European Commission

# A Community of Users on Secure, Safe and Resilient Societies

## Mapping Horizon 2020 and EU-funded Capacity-Building Projects under 2014-2017 Programmes

*Migration and Home Affairs*

Printed by Bietlot in Belgium

Manuscript completed in 2018

1st edition

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of the following information.

Luxembourg: Publications Office of the European Union, 2018

© European Union, 2018
Reuse is authorised provided the source is acknowledged.

The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39).

For any use or reproduction of photos or other material that is not under the EU copyright, permission must be sought directly from the copyright holders.

| | | | |
|---|---|---|---|
| Print | ISBN 978-92-79-96675-0 | doi: 10.2837/902758 | DR-03-18-391-EN-C |
| PDF | ISBN 978-92-79-96676-7 | doi: 10.2837/59936 | DR-03-18-391-EN-N |

Responsible Editor: **Philippe Quevauviller** (European Commission, DG HOME.B4). This document has been prepared by the Secure Societies Programme (Horizon2020). It does not reflect a formal position of the European Commission.

This document has been prepared by Ecorys Research and Consulting for the European Commission.

# A Community of Users on Secure, Safe and Resilient Societies

## Mapping Horizon 2020 and EU-funded Capacity-Building Projects under 2014-2017 Programmes

# Contents

**1. EXECUTIVE SUMMARY . . . 8**

**2. OVERVIEW OF TASKS AND OBJECTIVES . . . 9**

2.1 Background . . . 9
2.2 Objectives . . . 9
2.3 Logistics . . . 10
2.4 Governance and knowledge transfer . . . 10
2.5 Who are the users? . . . 13

**3. POLICY BACKGROUND . . . 14**

3.1 General framework . . . 14
3.2 EU Civil Protection Mechanism and related international policies . . . 16
3.3 Critical Infrastructure Protection . . . 17
3.4 CBRN and Explosives . . . 18
3.4.1 CBRN Action Plan . . . 18
3.4.2 Explosive Action Plan and Regulation 98/2013 . . . 19
3.4.3 International Conventions . . . 20
3.5 Major accident hazards . . . 20
3.6 Serious cross-border threats to health . . . 21
3.7 EU Adaptation Strategy to Climate Change . . . 21
3.8 Water and Marine policies . . . 22
3.9 Control of export and Union Custom Code . . . 23
3.10 Border security . . . 24
3.11 Fight against crime and terrorism . . . 24

**4. EU-FUNDING INSTRUMENTS - RESEARCH AND CAPACITY-BUILDING . . . 26**

4.1 Introduction . . . 26
4.2 Horizon 2020 . . . 26
4.3 DG ECHO . . . 27
4.4 DG HOME / ISF . . . 27
4.5 DG DEVCO - CoE . . . 28
4.6 LIFE+ . . . 29
4.7 Structural funds . . . 29
4.8 Education / Training . . . 29
4.9 JRC . . . 30
4.9.1 JRC's CBRNE activities . . . 30
4.9.2 ERNCIP . . . 31
4.9.3 Disaster Risk Management Knowledge Centre (DRMKC) . . . 32
4.10 Joint Investment Programme - EDA . . . 32

**1. DISASTER RISK AND CRISIS MANAGEMENT . . . 33**

1.1 Multi-hazards . . . 33
1.1.1 Multi-risk assessment, including cascading effects . . . 34
1.1.2 Multi-hazard risk reduction, preparedness, resilience enhancement . . . 34
1.1.3 Multi-hazards situation awareness / early warning . . . 40
1.1.4 Multi-hazard emergency response and crisis management, including cascading effects . . . 41
1.1.5 Earth observation support . . . 50
1.1.6 Cost assessments of hazards . . . 54
1.2 Climate hazards . . . 58
1.2.1 Multi-climate hazard risk prevention, awareness, preparedness, resilience . . . 58
1.2.2 Flood risks . . . 74
1.2.3 Drought risks . . . 85
1.2.4 Coastal risks . . . 87
1.2.5 Forest fire risk prevention . . . 88
1.3 Geological hazards . . . 94
1.3.1 Multi-geo hazard risk prevention, awareness, preparedness, resilience . . . 94
1.3.2 Volcanic risks . . . 96
1.3.3 Seismic and earthquake risks . . . 100
1.3.4 Tsunami risks . . . 106
1.3.5 Landslide risks . . . 107
1.3.6 Earth-surface ground deformations . . . 107

**2. HEALTH THREATS . . . 108**

2.1 Victims triage . . . 108
2.2 Contagions, pandemics . . . 108
2.3 Medical Responses . . . 115
2.4 Digital security in Health Services . . . 119

**3. FOOD SAFETY AND SECURITY . . . 123**

3.1 Food safety . . . 123
3.2 Supply chain . . . 127

**4. CRITICAL INFRASTRUCTURE PROTECTION AND URBAN BUILT ENVIRONMENT . . . 130**

4.1 Urban soft targets and Urban critical infrastructures . . . 130
4.1.1 Screening of persons, bags, vehicles . . . 130
4.1.2 Detection of potential CBRN-E threats at urban soft targets / urban critical infrastructures . . . 133
4.1.3 Cyber and physical threats to urban critical infrastructures and urban soft targets . . . 133
4.2 Critical Infrastructure Sectors . . . 135
4.2.1 Critical Energy Infrastructure: Electrical Power (Electricity) and Smart Grids, Oil, Gas . . . 135
4.2.2 Critical Transport / Transportation Infrastructure . . . 142
4.2.3 Critical Water Infrastructure . . . 147
4.2.4 Critical Finance Infrastructure . . . 151
4.3 Risk assessment and monitoring . . . 153
4.3.1 Multi-sector cyber and physical threats to critical infrastructures, including ICT . . . 153
4.3.2 Cascading effects from natural disasters related to critical infrastructures . . . 161
4.3.3 Multihazard assessment, stress tests . . . 161
4.3.4 Remote monitoring and surveillance tools / technologies . . . 161
4.3.5 Detection, prevention of intruders; Access Control . . . 169
4.4 Resilience . . . 171
4.4.1 Resilience of urban built environments . . . 171
4.4.2 Critical Infrastructure Resilience . . . 178

**5. CBRNE THREATS . . . 182**

5.1 Major accident hazards . . . 182
5.2 Chemical threats . . . 187
5.3 Biological threats . . . 188
5.4 RN emergency . . . 189
5.5 Explosives and their precursors . . . 193
5.6 Water Safety & Security . . . 198
5.7 CBRNE (Cross-cutting) . . . 201
5.8 Marine Pollution . . . 208

**6. CRIME AND TERRORISM . . . 211**

6.1 Terrorist threats . . . 211
6.2 Forensics . . . 214
6.3 Cybercrime & cyber security . . . 219
6.3.1 NIS - Cyber Security Management (for SMEs / business, local public authorities) . . . 219
6.3.2 Privacy and Data Protection . . . 241
6.3.3 Cybercrime . . . 258
6.4 Crime . . . 265
6.4.1 Organised crime . . . 265
6.4.2 Corruption . . . 269
6.4.3 Drug detection . . . 269
6.4.4 Firearms . . . 272
6.4.5 Support to law enforcement . . . 272
6.5 Radicalisation . . . 279
6.6 Supply Chain . . . 288
6.7 Financial crime . . . 290
6.8 Civil-military cooperation . . . 295
6.9 External security threat . . . 296

**7. BORDER SECURITY AND CUSTOMS ..... 297**

7.1 Aviation security ..... 297
7.2 Maritime security ..... 302
7.3 Land border security ..... 308
7.4 Multi-modal security, risk management, including migration ..... 309

**8. SOCIETAL RESILIENCE AND CIVIL PROTECTION ..... 320**

8.1 Socio-economic and ethical implications ..... 320
8.1.1 Ethics, Societal implications ..... 320
8.1.2 Post-crisis societal and psychological support ..... 325
8.1.3 Societal resilience to disasters ..... 325
8.2 Public involvement / engagement in research and use of social media ..... 327
8.2.1 Enhanced communication in crisis management ..... 327
8.2.2 Civil society engagement ..... 330
8.3 Population alert, civil protection (in case of emergencies) and practitioners' involvement ..... 334
8.3.1 Civil Protection Operations ..... 334
8.3.2 Population alerting ..... 341
8.3.3 Public Protection ..... 342
8.3.4 International cooperation / Humanitarian aid ..... 344
8.3.5 Training and Networking ..... 348
8.3.6 Protective equipment ..... 355

**9. HORIZONTAL ISSUES ..... 356**

9.1 Foresight studies on security threats & Roadmaps ..... 356
9.2 Standardisation, Testing & Certification ..... 356
9.3 Communication systems (Interoperability and communication with focus on security) ..... 360
9.4 Information / Communication systems for Disaster Management ..... 362
9.4.1 Communication systems / response coordination for first responders ..... 362
9.4.2 Communication systems with focus on disaster management (general) ..... 362

**10. WAY AHEAD ..... 367**

# 1. EXECUTIVE SUMMARY

In a world facing a growing risk of man-made and natural disasters resulting from increasingly frequent and severe natural, industrial and man-made hazards, the security of citizens, infrastructure and assets and the environment protection have become a high priority in the European Union. Strengthening capacities in disaster risk / crisis management and improving resilience in the fields of CBRN-E (Chemical, Biological, Radiological, Nuclear and Explosive) and natural and man-made disaster management, as well as in the areas of border security and the fight against crime and terrorism, represent key EU policy and research challenges.

The overall EU security policy framework covers many different sectors, which require coordination among various communities. In this respect, policy development and implementation rely on effective interactions among policy-makers, research, industry (including SMEs) and operational actors (first responders, civil protection units, police forces etc.) in the EU Member States. This requires a proper exchange of information and communication about either policy updates or (research) project results, which should be tailor-made to different sectors concerned with the goal of enhancing the transfer of research solutions or new policy recommendations to users in a timely and relevant fashion. Such exchanges are also needed to identify and address users' needs regarding research, technologies and policies, in order to better design funding programmes at an EU level. Finally, a proper transfer of knowledge from research to policy and operational sectors may have a positive impact on policy formulation and review.

However, the policy complexity, the high number of research projects, the difficulties associated with bringing innovative tools to the market and the lack of "interfacing" mechanisms make it difficult to efficiently reach these goals. In order to improve this situation, the European Commission is funding various types of projects, including large-scale demonstration projects. These projects, along with different policy committees and think-tanks, develop networks with user's groups in the Member States which have great potential but are currently too fragmented. In this respect, the need to build a "**Community of Users**" in the EU based on existing user's communities has been expressed in various fora. Discussions with different actors have hence taken place over the past months and a mapping of policies and research projects has been carried out in light of operational features regarding the overall risk management cycle (from preparedness / prevention, detection / surveillance, response / recovery) and the need to ensure a proper transfer (and implementation) of research outputs to users.

This working paper is built up on a mapping exercise carried out in 2016 about FP7 projects[1] which presented the reasoning for the development of a Community of Users on Secure, Safe and Resilient Societies. It focuses on mapping H2020 projects funded under the 2014-2015 calls for proposals. The H2020 projects are complemented by capacity-building projects funded in 2014 and 2015 by the Internal Security Fund Programme[2]. It will be complemented by a mapping of H2020 projects resulting from the 2016-2017 calls for proposals and capacity-building projects funded by different EU instruments (ISF, ECHO, LIFE+, INTERREG).

**This document does not reflect a formal position of the European Commission.**

1 A Community of Users on Secure, Safe and Resilient Societies (CoU) – Mapping EU Policies and FP7 research for enhancing partnerships in H2020

2 Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

# 2. OVERVIEW OF TASKS AND OBJECTIVES

## 2.1 Background

The management of disaster risks and crises of different kinds (unintentional or intentional man-made disasters, natural hazards) as well as other security / safety issues in the areas of border control, supply chains and crime are ruled by a number of international, EU and national policies covering various sectors and operational features such as preparedness, prevention, detection, surveillance, response, and recovery. A wide range of research and technological developments, as well as capacity-building and training projects, are striving to support the implementation of these policies. However, the complexity of the policy framework and the wide variety of research, capacity-building and training initiatives often leads to a lack of awareness about policies and/or project outputs by the among users, namely policy-makers, scientists, industry/SMEs and practitioners, e.g. civil protection units, medical emergency services and police departments. Highly fragmented information often leads to poor awareness of policy requirements by research and industry communities and poor transfer of research results to policy and stakeholders communities.

## 2.2 Objectives

In the light of the above, there is a strong need to establish a mechanism enabling better information exchanges with regular updates for all possibly interested organisations and effective interactions among projects and different communities. To better understand the type of information that should be considered and how it fits to a larger "architecture", a mapping exercise was carried out to highlight the scientific and technological challenges of key related policies and their possible matching by research projects funded by the 7th Framework Programme. A first step is to build up the framework of science-policy-industry-practitioner's interactions and to figure out how an efficient mechanism of information transfer could be made operational at EU and national levels in the light of Horizon 2020 developments. This is the core objective and mission of the **Community of Users on Secure, Safe and Resilient Societies**. More specifically, five key objectives are defined, namely:

1. Ensuring that research programming (particularly H2020) takes account practitioners' needs, thereby promoting research results that are relevant to them;
2. Identifying the most promising tools, methods, guidelines (including those developed in FP7 and H2020 projects) that have the potential to be taken up by practitioners;
3. Support the competitiveness of EU industry by enhancing the market for research results;
4. Ensuring that the expertise of practitioners is available to policy makers, thereby facilitating the policy-making process;
5. Facilitating the implementation of policy.

## 2.3 Logistics

The agenda and organisation of the Community of Users is under the responsibility of DG HOME.B4 in close coordination with various DGs and Agencies, as well as with REA and relevant projects.

In its first phase (2014-2015), the development of the Community of Users has been closely linked to two demonstration projects (EDEN[3] and DRIVER[4]) in terms of logistics, i.e. CoU meetings were organised under the umbrella of these two projects, while all other tasks were coordinated with other services. From 2016 to date, logistics are now carried out under a service contract with the development of a dedicated website. The first phase of the CoU development has focused on disaster risk and crisis management. The scope of the mapping has been enlarged to encompass all the areas covered by research on secure, safe and resilient societies.

## 2.4 Governance and knowledge transfer

The governance of the Community of Users and related knowledge transfer have to be established in the lights of the different interactions among different categories of actors, linking research, industry, policy sectors and practitioners.

In this respect, several levels of governance need to be considered: (1) a "horizontal" level in the framework of which interactions among research, industry, policy-makers and practitioners are established in a coordinated way at different scales, i.e. EU, national and regional; (2) a "vertical" level which establishes operational links among the EU, national and regional levels through appropriate information relays, synergies and demonstration activities.

### *a. Horizontal transfer*

- **Science to science**: sharing information and developing interactions among H2020 projects (via the Research DGs) dealing with specific themes to develop a critical mass and reduce fragmentation, and bring tools/technologies to the market through links with industrial stakeholders. EU-funded projects respond to topics which are generally based on well-defined policy hooks. We might hence expect that projects supporting common policy goals will establish synergies, which is rarely the case without a push from the Commission owing to various considerations (IPR and classified information in particular). Here again, sharing information and developing interactions on a regular basis should become a practice that the Commission asks of projects.
- **Policy to policy**: policy interactions in the light of policy implementation needs, including the respective DGs, and establishing links with Member States through formal committees (e.g. CBRN-E Advisory Group, Civil Protection Committee, Seveso Committee etc.). While International and EU policies are developed in close consultation among different sectors, in practice few interactions take place at the implementation level among sectors within the Member States. This is partly due to insufficient sharing of information and joint actions.

3 https://www.eden-security-fp7.eu/

4 http://driver-project.eu/

- **Science to policy**: formatting/translation of research information in a way which is tailor-made to policy-makers and ultimately user's needs, responding to well specified technical challenges. This is obviously directly linked to the above, with the requirement for the scientific community to format/translate research information in a way which is tailor-made to policy applications, basically responding to well specified technical challenges. This is the subject of the mapping described in this document.
- **Policy to science**: identification of research needs from policy-makers, stakeholders and practitioners on the short to long term and communication of these needs to be taken into account in research programming, development and implementation. An essential component of the policy to science interaction is the capacity for policy-makers to identify research needs on the short to long term and communicate these needs in anticipation to the research community so that programming, research development and implementation can match the policy timeline (e.g. access to the scientific state-of-the-art, short-term research / capacity building, longer term research goals, pre- and co-normative research).
- **Science to science**: sharing information and developing interactions among H2020 projects (via the Research DGs) dealing with specific themes to develop a critical mass and reduce fragmentation, and bring tools/technologies to the market through links with industrial stakeholders. EU-funded projects respond to topics which are generally based on well-defined policy hooks. We might hence expect that projects supporting common policy goals will establish synergies, which is rarely the case without a push from the Commission owing to various considerations (IPR and classified information in particular). Here again, sharing information and developing interactions on a regular basis should become a practice that the Commission asks of projects.
- **Policy to policy**: policy interactions in the light of policy implementation needs, including the respective DGs, and establishing links with Member States through formal committees (e.g. CBRN-E Advisory Group, Civil Protection Committee, Seveso Committee etc.). While International and EU policies are developed in close consultation among different sectors, in practice few interactions take place at the implementation level among sectors within the Member States. This is partly due to insufficient sharing of information and joint actions.
- **Science to policy**: formatting/translation of research information in a way which is tailor-made to policy-makers and ultimately user's needs, responding to well specified technical challenges. This is obviously directly linked to the above, with the requirement for the scientific community to format/translate research information in a way which is tailor-made to policy applications, basically responding to well specified technical challenges. This is the subject of the mapping described in this document.
- **Policy to science**: identification of research needs from policy-makers, stakeholders and practitioners on the short to long term and communication of these needs to be taken into account in research programming, development and implementation. An essential component of the policy to science interaction is the capacity for policy-makers to identify research needs on the short to long term and communicate these needs in anticipation to the research community so that programming, research development and implementation can match the policy timeline (e.g. access to the scientific state-of-the-art, short-term research / capacity building, longer term research goals, pre- and co-normative research).

*b. Vertical transfer*

- **International/EU to National**: in the research sector, interactions through H2020 consortia; in the policy sector, interactions through Committees representing Member States and stakeholders, working out appropriate relays to national authorities and stakeholders based on well-formatted information. At international/EU level, policies are elaborated by relevant organisations (e.g. UN for various conventions and European Commission for security-related EU policies). The links to the National level take place through Committees in which Member States are represented. There is a need to ensure that these Committees be informed on similar grounds about science & policy developments.
- **National to Regional/Local**: information relays through interactions with regional research partners and regional authorities as well as practitioner's networks and associations. Once representatives of the Member State's Committee are duly informed, it is to be expected that appropriate relays with regional / local implementers will then take place under the MS responsibility. This also requires a level of coordination which depends upon the willingness and capacity of each Member State. This level of interaction is less well defined than the EU level because of different settings within the Member States.
- **Regional to National/EU**: return of experiences from either practitioners involved in EU-funded projects or practitioners informed via national channels to the EU level.

## 2.5 Who are the users?

Fields concerned by security, safety and resilience for societies are themselves scattered into many different disciplines and sectors. To simplify, we will distinguish five main categories of users: (a) Policy–makers; (b) Scientists; (c) Industry (including SMEs); (d) Training and Operational units; and (e) NGOs and general public:

*a. Policy-makers and stakeholders*

- At the international level, UN bodies are closely working with the EU in the fight against crime and terrorism (UNICRI), disaster risk reduction (UN-ISDR), transboundary industrial accidents (UNECE), environment protection (UNEP) etc.
- At the EU level, the main policy DGs concerned with Crisis Management are DGs HOME (migration and home affairs), ECHO (civil protection), SANTE (health), GROW (enterprise), ENV (environment), CLIMA (climate action), ENER (energy), MOVE (transport), TAXUD (customs), TRADE (export, trade), EEAS/FPI (external security, foreign policy instrument) and the SG (Secretariat General), as well as the Joint Research Centre (JRC) as supporting DG, see section 5
- At the Member State's level, Ministries of Defence, Interior, Foreign Affairs, Civil Protection, Environment, Research and Industry, as well as Agencies and Regional Authorities, are concerned
- Often working at the interface between policy and science, various stakeholders are involved in bridging interests of different communities, e.g. consultancy companies

*b. Scientists*

- Security research involves a wide range of scientific disciplines which have to interact, ensure complementarity and build interdisciplinary networks
- Different types of scientists are to be considered (universities, research institutes, research units linked to Defence/Interior ministries or agencies)

*c. Industry (including SMEs)*

- Many industry branches and stakeholders are involved in the areas of defence, forensics, civil protection etc. Research results can benefit most first responders
- Different communication approaches to be followed towards large industries and SMEs often disconnected from discussions at EU level

*d. Practitioners*

- First responders, i.e. fire brigades, emergency services, police forces, civil protection units, military units, laboratories, water/flood management etc. as well as Decision-makers (at national or regional levels)
- Training centres for first responders, command control centres

*e. NGOs and general public*

- NGOs, Civil Society Organisations, public at large, education (schools) and training

While some of the above actors in categories a, b and c are used to participate in international meetings, this is less frequent for SMEs (in category c) and even less for actors in categories d and e. New ways must be found to ensure that information may freely circulate "horizontally" as well as "vertically" (see p. 7) in order to fertilize all project deliverables while, at the same time, maturing them to the final operational phase (also called "usefulness & use") by end-users, and integrating them into appropriate policy implementation and development.

# 3. POLICY BACKGROUND

## 3.1 General framework

A large span of sectors and policies cover secure, safe and resilient society's issues in a direct or indirect way, either by providing legally-binding frameworks of actions by EU Member States in the form of Directives, general frameworks in the form of Communications or technical specifications in the form of Decisions, for example.

Crisis Management policies follow an integrated approach for the management of natural and man-made hazards focusing on disaster risk reduction (prevention and preparedness) and disaster response. The policy is mainly represented by the EU Civil Protection Mechanism (UCPM)[5], and the operational dimension is coordinated by the Emergency Response Coordination Centre (ERCC). Disaster risk management is also addressed through the EU Internal Security Strategy[6] and the resulting European Agenda on Security adopted in April 2015[7] (DG HOME) and Consumer Health Protection policies (DG SANCO)[8]. In addition, climate-related disasters are covered by environmental and climate policies (DG ENV, in particular the Flood Directive[9] and DG CLIMA through the EU climate change adaptation strategy[10]). Finally, intergovernmental agencies are also involved in security policies, namely the European External Action Service (EEAS) – which implements the EU Common Foreign and Security Policy – and Europol – which is the EU Law Enforcement Agency. Both agencies assist EU Member States. There are also links with the Council Decision 2014/415/EU on the arrangements for the implementation by the Union of the solidarity clause, which covers response, situational awareness and analysis and threat assessment at Union level.

Other key EU policies concern industrial competitiveness and innovation, namely the EU Industrial Policy[11] which aims to boost industrial competitiveness and innovation (thus the access to market of developed technologies) and the EU research policy represented by Horizon2020[12].

5 Decision 1313/2013

6 Internal Security Strategy for the European Union: Towards a Eropean Security Model, 5842/2/2010

7 The European Agenda on Security, COM(2015) 185 final

8 Decision 1082/2013

9 Directive 2007/60/EC

10 COM (2013) 216 final

11 COM(2012) 417 final

12 http://ec.europa.eu/programmes/horizon2020/en/

With regards to CBRN-E, the key EU policy is represented by the CBRN Action Plan[13] (DG HOME) and the EU Action Plan on Enhancing the Security of Explosives[14] which expired at the end of 2015 and which is now under revision; the Regulation 98/2013 on the Marketing and Use of Explosives Precursors[15] has entered into force and is directly applicable to all MS. Other EU policies include CBRN as a focal point, namely in the sectors of Civil Protection and Consumer Health Protection (see above), as well as Energy Infrastructure and Transport Networks[16] (DGs ENER and MOVE), Customs[17] (DG TAXUD), Environment and Industrial Risks[18] (DG ENV) and International Cooperation, e.g. CBRN-E Centres of Excellence (DG DEVCO).

Complementary to EU policies, international policies are also active in Disaster Risk and Crisis Management. In the case of CBRN-E, various conventions exist, namely the United Nations Security Council Resolution 1540, the Chemical Weapon Convention (CWC controlled by the Organisation for the Prohibition of Chemical Weapons, OPCW), the Biological and Toxin Weapon Convention (BTWC without control mechanisms), and the Nuclear Non-proliferation Treaty (NPT controlled by the International Atomic Energy Agency, IAEA). In the field of Disaster Risk Management, Disaster Risk Reduction has been the core action line of the United Nations Hyogo Framework for Action on how to mitigate the impact of natural and man-made disasters, now continued by the Sendai Framework for Action setting priorities for the 2015-2025 period, among which the promotion of a better understanding of disaster risk management through the building, sharing and development of knowledge and the strengthening of the policy-science interface at local, national, regional and global levels.

The implementation of these policies represents a complex and ambitious challenge as they involve a wide variety of players whereas each Member State often follows specific national approaches (national action plans) for dealing with crises and are also differently organised in terms of disaster risk management capabilities. The EU framework represents a means and a real opportunity to discuss possible ways to improve coordination among the various national approaches and develop a common EU vision strengthened by a joint strategy in this field. The development of a Community of Users is, in this respect, an essential component to bring together key scientific, policy and industry actors, as well as other stakeholders (e.g. first responders, police representatives, fire fighters, civil protection units) around this common vision and strategy. This is closely linked to the EU industrial policy[19] under the responsibility of DG GROW, the EU research policy[20] coordinated by DG R&I and involving DG HOME (Secure Societies Programme), DG CNECT and JRC, the EU civil protection policy managed by DG ECHO, as well as the EU environmental and climate policies coordinated by DG ENV and CLIMA respectively.

13 COM(2009) 273 final and COM(2014) 247 final

14 Doc.8311/08/Council of the European Union, EU Action Plan on Enhancing the Security of Explosives

15 Regulation 98/2013

16 Regulation 347/2013 and Decision 661/2010

17 COM(2012) 793 final

18 Directive 2012/18/EU

19 COM (2010) 2020 final

20 COM (2011) 152 final

## 3.2 EU Civil Protection Mechanism and related international policies

The **UCPM**[21] aims to facilitate reinforced cooperation between the EU and the Member States and to facilitate coordination in the field of civil protection, in order to improve the effectiveness of systems for preventing, preparing for and responding to natural and man-made disasters. It supports and complements the efforts of the Member States for the protection, primarily of people but also of the environment and property, including cultural heritage, in the event of natural and man-made disasters, acts of terrorism and technological, radiological or environmental accidents, including marine pollution. Built upon these policy instruments, the UCPM is about developing an integrated approach to disaster management. The EU action is based on the principles of solidarity. The overall mechanism takes due consideration of laws and international commitments, and exploit synergies with relevant Union initiatives such as the European Earth Observation Programmes (Copernicus), the European Programme for Critical Infrastructure Protection (EPCIP) and the Common Information Sharing Environment (CISE). The mechanism is based on the Emergency Response Coordination Centre (ERCC) and the European Emergency Response Capacity (EERC) in the form of voluntary pool of pre-committed capacities from the Member States, trained experts, a Common Emergency Communication and Information System (CECIS) managed by the Commission and contact points in the MS. It also recognises the role of regional and local authorities in disaster management. Outside the Union, disaster response is coordinated with the United Nations and other relevant international actors with reference to Council Regulation No 1257/96 concerning humanitarian aid[22]. Finally, the use of military means under civilian leads as a last resort may constitute an important contribution to disaster response.

On technical grounds, the UCPM is working towards a general policy framework on disaster risk prevention aimed at achieving a higher level of protection and resilience against disasters by preventing or reducing their effects and by fostering a culture of prevention. From this perspective, it promotes the review of risk assessment, risk management planning conducted at national/regional level and the development of an integrated approach, linking risk prevention, preparedness and response actions. On the basis of information received from the EU Member States, the European Commission establishes and regularly updates a cross-sectoral risk overview. Among its priorities is the action to 'improve the knowledge base on disaster risks and facilitate the sharing of knowledge, best practices and information[23].

The UCPM is closely related to the **Sendai Framework for Action 2015-2025**[24] "Building the resilience of nations and communities to disasters" which is the successor of the Hyogo Framework for Action adopted by 168 UN Member States that voluntarily committed to work towards achieving its objectives, in particular improving disaster resilience and disaster risk reduction as a necessary ingredient for the achievement of poverty reduction and sustainable development. The Sendai Framework for Action sets out an ambitious set of priorities to place disaster risk reduction as a key element of sustainable development efforts, to define further steps to reduce existing and emerging risks and foster disaster resilience. As stressed in Council Conclusions on this matter, the EU supports a framework which strengthens the contribution of disaster risk management to smart, sustainable and inclusive growth by promoting the use and development of innovative technologies and encouraging a more systematic and reinforced science-policy interface in disaster risk management. These objectives are supported by IPCC recommendations expressed in the special report on extreme events[25].

21 Council Decision 2007/779/EC, OJ L 314, 1.12.2007

22 Council Regulation No 1257/96, OJ L 163, 2.7.1996

23 Art.5.1(a), Council Decision No. 1313/2013/EU, Official Journal of the European Union, L347, 20.12.2013

24 http://www.unisdr.org/we/coordinate/sendai-framework

25 Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), http://ipcc-wg2.gov/SREX/report/

The UCPM is also financing actions related to preventing, preparing for and responding to disasters. These include: an important EU Civil protection training programme, regular large-scale exercises and modules exercises, exchange of experts, prevention and preparedness projects (through annual calls for applications[26]), logistical and transport support for response missions, deployment of coordination, assessment or advisory missions, adaptation and certification of assets to be included in the Voluntary Pool, the availability of buffer capacities under the Voluntary Pool (additional assets than those made available by the Member States). In the area of marine pollution these actions are coordinated with the European Maritime Safety Agency and the regional sea conventions.

## 3.3 Critical Infrastructure Protection

The **new approach to the European Programme for Critical Infrastructure Protection**[27] (EPCIP) is built on a review of the 2006 programme and the Council Directive 2008/114/EC[28] on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection. It aims to ensure a high degree of protection of EU infrastructures and increase their resilience (against all threats and hazards). It looks at interdependencies between critical infrastructures, industry and state actors, taking account of the cross border dimension and interdependencies between sectors (e.g. European high-voltage electricity grid). The EPCIP established (1) procedures for the identification and designation of European critical infrastructures and assessment of the need to improve their protection (Directive 2008/114/EC); (2) measures to facilitate its implementation, including an action plan, CIWIN, CIP expert groups at EU level and information sharing process; (3) funding for CIP-related measures and projects focussing on 'Prevention, Preparedness and Consequence Management of Terrorism and other Security Related Risks' such as ERNCIP (see 6.9.2); and (4) an external dimension for engagement with third countries on CIP. At the time of publication of the revised approach (2013), less than 20 European Critical Infrastructures had been designated and hence very few Operator Security Plans had been produced; the number of ECI designated has since increased substantially. The Directive 2008/114/EC has mainly encouraged bilateral engagement of Member States instead of a real European forum for cooperation – the sector-focused approach of the directive represents a challenge to a number of MS as in practice the analysis of criticalities is not confined to sectoral boundaries and follows rather a 'system' or 'service' approach (e.g. hospitals, financial services). There is a need for a cross-sectoral approach development. In practical terms, development of preparedness strategies are based around contingency planning, stress tests, awareness raising, training, joint courses, exercises and staff exchange. The programme also promotes the dialogue between the operators of the critical infrastructures and those who rely upon them in order to better prepare responses to events affecting European critical infrastructures. The gaps identified in the review of the EPCIP led the Commission to present its new approach to the implementation of the EPCIP in 2013, with a greater focus on interdependencies and proposing practical work with four critical infrastructures of a European dimension (Eurocontrol, Galileo, the electricity transmission grid and the gas transmission network).

**The guidelines for trans-European energy infrastructure**[29] are built upon the Communication of 28 February 2011 entitled 'Energy infrastructure priorities for 2020 and beyond – A blueprint for an integrated European energy network'; it stipulates that the Union's energy infrastructure should be upgraded in order to prevent technical failure and to increase its resilience against such failure, natural or man-made disasters, adverse effects of climate change and threats to its security, in particular as regards European Critical Infrastructures and the assessment of the need to improve their protection.

26 http://ec.europa.eu/echo/en/funding-evaluations/financing-civil-protection-europe/selected-projects

27 SWD(2013) 318 final

28 Council Directive 2008/114/EC, OL L345/75

29 Regulation (EU) no 347/2013 of 17 April 2013, OJ L115/39 of 25.04.2013

Creating the environment for safe transport is essential for European citizens. **EU transport policies**[30] cover a wide range of security and safety policies in the air, road, maritime and rail areas which all relate to technical standards for preventing / detection risks and responding to major threats, including terrorist attacks, crimes and accidents. In order to maintain proper security levels cooperation with third countries is paramount and the Commission consolidates and strengthens security by working together with major international partners, exchanging experiences and best practices. Security in transport also relies on new technologies that can really assist in developing smooth high-security systems for the future but without making the security checks too long and intense.

## 3.4 CBRN and Explosives

From the above, it is clear that Chemical, Biological, Radiological, Nuclear and Explosive (CBRN-E) threats are covered by a range of policies. In views of improving coordination of actions related to CBRN-E risk management, the European Commission has issued strategic documents which main features are described below regarding technical challenges.

### 3.4.1 CBRN Action Plan

The **CBRN Action Plan** aimed to ensure that unauthorised access to CBRN materials of concern is as difficult as possible. Prevention is based on robust risk-assessment processes, which include the prioritisation, security and control of high-risk CBRN materials and facilities, developing a high-security culture of staff, improving the security of transport, information exchange, import and export regimes, and strengthening cooperation on the security of nuclear materials. Key Actions defined in the Plan are designed to reduce threat and damage from CBRN incidents of accidental, natural and intentional origin, including terrorist threats. It is a political commitment which may be seen as a roadmap of intentions guided by principles of EU solidarity (the responsibility of protecting populations against CBRN incidents lays with the Member States), EU added value (respecting principles of subsidiarity and proportionality), based on existing regulations and instruments, and in close consultation with national authorities. Actions are based on risk- and threat assessments and cost-effective assessments. Confidentiality of certain types of information is taken into account. Actions have been financially supported by expired and existing Union programmes and fund[31,32].

The plan aimed to efficiently respond to incidents involving CBRN materials and recover from them as quickly as possible. Specific attention is made to CBRN emergency planning, strengthening countermeasure capacity, reinforcing information flows, developing better modelling tools and improving criminal investigation capacity. The plan focuses on the required capability to detect CBRN materials in order to prevent or respond to CBRN incidents. This is related to the development of minimum detection standards to be applied across the entire EU, establishing trialling, testing and certification schemes for CBRN detection and improving the exchange of good practices on the detection of CBRN materials. The Plan promotes a scenario-based/modelling approach at EU level to identify work priorities in the detection field (identification of CBRN material and detection technologies), wide risk assessment (including events with cross-border effects) built on existing scenarios and national experience, and gap analysis; it supports the exchange of methods and procedures for developing scenarios and modelling, interconnecting detectors at national levels where feasible including data on incidents, coordination of exercises and lessons learnt. It also promotes a mechanism of information exchange among Member States on methodologies of scenario development related to sampling and detection, taking appropriate confidentiality into account. In the specific area of biological pathogens and toxins, the Plan promotes the development of detection models, considering distribution, possible vectors, infectious dose and stability.

30 http://ec.europa.eu/transport/home_en

31 http://ec.europa.eu/transport/home_en

32 OJ L 58, 24.2.2007, p.1-6 - Prevention, Preparedness and Consequence Management of Terrorism and other Security related risks

The CBRN Action Plan is complemented by the **new EU approach to the detection and mitigation of CBRN-E risks** which adopts a proactive approach to the detection of threats, and proposes among others to put effective, proportional safeguards in place, including prevention, preparedness and response measures at EU level with the objective to better assess the risks, to develop countermeasures, to share knowledge and best practices, test and validate new safeguards with the ultimate goal of adopting new security standards. The response mechanisms within the CBRN Action Plan are linked to various EU policy instruments such as the EU Mechanism for Civil Protection (see section 5.2), the EU Integrated Political Crisis Response Arrangements (IPCR), the implementation of the Solidarity Clause, the ARGUS crisis management system allowing for an immediate exchange of information among Commission rapid alert systems such as the ECURIE system for radiological emergencies, the Early Warning and Response System (EWRS) for communicable diseases, and the RAS-BICHAT for biological and chemical health threat.

### 3.4.2 Explosive Action Plan and Regulation 98/2013

The enhancement of the security of explosives has been identified as a priority issue for the European Commission in its efforts in the field of combating terrorism. Home-made explosives can be fabricated from certain easily accessible chemical precursors and can be misused by terrorists to inflict casualties and damage. In order to mitigate the risk of such misuse, in 2008 the Justice and Home Affairs Council approved the **EU Action Plan on Enhancing the Security of Explosives**. The Action Plan thus contributes to the implementation of the EU Counter Terrorism Strategy (2005) and is in line with the Internal Security Strategy (2010).

The EU Explosives Action Plan contains 48 measures related to the prevention, detection, and preparedness and response to explosives-related incidents. The recommendations for action address a comprehensive range of relevant aspects, such as precursors, storage, transport, traceability, detection, research, information exchange, and inter-agency coordination.

A first set of horizontal measures aims at improving the exchange of timely information and best practices, and supporting and promoting research, including research into inhibitors to precursors. A second set of measures focuses on prevention around explosives precursors, by raising staff awareness, increasing control over substances and explosives available on the market (including pyrotechnics), and establishing a mechanism for reporting suspicious transactions. Other prevention measures cover the security of explosives facilities and transport, as well as the security vetting of personnel at any stage in the supply chain. The action plan calls, in addition, for increased efforts to reduce the presence of bomb-making information over the internet. A third set of actions focuses on the detection of explosives threats. The plan has as a priority to establish a scenario-based approach to identifying priorities in the detection field, notably to identify detection technology requirements, current equipment that is available, and common minimum detection standards which should be applied. In the area of detection, the action plan recognises that there is an urgent need for improved exchange of information between authorities, researchers, and end-users, particularly in order to establish an EU-wide certification, testing and trialling scheme for the detection of explosives, and to continuously reassess the use of detection technologies in specific locations. Finally, a set of preparedness and response measures call on the creation of a network which improves the exchange of information and best practices among explosives ordnance disposal units in Europe, and also supports the development of threat assessments on explosives and on specific threats.

The actions contained in the EU Explosives Action Plan are implemented through a joint effort of the European Commission, Member States, Europol, research institutions as well as private sector stakeholders. DG HOME aimed at fully achieving implementation by the end of 2015.

One of the key actions of the EU Explosives Action Plan called on the Commission to consider measures to regulate the availability of explosives precursors on the market. As a result of the work done to implement this action, **Regulation (EU) 98/2013 on the marketing and use of explosives precursors** was adopted with

a view to enhancing the protection of citizens from the threat of homemade explosives. Regulation 98/2013 came into force on 2 September 2014. It restricts availability, possession and use, by members of the general public, of seven dangerous substances ('restricted explosives precursors,' listed in Annex I). Member States may decide to grant access by the public to these substances only through a system of licenses and registration. In addition, the Regulation introduces obligations for economic operators who place such substances on the market. Operators must ensure the appropriate labelling of restricted explosives precursors, and must also report any suspicious transactions involving both the seven restricted substances and eight other non-restricted substances which are also considered of concern (listed in Annex II).

### 3.4.3 International Conventions

At international level, the **EU strategy against Proliferation of Weapons of Mass Destruction** (WMD strategy), together with relevant Community Instruments, in particular the Instrument for Stability (supporting third countries to develop training and assistance on CBRN risk mitigation and preparedness), reinforces actions on reducing the risks from CBRN materials. This is linked to nuclear non-proliferation for strengthening nuclear security[33]. Furthermore, the Implementation of the UN Security Council Resolution 1540 will be further strengthened by supporting the International Atomic Energy Agency (IAEA), in particular contributing to more efficient export control and border monitoring systems. Regional Centres of Excellence will be instrumental in order to exchange best practices, support capacity building and share experiences gathered at EU level with key regions. Issues related to the threat of CBRN materials are also discussed by international organisations such as the Organisation for the Prevention of Chemical Weapons (OPCW), the BTWC Conference, Interpol and the Global Health Security Initiative (GHSI).

## 3.5 Major accident hazards

Major accidents can have consequences beyond the limits of industrial establishments and the potentially significant human, ecological and economic costs of an accident are borne not only by the establishment affected, but also by the society concerned. It is therefore necessary to establish and apply safety and risk-reduction measures to prevent major accidents, and to minimise their effects if they nevertheless occur, thereby ensuring a high level of protection throughout the Union as well as supporting sustainable economic growth.

The **Directive 2012/18/EU (on major-accidents hazards involving dangerous substances)**[34], better known as Seveso-III-Directive, sets a risk management framework: a) by obliging operators to take all necessary measures to prevent major accidents and to limit their consequences for human health or the environment and b) by requesting competent authorities to establish supporting policies (e.g. emergency or land-use planning). . Different sets of requirements are set depending on the amount of dangerous substances present in the establishment. The Directive excludes military establishments, pipelines, as well as the transportation of dangerous substances outside establishments. Risk assessments should consider operational causes, natural causes (e.g floods, earthquakes) and other external causes of accidents. The latter would, where appropriate, also include malicious acts even if those are not explicitely mentioned. While the Directive does not distinct between causes of accidents (e.g. unintentional or intentional) and is rather impact-oriented, traditionally it is rather a safety measure and implementation focusses on unintentional events. However, there is an increasing awareness in the community towards malicious causes of major accidents and the relevance of Seveso establishments for national security, which requires a cross-sectorial coordination as stipulated in the new CIP approach (see § 5.3). The Directive is complemented by CIP regulations for attack-prone installations.

33 COM(2009) 143 final, 26.03.2009

34 Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on major-accidents hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC, Official Jornal of the EU, No. L 197/1, 24.7.2012.

At international level, the EU is actively engaging in the **Convention on the Transboundary Effects of Industrial Accidents** (TEIA)[35] of UNECE (UN Economic Commission for Europe) which is designed to protect people and the environment against industrial accidents, aiming to prevent accidents from occurring, or reducing their frequency and severity and mitigating their effects if required. The Convention promotes active international cooperation between countries before, during and after an industrial accident. The TEIA has also close links with the Sendai Framework for Action (see section 5.2) and is increasingly aware of cross-links with CBRN-E issues, thus offering an additional cooperation channel. A number of other agencies (e.g. OECD, OPCW) are also active in the area of industrial accidents and cooperate with the EU and UNECE on the issue.

## 3.6 Serious cross-border threats to health

The protection of human health is a matter which has a cross-cutting dimension and is relevant to numerous Union policies and activities. The Commission should ensure, in liaison with the Member States, the coordination and exchange of information between the mechanisms and structures established under the **Decision 1082/2013/EU on serious cross-border threats to health**[4] as well as activities which are relevant to the preparedness and response planning, monitoring, early warning of, and combating serious cross-border threats to health. Pursuant to Decision 2119/98/EC a network for the epidemiological surveillance and control of communicable diseases in the Community has been set up. Apart from communicable diseases, a number of other sources of danger to health, in particular related to other biological or chemical agents or environmental events, which include hazards related to climate change, could by reason of their scale or severity, endanger the health of citizens in the entire Union, lead to the malfunctioning of critical sectors of society and the economy and jeopardise an individual Member State's capacity to react. The legal framework set up under the above Decision should, therefore, be extended to cover other threats and provide for a coordinated wider approach to health security at Union level. In the context of this Decision, an important role in the coordination of recent crises of Union relevance has been played by an informal group composed of high-level representatives from Member States, referred to as the Health Security Committee, and established on the basis of the Presidency Conclusions of 15 November 2001 on bioterrorism. The Decision promotes preparedness and response planning through consultation among the Member States and the Commission in order to share best practice and experience, as well as interoperability of national preparedness planning and addressing the intersectoral dimension of preparedness and response planning at Union level.

The Health Security Committee plays an important role in responding to health threats (notably in terms of crisis preparation, exercises on CBRN events and the listing of pathogens and chemicals which pose a health threat) whilst the European Centre for Disease and Control (ECDC) provides risk assessments for communicable diseases and biological incidents.

## 3.7 EU Adaptation Strategy to Climate Change

The **EU Adaptation Strategy to Climate Change** highlights the consequences of climate change and the need for adaptation measures. It focuses on early, planned and coordinated action rather than reactive adaptation. The communication highlights the need for systematic exchanges of best practice on how to best adapt to climate change. The strategy takes account of global climate change impacts such as disruptions to supply chains or impaired access to raw materials, energy and food supplies. The overall aim is to contribute to a more climate resilient Europe by enhancing the preparedness and capacity to respond to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination. This strategy is closely linked to national adaptation strategies which are considered as recommended instruments by the UN Framework Convention on Climate Change. A close coordination between climate change adaptation and disaster risk management / policies is also required. Development is foreseen of guidelines on minimum standards for disaster prevention based on good practices.

35 http://www.unece.org/env/teia.html

The requirement for "climate-proofing" and mainstreaming of adaption measures in various sectors also calls for strengthened preparedness and science-policy links. The strategy makes reference, in particular, to the Marine Framework Directive (Directive 2008/56/EC)[36] and various environmental policies, related to e.g. Forestry (EC Regulation 2152/2003), Water (Directives listed in the COM(2012)673 on the Blueprint to Safeguard Europe's Water Resources[37]), as well as other sectors such as Transport (Decision 661/2010/EC), Energy (COM(2011)665/3), and the above described Disaster Risk Prevention (within the Union Civil Protection mechanism) and Health (Decision 1082/2013).

## 3.8 Water and Marine policies

Linked to the above, specific policy instruments are in place in the water sector related to extreme hydrometeorological events such as floods and droughts. In the first place, complementing the Water Framework Directive (WFD)[38] (and its daughter Directives, namely the Priority Substances Directive[39] and the Groundwater Directive[40]), flood prevention and management are tackled by the Flood Directive which requires EU Member States to assess and manage flood risks, with the aim of reducing adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in Europe. This directive has to be coordinated with the implementation of the WFD from the second river basin management plan onward (which will take place from 2015 to 2021). It therefore provides a comprehensive mechanism for assessing and monitoring increased risks of flooding, taking into account the possible impacts of climate change, and for developing appropriate adaptation approaches. Water scarcity and droughts are also considered in the policy context[41]. In particular, a European assessment of water scarcity and droughts has been conducted by the European Commission in the framework of the Water Scarcity and Drought Communication to monitor changes across Europe and to identify where further action is needed in response to climate change. Recommendations have been taken on board in the Blueprint to Safeguard Europe's Water Resources. It may, therefore, be considered that the successive steps of the WFD River Basin Management Planning (RBMP) and the related flood and drought policy framework may conveniently incorporate adaptation to climate-related water risks through risk assessment, monitoring, environmental objective setting, economic analysis and action programmes to achieve well defined environmental objective.

The Drinking Water Directive (DWD)[42] regulates the quality of water intended for human consumption. The Directive is currently under evaluation as a follow-up of the European Citizens' Initiative (ECI) Right2Water[43]. The policy concerns the quality of drinking water from around 100,000 water supplies. It aims to protect human health by ensuring that drinking water at the consumer tap is wholesome and clean. It lays down essential quality standards at EU level, for which monitoring programmes have to be performed. For any failure remedial action has to be taken. Its intervention logic was to address all possible contamination causes, including from treatment and distribution, by setting strict minimum parametric values to be complied with at the consumer tap. It thus implicitely includes deliberate poisoining risks. The abstraction of drinking water and the protection of water bodies for this aim is, however, not regulated in the DWD, but in Article 7 of the above mentioned

36 Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164/19.

37 COM(2012) 673 final

38 Directive 2000/60/EC

39 Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy, OJ L 226/1.

40 Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration, OJ L 372.

41 COM(2007) 414 final

42 Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, OJ L 330, 5.12.1998, p. 32

43 Communication from the Commission on the European Citizens' Initiative "Water and sanitation are a human right! Water is a public good, not a commodity!" COM/2014/0177 final

Water Framework Directive (WFD), which requires Member States to identify bodies of water for the abstraction of drinking water and to protect them, so that the resulting water will meet the DWD requirements under the water treatment regime applied.

Finally, while the protection of the (coastal) marine environment is covered by the WFD, EU environmental policymakers considered there was a lack of strategy underpinning the policies to protect the marine environment. A strategy was thus developed in the sixth Environmental Action Programme (2002-2012) which resulted in setting up environmental objectives for the marine environment. The related protection regime is regulated under the EU Marine Strategy which was adopted in 2008[44].

## 3.9 Control of export and Union Custom Code

The **Council Regulation (EC) no 428/2009 on a Community regime for the control of exports, transfer, brokering and transit of dual-use items**[45] is setting rules that Member States have to apply to control the transfer of certain dual-use items within the Community in order to safeguard public policy or public security. This includes the effectiveness of controls on exports from the Community and those items which only pass through the territory of the Community (i.e. not assigned to a customs-approved treatment or use other than the external transit procedure or placed in a free zone or warehouse with no record of them).

**The Union Customs code** (UCC) is part of the modernisation of customs and serves as the new framework regulation on the rules and procedures for customs throughout the EU. Its substantive provisions have entered into force on 1 May 2016[46]. With the increase in global threats, EU customs holds a key role in ensuring external border and supply chain security and thus contributing to the security of the European Union. The use of detection technology and control equipment, together with the mandatory data submission (Entry Summary declarations) and the EU risk management system, are important elements of the overall customs control and supervision process.

Detection technologies have long played an important part in customs border controls by assisting in the detection of dutiable, prohibited and controlled goods and materials. However, as the volume of international trade continues to expand and an increasing emphasis is placed on supply chain security and trade facilitation, the role of Customs is evolving. For instance, the use of data analysis has become as important as the use of detection technologies in dealing with existing and emerging threats. **This continuous drive for more efficient and more effective customs processes calls for the integrated application of innovative information and detection technologies**.

Adapting cargo information systems is essential to strentening monitoring and risk based controls of international supply chains in order to ensure that CBRN material are not illicitly entering in to the European Union.

44 EU Marine Strategy Framework Directive, 2008/56/EC

45 OJ L 134/1 of 29.05.2009

46 Regulation (EU) no 952/2013

## 3.10 Border security

In the framework of the Communication "*Examining the creation of a European Border Surveillance System (EUROSUR)*[47]", support needed in the area of border security targeted the development of technologies and capabilities which are required to enhance systems, equipment, tools, processes, and methods for rapid identification to improve border security, whilst respecting human rights and privacy. This includes both control and surveillance issues, contributing to the further development of the EUROSUR and promoting an enhanced use of new technology for border checks; also in relation to the Smart Borders legislative initiative (for both EUROSUR and the Smart Borders, the Commission published the initial relevant communications on 13 February 2008).

At sea, the main technical challenge was identified in the detection and identification of small non cooperative vessels (and of their anomalous behaviour). At the system level the identified priority was to improve the sharing of information amongst actors active in maritime surveillance. A close interactive dialogue has taken place with other Commission DGs (DG HOME, DG MARE, DG JRC, DG MOVE) as well as with EU agencies (Frontex, EMSA and EDA). This helps the setting by the Frontex Agency of CONOPS (concepts of operations) as related to the detection small boats detection.

## 3.11 Fight against crime and terrorism

Regarding the fight against crime and terrorism, the European Commission is not in charge of operational activities but supports and facilitates the activities of the security practitioners at the EU level.

The main policy framework for this action is provided by the **European Agenda on Security (COM(2015) 185 final)** adopted on 28th April 2015, which provides strategic focus for the EU and Member States for the overall goal of strengthening the Union's security framework. The three pillars of the Union's action to obtain this goal are: to strengthen the information exchange; to increase the operational cooperation; and to provide support in training, funding, research and innovation. The main thematic priorities listed in the Agenda are: terrorism, organised crime and cybercrime.

A **Communication on the delivery of the Agenda on Security (COM(2016) 230 final)** has been adopted in April 2016. It acknowledges the common position of the European Parliament, the EU Ministers for Justice and Home Affairs and the Commission to press ahead with the measures foreseen and to deepen the fight against terrorism. For this reason, the Communication, one year on from the presentation of the Agenda, takes stock of the progress that has been made in its implementation as concerns the EU contribution to counter-terrorism.

47 COM(2008) 68 final

In addition to the Agenda, a number of more specific EU legislative and policy documents apply in the area of fight against crime and terrorism. Two of the most relevant ones are the **Regulation (EU) No 98/2013** of the European Parliament and of the Council of 15 January 2013 on the marketing and use of explosives precursors, and the **Communication COM(2016) 379 final** on supporting the prevention of radicalisation leading to violent extremism.

Also, on 13 and 14 December 2011, the Council approved conclusions (17537/11 ENFOPOL 413 COPEN 342) on the vision for European Forensic Science 2020 including the creation of a European Forensic Science Area and the development of forensic science infrastructure in Europe. Their aim was to foster cooperation between police and judicial authorities across the European. An action plan has been developed under the Dutch presidency which should be adopted as Council conclusions in June 2016.

Furthermore, the Commission assists EU Member States in the implementation of existing legal instruments such as e.g. the Data Retention Directive, the Decision on access for consultation of the Visa Information System etc.[1]. The EC also participates in specialised working groups of the Council such as COSI, and agencies such as Europol and CEPOL.

Finally support to security practitioners is also granted via the financing of national and multi-national projects that enhance police cooperation, including among police networks.

# 4. EU-FUNDING INSTRUMENTS - RESEARCH AND CAPACITY-BUILDING

## 4.1 Introduction

As highlighted in section 4.1, EU research funding is orchestrated by different "research families", namely various programmes of DG RTD, DG CNECT and DG HOME, as well as research actions undertaken by the Joint Research Centre (JRC). Other funding instruments focus on capacity-building and training (e.g. prevention, preparedness and response projects in disaster risk management funded by DG ECHO, security-related projects funded by DG HOME) but they will not be developed in this document. Linked to EU research actions, the European Defense Agency (EDA) funds research projects with interactions with DG HOME funded projects under the so-called European Framework Cooperation (EFC).

While research programming and policy responsibilities lay with the respective General-Directorates of the European Commission, the management of projects is increasingly delegated to "sister" agencies, namely the Research Executive Agency (REA) and the Executive Agency for SMEs (EASME).

## 4.2 Horizon 2020

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation. In the Security area, Horizon 2020 will contribute to the implementation of the policy goals of the Europe 2020 strategy, the Security Industrial Policy, the Internal Security Strategy, the Cyber Security Strategy[48], the Union Civil Protection Mechanism, as well as supporting the various above-mentioned thematic policies. The primary aim of the Work Programme on "Secure societies – Protecting freedom and security of Europe and its citizens" is to enhance the awareness, preparedness and resilience of our society against natural and man-made disasters. Crisis Management (including CBRN-E, natural and man-made disaster risk management) related research will be considered in various topics focusing on new crisis management tools, novel solutions for the protection of critical infrastructure, and new forensic tools for fighting crime and terrorism.

48 COM (2013) 48 final

The current EU Framework Programme for Research and Innovation is built up upon achievements of the 7th Framework Programme, which mapping is focused upon and which embedded serveral programmes of direct or indirect relevance to secure, safe and resilient societies, namely:

- Health, demographic change and wellbeing;
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, environment, resource efficiency and raw materials;
- Europe in a changing world - inclusive, innovative and reflective societies;
- Secure societies - protecting freedom and security of Europe and its citizens.

## 4.3 DG ECHO

The overall rationale of the DG ECHO's Programme for Capacity Building is that such investments into the global humanitarian system lead to more rapid and more cost-effective humanitarian responses, allowing a better and broader humanitarian coverage. EU Member States and the European Commission's partners agreed that: "supporting the development of the collective global capacity to respond to humanitarian crises is one of the fundamental tenants of our [EU] approach"[49]. The principal objective of the programme is to strengthen the global humanitarian preparedness and response capacity. Specific objectives are:

- To increase the effectiveness and reinforce the capacity of international humanitarian organisations and stakeholders to assess, analyse, prepare and respond to humanitarian needs during man-made and /or natural disasters and their immediate aftermath in a coordinated and inclusive manner.
- To reinforce the capacity of international humanitarian organisations and stakeholders to deliver more varied and appropriate forms of food assistance, during emergencies and their immediate aftermath.

## 4.4 DG HOME / ISF

The goal of the Internal Security Fund, managed by DG HOME, is to contribute to ensuring a high level of security in the EU. One of two general objectives is enhancing the capacity of EU States and the Union for managing effectively security-related risk and crisis, and preparing for protecting people and critical infrastructure against terrorist attacks and other security related incidents. In this context the Fund co-finances projects in the areas of CBRN-E, critical infrastructure protection as well as crisis management. The projects are supposed to be much more operational than those funded under the Horizon 2020. The majority of the funds are implemented via the shared management, nevertheless the Commission directly manages – as union actions – around 1/3 of the total budget (which for the 2014-20 period, slightly over EUR 1 billion). These funds will have to cover however all security-related priorities, i.e. apart from above-mentioned areas, also fight against organized crime and police cooperation mechanisms.

49 As adopted by the Council, EP and Commission on 18 December, (OJ 2008/C/ 25/01 of 30.01.2008).

## 4.5 DG DEVCO - CoE

As a matter of new international priority, the European Union decided in 2010 to launch and fund a new concept called "CBRN Risk Mitigation Centers of Excellence (CoE)", based on a voluntary, cross border, local ownership and, last but not least, bottom up approach. As of today, 52 partner countries joined the initiative, coordinated around 8 regional secretariats based Georgia, Jordan, Algeria, Morocco, Kenya, United Arab Emirates, Uzbekistan and The Philippines launched its chemical, biological, radiological and nuclear (CBRN) Centres of Excellence (CoE) initiative (hereinafter the initiative) in May 2010. The initiative is designed to strengthen the institutional capacity of non-EU countries to mitigate CBRN risks which, if not countered, may constitute a threat to the EU. The origin of these risks can be criminal (proliferation, theft, sabotage and illicit trafficking), accidental (industrial catastrophes, in particular chemical or nuclear, waste treatment and transport) or natural (pandemics but also consequence of natural hazards on CBRN material and facilities).

With a budget of 250 million euro for the 2010–2020 period, the initiative is the single biggest measure of the long-term component of the Instrument contributing to Stability and Peace (IcSP). The IcSP was designed to provide the European Union with a new strategic tool to address a number of global security and development challenges. The IcSP provides non-EU partner countries with technical and financial assistance for risk mitigation and preparedness relating to chemical, biological, radiological and nuclear material or agents. According to the European Parliament and the Council, the measures adopted through the IcSP should be complementary and consistent with measures adopted in pursuit of the EU's common foreign and security policy.

The main objectives of the EU CBRN Centres of Excellence initiative are to strengthen the long-term national and regional CBRN governance and capabilities of responsible authorities and administrative infrastructure. The CoE initiative is a provider of **tools and means for increased CBRN governance**. It facilitates CBRN governmental officials from partner countries, belonging to all relevant ministries and agencies involved in CBRN governance, to meet regularly at the national level but also twice a year at the regional level between CBRN (round tables). This cross agency cooperation is key to stimulate further networking and has been much appreciated by partner countries. It **funding for CBRN activities identified and agreed by partner countries** during these regional round tables meetings. By implementing these activities, Member States come together and work to create action and provide CBRN governance support. More than fifty CoE projects have been funded in the last 5 years. These activities include a wide variety of formats, such as workshops and trainings, train the trainers programmes, capacity building or even equipment. Interagency cooperation, team building and support for CBRN administrative reforms are also part of these activities. Furthermore, the CoE provides a funding platform and a **sound methodology to first assess CRBN gaps needs at the national levels** (NAQs with hundreds of supporting questions) which is activated only upon request from a partner country, and, secondly, **a methodology to develop CBRN National Action Plans based on the needs assessments**. Results are fully confidential and belong entirely to the country.In the last two years, more than 25 partner countries completed their CBRN needs assessments and more than 15 started to develop their own National Action Plans. Some of the first NAPs developed within the initiative will be presented shortly this afternoon by their CoE country representatives.

The European External Action Service (EEAS), the body responsible for the EU foreign policy, is responsible for the strategic orientation of the initiative. DG DEVCO — International Cooperation and Development — is the decision-making body and is responsible for implementing the initiative's budget. It prepares the annual action programmes of the IcSP and monitors the work of the main implementing bodies: the Commission's Joint Research Centre (JRC) and the UN Interregional Crime and Justice Research Institute (UNICRI).

Further detailed info: http://www.cbrn-coe.eu/

## 4.6 LIFE+

The LIFE (the Financial Instrument for the Environment) Regulation, which was published on 20 December 2013, sets a budget for the next funding period, 2014–2020, of €3.4 billion in current prices. The LIFE programme is the EU's funding instrument for the environment and climate action. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental and climate policy and legislation by co-financing projects with European added value. The European Commission (DG Environment and DG Climate Action) manages the LIFE programme. The Commission has delegated the implementation of many components of the LIFE programme to the Executive Agency for Small and Medium-sized Enterprises (EASME). External selection, monitoring and communication teams provide assistance to the Commission and EASME. The European Investment Bank will manage the two new financial instruments (NCFF and PF4EE). The LIFE programme will contribute to sustainable development and to the achievement of the objectives and targets of the Europe 2020 Strategy, the 7th Union Environmental Action Programme and other relevant EU environment and climate strategies and plans.

## 4.7 Structural funds

Solutions exist that can help our regions become the best that they can be. Today, the EU's emphasis is very much on paving the way for regions to realise their full potential – by helping them to capitalise on their innate strengths while tapping into opportunities that offer possibilities for economic, social and environmental progress. Interreg Europe helps regional and local governments across Europe to develop and deliver better policy. By creating an environment and opportunities for sharing solutions, the programme aims to ensure that government investment, innovation and implementation efforts all lead to integrated and sustainable impact for people and place. By building on its forerunner, INTERREG IVC (2007-2013), Interreg Europe aims to get maximum return from the EUR 359 million financed by the European Regional Development Fund (ERDF) for 2014-2020. To achieve this goal, Interreg Europe offers opportunities for regional and local public authorities across Europe to share ideas and experience on public policy in practice, therefore improving strategies for their citizens and communities.

## 4.8 Education / Training

Erasmus+ is the EU's programme to support education, training, youth and sport in Europe. Its budget of €14.7 billion will provide opportunities for over 4 million Europeans to study, train gain experience, and volunteers abroad. Set to last until 2020, Erasmus+ does not just have opportunities for students. Merging seven prior programmes, it has opportunities for a wide variety of individuals and organisations. Erasmus+ has opportunities for people of all ages, helping them develop and share knowledge and experience at institutions and organisations in different countries. Erasmus+ has opportunities for a wide range of organisations, including universities, education and training providers, think-tanks, research organisations, and private businesses. The aim of Erasmus+ is to contribute to the Europe 2020 Strategy for growth, jobs, social equity and inclusion, as well as the aims of ET2020, the EU's strategic framework for education and training.

## 4.9 JRC

### 4.9.1 JRC's CBRNE activities

The extensive ongoing work in CBRNE in the European Commission's Joint Research Centre is bringing together JRC's competences in chemical, biological, radiological, nuclear and explosive risks to respond to the needs of policy DGs in successfully addressing CBRNE as an emerging issue in the EU and in global security. In this context, the JRC collaborates with DG HOME for actions inside the EU in the implementation of the EU CBRN and Explosives action plans, and in aviation security; with DG DEVCO to support the mirroring of activities with partner countries of the EU, acknowledging that security issues are not limited by borders; and with several other partner DGs to fulfil their technical and scientific needs in the CBRNE areas. Security and non-proliferation issues remain an important pillar of the JRC's Euratom activities, extending our support to international safeguards, combating illicit trafficking of nuclear and radioactive materials, enhancing nuclear forensics, export control, and supporting several activities of training (in nuclear safeguards and nuclear and radiological security), as well as research agreements with several institutions in the EU MS. International cooperation with key partners (US, IAEA) in activities such as the Border Monitoring Working Group is also very important in this regard. Finally, standardisation in security is a key issue for the EU market, and the JRC actively supports the development of standards by providing scientific inputs to the European and International technical committees.

The activities in CBRNE security are strongly synergic and are aggregated in JRC's CBRNE cluster, currently including 34 projects focused on several key areas: support to the implementation and monitoring of EU CBRN security policy and international cooperation, support to CBRNE standardisation, improving CBRNE detection, optimising the prevention and detection approach to the emergence of new psychoactive drugs, implementing capacity building and training in nuclear security, supporting export control of dual use items, enhancing critical infrastructure protection and developing nuclear forensics.

Some examples of JRC's activities in CBRNE security include:

- The establishment and running of EUSECTRA - European nuclear security training centre, located in the JRC premises in Karlsruhe and Ispra, inaugurated in April 2013. EUSECTRA offers hands-on training using a wide variety of radioactive and nuclear materials and a broad selection of equipment and measurement instruments. So far, EUSECTRA has conducted trainings for several partners, among them DG TAXUD (Front Line Officers Training Course on Radiation Detection Techniques; customs experts from all the EU Member States will be trained over in total five sessions between June 2015 and February 2016), DG HOME (training for law enforcement officers being planned) and DG ENER but also external customers such as the US' Second Line of Defence programme. It remains at the disposal of MS needs.
- The JRC leads the ITRAP+10 Phase II project, which aims at testing various families of the RN detection equipment produced in the European Union. Manufacturers of instruments used against illicit trafficking of radioactive sources and nuclear material have been invited to participate in an extensive test programme, based on available IEC and ANSI standards, and IAEA recommendations. The important results of the project have been the basis for the input given to International Standardisation Organisations to review and improve the standards. Also, a certification scheme is being set up to capacitate MS laboratories to perform the same verifications.

- The CBRN Centres of Excellence initiative (see section 6.5), launched in 2010 by the European Union, provides a platform for voluntary regional cooperation on all CBRN-related hazard issues, be it of criminal (trafficking, terrorism), natural (pandemics, volcanic eruptions) or accidental (e.g. Fukushima) origin. It also includes the JRC support to the EU outreach activities in export control for dual-use items. The initiative is managed by DG DEVCO and the EEAS, with the technical and scientific support of a task force from the JRC and the collaboration of the United Nations' UNICRI institute. The JRC supports countries participating in the initiative to work together to identify risks, assess gaps and needs, draft National Action Plans and design capacity building projects to be implemented in the partner regions by EU MS consortiums. Fifty-two countries are now partners of the initiative, and a further 25 are looking to join.
- The JRC - Institute for reference materials and measurements (IRMM) supports the development of advanced measurement standards and training in several fields including safety and security linked to CBRN-E threats. For example the institute provides nuclear reference measurements and conformity assessment tools to safeguards authorities, industry and the international community helping to stop illicit trafficking of nuclear and radiological materials. JRC-IRMM reviews and tests the performance of new and existing chemical, biological and explosives threat detection equipment for current and emerging substances of interest, and develops testing protocols for first responder (hand-held) equipment. Scientific studies are performed on request for DG HOME and the Standing Committee for Precursors. JRC-IRMM will also produce explosives simulants as quality control tools to i) check that regulatory requirements for explosives detection equipment are met and ii) to support the end users in the Member States. JRC-IRMM provides impartial analysis and technical support to the continuous development and implementation of EU aviation security policies. JRC-IRMM supports the implementation EU requirements for explosives trace detection (ETD), by i) assisting the Commission's own team of aviation security inspectors, ii) providing reference materials to EU test centres who carry out testing of ETD equipment, and iii) developing training tools for personnel involved in operating ETD equipment at security checkpoints. JRC-IRMM supports a new Commission Regulation aiming at harmonising the certification of aviation security equipment, by providing impartial technical analysis of the conformity assessment practices.

### 4.9.2 ERNCIP

The Joint Research Centre set up the European Reference Network for Critical Infrastructure Protection (ERNCIP) project in 2009 (https://erncip-project.jrc.ec.europa.eu/). This took place under the mandate of the DG HOME, in the context of the European Programme for Critical Infrastructure Protection (EPCIP), and with the agreement of Member States. ERNCIP is a European effort with the mission to “foster the emergence of innovative, qualified, efficient and competitive security solutions, through networking of European experimental capabilities”, with three strategic goals to:

- Improve the protection of critical infrastructure in the EU
- Support the development of the EU’s single market for security
- Identify gaps in EU security product testing capabilities.

To achieve these goals, ERNCIP maintains an online inventory of experimental capabilities in Europe (“The ERNCIP Inventory”) and has developed a network of experts to identify and promote good test practices to form the basis of common European testing standards, aiming at harmonisation of test methodologies and test protocols, where practical. Currently, ERNCIP brings together over 200 active volunteers in this network.

The ERNCIP Inventory (https://erncip-project.jrc.ec.europa.eu/inventory) is a free-to-use search tool for information on European security experimental and testing facilities. It helps all types of critical infrastructure stakeholders to identify and make contact with CIP-related experimental expertise located in the EU. For the laboratories that are registered in the ERNCIP Inventory it provides greater visibility and increased business potential.

Member States and the Commission jointly define the Thematic Areas (TA) of concern, for ERNCIP to address at the EU level. When the need for a TA is identified, ERNCIP forms a Thematic Group (TG) to address this concern. A TG consists of nominated experts from research facilities, and also other stakeholders such as manufacturers and vendors of security solutions, government authorities, academia, and operators of critical infrastructures. Each group is led by an appointed Coordinator, who is responsible for the work programme for the TG to deliver against, in order to achieve the objectives agreed with ERNCIP.

### 4.9.3 Disaster Risk Management Knowledge Centre (DRMKC)

The Knowledge Centre for Disaster Risk Management is an initiative of the European Commission to further enhance and exploit the knowledge and evidence base of the Commission and the EU member states in disaster risk management. The Knowledge Centre adopts a networked approach to the science/knowledge-policy interface in Disaster Risk Management to support translating complex scientific data and analyses into usable information and provide science-based advice for DRM policies, as well as timely and reliable scientific-based analyses for emergency preparedness and response coordinated activities.

The Knowledge Centre could become a focal point of reference to support the work of Member States, relevant Commission services and the wider DRM community within and beyond the EU. For example, through taking up the results of other projects such as FP7 DRIVER, the Knowledge Centre can advise and inform Member States and others on DRM tools and cooperate with other initiatives (Community of Users). In addition, via the international dimension of the Knowledge Centre, the EU could support the Sendai framework for Disaster Risk Reduction to promote a more systematic and reinforced science-policy interface to strengthen the contribution of DRM to smart, sustainable and inclusive growth globally.

## 4.10 Joint Investment Programme - EDA

The European Commission (EC) and the European Defence Agency (EDA) aim at maximising the complementarity and synergy of civilian security and defence-related research activities. This synchronisation of Research & Technology (R&T) investment takes place in the context of the European Framework Cooperation (EFC). In September 2011 the EFC cooperation agreement was signed on the CBRN protection by high representatives of EDA and the EC. The EDA contribution takes the form of a Joint Investment Programme (JIP-CBRN), with a centrally managed budget funded by all contributing Members (cM). The cooperation encompasses research activities identified under the security research theme of the Union's seventh research framework programme (FP7 SEC) and the EDA JIP CBRN. The JIP CBRN is a so called EDA R&T CAT A programme managed by a Management Committee comprising one representative from each cM. This committee is chaired by EDA and also comprises a non-voting representative from the Commission. The Management Committee is in charge of the management of the programme, the technological content and the selection of the proposals. Furthermore, they will follow the projects and do the dissemination of the results. As the JIP CBRN is an R&T Cat A programme, all the outcomes are research results (technology demonstration may be included) to be used by all the contributing Members.

Contributing Members of JIP CBRN are Austria, Belgium, Czech Republic, Germany, Spain, France, Ireland, Italy, Netherlands, Poland, Portugal, Sweden and Norway. The budget allocated to the JIP CBRN programme is 12 Million Euro. CBRN Protection is an important dual use domain in which Member States are prepared to jointly invest at a European level. In view of existing and emerging CBRN threats mid- to long-term, Member States see a need for enhanced technological development to protect against these threats. Examples of research funded by the JIP CBRN are described in this report.

# 1. Disaster risk and crisis management

Most of the research projects listed in this section directly or indirectly support the UCPM (see section 3.2) which address all aspects of the DRM cycle by strengthening cooperation and facilitating coordination within Europe in the areas of disaster prevention, preparedness and response. The mechanism indeed includes an action to 'improve the knowledge base on disaster risks and facilitate the sharing of knowledge, best practices and information'[50]. The use of various Union funds that may support sustainable disaster prevention is promoted and EU Member States and regions are encouraged to exploit those funding opportunities.

## 1.1 Multi-hazards

Series of projects are of generic nature and address tools and technologies related to DRM (from prevention to recovery) that can be applied to all types of (natural) disasters. The inter-operability of tools/technologies is actually mentioned in the CBRN Action Plan and UCPM as a mean to improve planning of disaster response operations, scenario building and response capacities (of direct support to the ERCC mission). The UCPM also promotes consistency in the response of disasters (networking), and the support to coordination of operational organisations (UN Office for the Coordination of Humanitarian Affairs (OCHA) and Member States).

The following section provides a snapshot of H2020 projects categorised according to specific sectors / themes related to natural hazards.

50 Art.5.1(a), Council Decision No. 1313/2013/EU, Official Journal of the European Union, L347, 20.12.2013

### 1.1.1 Multi-risk assessment, including cascading effects

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-risk assessment, including cascading effects | BEYOND<br>MATRIX<br>RASOR |

In the H2020 framework, the following project has been funded and falls into the multi-risk assessment category (with a link to the category 'Cost assessments of hazards').

| SMALLDIS | |
|---|---|
| **Title** | The impact of small-scale disaster events: an exploration of disaster related losses, extensive risk management and learning at the institutional and community level in Italy (SMALLDIS)<br><br>***This project also corresponds to the category 'Cost assesments of hazards'.*** |
| **Contract details** | Excellent Science Call: H2020-MSCA-IF-2015 Topic code: MSCA-IF-2015-EF<br>September 2016 / September 2018 - EUR: 180.277,20<br><br>REA - 707683 |
| **Abstract** | The objectives of this project include 1) a conceptual assessment of mechanisms for capturing data on disaster losses to analyze how definitions impact data accuracy for measuring extensive risk; 2) using alternative sources to build on existing datasets to assess the economic, social, and environmental losses associated with extensive disasters for three regions in Italy; 3) examining how disaster management institutions and communities respond to small scale and recurrent disasters, and if such events trigger changes in risk perception, disaster management, and learning at both institutional and community levels; 4) comparisons between quantitative and qualitative impacts of disaster events, and institutional regimes, hazard contexts, and cultural norms for confronting risk. |
| **Website** | https://www.cmcc.it/ |
| **Consortium (prone to modification in case of GA amendment)** | Coordinator:<br>1. Fondazione Centro Euro-Mediterraneo Sui Cambiamenti Climatici (IT) |

### 1.1.2 Multi-hazard risk reduction, preparedness, resilience enhancement

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | Project Acronyms |
|---|---|
| Multi-hazard risk reduction, preparedness, resilience enhancement | CAPHAZ-NET<br>CATALYST<br>CRISMA<br>EMBRACE<br>ENHANCE<br>IncREO<br>TACTIC |

These projects were complemented in the H2020 framework by the following projects funded by the Secure Societies programme:

| CARISMAND | |
|---|---|
| Title | Culture And RISkmanagement in Man-made And Natural Disasters (CARISMAND) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-21-2014<br>October 2015 / September 2018 - EUR 3,788,526. 25<br><br>REA - 653748 |
| Abstract | CARISMAND is approaching the links, and gaps, between disaster management, culture and risk perception from the broadest possible multi-disciplinary perspective and, simultaneously, developing a feedback-loop between disaster management stakeholders and citizens to establish, test, and refine proposed solutions for culturally-informed best practices in disaster management. Systematically, CARISMAND will use an approach that examines natural, man-made and technical disasters, placing at the centre of attention specific aspects that affect culturally informed risk perceptions. Results are discussed through a wide cross-sectional knowledge transfer between disaster managers from different locations and cultural backgrounds in six Citizen Summits and three Stakeholder Assemblies. |
| Website | http://www.carismand.eu/<br>https://www.cmcc.it/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rijksuniversiteit Groningen (NL)<br>Consortium:<br>2. Academia Nationala de Informatii Mihai Viteazul (RO)<br>3. Ayuntamiento de Valencia (ES)<br>4. Comune di Firenze (IT)<br>5. Consiglio Nazionale delle Ricerche (IT)<br>6. Euro-Mediterranean Seismological Centre (FR)<br>7. Fondatsiya Libre (BG)<br>8. Fundatia Pentru Smurd (RO)<br>9. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>10. Laboratorio di Scienze della Cittadinanza (IT)<br>11. Law and Internet Foundation (BG)<br>12. Ministério da Justiça (PT)<br>13. Nutcracker Research Limited (UK)<br>14. Provincie Groningen (NL)<br>15. Serviciul de Telecomunicatii Speciale (RO)<br>16. Police and Crime Commissioner for South Yorkshire (UK)<br>17. Universita degli Studi di Firenze (IT)<br>18. Universita ta Malta (MT)<br>19. Univerzitet u Novom Sadu (RS) |

| I-REACT | |
|---|---|
| Title | Improving Resilience to Emergencies through Advanced Cyber Technologies (I-REACT) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-01-2015<br>June 2016 / June 2019 - EUR: 5,393,866.75<br><br>REA - 700256 |
| Abstract | I-REACT aims to provide increased resilience to natural disasters though better analysis and anticipation, effective and fast emergency response, increased awareness and citizen engagement. I-REACT integrates existing services, both local and European, into a platform that supports the entire emergency management cycle. Innovative cyber technologies and ICT systems are leveraged to enable early planning of disaster risk reduction actions, achieve effective preparedness thanks to risk assessment and early warnings, and efficiently manage emergency responses by empowering first-responders with up-to-date situational information and by engaging citizens through crowdsourcing approaches and social media analysis. |
| Website | http://www.i-react.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Istituto Superiore Mario Boella Sulle Technolgie Dell'Informatzione e Delle Telecomunicazioni Associazione (IT)<br>Consortium:<br>2. Alpha Consultants Ltd (UK)<br>3. Ansur Technologies AS (NO)<br>4. Answaretech Sl (ES)<br>5. Aquobex Ltd (UK)<br>6. Bitgear Wireless Design Services Doo Celi Srl (RS)<br>7. Consorzio per il Sistema Informativo (CSI Piemonte) (IT)<br>8. Eoxplore UG (Haftungsbeschrankt) GMBH (IT)<br>9. Fondazione Bruno Kessler (DE)<br>10. Geoville Informationssysteme und Datenverarbeitung MBH (AT)<br>11. Ilatieteen Laitos (Fi)<br>12. Joinpad Srl (IT)<br>13. JRC – Joint Research Centre – European Commission (BE)<br>14. Meteosim SL (ES)<br>15. Politecnico di Torino (IT)<br>16. Scienseed Sl (ES)<br>17. Technische Universitaet Wie (AT)<br>18. Terranea UG (Haftungsbeschrankt) GMBH (DE)<br>19. United Nations Educationa, Scientific and Cultural Organization – UNESCO (FR) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| CAPACITIES | |
|---|---|
| Title | Disaster Risk Management Capacity Development for Cities in Eastern Partnership Countries (CAPACITIES) |
| Contract details | 2017/PREV/783133 01/01/2018 - 31/12/2019; EUR: 449233.88 |
| Abstract | The Core Team of VRZHZ, HouCon and PA RCSD will help 3 cities in Eastern Partnership countries (Ararat, Kutaisi and Ungheni) to structurally improve their capacities to lead and coordinate a structured process of DRM planning, based on multi-hazard risk assessments and self-insight in their current DRM capabilities. Capacities will start with a DRM curriculum for 2 focal points of each city, to increase their knowledge about DRM. The focal points will transfer this knowledge to their colleagues and stakeholders with support of the Core Team. Development of network relations with stakeholders, as a start for structured cooperation on DRM is part of the process. The 2nd year we will work on increased self-insight of the cities in their own situation regarding DRM capabilities. To reach this, each city will organize a self-assessment, followed by city-to-city peer reviews. At the end the cities will develop local strategies and roadmaps to improve their DRM capabilities in the coming years. (Internal classification of DG Echo is DISASTER RISK MANAGEMENT) |
| Website | www.drm-capacities.eu |
| Consortium (prone to modification in case of GA amendment) | Coordinator: VEILIGHEIDSRE GIO ZUIDHOLLAND ZUID (NL) Romboutslaan 105 3312 KP DORDRECHT THE NETHERLANDS<br>Consortium:<br>1. Ungheni City Hall (MOLDOVA)<br>2. Kutaisi City Hall (GEORGIA)<br>3. Merii Arrat (ARMENIA)<br>4. Public Association (MOLDOVA)<br>5. Houdijk Advies B.V. (NL) |

| GREEN | |
|---|---|
| Title | GREEN Infrastructures for disaster risk reduction protection: evidence, policy instruments and marketability (GRIN) |
| Contract details | 2016/PREV/18 ; EUR: 510864 |
| Abstract | Without concerted action and long-term adaptation planning, future risks are likely to be amplified by on-going human-induced climate change and socio-economic change. To improve the resilience of society, both structural and non-structural measures and grey and green infrastructure will be needed. In particular, a greater deployment of nature-based solutions such as green infrastructures (GIs) is being increasingly advocated by European institutions NGO's, governments and financing bodies as a part of flexible, effective and efficient, and no-regret measures for disaster risk reduction and adaptation to climate change. GREEN addresses these shortcomings and provides the necessary innovation in methods, tools, and solutions to appropriately promote the role of GI for DRR, climate change adaptation (CCA) and sustainable. (Internal classification of DG Echo is DRR) |
| Website | http://www.eucentre.it/green-project/?lang=en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: FONDAZIONE CENTRO EUROPEO DI FORMAZIONE E RICERCA IN INGEGNERIA SISMMICA (EUCENTRE) (IT)<br>Consortium:<br>1. Stichting Deltares (NL)<br>2. Fondazione Eni Enrico Mattei (IT)<br>3. Aristotle University of Thessaloniki - Special Account for Research Funds (GR) |

| EMPREP | |
|---|---|
| Title | Improved Emergency Preparedness & Coordinated Response in South Caucasus (EMPREP) |
| Contract details | 2016/PREP/17 01/01/2017 - 31/12/2018; EUR: 425000 |
| Abstract | The objective of EmPrep is to increase the interoperability and capacity of the Armenian and Georgian emergency management sectors to adequately and effectively prepare for and respond to emergency events, both within national boundaries and across the South Caucasus region. By strengthening and consolidating the organizational preparedness measures and actions ARCS and GRCS are actively contributing to the nations' ability to prepare for and respond to disasters in a coordinated, timely and effective manner, reducing the impact of these events on vulnerable people.The target group of the project includes emergency management stakeholders from public authorities and other CSOs at national level in Armenia and Georgia; Red Cross personnel supporting emergency management operations and PSS and finally; local population receiving increased awareness and readiness in case of emergency. (Internal classification of DG Echo is EMERGENCY MANAGEMENT) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7468&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: DANISH RED CROSS<br>Consortium:<br>1. Armenia Red Cross Society (Armenia)<br>2. Georgia Red Cross Society (Georgia)<br>3. The Icelandic Red Cross (IS)<br>4. Austrian Red Cross (AT)<br>5. International Federation of the Red Cross (Switzerland) |

| IPCAM 2 | |
|---|---|
| Title | Increasing Preparedness Capacities Across the Mediterranean 2 (IPCAM 2) |
| Contract details | 2016/PREP/08 01/01/2017 - 31/12/2018; EUR: 499913 |
| Abstract | Building upon the achievements of IPCAM 1 project (2015-2016), IPCAM 2 will further support actions undertaken by the Tunisian National Civil Protection Office to improve disaster preparedness arrangements at local, national and cross-border level. These include the development of: more functional interinstitutional arrangements and coordination mechanisms between national disaster response actorsONPC capacities for information exchange, risk monitoring and decision-supportthe integration between Tunisian civil protection volunteer associations, ONPC and the populationthe collaboration between the 4 partner civil protection authorities and the EU Civil Protection Mechanism. (Internal classification of DG Echo is ) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7483&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ITALIAN CIVIL PROTECTION<br>Consortium:<br>1. Office National de la Protection Civile – ONPC (Tunisia)<br>2. Federal Agency for Technical Relief – THW (DE)<br>3. Bundesamt für Bevölkerungsschutz und Katastrophenhilfe – BBK (DE) |

| EVAPREM | |
|---|---|
| Title | Developing an evaluation model to assess prevention measures (EVAPREM) |
| Contract details | 2016/PREV/11 01/01/2017 - 31/12/2018; EUR: 398255 |
| Abstract | The objective of this project is to develop a universal and comprehensive model for evaluating the results of prevention measures implemented by the rescue boards of European countries. Our aim for the project is to deepen our understanding of the effectiveness and efficiency of the prevention services considering the corresponding socio-economic environment. The project will provide robust evidence and analysis to support policy-makers in understanding the impact of prevention and supports policy-makers at different administrative levels in elaborating and reshaping the selection of prevention services with providing cost effective evaluation tools. The process of the project involves substantial cooperation of countries in Europe and contributes in exchange of experience of improving systematic and strategic planning in the area of prevention services. (Internal classification of DG Echo is METHODOLOGY DEVELOPMENT) |
| Website | https://www.rescue.ee/en/organization/projects/evaprem.html |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ESTONIA RESCUE BOARD<br>Consortium:<br>1. University of Tartu (EE)<br>2. State Fire and Rescue Service (LV)<br>3. Frederiksborg Brand og Redning (DK)<br>4. Fire and Rescue Department under the Ministry of the Interior of the Republic of Lithuania (LT)<br>5. University of Turku (FI) |

## The projects were complemented by the following projects funded by INTERREG program:

| GRADe | |
|---|---|
| Title | Joint risk prevention and management system for Gradinari – Malu - Byala communities for a safe and developed cross-border region |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 31/12/2016 - 30/08/2018 |
| Abstract | The project is addressing the effects of the climate change upon the environment of Byala, Malu and Gradinari cross-border communities, and the lack of coordination, planning & risk mitigation capacity registered at the beneficiaries' level. Therefore, the project is aiming at increasing the quality of the common risk management in these communities, in relation with the progress of coordination of the management of decisions and intervention at county/ district level. The total budget of the project is 718.048,55 euro. The project activities are: Information and Publicity; Creating a joint system for risk management; Joint elaboration of a Guidelines for common management of natural hazards and other emergency situations; Improving the logistics for risk management in Gradinari, Malu and Byala communities; Joint applications in floods, fire and winter-related natural hazards; Awareness campaign on risk management in Byala, Gradinari, Malu; Establishing a joint partnership in the field of early warning and risk management; Project management. The project will improve the joint risk management in target area through increasing the tactical and operational levels of coordination, enhancing the joint work, equipment and human resources, along with raising awareness among communities upon preparedness and prevention of risk situations. Moreover, the project will contribute to the creation of a joint partnership in the field of early warning and risk management. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Gradinari Commune (RO)<br>Consortium members:<br>2. Malu Commune (RO);<br>3. Municipality of Byala (BG); |

| RockTheAlps | |
|---|---|
| Title | Harmonized ROCKfall natural risk and protection forest mapping in the ALPine Space |
| Contract details | 2014 - 2020 INTERREG VB Alpine Space 01/11/2016 - 31/10/2019 |
| Abstract | In natural hazard management and disaster risk reduction worldwide, but especially in the Alpine Space , forests are increasingly considered equal to technical or civil engineering measures. Forests can, e.g. lead to increase slope stability and reduce the risk to an acceptable level in many locations. Where forests are present, the implementations of technical measures for risk reduction are often redundant or cheaper. Beautiful examples are the numerous forests throughout the Alps that prevent the release of snow avalanches instead of expensive snow racks and the large scale afforestation in the late 19th century that nowadays prevent upslope erosion and sedimentation problems in the lower parts of the Alpine catchments. The preservation and enhancement of the protective role of forests against natural risks are key to an efficient strategy for strengthening the liveability of the AS. The 6 Pan EU Ministerial Conferences on the Protection of Forest held since 1990, have all stressed the need for a common approach to value Forest Ecosystem Services (FES) as a basis for developing a Sustainable Forest Management. Priorisation of FES has to be done on the basis of societal needs. Although it is widely recognised that reduction of natural hazard risks is one of these, harmonised methods mapping this FES are currently not available. Within this context, ROCKtheALPS will capitalise the knowledge gained in previous EU projects and fulfil its main objectives to provide the 1st AS regional rockfall risk zoning tool, as well as the 1st AS wide harmonised map of rockfall risk and protection forests, these innovative maps will contribute to enhance action 8 of EUSALP (improving risk management), and the action 5 of Europe 2020 biodiversity strategy (FES mapping/valuing).These outputs will support local/regional/national/EU governance authorities in risk prevention/forest management. An interdisciplinary/transnational partnership has been set up with a 1.86 M€ ERDF budget. |
| Website | http://www.alpine-space.eu |

| RockTheAlps | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. National research institute of science and technology for environment and agriculture, Grenoble regional centre (FR)<br>Consortium members:<br>2. Department of Agricoltural, Forest and Food Sciences, University of Turin (IT);<br>3. University of Padova (IT);<br>4. Slovenia Forest Service (SI);<br>5. AUTONOMOUS PROVINCE OF TRENTO – FOREST AND WILDLIFE, DEPARTMENT (IT);<br>6. Austrian Federal Ministery of Agriculture, Forestry, Environment and Water Management (AT);<br>7. Bern University of Applied Sciences / HAFL (CH);<br>8. Slovenian Forestry Institute (SI);<br>9. University of Ljubljana, Biotechnical Faculty, Department for Forestry and Renewable Resources (SI);<br>10. Regional Agency for Services in Agriculture and Forest – Lombardia Region (IT);<br>11. French Geological Survey (FR);<br>12. Politecnico di Torino (IT);<br>13. Federal Research and Training Centre for Forests, Natural Hazards and Landscape (AT);<br>14. Alp'Géorisques (FR);15. Bavarian State Institute of Forestry (DE) |

### 1.1.3 Multi-hazards situation awareness / early warning

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-hazards situation awareness / early warning | A4A<br>AIRBEAM<br>COPE<br>INACHUS<br>MOSAIC<br>OPTI-ALERT<br>PHAROS |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of multi-hazards situation awareness and early warning.

### 1.1.4 Multi-hazard emergency response and crisis management, including cascading effects

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-hazard emergency response and crisis management, including cascading effects | ACRIMAS<br>BRIDGE<br>CASCEFF<br>COBACORE<br>DISASTER<br>DRIVER<br>EMILI<br>EVACUATE<br>FORTRESS<br>HIT-GATE<br>IDIRA<br>PREDICT<br>SAFER<br>SICMA<br>SNOWBALL S(P)EEDKITS |

These projects were complemented in the H2020 framework by the following projects:

| MAGIC | |
|---|---|
| Title | Moving Towards Adaptive Governance in Complexity: Informing Nexus Security (MAGIC) |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-WATER-015-two-stage Topic code: WATER-2b-2015 June 2016 / June 2020 - EUR: 7.457.761,25<br><br>EASME - 689669 |
| Abstract | The objective of this project is to open the path towards a new way of managing the Nexus in which researchers and decision makers work together in the search for development strategies while maintaining a leading and informed participation in international discussions about global issues, like climate change or food security. Climate, water, land energy, and food modeling are integrated into a socio- and bio-economics framework using an iterative and participatory method. The impacts are twofold: 1) MAGIC contributes a methodological framework where the needs for advice of different DG in the design of development strategies for the EU are covered using a method that can embrace the complexity of the nexus, for a better understanding of the interactions it holds. 2) the project provides 'on the flight' advice to the EC about the timeliness and soundness for the EU 2020 Strategy and the EU position in international agreements of EU policies -like the Water Framework Directive, the Common Agricultural Policy, or the Low-Carbon Economy Strategy- and targets of implementing technologies -such as fracking, desalination, biofuels and GMOs. |
| Website | http://magic-nexus.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat Autonoma De Barcelona (ES)<br>Consortium:<br>2. Climate Analytics Gmbh (DE)<br>3. Instituto Tecnologico De Canarias, S.A. (ES)<br>4. Jrc -Joint Research Centre- European Commission (BE)<br>5. The James Hutton Institute (UK)<br>6. Universita Degli Studi Di Napoli Federico Ii. (IT)<br>7. Universiteit Twente (NL)<br>8. Universitetet I Bergen (NO)<br>9. Wageningen University (NL) |

| Reaching out | |
|---|---|
| Title | demonstRation of EU effective lArge sCale tHreat and crIsis maNaGement OUTside the EU (Reaching out) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-03-2015<br>October 2016 / December 2019 - EUR: 18,811,558.38<br><br>REA - 700151 |
| Abstract | Reaching Out proposes an innovative multi-disciplinary approach that will optimize the efforts, address a wide spectrum of users and maximize market innovation success. The project has five main objectives: (1) develop a Collaborative Framework, with distributed platforms of functional services; (2) implement a flexible and open "collaborative innovation" process involving users and SMEs, suppliers, operators and research organisations; (3) develop, upgrade and integrate 78 new connectable and interoperable tools; (4) conduct 5 large scale demonstrations on the field; (5) provide recommendations and evaluations for future legal and policy innovations. The main expected impact is to improve external disaster and crisis management efficiency and cost-benefit and increase the EU visibility whilst enhancing EU industry competitiveness and enlarging the market. |
| Website | https://reout.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Airbus Defence and Space SAS (FR)<br>Consortium:<br>2. Arbeiter-Samariter-Bund Deutschland EV (DE)<br>3. Astri Polska Spolka z Ograniczona Odpowiedzialnoscia (PL)<br>4. Atrisc (FR)<br>5. Austria insitut fur Europa- und Sicherheitspolitik (AIES) (AT)<br>6. Ayuntamiento de Madrid (ES)<br>7. BAE Systems (operations) Ltd (UK)<br>8. Department of Health (UK)<br>9. Ecole Normale Superieure de Lyon (FR)<br>10. Eureka Comunicazione Telematica Srl (IT)<br>11. European Union Satellite Centre (ES)<br>12. Federation Internationale des Societes de la Croix-Rouge et du Croissant Rouge – Shelter Research Unit ASBL (LU)<br>13. Intsitut de Radioprotection et de Surete Nucleaire (FR)<br>14. Isitituto Affari Internazionali (IT)<br>15. LDI Innovation OU (EE)<br>16. Leonaro – Societa per Azioni (IT)<br>17. Magen David Adom in Israel (IL)<br>18. Ministere de l'Interieur (FR)<br>19. Rinicom Limited (UK)<br>20. Service Departemental D'Incendie et de Secours de la Haute-Corse (FR)<br>21. Stockholms Universitet (SE)<br>22. Teknologian tutkimuskeskus VTT Oy (FI)<br>23. Univ. Cattolica del Sacro Cuore (IT)<br>24. Univ. Degli Studi di Napoli Federico II (IT)<br>25. Univ. Catholique du Louvain (BE)<br>26. Univ. de Nice Sophia Antipolis (FR)<br>27. Univ. I Agder (NO) |

| CENTAURO | |
|---|---|
| Title | Robust Mobility and Dexterous Manipulation in Disaster Response by Fullbody Telepresence in a Centaur-like Robot (CENTAURO) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2014-1 Topic code: ICT-23-2014<br>April 2015 / October 2018 - EUR: 4.124.915,00<br><br>CNECT - 644839 |
| Abstract | The CENTAURO project aims at development of a human-robot symbiotic system where a human operator is telepresent with its whole body in a Centaur-like robot, which is capable of robust locomotion and dexterous manipulation in the rough terrain and austere conditions characteristic of disasters. The Centauro system will be capable of using unmodified human tools for solving complex bimanual manipulation tasks, such as connecting a hose or opening a valve, in order to relieve the situation. A human operator will control the robot intuitively using a full-body telepresence suit that provides visual, auditory, and upper-body haptic feedback. Rich sensors will provide the necessary situation awareness. |
| Website | https://www.centauro-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rheinische Friedrich-Wilhelms-Universitat Bonn (DE)<br>Consortium:<br>2. Fondazione Istituto Italiano Di Tecnologia (IT)<br>3. Kerntechnische Hilfsdienst GMBH (DE)<br>4. Kungliga Tekniska Hoegskolan (SE)<br>5. Linkopings Universitet (SE)<br>6. Progenox Gmbh (DE)<br>7. Rheinisch-Westfaelische Technische Hochschule Aachen (DE)<br>8. Scuola Superiore Di Studi Universitari E Di Perfezionamento Sant'anna (IT) |

| SmokeBot | |
|---|---|
| Title | Mobile Robots with Novel Environmental Sensors for Inspection of Disaster Sites with Low Visibility (SmokeBot) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2014-1 Topic code: ICT-23-2014<br>January 2015 / July 2018 - EUR: 3.817.417,50<br><br>CNECT - 645101 |
| Abstract | SmokeBot addresses shortcomings of existing sensor technology and the related cognitive approaches for robotics that operate in domains with restricted visibility. The focus is on civil robots supporting fire brigades in search and rescue missions, e.g. in post-disaster management operations in response to tunnel fires. It will deliver software and hardware components which facilitate robot systems to perform under harsh conditions of smoke, dust or fog. SmokeBot will improve the abilities of the selected platform, thus increasing safety of rescue staff and European citizens. |
| Website | http://aass.oru.se/Research/mro/smokebot/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Orebro University (SE)<br>Consortium:<br>2. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (DE)<br>3. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>4. Stadt Dortmund (DE)<br>5. Taurob Gmbh (AT)<br>6. The University Of Warwick (UK) |

| TransCrisis | |
|---|---|
| Title | Enhancing the EU's Transboundary Crisis Management Capacities: Strategies for Multi-Level Leadership (TransCrisis) |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies Call: H2020-EURO-SOCIETY-2014 Topic code: EURO-4-2014<br>April 2015 / April 2018 - EUR: 2.280.209,00<br><br>REA - 649484 |
| Abstract | This project outlines the institutional requirements for effective and legitimate crisis leadership at EU level in the face of transboundary crisis. The project analyses the capacities of political leaders in EU institutions and member states to fulfill these leadership functions. It will pinpoint the existing and required capacities to support these functions; investigate the crisis management capacities of individual political leaders and EU institutions; explore the effects of political leadership at MS level; and study how crisis management capacity is exercised in various policy sectors. The project will result in: recommendations for effective and legitimate crisis leadership; a 'crisis management capital index' that allows for an evidence-based assessment; and strategies to build support for transboundary crisis management in a multilevel system, reconnecting citizens with an idea of what the EU can do for them. |
| Website | https://www.transcrisis.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. London School Of Economics And Political Science (UK)<br>Consortium:<br>2. Crisisplan B.V. (NL)<br>3. Institut Barcelona D Estudis Internacionals, Fundacio Privada (ES)<br>4. Kozep-Europai Egyetem (HU)<br>5. Stockholms Universitet (SE)<br>6. Taenketanken Europa (Taenketanken) (DK)<br>7. Universita Degli Studi Di Catania (IT)<br>8. Universiteit Utrecht (NL) |

| HEIMDALL | |
|---|---|
| Title | HEIMDALL - MULTI-HAZARD COOPERATIVE MANAGEMENT TOOL FOR DATA EXCHANGE, RESPONSE PLANNING AND SCENARIO BUILDING |
| Contract details | Secure Societies Call: H2020-SEC-2016-2017-1 Topic code: SEC-01-DRS-2016<br>May 2017 / October 2020 - EUR: 7.836.370,63 GA 740689 |
| Abstract | The project aims at improving preparedness of societies to cope with complex crisis situations by means of providing integrated tools to support efficient response planning and the building of realistic multidisciplinary scenarios. The project will design and develop a system for improving response planning strategies and scenario building (TRL 7 or 8) and facilitating organizational coordination among many actors, integrating a wide range of support tools to be used operationally by a large variety of stakeholders (firefighting units, medical emergency services, police departments, civil protection units, command and control centres). The devised system shall integrate existing and newly developed tools to enhance the cooperation between autonomous systems (satellite-, sea-, land- and air-based) from different agencies as well as to consolidate the methodology for cross-border scenario-building. The project shall investigate the currently existing tools and methodologies with the involvement of local authorities and end users and provide mechanisms to enhance cooperation among all involved actors. The main domains to be taken into account are: • The EU Civil Protection Mechanism (natural and man-made disasters, including events affecting critical infrastructure) • IPCC recommendations in relation to extreme climatic events • The Sendai Framework The project shall develop on the basis of realistic scenarios in specific geographical areas with the close involvement of local authorities. Since the expected TRL is 7 or 8, the prototype shall be demonstrated by the end of the project in a realistic environment. Although the project will develop a flexible system which should be adaptable to integrate multiple hazard-specific tools, the main scenarios considered for the time being are: forest fire, flood, flash floods and landslides. |
| Website | http://heimdall-h2020.eu/ |

| HEIMDALL | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Deutsches Zentrum Fuer Luft und Raumfahrt EV (DE)<br>Consortium:<br>2. Associazione Della Croce Rossa Italiana (IT)<br>3. Avanti Communications Ltd (UK)<br>4. Centre Technologic de Telecomunicacions de Catalunya (ES)<br>5. Centro Internazionale in Monitoraggio Ambientale - Fondazione CIMA (IT)<br>6. Departament d'Interior - Generalitat de Catalunya (ES)<br>7. Eberhard Karls Univesitaet Tuebingen (DE)<br>8. Frederiksborg Brand og Redning (DK)<br>9. Fundacio D Ecologia del Foc i Gestio D'Incendis pau Costa Alcubierre (ES)<br>10. Institut Cartografic I Geologic de Catalunya (ES)<br>11. Scottish Fire and Rescue Service (UK)<br>12. Space Hellas Anonymi Etaireia Systimata Kai Ypiresies Tilepikoinonionpliroforik-is Asfaleias – Idiotiki Epicheirisi Parochis Yperision ASFA (EL)<br>13. Technosylva SL (ES)<br>14. Universite de Strasbourg (FR) |

| IN-PREP | |
|---|---|
| Title | An INtegrated next generation PREParedness programme for improving effective inter-organisational response capacity in complex environments of disasters and causes of crises |
| Contract details | Secure Societies Call: H2020-SEC-2016-2017-1 Topic code: SEC-01-DRS-2016<br>September 2017 / August 2020 - EUR: 7.999.556,25 GA 740627 |
| Abstract | European countries confront the rising specter of transboundary crises, which cross national borders as well as policy boundaries with speed and ease, threatening the continuing functioning of critical infrastructures and the well-being of many citizens. Transboundary crises pose a specific set of complex challenges for which Europe is – despite recent policy initiatives (e.g. Decision No 1313/2013/EU) – still ill prepared. We recognize three challenges that need urgent attention. First, member states need to develop shared response planning. Second, countries need to share information in real time. This sense-making challenge requires a way to have multiple countries and agencies create a shared picture of an emerging crisis based on multiple sources (different countries, many agencies). Third, countries need to coordinate the use of critical resources to ensure a timely response and to avoid waste and misspending. These challenges are hard to meet in any type of crisis or disaster, but especially in a transboundary context that lacks a dominant actor. IN-PREP will establish and demonstrate a next generation programme by enabling a reference implementation of coordination operations (Handbook of Transboundary Preparedness and Response Operations that synthesises the lessons learnt, recommendations, check-lists from past incidents) and a training platform (Mixed Reality Preparedness Platform a novel IT-based tool, which holistically integrates Information Systems (IS) and Situational Awareness (SA) modules over a decision support mechanism and the visualisation of assets and personnel) to the entirety of civil protection stakeholders (firefighting units, medical emergency services, police forces, civil protection units, control command centres, assessment experts) to meet these challenges. The proposed framework will not only improve preparedness and planning but can be also applied during joint interventions, thus improving the joint capacity to respond.<br><br>***This project also corresponds to the category 'Civl protection operations'.*** |
| Website | https://www.in-prep.eu/ |

| IN-PREP | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Institute of Communication and Computer Systems ICCS (EL)<br>Consortium:<br>2. Airbus DS Sas (FR)<br>3. AIR Worldwide Limited (UK)<br>4. Assistance Publique – Hopiteaux de Paris (FR)<br>5. C.C.I.C.C. Limited (IE)<br>6. Crisisplan B.V. (NL)<br>7. Deutsche Hochschulde der Polizei (DE)<br>8. Deutsches Zentrum fur Luft und Raumfahrt EV (DE)<br>9. Diginext Sarl (FR)<br>10. Dimos Rodou (EL)<br>11. Exus Software Ltd (UK)<br>12. Fraunhofer Gesellschaft zur Foerderung der Angewandten forschung EV (DE)<br>13. Health Service Executive (IE)<br>14. Intelligence for Environment & Security (IT)<br>15. Ministero Dell'Interno (IT)<br>16. Police Service of Northern Ireland (UK)<br>17. Satways – Proionta Kai Ypiresies Tilematikis Diktyakon Kai Tilepikinoniakon Efarmogon Etairia Periorismenis Efthinis Epe (EL)<br>18. Trilateral Research Ltd (UK)<br>19. Univ. of Greenwich (UK)<br>20. Veiligheidsregio Ijsselland (NL) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| USCORE2 | |
|---|---|
| Title | City to city local level peer review on Disaster Risk Reduction (U -SCORE2) |
| Contract details | 2016/PREV/04 01/01/2017 - 31/12/2018; EUR: 757639 |
| Abstract | UScore2 will design a practical city-to-city peer review tool for measuring city resilience and enabling resilience action planning. This project will apply the peer review tool to 3 EU cities with very diverse characteristics to support DRR in those cities as well as refine the tool to enable it to be more broadly applicable. An impact evaluation methodology will be developed and applied to evaluate the peer review tool and gauge its impact on enhancing city resilience. The peer review tool will be designed for use by a wide range of cities both within the EU and globally to assist cities in implementing cross sector disaster management policies in line with European civil protection frameworks and to meet the objectives of the Sendai Framework for DRR. (Internal classification of DG Echo is DISASTER RISK REDUCTION) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/uscore2-city-city-local_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: SALFORD CITY COUNCIL (UK)<br>Consortium:<br>1. Resilience and Emergencies Division, Department for Communities and Local Government (UK)<br>2. Municipality of Amadora (PT)<br>3. Portuguese National Authority for Civil Protection (PT)<br>4. Comune di Viggiano (IT)<br>5. The United Nations Office for Disaster Risk Reduction (Switzerland)<br>6. The University of Manchester (UK) |

The projects were complemented by the following projects funded by INTERREG program:

| FLOEQ | |
|---|---|
| Title | Strengthening the capacity of the Romanian and Serbian authorities to react in case of flooding and earthquakes |
| Contract details | 2014 - 2020 Interreg IPA CBC Romania - Serbia 07/07/2017 - 06/07/2019 |
| Abstract | The targeted project area is vulnerable to different types of natural disasters, particularly floods, landslides, earthquakes, forest fires, technical and technological accidents, that can cause human losses and damages, affecting economic stability and growth. The project proposal aims at strengthening cooperation of emergency management services of Serbia and Romania, with emphasis on their regional branches in the eligible area across the border, improving preparedness of the Serbian and Romanian regional protection and rescue units for response in case of joint intervention. The project will contribute to better preparedness of the whole cross border region for emergencies and disasters. Overall objective of project is to contribute to reducing the risks of disasters caused by floods and earthquakes in cross-border area of Serbia and Romania. Main outputs of project are: Procured equipment for protection and intervention in case of floods and earthquakes by the end of the project implementation. Trainings and joint field exercise for local protection and rescue units and other operational units are conducted by the end of project implementationDuring the implementation of this project, the capacity of the protection and rescue units will be improved through comprehensive education process, joint field exercise and procurement of necessary technical equipment, which will be owned by the Sector for Emergency Management in Serbia and „Drobeta" Inspectorate for Emergency Situation in Romania, and used by local operational units. Joint project team meetings and joint steering committee meetings held. Workshop and seminars for local authorities regarding joint intervention in case of floods and earthquake conducted by the end of project implementation. Specific working rules for joint intervention teams in case of floods and earthquake are elaborated, printed in three languages (Romanian, Serbian and English) and distributed. Regional cooperation in both prevention and mitigation of harmful consequences of all natural disasters is very important. Cooperation between the main operational units from target municipalities from both sides of the border will be secured through their active participation in numerous activities and events including joint meetings, seminars and workshop. Public awareness campaign through organization of workshops for young pupils from schools in the project area will be implemented. Press conferences on both sides of the border will be organized during project implementation. Promotional materials and educational brochures will be printed and distributed in the project areaPrevious experience and practice of other countries have shown that raising awareness of the general population about the risks natural disasters, and providing them with the relevant information and advice on what to do in case of floods and earthquakes, is among major elements in reducing the harmful effects on people, animals, economic and cultural assets and the environment. Disasters do not consider countries' borders and can, therefore, threaten entire areas in neighboring countries, stating disaster risk management by definition a cross-border issue. Therefore, cross border cooperation in terms of good preparedness and capabilities of all relevant stakeholders in cases of emergency situations, as well as technical and procedural harmonization between the intervention teams, has a crucial importance to the timely and successful disaster response in border areas. |
| Website | http://www.romania-serbia.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Ministry of Interior of the Republic of Serbia, Sector for Emergency Management (RS)<br>Consortium members:<br>2. „Drobeta" Inspectorate for Emergency Situation within Mehedinti County (RS) |

| Partners in Safety | |
|---|---|
| Title | Partners in Safety |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 17/03/2017 - 16/03/2020 |
| Abstract | The project's main objective is the development of joint operational capabilities for intervention in emergency situations (heavy snowdrifts and icing, floods and fires) in the territories of Branistea (RO), Brosteni (RO) and Boynitsa (BG). The project aims at acquiring the appropriate equipment mandatory for the activity of emergency situations administration units in both areas. This way, the preventive actions for disaster protection will be significantly improved and a high standard infrastructure will be attained in order to minimize, control and overcome the consequences of vicissitudes, to ensure protection of life and health of the population and the protection of existing infrastructure in the mentioned settlements. The prioritization of the emergency situations the project addresses had been based on intervention reports, operative reports (how the situation has occurred and the damage situations), communiques of the first aid teams as follows: heavy snowfalls and icing in the Municipiality of Boynitsa, floods, fires and snowdrifts in the Branistea and Brosteni Commune territory. The project's main result and indicator is 6.409 people benefiting from the actions of the joint risk management activities. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Branistea Administrative and Territorial Division (RO)<br>Consortium members:<br>2. Boynitsa Municipality (BG);<br>3. Administrative and Territorial Division Brosteni (RO) |

| SYSEP | |
|---|---|
| Title | Systems for emergency preparedness |
| Contract details | 2014 - 2020 Interreg IPA CBC Romania - Serbia 16/06/2017 - 15/04/2019 |
| Abstract | The common challenges of the programme area we are jointly tackling are: - Lack of strategic thinking, planning and implementation ( both at regional or local level); - Lack of cooperation between stakeholders with common interests and prerogatives; - An obvious ''delay'' regarding economic development due to the lack of funds for purchasing the latest technologies and equipment and training the human resources; Regarding emergency situations preparedness and management the common challenges are: The lack of an emergency situations SWOT analysis and risk mapping analysis done by the local authorities which shall underline both the present problems and the future solutions; Decreased population awareness regarding environmental and emergency situations issues. The overall objective of the project is: Improving the quality of life in the cross boarder and Danube area by raising the level of safety and awareness among citizens from both sides of the border through an effective emergency situations management and preparedness. The main outputs: - good cooperation between stakeholders with common interests and prerogatives; - Efficient emergency situations reactions at the local authorities level due to the accumulation of theoretical knowledge and practice, and due to investment in new equipment and know-how sharing; - Increased population awareness regarding environmental and emergency situations issues. - Local communities on both sides of the Danube in Moldova Noua and Golubac will benefit from them. The partners will share information and collaborate for prevention of reactions to natural disasters and street flooding in and intervention in case of emergency situations in Moldova Noua and Golubac. Direct beneficiaries, who are tackled by Action, are the specialized departments for emergency situations. Living citizens of the partners' cities will benefit from project implementation as they will be better protected against emergency situations and natural disasters. Due to common needs of both sides a cross border approach was imposed as a required model for achieving a joint interest, especially in terms of influences on large number of beneficiaries on wider area. Namely, focus of project is active exchange of experiences and knowledge in terms to increase existing practice and to develop new techniques which could not be possible to reach without proposed investment in basic equipment. Civil involvement and training for school children are innovative and original proposed approaches for the preparedness to emergency situation in completion to the endowing with equipment. |
| Website | http://www.romania-serbia.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Territorial Administrative Unit Moldova Noua City (RO)<br>Consortium members:<br>2. Municipality of Golubac (RS) |

| Transfer of knowledge and skills in chemical and ecological rescue | |
|---|---|
| Title | Transfer of knowledge and skills in chemical and ecological rescue |
| Contract details | 2014 - 2020 INTERREG V-A Lithuania - Poland 01/03/2017 - 28/02/2019 |
| Abstract | The strategic goal of the project is to increase the cross-border cooperation of fire and rescue services operating on both sides of the Lithuanian-Polish border in order to develop more integrated and better quality governance and services to deal with disasters' response and damage control, ensuring the safety of border residents, property and the environment. Implementation of this project is important because of the existing need to organise joint exercises and trainings, purchase of the lacking equipment as well as development and deepen knowledge and abilities in the field of chemical and environmental rescure services. The main problem is lack of equipment, joint exercises and insufficient transfer of knowledge between the services, therefore the proposed solutions include organisation of theoretical and practical trainings, supply of the rescue services in the border region with special chemical and ecological rescue equipment and facilities. |
| Website | http://lietuva-polska.eu/en/interreg.html |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Regional Headquarters of State Fire and Rescue Service in Alytus (LT)<br>Consortium members:<br>2. Regional Headquarters of State Fire Service in Bialystok (PL);<br>3. Regional Headquarters of State Fire and Rescue Service in Marijampole (LT);<br>4. Regional Headquarters of State Fire Service in Olsztyn (PL) |

| Uramet | |
|---|---|
| Title | Meteorological Radars Union |
| Contract details | 2014 - 2020 INTERREG V-A France - Italy (ALCOTRA) 03/03/2016 - 24/10/2017 |
| Abstract | The project's aim is to harmonize the measurement systems of violent storms and rains on the involved territories, and to establish a cross-border management of the alert-system for operators (civil protection, firefighters, etc) and populations. The real-time diffusion of information through different media (web, app), thanks to shared systems of monitoring and data convergence and calculations, represents a strong added value from a cross-border civil protection point of view. Moreover, thanks to awareness raising campaigns, populations will be able to apply by themselves some life-saving operations. |
| Website | http://www.interreg-alcotra.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Regional Agency for the environmental protection of Piedmont (IT)<br>Consortium members:<br>2. Regional Agency for the environmental protection of Liguria (IT);<br>3. NOVIMET (FR);<br>4. Liguria Region (IT) |

### 1.1.5 Earth observation support

Earth observation tools are mainly developed within projects funded by the Space Programme. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Earth Observation support | AVERT<br>BONAS<br>COMMONSENSE<br>EMPHASIS<br>ENCOUNTER<br>HOMER<br>LOTUS<br>OPTIX<br>PREVAIL<br>ROSFEN<br>SALIANT<br>SUBCOP |

These projects were complemented in the H2020 framework by the following projects:

| EGSIEM | |
|---|---|
| Title | European Gravity Service for Improved Emergency Management (EGSIEM)<br>***This project also corresponds to the categories 'Flood risks' and 'Drought risks'.*** |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-EO-2014 Topic code: EO-1-2014<br>January 2015 / January 2018 - EUR: 1.752.050,00<br><br>REA - 637010 |
| Abstract | The aim of this proposal is to demonstrate that mass redistribution products open the door for innovative approaches to flood and drought monitoring and forecast. The timeliness and reliability of information is the primary concern for any early-warning system. We aim to increase the temporal resolution from one month, typical for GRACE products, to one day and to provide gravity field information within 5 days (near real-time). Early warning indications derived from these products are expected to improve the timely awareness of potentially evolving hydrological extremes and to help in the scheduling of high-resolution follow-up observations. Data products and indicators will be provided for its future use within international initiatives such as the Copernicus Emergency Management Service and the International Charter "Space and Major Disasters". Three dedicated services will be provided: 1) a scientific combination service, 2) a near real-time service and 3) a hydrological/early warning service. |
| Website | http://www.egsiem.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Bern (CH)<br>Consortium:<br>2. Centre National D'etudes Spatiales – Cnes (FR)<br>3. Deutsches Zentrum Fuer Luft - Und Raumfahrt Ev (DE)<br>4. Geode & Cie (FR)<br>5. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>6. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE) |

| GEO VISION | |
|---|---|
| Title | GNSS driven EO and Verifiable Image and Sensor Integration for mission-critical Operational Networks (GEO VISION) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-Galileo-2014-1 Topic code: GALILEO-2-2014<br>January 2015 / January 2017 - EUR: 999.653,25<br><br>GSA - 641451 |
| Abstract | GEO-VISION is an user-driven project developing interactive mission-critical visual communications software solution. The focus is operationally relevant visual content from photos and video, based on GNSS, for reducing financial and humanitarian impacts of disasters. GEO-VISION allows users to focus on relevant and trusted operational content. |
| Website | http://www.geo-vision.space/<br>http://www.egsiem.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ansur Technologies AS (NO)<br>Consortium:<br>2. D'appolonia Spa (IT)<br>3. D.M.A.T. Consulting Kg (AT)<br>4. Johanniter-Unfall-Hilfe Ev (DE)<br>5. United Nations Institute For Training And Research (CH)<br>6. Universitat Autonoma De Barcelona (ES) |

## These projects were complemented by new projects funded in 2016-2017:

| AIOSAT | |
|---|---|
| Title | Autonomous Indoor Outdoor SafetyTracking system |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-GALILEO-GSA-2017-1. Topic code: GALILEO-3-2017. December 2017 / May 2020 - EUR: 1.764.262,50 GA 776425 |
| Abstract | The Europe population experiences yearly about 2 million to 2.5 million fires with 20 to 25 thousand deaths and 250 to 500 thousand reported injuries. Moreover, EUFireAcademy states European countries suffered 558 fatalities per million inhabitants due to fire hazards during the year 2010. Even though satellite-based positioning technology allows rescue workers to already operate efficiently, GPS availability, reliability, and accuracy are often poor during fire operations, for example due to thick smoke, dense forests, rough terrain and inside buildings. In this context, the objective of AIOSAT (Autonomous Indoor & Outdoor Safety Tracking System) is to progress beyond the state of the art by defining the AIOSAT concept that aims to overcome aforementioned limitations of GNSS usage in rescue interventions. For this purpose, GNSS positions are enhanced with EGNOS and fused with position information inferred from IMU and RF. The main paths to the goal will be to define 1) the end-user requirements for the AIOSAT system, 2) the Advanced Positioning Subsystem 3) the Communications Subsystem 4) the tracking and alerting (TA) application and, 5) build an integrated prototype system validated during field tests. The dissemination and use of the project outcomes are the ultimate objective. Therefore, in order to use and spread the knowledge acquired, a set of concrete, quantitative and customized activities is planned. The main strengths of the AIOSAT consortium are threefold.1) It is composed of world class organizations with extensive and successful prior experience in the research topics related to the technologies employed. 2) The consortium involves two end-users, a technology provider, a university, a university-level military academy and two SMEs aiming at exploiting the project results as subsystem integrators, software and service providers. And 3), last but not least, the small consortium size avoids inefficiencies and work overhead typical for larger projects.<br><br>***This project also corresponds to the category 'Multi-hazards situation awareness / early warning'.*** |
| Website | http://www.aiosat.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Asociacion Centro Tecnologico Ceit-IK4 (ES)<br>Consortium:<br>2. Inertia Technology B.V. (NL)<br>3. Stichting Saxion (NL)<br>4. Ecole Royale Militaire - Koninklijke Militaire School (BE)<br>5. Integrasys SA (ES)<br>6. Veiligheidsregio Twente (NL)<br>7. Hulpverleningszone Centrum (Oost-Vlaanderen) (BE) |

| CEASELESS | |
|---|---|
| Title | Copernicus Evolution and Aplications with Sentinel Enhancements and Land Effluents for Shores and Seas |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2016.<br>Topic code: EO-3-2016. November 2016 / October 2019 - EUR: 1.999.332,50 GA 730030 |
| Abstract | The CEASELESS project will demonstrate how the new Sentinel measurements can support the development of a coastal dimension in Copernicus by providing an unprecedented level of resolution/ accuracy/continuity with respect to present products. The retrieval and validation for restricted domains and for an enlarged set of combined variables (user oriented) will be the basis to advance the state of the art in assimilation, modelling and applications, at a level commensurate with the new Sentinel capabilities. The project will address the multiple scales coexisting in littoral areas by developing new shallow water parameterizations, introducing them into coupled model suites (wind-wave-surge-current-land discharge) and producing new standards for coastal simulations and analyses. The permanent data base, with dynamic repositories, plus the modular structure of the developed models will demonstrate the technical feasibility of a future operational Copernicus coastal service. The set of derived products will be ingested into the users' work routines, proving the economic feasibility of the Copernicus coastal extension. The level of conflicts in squeezed coastal zones, expected to grow in the face of climate change, will, thus, benefit directly from CEASELESS, establishing tangible contributions for a wide range of economic sectors. The data repositories (accessible via a dedicated portal), regularly updated with the evolving (satellite-derived) bathymetry will facilitate the use/re-use of our high resolution results, supporting a new set of Copernicus coastal applications such as renewable energy, coastal erosion or harbour exploitation. The mutual validation of satellite data, numerical results and in-situ observations will generate reciprocal profit for enhanced competiveness of EU coastal industries where we shall also explore the suitability for cases in 3rd countries, opening new business opportunities for a coastal Copernicus. |
| Website | https://ceaseless.barcelonatech-upc.eu/en/ceaseless_project |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat Politecnica de Catalunya (ES)<br>Consortium:<br>2. MET Office (UK)<br>3. DHI (DK)<br>4. Consiglio Nazionale delle Ricerche (IT)<br>5. European Centre for Medium-Range Weather Forecasts (UK)<br>6. Danmarks Tekniske Universitet (DK)<br>7. Helmholtz-Zentrum Geesthacht Zentrum fur Material- und Kustenforschung GMBH (DE)<br>8. DHI GRAS AS (DK)<br>9. Natural Environment Research Council (UK) |

| E2mC | |
|---|---|
| Title | Evolution of Emergency Copernicus services |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2016.<br>Topic code: EO-3-2016. November 2016 / January 2019 - EUR: 1.500.000,00 GA 730082 |
| Abstract | E2mC aims at demonstrating the technical and operational feasibility of the integration of social media analysis and crowdsourced information within both the Mapping and Early Warning Components of Copernicus Emergency Management Service (EMS). The Project will develop a prototype of a new EMS Service Component (Copernicus Witness), designed to exploit social media analysis and crowdsourcing capabilities to generate a new Product of the EMS Portfolio. The purpose of the new Copernicus Witness Service Component is to improve the timeliness and accuracy of geo-spatial information provided to Civil Protection authorities, on a 24/7 basis, during the overall crisis management cycle and, particularly, in the first hours immediately after the event.<br>This will result in an early confirmation of alerts from running Early Warning Systems as well as first rapid impact assessment from the field. The technological enabler of the Copernicus Witness is the innovative and scalable Social&Crowd (S&C) Platform, developed by E2mC. Heterogeneous social media data streams (Twitter, Facebook, Instagram,... and different data: text, image, video, ...) will be analysed and sparse crowdsourcing communities will be federated (crisis specific as Tomnod, HOT, SBTF and generic as Crowdcrafting, EpiCollect,...). Two demonstration loops will validate the usefulness of Copernicus Witness and the S&C Platform suitability to allow EC to evaluate possible Copernicus EMS evolution options. E2mC will perform demonstrations within realistic and operational scenarios designed by the Users involved within the Project (Civil Protection Authorities and Humanitarian Aid operators, including their volunteer teams) and by the current Copernicus EMS Operational Service Providers that are part of the E2mC Consortium. The involvement of social media and crowdsourcing communities will foster the engagement of a large number of people in supporting crisis management; many more citizens will become aware of Copernicus.<br><br>***This project also corresponds to the category 'Civil Protection operations'.*** |
| This project also corresponds to the category 'Civil Protection operations'. | |
| Website | https://www.e2mc-project.eu/ |

| E2mC | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. E-Geos Spa (IT)<br>Consortium:<br>2. Autonoom Provinciebedrijf Campus Vesta (BE)<br>3. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (DE)<br>4. Gaf AG (DE)<br>5. Kajo Sro (SK)<br>6. Paris-Lodron-Universitat Salzburg (AT)<br>7. Politecnico Di Milano (IT)<br>8. Public Safety Communication Europe Forum AISBL (BE)<br>9. Systemes D'information A Reference Spatiale – Sirs (FR)<br>10. Terranea Ug (Haftungsbeschrankt) Gmbh (DE)<br>11. Universite De Geneve (CZ)<br>12. Universite De Strasbourg (FR) |

| EOPEN | |
|---|---|
| Title | EOPEN: opEn interOperable Platform for unified access and analysis of Earth observatioN data |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2017.<br>Topic code: EO-2-2017. November 2017 / October 2020 - EUR: 1.999.500,00 GA 776019 |
| Abstract | Earth Observation data access through the Copernicus data distributor systems has paved the way to monitor changes on Earth, using Sentinel data. One of the main objectives of EOPEN is to fuse Sentinel data with multiple, heterogeneous and big data sources, to improve the monitoring capabilities of the future EO downstream sector. Additionally, the involvement of mature ICT solutions in the Earth Observation sector shall address major challenges in effectively handling and disseminating Copernicus-related information to the wider user community, beyond the EU borders. To achieve the aforementioned goals, EOPEN will fuse Copernicus big data content with other observations from non-EO data, such as weather, environmental and social media information, aiming at interactive, real-time and user-friendly visualisations and decisions from early warning notifications. The fusion is also done at the semantic level, to provide reasoning mechanisms and interoperable solutions, through the semantic linking of information. Processing of large streams of data is based on open-source and scalable algorithms in change detection, event detection, data clustering, which are built on High Performance Computing infrastructures. Alongside this enhanced data fusion, a new innovative, overarching Joint Decision & Information Governance architecture will be combined with the technical solution to assist decision making and visual analytics in EOPEN. Apart from EO product-oriented data management activities, EOPEN also exploits user-oriented feedback, tagging, tracking of interactions with other EOPEN users. EOPEN will be demonstrated in real use case scenarios in flood risk monitoring, food security and climate change monitoring. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Serco SpA (IT)<br>Consortium:<br>2. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>3. Korea University (KR)<br>4. Space Applications Services NV (BE)<br>5. Sundosoft Ltd (KR)<br>6. Ilmatieteen Laitos (FI)<br>7. National Observatory of Athens (EL)<br>8. Universitaet Stuttgart (DE)<br>9. Autorita di Bacino dei Fiumi Isonzo Tagliamento Livenza Piave Brenta Bacchiglione (IT) |

| EUGENIUS | |
|---|---|
| Title | European Group of Enterprises for a Network of Information Using Space |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2016.<br>Topic code: EO-1-2016. October 2016 / September 2018 - EUR: 1.762.139,88 GA 730150 |
| Abstract | The Copernicus program is today at a cornerstone: •The Sentinel satellites are being deployed. Their images, associated with Third Party missions' data are being used for delivering Copernicus core services results (at global, European, and regional levels). •The European structures (EEA, ECMWF, EMSA , etc.) and the scientific community are starting to use operationally these data and the results for a better knowledge and understanding of the key land-cover stakes and environmental monitoring. But, the regional actors who are responsible for managing (at least partially) land-cover and natural resources policies have still difficulties to get access to these data and information, and moreover are not in position to combine them with their existing geo-information systems. A group of five SMEs (TerraNIS, Spacebel, Planetek, Terraspatium and Sertit), supported by a consulting firm specialized in Space market innovation and organization (Cap High Tech), are proposing to provide the regional institutional and commercial users with operational information services. These services will take the highest benefit from Copernicus outputs, for territory monitoring and management. These SMEs have decided to put in common their complementary skills and products, in the frame of a dedicated association (called EUGENIUS). They will implement "regional hubs" (Geo-information platforms) building the first instance of the "EUGENIUS network". These regional hubs shall deliver services in the following domains: •Urbanization monitoring and management (densification, preservation of rural and "green" areas, transportation means, etc.) •Agriculture areas and activities (crop monitoring, crop identification and classification, potential yield assessment, water resources and irrigation, etc.) •Forest monitoring (surfaces, trees species classification, exploitation status, etc.) •assessing and monitoring some natural risks at regional levels (flooding, landslides and water quality) |
| Website | https://www.eugenius-asso.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Terranis SAS (FR)<br>Consortium:<br>2. Terra Spatium Anonymi Etaireia Proionton Kai Ypiresion Geopliroforikis Kai Diastimatos (EL)<br>3. Spacebel SA (BE)<br>4. Planetek Italia SRL (IT)<br>5. Universite de Strasbourg (FR)<br>6. Capital High Tech SARL (FR) |

### 1.1.6 Cost assessments of hazards

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Cost assessments of hazards | CONHAZ |

| COACCH | |
|---|---|
| Title | CO-designing the Assessment of Climate CHange costs |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2017-OneStageB.<br>Topic code: SC5-06-2016-2017. December 2017 / May 2021 - EUR: 4.999.843,75 GA 776479 |
| Abstract | COACCH will develop an innovative science-practice and integrated approach to co-design and co-deliver an improved downscaled assessment of the risks and costs of climate change in Europe, working with end users from research, business, investment, and policy making communities throughout the project. COACCH will advance the evidence base on complex climate change impact chains, assessing their market, non-market, macroeconomic and social consequences in the EU. It will integrate spatially-explicit impact models, macroeconomic models with subnational resolution, statistical downscaling techniques and innovative non-modelling approaches, covering market (agriculture, forestry, fishery, industry, services, energy, built environment, infrastructure) and non-market sectors (ecosystems, health). It will explicitly look at competitiveness and growth, as well as at the social and economic repercussion of major global climate change in Europe. COACCH will deliver new knowledge on the impacts and economic consequences of climate tipping points of major concern for Europe, and explore the new concept of climate-induced socio-economic tipping points, at European and national level. COACCH will advance the economic valuation of climate action, identifying short to long-term mitigation and adaptation policy under climate change, including extreme events and tipping points. It will compare the respective performances according to different criteria of decision making under uncertainty, reducing uncertainty around valuation. The project will also produce a new generation of climate damage functions accessible to various users. Finally, COACCH will use a wide range of innovative communication and dissemination activities, to promote easier access to the results and ensure the outreach and impact of the project, and contribute to major international scientific networks and reports (IPCC, Climate-ADAPT platform). |
| Website | http://www.coacch.eu/ |

| COACCH | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fondazione eni Enrico Mattei (IT)<br>Consortium:<br>2. Stichting VU (NL)<br>3. Climate Analytics GMBH (DE)<br>4. Paul Watkiss Associates Ltd (UK)<br>5. Ministerie van Infrastructuur en Waterstaat (NL)<br>6. Potsdam Institut fuer Klimafolgenforschung (DE)<br>7. GCF - Global Climate Forum EV (DE)<br>8. Stichting Deltares (NL)<br>9. Internationales Institut fuer Angewandte Systemanalyse (AT)<br>10. Asociacion BC3 Basque Centre for Climate Change - Klima Aldaketa Ikergai (ES)<br>11. Univerzita Karlova (CZ)<br>12. Universitaet Graz (AT)<br>13. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (IT)<br>14. Ecologic Institut Gemeinnützige GmbH (DE) |

| H2020_Insurance | |
|---|---|
| Title | Oasis Innovation Hub for Catastrophe and Climate Extremes Risk Assessment |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2016-TwoStage.<br>Topic code: SC5-01-2016-2017. May 2017 / April 2020 - EUR: 4.802.522,01 GA 730381 |
| Abstract | Globally, there is increased concern of the potential impacts of extreme climate events and their impact on loss and damage of people, assets and property as a result of these events. Therefore, natural partners in using climate services to assess risk are the Global Insurance Sector, who are key implementers in increasing societies resilience and recovery of extreme events and who are integral, co-design partners in this programme. This project intends to operationalize a system, called the Oasis Loss Modelling Framework, that combines climate services with damage and loss information and provides a standardised risk assessment process that can assess potential losses, areas at most risk and quantify financial losses of modelled scenarios. We intend to prove the Oasis LMF system through undertaking a range of demonstrators linked and co-designed to 'real' situations and end-user communities in the insurance, municipalities and business sectors (see list of partners & collaborators). These demonstrators have already been agreed with our end-users and develop work around hydro-climatic risk (in the Danube Region), Typhoon Risk, African Farmer Risk – through using climate information to support the underwriting of micro-insurance, climate v health and climate v forest asset risk assessment. We also intend to further expand access by all sectors to the models, tools and services developed within this programme and the broader climate services sector by operationalizing an open eMarket place and matchmaking facility for catastrophe and climate data and models, tools and services and through broadening awareness in the climate modelling and end-users communities to the Framework, and the transparent and comparable standard it offers to support evidence based risk assessment and adaptation planning. |
| Website | https://h2020insurance.oasishub.co/ |

| H2020_Insurance | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Potsdam Institut fuer Klimafolgenforschung (DE)<br>Consortium:<br>2. Univerzitet u Novom Sadu Fakultet Tehnickih Nauka (RS)<br>3. Imperial College of Science Technology and Medicine (UK)<br>4. Fresh-Thoughts Consulting GMBH (AT)<br>5. Oasis Loss Modelling Framework Limited (UK)<br>6. Genillard & CO GMBH (DE)<br>7. Klimabarat Telepulesek Szovetsege (HU)<br>8. Pannon Pro Innovacios Szolgaltato Korlatolt Felelossegu Tarsasag<br>9. Tecnosylva SL (ES)<br>10. Betterpoints Limited (UK)<br>11. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum GFZ (DE)<br>12. Charite - Universitaetsmedizin Berlin (DE)<br>13. City University of Hong Kong (HK)<br>14. Danmarks Tekniske Universitet (DK)<br>15. Aria Technologies SA (FR)<br>16. Universite d'aix Marseille (FR)<br>17. ONF International (FR)<br>18. Technische Universiteit Delft (NL)<br>19. Trans-African Hydro-Meteorological Observatory (KE)<br>20. GAF AG (DE) |

| NAIAD | |
|---|---|
| Title | NAture Insurance value: Assessment and Demonstration |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2016-OneStageB.<br>Topic code: SC5-09-2016. December 2016 / November 2019 - EUR: 4.994.370,00 GA 730497 |
| Abstract | NAIAD aims to operationalise the insurance value of ecosystems to reduce the human and economic cost of risks associated with water (floods and drought) by developing and testing - with key insurers and municipalities - the concepts, tools, applications and instruments (business models) necessary for its mainstreaming. We will do this in detail for 8 demonstration sites (DEMOs) throughout Europe and develop tools and methods applicable and transferable across all of Europe. The assumption is that Natural Assurance Schemes can reduce risk, especially to drought and flooding, and this risk reduction can be assessed and incorporated within insurance schemes. NAIAD´s conceptual frame is based on three pillars: (i) to help build a resilience approach to risk management through nature based solutions, (ii) the operationalisation and testing of scientific methods using a source-to-sea in DEMOs, (iii) the uptake of nature based solutions that are cost-effective and provide environmental, social and economic benefits. Trans-disciplinarity and stakeholder engagement are at the core of NAIAD for two reasons: first, because the conceptual and assessment methodologies combine physical, social and cultural and economic aspects, integrated into tools and methods but second, and most importantly "road tested" and validated with the stakeholders and end users themselves at the DEMOs. NAIAD will contribute to providing a robust framework for assessing insurance value for ecosystem services by (i) enabling full operationalisation through improved understanding of ecosystem functionality and its insurance value at a broad range of scales in both urban and rural context; (ii) making explicit the links between ecosystem values and social risk perception; and (iii) the application of developed methods and tools in water management by relevant stakeholders, especially businesses, public authorities and utilities. |
| Website | |

| NAIAD | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Confederacion Hidrografica del Duero (ES)<br>Consortium:<br>2. Universidad Politecnica de Cartagena (ES)<br>3. Field Factors BV (NL)<br>4. Stichting IHE Delft Institute for Water Education (NL)<br>5. Stiftelsen Stockholm International Water Institute (SE)<br>6. Universite de Nice Sophia Antipolis (FR)<br>7. Helmholtz-Zentrum Geesthacht Zentrum fur Material- Und Kustenforschung Gmbh (DE)<br>8. I-Catalist SL (ES)<br>9. Institut National de Recherche en Sciences et Technologies pour L'environnement et L'agriculture (FR)<br>10. Institutul National de Cercetare-Dezvoltare Pentru Geologie Si Geoecologie Marina-Geoecomar (RO)<br>11. Business Development Group SRL (RO)<br>12. Zavod Za Ihtioloske in Ekoloske Raziskave Revivo (SI)<br>13. Bureau de Recherches Geologiques et Minieres (FR)<br>14. Consiglio Nazionale delle Ricerche (IT)<br>15. Kobenhavns Kommune (DK)<br>16. Ambiotek Community Interest Company (UK)<br>17. Stichting Deltares (NL)<br>18. Zavod Iskriva, Iskrisce Za Razvoj Lokalnih Potencialov (SI)<br>19. Geological Survey of Denmark and Greenland (DK)<br>20. Europejskie Regionalne Centrum Ekohydrologii Polskiej Akademii Nauk (PL)<br>21. Instituto Geológico Y Minero De España (ES)<br>22. Caisse Centrale de Reassurance (FR)<br>23. King's College London (UK) |

## 1.2 Climate hazards

Preparedness and adaptation planning to threats related to climate change are defined **in the EU Adaptation Strategy to Climate Change**, which calls for bridging the knowledge gap, in particular on damage and adaptation costs and benefits, regional and local-level analyses and risk assessments, tools to support decision-making, monitoring and evaluating past adaptation efforts. Links with Horizon2020 DRS topics have been designed in this respect. This section highlights projects dealing with risk management-related tools and technologies that are applicable mainly to climate-related hazards – Forest fires are included in this category, keeping in mind that they also may be due to intentional man-made actions.

### 1.2.1 Multi-climate hazard risk prevention, awareness, preparedness, resilience

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-climate hazard risk prevention, awareness, preparedness, resilience | CLIMB<br>CLUVA<br>EUPORIAS<br>KNOW4DRR<br>INTACT<br>KULTURISK<br>RAIN<br>WASSERMED |

Complementing the above, risk prevention and reduction of climate-related disasters are subject to continuous major research efforts, namely:

| ANYWHERE | |
|---|---|
| Title | EnhANcing emergencY management and response to extreme WeatHER and climate Events (ANYWHERE) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-01-2015<br>June 2016 / August 2019 - EUR 11,973,367<br><br>REA - 700099 |
| Abstract | Implementation of a Pan-European, multi-hazard platform providing a better identification of the expected weather-induced impacts and their location in time and space before they occur. The platform empowers exposed responder institutions and citizens to enhance their anticipation and pro-active response capacity to face extreme and high-impact weather and climate events by capitalizing on the advanced forecasting methodologies and impact models made available by previous RTD projects, maximizing the uptake of their innovative potential not fully exploited up to now. Provision of early warning products and locally customizable decision support services proactively targeted to the needs and requirements of authorities, public /private operators of critical infrastructures and networks. |
| Website | http://anywhere-h2020.eu/ |

| ANYWHERE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Politecnica de Catalunya (ES)<br>Consortium<br>2. Agència Catalana de l'Aigua (ES)<br>3. Agencia de Medio Ambiente y Agua de Andalucia (ES)<br>4. ARPAL (IT)<br>5. Airbus SAS (FR)<br>6. Centre National de la Recherche Scientifique CNRS (FR)<br>7. Fondazione CIMA (IT)<br>8. Comune di Genova (IT)<br>9. Consorzio Futuro in Ricerca (IT)<br>10. D'Appolonia SPA (IT)<br>11. Departament d'Interior – Catalunya (ES)<br>12. Direccion General de Proteccion Civil y Emergencias (ES)<br>13. Direction de l'Economie Publique – Berne (CH)<br>14. Euro. Centre for Medium-Range Weather Forecasts (UK)<br>15. GEO 7 Ag (CH)<br>16. Helmholtz-Zentrum fuer Umweltforschung Gmbh – UFZ (DE)<br>17. Helse Stavanger HF (NO)<br>18. Hydrometeorological Innovative Solutions (ES)<br>19. Ilmatieteen Laitos (FI)<br>20. JRC (BE)<br>21. Kajo SRO (SK)<br>22. Meteodat Gmbh (CH)<br>23. Finland Ministry of the Interior (FI)<br>24. Scuola Superiore di Studi Universitari e di Perfezionamento Sant'anna (IT)<br>25. Service Departemental d'Incendie et de Secours de la Haute-Corse (FR)<br>26. Stiftelsen Sintef (NO)<br>27. Univ. of Reading (UK)<br>28. Univ. Paderborn (DE)<br>29. Univ. de Geneve (CH)<br>30. Univ. de Nice Sophia Antipolis (FR)<br>31. Wageningen Univ. (NL) |

| beAWARE | |
|---|---|
| Title | Enhancing decision support and management services in extreme weather climate events (beAWARE)<br><br>***This project also corresponds to the category 'Multi-hazards situation awareness / early warning'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-01-2015<br>January 2017 / December 2019 - EUR 5,953,780<br><br>REA - 700475 |
| Abstract | Development of an integrated solution to support forecasting, early warnings, transmission and routing of the emergency data, aggregated analysis of multimodal data and management the coordination between the first responders and the authorities during all phases of an emergency incident. The solution will rely on platforms, theories and methodologies that are already used for disaster forecasting and managerment, supplemented with additional elements required for operational efficiency. The context is based in the domain of situational awareness and command and control (C2). |
| Website | http://beaware-project.eu/ |

| beAWARE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>Consortium:<br>2. Autorita di Bacino dei Fiumi Isonzo Tagliamento Livenza Piave Brenta Bacchiglione (IT)<br>3. Ayuntamiento de Valencia (ES)<br>4. Elliniki Omada Diasosis Somateio (EL)<br>5. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V.(DE)<br>6. Frederiksborg Brand og Redning (DK)<br>7. IBM Israel (IL)<br>8. Ilmatieteen Laitos (FI)<br>9. Motorola Solutions Israel Ltd (IL)<br>10. Universidad Pompeu Fabra (ES) |

| BRIGAID | |
|---|---|
| Title | BRIdges the GAp for Innovations in Disaster resilience (BRIGAID) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-09-2015<br>May 2016 / April 2020 - EUR 7,739,805.79<br><br>EASME - 700699 |
| Abstract | Bridging the gap between innovative solutions aimed at reducing the increased climate change risks and their market up-take. Three pillars of the approach: (1) consideration of geographic variability of climate-related hazards and their interaction with socio-economic changes; (2) establishment of structural, on-going support for innovations, which are validated in field tests and live-demos; (3) development of a framework enabling independent, scientific judgement of an innovation's socio-technological effectiveness. Activities include the development of a technological and performance standards for adaptation options by providing a Test and Implementation Framework (TIF) and test facilities throughout Europe; establishment of an innovators network and development of business models and market outreach. |
| Website | http://brigaid.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Technische Universiteit Delft (NL)<br>Consortium:<br>2. Agjencia Kombetare e Planifikimit te Territorit (AL)<br>3. APA Proiect SRL (RO)<br>4. Aquaproiect SA (RO)<br>5. Consus Carbon Engineering Spolka z Ograniczona Odpawiedzialnoscia (PL)<br>6. D'Appolonia SPA (IT)<br>7. Ecologic Institut Gemeinnützige Gmbh (DE)<br>8. Futurewater SL (ES)<br>9. Geomatics Research & Development SRL (IT)<br>10. GIFF Gestao Integrada De Fogos Florestais SA (IT)<br>11. HKV Lijn in Water BV (NL)<br>12. I-Catalist SL (ES)<br>13. Instituto Superior de Agronomia (PT)<br>14. International Center for Research on the Environment and the Economy (EL)<br>15. Katholieke Universiteit Leuven (BE)<br>16. L'Orangerie Studio (ES)<br>17. Migal Galilee Research Institute Ltd (IL)<br>18. National Administration Apele Romane (RO)<br>19. Spectrum Construct SRL (RO)<br>20. Funding Company (NL)<br>21. Thetis SPA (IT)<br>22. Univ. di Bologna (IT)<br>23. Univ. of Oxford (UK)<br>24. Univ. Tehnica de Constructii Bucuresti (RO)<br>25. Univ. Catholique de Louvain (BE) |

| CLISEL | |
|---|---|
| Title | "Climate Security with Local Authorities" From insecurity takers to security makers: mobilizing local authorities to secure the EU against the impacts of climate change in Third Countries (CLISEL) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-22-2015<br>May 2016 / April 2019 - EUR 889,205.00<br><br>REA - 700385 |
| Abstract | CLISEL looks at the issue of climate-induced migration and aims to understand the extent to which migrants from ecologically vulnerable Third Countries are perceived as a security issue, the reasons why that is (not) the case, as well as the policies and actions through which local administrators can ward off the emergence of security crisis within their territory. |
| Website | http://www.clisel.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universita degli Studi di Cagliari (IT)<br>Consortium:<br>2. Consiglio delle Autonomie Locali Sardegna (IT)<br>3. Kungliga Tekniska Hoegskolan (SE)<br>4. Lancaster Univ. (UK)<br>5. Univ, Bern (CH) |

| EU-CIRCLE | |
|---|---|
| Title | A panEuropean framework for strengthening Critical Infrastructure resilience to climate change (EU-CIRCLE)<br><br>***This project also corresponds to the category 'Critical Infrastructure Resilience'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-09-2014<br>June 2015 / June 2018 - EUR: 7,283,525.00<br><br>EASME - 653824 |
| Abstract | Development of an innovative framework for supporting the interconnected European Infrastructure's resilience to climate pressures, supported by an end-to-end modelling environment where new analyses can be added anywhere along the analysis workflow and multiple scientific disciplines can work together to understand interdependencies, validate results, and present findings in a unified manner providing an efficient "Best of Breeds" solution of integrating into a holistic resilience model existing modelling tools and data in a standardised fashion. It, will be open and accessible to all interested and it will be complemented with a webbased portal allowing users to introduce fully tailored solutions and infrastructure data, by defining and implementing customised impact assessment models, and use climate / weather data on demand. |
| Website | http://www.eu-circle.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. National Center for Scientific Research 'Demokritos'(EL)<br>Consortium:<br>2. Aditess Advanced Integrated Technology Solutions & Services Ltd. (CY)<br>3. Akademia Morska W Gdyni (PL)<br>4. Artelia Eau et Environnement Sas (FR)<br>5. D'Appolonia Spa (IT)<br>6. Drzavna Uprava za zastitu I spasavanje (HR)<br>7. Drzavni Hidrometeoroloski Zavod (HR)<br>8. Entente pour la Foret Mediterraneenne (FR)<br>9. European University Cyprus (CY)<br>10. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschun E.V. (DE)<br>11. Kentro Meleton Asfaleias Meteorologisk Institutt (NO)<br>12. Ministry of National Defence, Greece (EL)<br>13. MRK Management Consultants GMBH (DE)<br>14. Satways – Proionta Kay Ypiresies Tilematikis Diktyakon Kai Tilepikinoniakon Efarmogon Etairia Periorismenis Efthinis Epe (EL)<br>15. The council of the Borough of Torbay (UK)<br>16. The University of Exeter (UK)<br>17. The Univversity of Huddersfield (UK)<br>18. The University of Salford (UK)<br>19. Veleuciliste Velika Gorica (HR)<br>20. Xuvasi Ltd (UK) |

| HERACLES | |
|---|---|
| Title | HEritage Resilience Against CLimate Events on Site (HERACLES) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-11-2015<br>May 2016 / May 2019 - EUR: 6,564,313.75<br><br>EASME - 700395 |
| Abstract | The main objective is to design, validate and promote responsive systems/solutions for effective resilience of CH against climate change effects, considering as a mandatory premise a holistic, multidisciplinary approach through the involvement of different expertise. This entails the development of a system exploiting an ICT platform able to collect and integrate multisource information in order to effectively provide complete and updated situational awareness and support decision. The strength of HERACLES solutions is their flexibility in evaluating a big quantity of different information that can be changed and tailored to the specific CH assets needs, guaranteeing in that way a general applicability. |
| Website | http://www.heracles-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Consiglio Nazionale Delle Richerche (IT)<br>Consortium:<br>2. Aria Technologies SA (FR)<br>3. Comune di Gubbio (IT)<br>4. Consorzio Interuniversitario Nazionale per la Scienze e Technologia dei Materiali (IT)<br>5. CVR S.R.L. (IT)<br>6. E-Geos Spa (IT)<br>7. Ephorate of Antiquities of Heraklion (EL)<br>8. European Materials Research Society (FR)<br>9. Foundation for Research and Technology Hellas (EL)<br>10. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>11. Leonardo – Societa per Azioni (IT)<br>12. Panepistimio Kritis (EL)<br>13. Sistema GMBH (AT)<br>14. Thales Italia Spa (IT)<br>15. Thales SA (FR)<br>16. The International Emgergency Management Society Aisbl (BE)<br>17. Uninova-Instituto de Desenvolvimento de novas Tecnologias-Associacao (PT)<br>18. Universita Degli Studi di Perugia (IT) |

| PLACARD | |
|---|---|
| Title | PLAtform for Climate Adaptation and Risk reDuction (PLACARD) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-09-2014<br>June 2015 / June 2020 - EUR: 2,852,760.00<br><br>RTD - 653255 |
| Abstract | PLACARD will tackle current challenges by (1) providing a common 'space' where CCA and DRR communities can come together, share experiences and create opportunities for collaboration; (2) facilitating communication and knowledge exchange between both communities; and (3) supporting the coordination and coherence of CCA and DRR research, policy and practice. The approach will establish a strong and operational network of networks by connecting to existing networks and boundary organisations, to foster dialogue among stakeholders, supported by an online platform. This overarching network will enable these communities to share knowledge, to discuss challenges and to jointly co-produce options to bridge the gaps they experience. |
| Website | http://www.placard-network.eu/ |

| PLACARD | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacao da Faculdade de Ciencias da Universidae de Lisboa FP (PT)<br>Consortium:<br>2. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (IT)<br>3. Helmholtz-Zentrum fuer Umweltforschung GMBH – UFZ (DE)<br>4. Sei Oxford office Limited Stockholm Environment Institute Oxford Office Sei Ltd (UK)<br>5. Stichting International Red Cross Red Crescent Centre on Climate Change and Disaster Preparedness (NL)<br>6. Stichting Wageningen Research (NL)<br>7. Stiftelsen the Stockholm Environment Institute (SE)<br>8. The Chancellor, Master and Scholars of the University of Oxford (UK)<br>9. Umweltbundesambt GMBH (AT)<br>10. United Nations International Strategy for Disaster Reduction (CH)<br>11. Univ. de Geneve (CH) |

| RESCCUE | |
|---|---|
| Title | RESilience to cope with Climate Change in Urban arEas - a multisectorial approach focusing on water (RESCCUE)<br><br>***This project also corresponds to the category 'Resilience of urban built environments'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-09-2015<br>May 2016 / May 2020 - EUR: 6.896.991,76<br><br>EASME - 700174 |
| Abstract | RESCCUE aims to deliver a framework enabling city resilience assessment, planning and management. These tools will assess urban resilience from a multisectorial approach, for current and future climate change scenarios and including multiple hazards. The possible approaches will be ranked by their cost-efficiency in terms of CAPEX and OPEX to evaluate their benefits potential. This will enable city managers and urban system operators deciding the optimal investments to cope with future situations. |
| Website | http://www.resccue.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Aquatec Proyectos para el sector del Agua SA (ES)<br>Consortium:<br>2. ADP Aguas de Portugal SGPS SA (PT)<br>3. Ajuntament de Barcelona (ES)<br>4. Bristol City Council (UK)<br>5. Camara Municipal de Lisboa (PT)<br>6. Cetaqua, centro Tecnologico del Agua, Fundacion Privada (ES)<br>7. Ecole des Ingenieurs de la Ville de Paris (FR)<br>8. EDO Distribuicao Energia SA (PT)<br>9. Endesa Distribucion Electrica SL (ES)<br>10. Epal-Emprese Portuguesa das Aguas Livres SA (PT)<br>11. Fundacio Institut de Recerca de l'Energia de Catalunya (ES)<br>12. Fundacion para la Investigacion del Clima (ES)<br>13. HIDRA – Hidraulica e Ambiente LDA (PT)<br>14. Laboratorio Nacional de Engenharia CIVIL (PT)<br>15. Opticits Ingernieria Urbana SL (ES)<br>16. Suez Advanced Solutions UK Limited (UK)<br>17. Univ. of Exeter (UL)<br>18. United Nations Human Settlements Programme (KE)<br>19. Urban DNA Solutions LLP (UK) |

| RESIN | |
|---|---|
| Title | Climate Resilient Cities and Infrastructures (RESIN)<br><br>***This project also corresponds to the category 'Resilience of the urban built environment'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-09-2014<br>May 2015 / November 2018 - EUR: 7,466,004.50<br><br>EASME - 653522 |
| Abstract | The objective of RESIN is to provide standardised methodologies for vulnerability assessments, performance evaluations of adaptation measures, and for decision support tools supporting the development of robust adaptation strategies tailored to the city. RESIN aims to create a common unifying framework that allows comparing strategies, results and identification of best practices by (1) creating an urban typology that characterises European cities; (2) delivering standardised methods for assessing climate change impacts, vulnerabilities, and risks; (3) collaborating closely with 4 'case cities' for practical applicability and reproducibility; (4) integrating findings in a coherent framework for the decision making process, with associated methods, tools and datasets. |
| Website | http://www.resin-cities.eu/home/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>Consortium<br>2. Arcadis Nederland BV (NL)<br>3. Asociacion Bc3 Basque Centre For (ES) Climate Change - Klima Aldaketa Ikergai<br>4. Ayuntamiento de Bilbao (ES)<br>5. Ecole des Ingenieurs de la Ville Deparis (FR)<br>6. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V.(DE)<br>7. Fundacion Tecnalia Research & Innovation (ES)<br>8. Hlavne Mesto Slovenskej Republiky Bratislava (SK)<br>9. Iclei European Secretariat Gmbh (Iclei Europasekretariat Gmbh) (DE)<br>10. Itti Sp Zoo (PL)<br>11. Oldham Metropolitan Borough Council (UK)<br>12. Siemens Aktiengesellschaft (DE)<br>13. Siemens Aktiengesellschaft Oesterreich (AT)<br>14. Stichting Nederlands Normalisatie – Instituut NL)<br>15. The University Of Manchester (UK)<br>16. Uniresearch BV (NL)<br>17. Univerzita Komenskeho V Bratislave (SK) |

| STORM | |
|---|---|
| Title | Safeguarding Cultural Heritage through Technical and Organisational Resources Management (STORM) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-11-2015<br>June 2016 / June 2019 - EUR: 7,297,875.00<br><br>EASME - 700191 |
| Abstract | STORM proposes a set of predictive models and improved non-invasive and non-destructive methods of survey and diagnosis, for effective prediction of environmental changes and for revealing threats and conditions that could damage cultural heritage sites. STORM will determine how different vulnerable materials, structures and buildings are affected by different extreme weather events together with risks associated to climatic conditions or natural hazards, offering improved, effective adaptation and mitigation strategies, systems and technologies. An important result of STORM will be a cooperation platform for collaboratively collecting and enhancing knowledge, processes and methodologies on sustainable and effective safeguarding and management of European Cultural Heritage. The system will be capable of performing risk assessment on natural hazards taking into account environmental and anthropogenic risks, and of using Complex Events processing. |
| Website | http://www.storm-project.eu/ |

| STORM | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering - Ingegneria Informatica Spa (IT)<br>Consortium:<br>2. Direcao Geral do Patrimonio Cultural (PT)<br>3. Ephorate of Antiquities of Rethymno (EL)<br>4. Foundation for Research and Technology Hellas (EL)<br>5. Inov Inesc Inovacao - Instituto de Novas Tecnologias (PT)<br>6. Kpeople Ltd (UK)<br>7. Mellor Archaeological Trust (UK)<br>8. Ministero Dell'interno (IT)<br>9. Municipio de Grandola (PT)<br>10. Nova Conservacao - Restauro e Conservacao do Patrimonio Artistico-Cultural Lda (PT)<br>11. Resiltech Srl (IT)<br>12. Soprintendenza Speciale per Il Colosseo Il Museo Nazionale Romano e L'area Archeologica Di Roma (IT)<br>13. Sparta Technologies Ltd (UK)<br>14. Technological Educational Institute Of Piraeus (EL)<br>15. The University of Salford (UK)<br>16. Troiaresort - Investimentos Turísticos, S.A. (PT)<br>17. Universita Degli Studi Della Tuscia (IT)<br>18. Universitaet Stuttgart (DE)<br>19. Zentralanstalt fur Meteorologie Undgeodynamik (AT) |

| Climate europe | |
|---|---|
| Title | Bringing INnovation to onGOing water management – A better future under climate change (Climate europe)<br><br>***This project also corresponds to the categories 'Flood risks' and 'Drought risks'.*** |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-WATER-2014-two-stage Topic code: WATER-2a-2014 July 2015 / July 2019 - EUR: 7.822.422,50<br><br>EASME - 641739 |
| Abstract | BINGO will provide demand-driven solutions for a number of specific climate-related challenges in particular for highly vulnerable water resources of strategic importance. BINGO aims at reducing the uncertainty of climate predictions and developing response management strategies for future weather challenges to help society manage that uncertainty. BINGO will develop and validate all solutions built by strong dynamic interaction of researchers with end-users and decision makers throughout the project. By creating such knowledge alliances, water managers and other stakeholders can share awareness of climate challenges, thus increasing the possibilities of collaboration in order to manage and better cope with future climate challenges. |
| Website | http://www.projectbingo.eu/ |

| Climate europe | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Laboratorio Nacional De Engenharia Civil (PT)<br>Consortium:<br>2. Aigues De Barcelona, Empresa Metropolitana De Gestio Del Cicle Integral De L'aigua SA (ES)<br>3. Ajuntament De Badalona (ES)<br>4. Aquatec Proyectos Para El Sector Del Agua SA (ES)<br>5. Area Metropolitana De Barcelona (ES)<br>6. Bergen Kommune (NO)<br>7. Cetaqua, Centro Tecnologico Del Agua, Fundacion Privada (ES)<br>8. Comunidade Intermunicipal Da Leziria Do Tejo (PT)<br>9. Direcao-Geral De Agricultura E Desenvolvimento Rural (PT)<br>10. Epal-Empresa Portuguesa Das Águas Livres, SA (P)T<br>11. Freie Universitaet Berlin (DE)<br>12. Gelderland (NL)<br>13. I.A.Co Environmental And Water Consultants Ltd (CY)<br>14. Interwies Eduard (DE)<br>15. Iww Rheinisch Westfalisches Institut Fur Wasserforschung Gemeinnutzige GMBH (DE)<br>16. Kwr Water B.V. (NL)<br>17. Norges Teknisk-Naturvitenskapelige Universitet Ntnu (NO)<br>18. Sociedade Portuguesa De Inovacao - Consultadoria Empresarial E Fomento Da Inovacao S.A. (PT)<br>19. The Cyprus Institute (CY)<br>20. Vitens Nv (NL)<br>21. Wupperverband (DE) |

| Climateurope | |
|---|---|
| Title | European Climate Observations, Modelling and Services – 2 (Climateurope)<br><br>***This project also corresponds to the categories 'Earth Observation Support.*** |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-SC5-2015-one-stage Topic code: SC5-05b-2015 December 2015 / December 2020 - EUR: 2.994.372,50<br><br>EASME - 689029 |
| Abstract | The Climateurope Action will coordinate and support Europe's knowledge base to enable better management of climate-related risks and opportunities thereby creating greater social and economic value. Climateurope has four main objectives:1) Develop a European framework for Earth-system modelling and climate service activities, built around a managed network of European, national and international activities and organisations. 2) Coordinate and integrate European climate modelling, climate observations and climate service infrastructure initiatives and facilitate dialogue among the relevant stakeholders. 3) Establish multi-disciplinary expert groups to assess the state-of-the-art in Earth-system modelling and climate services in Europe. 4) Enhance communication and dissemination activities with stakeholders. Two key impacts are (i) to greatly enhance the transfer of information between suppliers and users to improve the resilience of European society to climate change and mitigation of the risk of dangerous climate change; and (ii) to increase efficiency through improved coordination, to reduce fragmentation and create synergies with international R&I programmes. |
| Website | https://www.climateurope.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Met Office (UK)<br>Consortium:<br>2. Agence Nationale De La Recherche (FR)<br>3. Barcelona Supercomputing Center - Centro Nacional De Supercomputacion (ES)<br>4. Centre National De La Recherche Scientifique Cnrs (FR)<br>5. European Centre For Medium-Range Weather Forecasts (UK)<br>6. Fondazione Centro Euro-Mediterraneo Sui Cambiamenti Climatici (IT)<br>7. Helmholtz-Zentrum Geesthacht Zentrum Fur Material- Und Kustenforschung GMBH (DE)<br>8. Imperial College Of Science Technology And Medicine (UK)<br>9. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>10. Republicki Hidrometeoroloski Zavodsrbije (RS)<br>11. Sveriges Meteorologiska Och Hydrologiska Institut (SE) |

| ERA4CS | |
|---|---|
| Title | European Research Area for Climate Services (ERA4CS) |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-SC5-2015-one-stage Topic code: SC5-02-2015<br>January 2016 / January 2021 - EUR: 25.000.000,00<br><br>RTD - 690462 |
| Abstract | ERA4CS will focus on the development of a "climate information translation" layer bridging "user communities" and "climate system sciences". ERA4CS will boost the JPI Climate initiative by mobilizing more countries, within EU Member States and Associated Countries, by involving both research performing organizations (RPOs) and research funding organizations (RFOs), as well as distinct national climate services and academia. Additional activities will initiate a strong partnership between JPI Climate and others key European and international initiatives (as Copernicus, KIC-Climate, JPIs, WMO/GFCS, Future Earth, Belmont Forum) in order to work towards a common vision and a multiyear implementation strategy, including better co-alignment of national programs and activities up to 2020 and beyond. |
| Website | http://www.jpi-climate.eu/ERA4CS<br>https://www.climateurope.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Agence Nationale De La Recherche (FR)<br>Consortium:<br>2. Administratia Nationala De Meteorologie R.A. (RO)<br>3. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>4. Agencia Estatal De Meteorologia (ES)<br>5. Alfred-Wegener-Institut Helmholtz- Zentrum Fuer Polar- Und Meeresforschung (DE)<br>6. Barcelona Supercomputing Center - Centro Nacional De Supercomputacion (ES)<br>7. Bundesministerium Für Wissenschaft, Forschung Und Wirtschaft (AT)<br>8. Bureau De Recherches Geologiques Et Minieres (FR)<br>9. Centre National De La Recherche Scientifique Cnrs (FR)<br>10. Centrum Vyzkumu Globalni Zmeny Av Cr Vvi (CZ)<br>11. Commissariat A L Energie Atomique Et Aux Energies Alternatives (FR)<br>12. Consiglio Nazionale Delle Ricerche (IT)<br>13. Danmarks Meteorologiske Institut (DK)<br>14. Department Of Housing, Planning, Community And Local Government (IE)<br>15. Deutsches Zentrum Fuer Luft - Und Raumfahrt Ev (DE)<br>16. Environmental Protection Agency Of Ireland (IE)<br>17. Fondazione Centro Euro-Mediterraneo Sui Cambiamenti Climatici (IT)<br>18. Forskningsrådet För Miljö, Areella Näringar Och Samhällsbyggande (SE)<br>19. Fundacao Da Faculdade De Ciencias Da Universidade De Lisboa Fp (PT)<br>20. Fundacao Para A Ciencia E A Tecnologia (PT)<br>21. Fundacion Instituto De Hidraulica Ambiental De Cantabria (ES)<br>22. Helmholtz-Zentrum Geesthacht Zentrum Fur Material- Und Kustenforschung Gmbh (DE)<br>23. Ilmatieteen Laitos (FI)<br>24. Innovationsfonden (DK)<br>25. Institut National De La Recherche Agronomique (FR)<br>26. Institut National De L'informationgeographique Et Forestiere (FR)<br>27. Institut Royal Meteorologique De Belgique (BE)<br>28. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>29. Meteo-France (FR)<br>30. Meteorologisk Institutt (NO) |

| ERA4CS | |
|---|---|
| | 31. Met Office (UK)<br>32. Ministerio De Economia, Industria Y Competitividad (ES)<br>33. Ministero Dell'istruzione, Dell'universita' E Della Ricerca (IT)<br>34. National Center For Scientific Research "Demokritos" (EL)<br>35. Natural Environment Research Council (UK)<br>36. Nederlandse Organisatie Voor Wetenschappelijk Onderzoek (NL)<br>37. Norges Forskningsrad (NO)<br>38. Norges Vassdrags- Og Energidirektorat (NO)<br>39. Service Public Federal De Programmation Politique Scientifique (BE)<br>40. Slovenska Akademia Vied (SK)<br>41. Suomen Ymparistokeskus (FI)<br>42. Sveriges Meteorologiska Och Hydrologiska Institut (SE)<br>43. The University Of Reading (UK)<br>44. Uni Research As (NO)<br>45. Unitatea Executiva Pentru Finantarea Invatamantului Superior, A Cercetarii, Dezvoltarii Si Inovarii (RO)<br>46. Universidad De Cantabria (ES)<br>47. Universitaet Graz (AT)<br>48. Universitat Rovira I Virgili (ES)<br>49. Universite De Versailles Saint-Quentin-En-Yvelines. (FR)<br>50. Universite Grenoble Alpes (FR)<br>51. Universite Paris Xii Val De Marne (FR)<br>52. Universite Paul Sabatier Toulouse Iii (FR)<br>53. Universite Pierre Et Marie Curie - Paris 6 (FR) |

| CENTAUR | |
|---|---|
| Title | Cost Effective Neural Technique for Alleviation of Urban Flood Risk (CENTAUR) |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-WATER-2014-two-stage Topic code: WATER-1a-2014 September 2015 / September 2018 - EUR: 2.548.395,63<br><br>EASME - 641931 |
| Abstract | CENTAUR will develop a new market ready approach to RTC of sewer networks with the aim of reducing local flood risk in urban areas. This proposal will develop a novel low cost de-centralised, autonomous RTC system. This RTC system will utilise data driven distributed intelligence combined with local, low cost monitoring systems installed at key points within existing sewer infrastructure. The system will utilise mechanically simple, robust devices to control flow in order to reduce flood risk at vulnerable sites. This system will be informed and governed directly by sensors distributed within the local network, without the need for an expensive hydrodynamic model or real time rainfall measurements. |
| Website | https://www.sheffield.ac.uk/centaur/index |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Sheffield (UK)<br>Consortium:<br>2. Ac Aguas De Coimbra EM (PT)<br>3. Eidgenoessische Anstalt Fuer Wasserversorgung Abwasserreinigung Und Gewaesserschutz (CH)<br>4. Environmental Monitoring Solutions Limited (UK)<br>5. Steinhardt Gmbh (DE)<br>6. Universidade De Coimbra (PT)<br>7. Veolia Water Outsourcing Limited (UK) |

| FLOOD-serv | |
|---|---|
| Title | Public FLOOD Emergency and Awareness SERVice (FLOOD-serv) |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies Call: H2020-INSO-2015-CNECTTopic code: INSO-1-2015 Augustus 2016 / Augustus 2019 - EUR: 2.528.630,63<br><br>REA - 693599 |
| Abstract | The overall objective of FLOOD-serv is to develop and to provide a pro-active and personalised citizen-centric public service application that will enhance the involvement of the citizen and will harness the collaborative power of ICT networks (networks of people, of knowledge, of sensors) to raise awareness on flood risks and to enable collective risk mitigation solutions and response actions. Other general objectives are:1) Empowering local communities to directly participate in the design of emergency services dealing with floods mitigation actions.2) Harness the power of new technologies, such as social media, and mobile technologies to increase the efficiency of public administrations in raising public awareness and education regarding floods risks, effects and impact.3) Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation actions related to floods though an ICT-enabled cooperation and collaboration of all stakeholders. |
| Website | http://www.floodserv-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Siveco Romania Sa (RO)<br>Consortium:<br>2. A.N.O. Sistemas De Informatica e Servicos Lda (PT)<br>3. Answaretech Sl (ES)<br>4. Ayuntamiento De Bilbao (ES)<br>5. Bratislavsky Samospravny Kraj (SK)<br>6. Cellent Ag (AT)<br>7. Comune Di Genova (IT)<br>8. Exdwarf Consulting Sro (SK)<br>9. Government To You (BE)<br>10. Institutia Prefectului Judetul Tulcea (RO)<br>11. Institutul National De Cercetare-Dezvoltare Delta Dunarii (RO)<br>12. Municipio De Vila Nova De Famalicao (PT) |

| IMPREX | |
|---|---|
| Title | IMproving PRedictions and management of hydrological EXtremes (IMPREX) |
| Contract details | Climate Action, Environment, Resource Efficiency And Raw Materials Call: H2020-WATER-2014-Two-Stage Topic Code: WATER-2a-2014<br>October 2015 / October 2019 - EUR: 7.996.848,00<br><br>EASME - 641811 |
| Abstract | Imprex targets the quality of short-to-medium hydro-meteorological predictions and aims to enhance the reliability of future climate projections, apply this information to strategic sectoral and pan-european surveys at different scales, and evaluate and adapt current risk management strategies. The impact of forecasts of hydro-meteorologiacl extremes will be assessed by applying dynamic model ensembles, process studies, new data assimilation techniques and high resolution modelling. Novel climate change impact assessment concepts will focus at increasing the realism of relevant events by specific high resolution regional downscaling, explore compounding trans-sectoral and trans-regional risks, and design new risk management paradigms tob e demonstrated in impact surveys for strategic economic sectors. A pan-european assessment of risk management and adaptation strategies is applied, minimizing risk transfer from one sector or region to another. Key outreach products include: a periodic hydrological risk outlook for europe, incorporating the dynamic evolution of hydro-climatic and socio-economic processes; maximisation of surveys' legacy impacts, aimed at european public stakeholder and business networks, including user-friendly assessment summaries, and training material. |
| Website | http://www.imprex.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>Consortium:<br>2. Adelphi Research Gemeinnutzige Gmbh (DE)<br>3. Aquatec Proyectos Para El Sector Del Agua Sa (ES)<br>4. Arctik Sprl (BE)<br>5. Barcelona Supercomputing Center - Centro Nacional De Supercomputacion (ES)<br>6. Bundesanstalt Fuer Gewaesserkunde (DE)<br>7. Centro Internazionale In Monitoraggio Ambientale - Fondazione Cima (IT)<br>8. Cetaqua, Centro Tecnologico Del Agua, Fundacion Privada (ES)<br>9. European Centre For Medium-Range Weather Forecasts (UK)<br>10. Futurewater Sl (ES)<br>11. Helmholtz-Zentrum Geesthacht Zentrum Fur Material- Und Kustenforschung Gmbh (DE)<br>12. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE<br>13. Hkv Lijn In Water Bv (NL)<br>14. Institut National De Recherche En Sciences Et Technologies Pour L'environnement Et L'agriculture (FR)<br>15. Met Office (UK)<br>16. Politecnico Di Milano (IT)<br>17. Potsdam Institut Fuer Klimafolgenforschung (DE)<br>18. Stichting Deltares (NL)<br>19. Stichting VU (NL)<br>20. Stichting Water Footprint Network (NL)<br>21. Sveriges Meteorologiska Och Hydrologiska Institut (SE)<br>22. The Research Committee Of The Technical University Of Crete (EL)<br>23. The University Of Reading (UK)<br>24. Universitat Politecnica De Valencia (ES) |

## These projects were complemented by new projects funded in 2016-2017:

| CaseXtreme | |
|---|---|
| Title | ChAnges in the Statistics of EXTremes Events in cliMatE |
| Contract details | Industrial Leadership - European SME innovation Associate - pilot . Call: H2020-INNOSUP-02-2016. Topic code: INNOSUP-02-2016. September 2017 / August 2018 - EUR: 125.500,00 GA 739686 |
| Abstract | Most of the developing countries are widely recognised to be vulnerable to climate risks. Climate-related disasters are already undermining record growth across the world, threatening hard-won gains and vulnerable populations' lives and livelihoods; increasing climate volatility can only exacerbate this and counteract the investments being made by countries to mitigate, prepare for and manage current weather risks. Amigo is currently working on an international funded project called eXtreme Climate Facility (XCF) and it is developing a specific multi-hazard Extreme Climate Index (ECI). This index would be based on meteorological data and designed to capture the severity and frequency of heat, drought, flood and other extreme weather events. In order to create financial vehicles that tracks the frequency and magnitude of extreme climate shocks in developing countries and provides additional financing for countries already managing their current climate risks, it becomes necessary to develop specific methodologies to identify the changes in the frequency of extreme events as also requested by international organization and countries. With such instruments, the disbursement of climate adaptation funds to countries would be entirely data-driven over a 30 year, or some long term, adaptation period; if there are no significant increases in the frequency or magnitude of extreme weather events over current climatology, then no payments would be made. Where payments are made, countries would use those funds to invest in Disaster Risk Reduction (DRR) or climate change adaption measures specified in pre-defined country-level adaptation plans. In this framework, the first level Objective of the project CaseXtreme is to identify a suitable metric for the Statistical Significance of Changes in the Statistics of Extremes (SSCSE) in order to provide the baseline for the design of innovative financial products and risk management tools.<br><br>***This project also corresponds to the category 'International cooperation and Humanitarian aid'.*** |
| Website | http://climateservices.info/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. AMIGO SRL (IT) |

| CLARA | |
|---|---|
| Title | Climate forecast enabled knowledge services |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2016-TwoStage.<br>Topic code: SC5-01-2016-2017. June 2017 / May 2020 - EUR: 3.459.075,00 GA 730482 |
| Abstract | Climate variability and change (CVC) embody sizeable economic, social and environmental risks in Europe and globally . Climate services (CSs) (Brasseur and Gallardo, 2016; Brooks, 2013; Lourenco et al., 2015) are essential for catalysing economic and societal transformations that not only reduce these risks and/or improve societal resilience, but also unlock Europe's innovation potential, competitiveness and economic growth. As a part of European efforts to catalyse the potential of climate services for more efficient natural resource management and improved disaster risk management and resilience, the CLARA project will boost innovation and uptake of climate services based on front line seasonal and decadal forecasts and climate projections. Building upon the advancements in climate modelling and science in the context of the Copernicus Climate Change Service (C3S), the CLARA project will illustrate genuine benefits and economic value of CSs in the face of climate variability and short-term climate change. A portfolio of user co-designed and co-developed climate services will help to improve policy and decision makings in the five priority areas GFCS: disaster risk reduction, water resource management, agriculture and food (security), renewable energy sources, and public health. Carefully designed business and marketing strategies will promote their uptake, help to energise the European market with climate services, and foster the European innovation potential. |
| Website | http://www.clara-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (IT)<br>Consortium:<br>2. Apertum IT AB (SE)<br>3. Gecosistema SRL (IT)<br>4. Regione Emilia Romagna (IT)<br>5. DCMR Milieudienst Rijnmond<br>6. Sveriges Meteorologiska och Hydrologiska Institut (SE)<br>7. The Climate Data Factory (FR)<br>8. Istituto Superiore per la Protezione e la Ricerca Ambientale (IT)<br>9. Universidad de Cordoba (ES)<br>10. Agenzia Regionale per la Prevenzione, l'ambiente e l'energia dell'emilia-Romagna (IT)<br>11. Sistemas Abiertos de Informacion Geografica Sociedad Limitada (ES) |

| HydroSocialExtremes | |
|---|---|
| Title | Uncovering the Mutual Shaping of Hydrological Extremes and Society |
| Contract details | European Research Council - Consolidator Grant. Call: ERC-2017-COG. Topic code: ERC-2017-COG. April 2018 / March 2023 - EUR: 1.835.361,00 GA 771678 |
| Abstract | More than 100 million people per year are affected by hydrological extremes, i.e. floods and droughts. Hydrological studies have investigated human impacts on droughts and floods, while conversely social studies have explored human responses to hydrological extremes. Yet, the dynamics resulting from their interplay, i.e. both impacts and responses, have remained poorly understood. Thus, current risk assessment methods do not explicitly account for these dynamics. As a result, while risk reduction strategies built on these methods can work in the short-term, they often lead to unintended consequences in the long-term. As such, this project aims to unravel the mutual shaping of society and hydrological extremes. A combined theoretical and empirical approach will be developed to uncover how the occurrence of hydrological extremes influences society's wealth, institutions and population distribution, while, at the same time, society in turn alters the frequency, magnitude and spatial distribution of hydrological extremes via structural measures of water management and disaster risk reduction. To explore the causal mechanisms underlying this mutual shaping, this project will propose explanatory models as competing hypotheses about the way in which humans drive and respond to droughts and floods. These alternative explanations will be developed and tested through: i) empirical analysis of case studies, and ii) global investigation of numerous sites, taking advantage of the current unprecedented proliferation of worldwide datasets. By combining these different methods, this project is expected to address the gap of fundamental knowledge about the dynamics of risk emerging from the interplay of hydrological extremes and society. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Uppsala Universitet (SE) |

| PROTECT | |
|---|---|
| Title | Propagation of atmospheric ROssby waves - connection to prEdictability of Climate exTremes |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. October 2018 / September 2020 - EUR: 158.121,60 GA 797961 |
| Abstract | Extreme weather events, such as heatwaves, droughts and flooding, have a devastating impact on humanity, causing increased mortality and suffering, as well as economic losses. Skillful predictions of such events, with sufficient lead-time for adaptation procedures can provide huge benefits to humankind. Recent extreme events, including the severe European and Russian heatwaves, have been found to be associated with particular atmospheric wave dynamics, specifically the propagation of Rossby waves along atmospheric waveguides. Our proposed research will explore the seasonal predictability of extreme events through a lens of atmospheric waveguides and Rossby wave propagation. We will answer four key research questions: I. What is the predictability of dominant modes of variability in waveguide geometry? II. How does the frequency of extreme events as a function of location relate to waveguide geometry in both observations and forecast systems? III. How do the results from I and II combine to provide predictability on the likelihood of extreme events? IV. How does model resolution impact Rossby wave propagation and the relationship to extreme events? Both re-analysis (observational) data, and seasonal forecast model data will be used. We will calculate the Rossby refractive index and analyze its spatial and temporal variability, quantifying the predictability in waveguide geometry. Extreme events (heatwaves, cold snaps, droughts and blocking events) will be identified in the datasets, with lag-lead regression and composites revealing the connections to the waveguide geometry. We will create empirical models to predict the frequency of extreme events, evaluate their reliability, and compare to these to existing dynamical forecasts. Our goal is to harness the increased understanding of climate extremes that atmospheric dynamics can bring, to help improve the predictability of extreme events, reducing their human and societal impacts. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Barcelona Supercomputing Center - Centro Nacional De Supercomputacion (ES) |

| SINCERE | |
|---|---|
| Title | Strengthening INternational Cooperation on climatE change REsearch |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2017-OneStageB.<br>Topic code: SC5-31-2017. February 2018 / January 2022 - EUR: 2.224.225,00 GA 776609 |
| Abstract | SINCERE, consistent with the EU research and innovation policy, will strengthen open international climate change research and innovation cooperation involving European partners in support of the implementation of the Paris Climate Agreement, including in the broader context of the Sendai Framework for Disaster reduction and the UN Sustainable Development Goals. SINCERE aims to strengthen the delivery of the JPI Climate Strategic Research and Innovation Agenda (SRIA), building on existing collaborations, such as with other JPIs, the business sector and global financial institutions, and other key international research, policy and societal actors. Expanding JPI Climate to include member countries in Eastern Europe is a particular goal. Two Flagship Actions, focused on the design of research and innovation collaborations in Africa and Latin America, aim to expand and deepen knowledge to support the uptake of climate change adaptation and mitigation policies, climate services and resilience to disasters linked to climate change. Targeted activities supported by an innovative outreach programme will enhance the international impact of JPI Climate research and innovation activities supporting both global science programmes and policy processes. SINCERE is uniquely positioned to internationalise European climate change research and innovation collaboration, bringing together major national European research funding organizations represented in JPI Climate and a number of research performing organisations mandated by JPI Climate Governing Board members, along with new partners, including two international partners. SINCERE partners have contributed to setting up and implementing the JPI Climate SRIA. This brings the advantages of trust and ease of communication between SINCERE and the governance of JPI Climate, notably the Governing Board and its Executive Committee, as well as the Central Secretariat, which is based at the same institution as the SINCERE coordinator. |
| Website | http://www.jpi-climate.eu/sincere |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Service Public Federal de Programmation Politique Scientifique (BE)<br>Consortium<br>2. Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NL)<br>3. Aarhus Universitet (DK)<br>4. Institutul de Ecologie si Geografie (MD)<br>5. Economic and Social Research Council (UK)<br>6. Ministerio de Economia, Industria y Competitividad (ES)<br>7. Deutsches Zentrum Fuer Luft - und Raumfahrt EV (DE)<br>8. Norges Forskningsrad (NO)<br>9. Universitaet fuer Bodenkultur Wien (AT)<br>10. Danmarks Tekniske Universitet (DK)<br>11. Eidgenoessisches Departement des Innern (CH)<br>12. Ilmatieteen Laitos (FI)<br>13. Environmental Protection Agency of Ireland (IE)<br>14. The Chancellor, Masters and Scholars of the University of Oxford (UK)<br>15. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (IT)<br>16. Institut de Recherche pour le Developpement (FR)<br>17. Centre National de la Recherche Scientifique (FR)<br>18. Ministrstvo za izobrazevanje, znanost in sport (SL)<br>19. Ministerio de Ciencia, Tecnología e Innovación Productiva (AR)<br>20. Stichting Wageningen Research (NL) |

## The projects were complemented by the following projects funded by DG Echo:

| EXTREMA | |
|---|---|
| Title | EXTReme tEMperature Alerts for Europe (EXTREMA) |
| Contract details | 2017/PREV/783180 01/01/2018 - 31/12/2019; EUR: 572306.74 |
| Abstract | EXTREMA aims to improve the resilience of the European population to extreme temperature events (heatwaves and cold spells). To maintain an acceptable quality of life for the foreseeable future, Europe has to increase the population's resilience to extreme temperatures. Increased awareness induces self-protective behaviours that in turn reduce the loss of life. To that end, EXTREMA proposes a new innovative and effective approach that aims to exploit the high penetration of smartphones in Europe in the form of a mobile application for the public, and an administration web hub for the local authorities. The mobile app will evaluate the real-time personalised health risk of the user at his/her location, and if high, it will alert him/her and provide recommendations. The web hub will provide information and tools to the authorities to help them manage the disaster: next day alerts, current hazard maps, and an information management tool for the open centres. EXTREMA, through its beneficiaries, has secured access to several important international city networks (Internal classification of DG Echo is URBAN RESILIENCE) |
| Website | http://aratos-systems.com/about%20us.html |

| EXTREMA | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator: NATIONAL OBSERVATORY OF ATHENS (GR) Leoforos Nymfon, P.O.Box 11810 Theseio GR-20048 ATHENS GREECE<br>Consortium:<br>1. National and Kapodistrion University of Athens (GR)<br>2. Oulun Yliopisto (FI)<br>3. Aratos Systems B.V.(NL)<br>4. ANYSOLUTION SL (ES)<br>5. Petropoulos Georgios & CO (GR)<br>6. Municipality of Athens – Epicheirisi Michanografisis (GR)<br>7. Law and Internet Foundation (BG) |

## The projects were complemented by the following projects funded by INTERREG program:

| DERMR | |
|---|---|
| Title | DEVELOPMENT OF ENVIRONMENTAL RISK MANEGEMENT RESOURCES |
| Contract details | 2014 - 2020 INTERREG V-A Latvia - Lithuania 01/04/2017 - 31/03/2019 |
| Abstract | Jelgava City Council, Siauliai City Municipality Administration, State Fire and Rescue Service of Latvia and Siauliai county Fire and Rescue board are developed Parnership to apply for "Interreg V-A Latvia-Lithuania Programme 2014-2020" call proposal. During period of April 2017 till April 2019 going to provide joint contribution to develop environmental risk management resources in Latvia-Lithuania cross-border region in order to undertake effective environmental protection measures as they have common signifficant terittorial challanges - disasters of fire in border region of Latvia and Lithuania and the cities of Project area do not provide complete security from environmental/civil disasters. Established and developed cooperation and common border-region identity opens a potential to significant common development to provide efficient detection of potential risks and operational information flow, effective environmental/civil protection, disaster damage and pollution prevention, mitigation, elimination and remediation as well as improve of communities; knowledge in the fields of environmental and civil protection and provided huge potential to build public awareness to avoid, prevent and warn of environmental/civil risks. The Project challanges main terget for secure, sustainable and clean environment. |
| Website | http://latlit.eu/lli-232-development-of-environmental-management-resources-dermr/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Jelgava City Council (LV)<br>Consortium members:<br>2. Siauliai county Fire and Rescue board (LT);<br>3. Siauliai City Municipality Administration (LT);<br>4. State Fire and Rescue Service of Latvia (LV) |

| DJ-VR: R.A.E.S | |
|---|---|
| Title | Co-ordinated and efficient reactions of the authorities in the emergency situations in Dolj-Vratsa region |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 22/12/2017 - 21/12/2020 |
| Abstract | The project is addressing the effects of the climate change upon the environment of DJ-VR and the common threats of natural and anthropic disasters they have to be prepared for at cross-border level, having a total eligible budget of 6,000,000 euro, to which 817,771.21 euro non-eligible are added. The project is strengthening the joint risk management system by providing performant intervention and rescue equipment able to fight disasters and other natural hazards. For coordination, the project is establishing one operational base in each county, which will have well-trained human resources within joint exercises. The project is also addressing the low coordination among all stakeholders and the insufficient population preparedness for risk situations. Its objective is improving the joint risk management in DJ-VR area. The main activities are: establishment and endowment of the Unit for Emergency Situations Interventions in cross border area, Craiova and of a Cross-border Point for improving the mitigation capacity in emergency situations and disasters in Vratsa; joint exercises, including trainings, in Dolj (aviation disaster) and in Vratsa (floods); awareness raising campaign for public and also for stakeholders involved in joint risk management; information and publicity. The result will be an improved joint risk in DJ-VR area, through a better joint response capacity, preparedness and trained human resources, along with connection among stakeholders and with communities. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. DOLJ COUNTY COUNCIL (RO)<br>Consortium members:<br>2. Municipality of Vratsa (BG) |

### 1.2.2 Flood risks

Flood early warning and alert systems, and more generally flood risk management operations have been subject to a wide range of research projects funded by various programmes. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Flood risks | CORFU<br>DCGGEOPHYS<br>FLADAR<br>FLOODCHANGE<br>FLOODIS<br>FLOODPROBE<br>FLOODSAT<br>FLOODSTAND<br>IMPRINTS<br>INFLATER<br>INFLATER-DEMO<br>MAN-U<br>SMARTEST<br>STARFLOOD<br>URBANFLOOD |

| DAREnet | |
|---|---|
| Title | DAnube river region Resillience Exchange network |
| Contract details | Secure Societies Call: H2020-SEC-2016-2017-1 Topic code: SEC-21-GM-2016-2017<br>September 2017 / August 2022 - EUR: 3.500.000,00 GA 740750 |
| Abstract | The DAREnet project is to support flood management practitioners across the EU Danube River region and from different disciplines to deepen and broaden their Research, Development and Innovation related collaboration (=RDI). DAREnet will build a multi-disciplinary community of practitioners, operating in a network of civil protection organisations, and supported by a broad range of stakeholders from policy, industry and research. Together they will build a transnational and interdisciplinary ecosystem to foster synergies, innovation and its uptake. One of the key-results of DAREnet will be a regularly updated RDI Roadmap highlighting promising innovation opportunities to cope with the main environmental and societal challenges of the region. It will provide concrete perspectives for the further development, industrialisation and uptake of innovations of highest relevance for practitioners. The Roadmap will be the result of a systematic assessment and prioritisation of promising innovations, including standardisation to foster the development of common capabilities. The RDI Roadmap will also lay the basis for concrete innovation initiatives, practitioner-driven and "bottom-up", building a unique portfolio of joint innovation concepts for the Danube river region. To reach sustainable impact, DAREnet will draw upon synergies with the modules and facilities of the EUCPM and the regional strategies for flood prevention and risk management of the ICPDR and EUSDR. DAREnet will promote the RDI Roadmap and Portfolio to political key-stakeholders on national, regional and European level, and will also prospect institutional options to ensure the continuity of the DAREnet innovation process after project end.<br><br>***This project also corresponds to the category 'Roadmaps'.*** |
| Website | http://www.mpvsz.hu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Bundesministerium des Innern (DE)<br>Consortium:<br>2. Arttic (FR)<br>3. Deutsches Zentrum Fuer Luft- und Raumfahrt EV (DE)<br>4. Drzavna uprava za zastitu i spasavanje (HR)<br>5. Fundatia Centrul National Appel Pentru Managementul Dezastrelor (RO)<br>6. Hungarian Civil Protection Association (HU)<br>7. International Commission for the Protection of the Danube River (AT)<br>8. Isem-Institut Pre Medzinarodnu Bezpecnost a Krizove Riadenie, No (SK)<br>9. Itti sp Zoo (PL)<br>10. Ministarstvo Unutrasnjih Poslova Republike Srbije (RS)<br>11. Osterreichisches Rotes Kreuz (AT)<br>12. Stad Geel (BE)<br>13. Universitet U Beogradu, Fakultet Bezbednosti (RS)<br>14. Главна дирекция "Пожарна безопасност и защита на населението" (BG) |

| FLOODARC | |
|---|---|
| Title | Understanding long-term FLOOD pattern variability in Western Mediterranean using natural ARChives |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. April 2019 / March 2021 - EUR: 185.076,00 GA 796752 |
| Abstract | Society is becoming more vulnerable to natural climate variability through increasing exposure of people and infrastructure. Notably, floods are among the most destructive natural hazards causing widespread loss of life, damage to infrastructure and economic deprivation. Robust knowledge about their future trends is therefore crucial for the sustainable development of societies worldwide, particularly in sensitive areas such as Western Mediterranean. This Marie Sklodowska-Curie Action (MSCA) aims to provide a more comprehensive understanding of the long-term variability of hazardous (high-impact) floods at different temporal and spatial scales. Through this action the Experienced Researcher (ER) will work within the Hydro-Meteorology, Climate and Society Interactions (HMCIS) group at the Host Institution (IGE) to develop a high-impact flood database in Western Mediterranean. State-of-the art statistical tools applied to the flood database will allow the ER i) to evaluate, for the first time, the causes of non-stationarity in the long-term flood pattern evolution at a sub-continental scale and; ii) to investigate the role of the climate variability on the high-impact flood patterns at centennial to millennial time-scales in W Mediterranean. The ER has expertise in high-resolution proxies of flood events contained in lacustrine and fluvial sediments. He aims to obtain specific training in geo-statistical tools applied to Flood Hydrology at the Host Organization. This MSCA project will significantly contribute to the career development of the researcher and will enhance our current understanding of the natural variability of floods and its trace in the sedimentary record. Therefore, this study will help to address major concerns in relation to flood hazards and adaptation strategies in line with the European engagement with climate change (EU report 2012, Horizon 2020, Climate Action) and the EU Floods directive (2007/60/EC). |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universite Grenoble Alpes (FR) |

| INUNDO | |
|---|---|
| Title | INUNDO - The European Flood Database |
| Contract details | Industrial Leadership – Innovation in SMEs. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-04-2016-2017. June 2016 / November 2016 - EUR: 50.000,00 GA 729401 |
| Abstract | Flood disasters are a continued global threat and the related costs, from mitigation through to economic losses, continue to climb. Overall losses due to the large European summer floods of 2013 reached almost 15 billion Euros. INUNDO provides accurate, current and historical flood spatial information for risk modelling to help (re-)insurance companies improve their existing risk assessment processes. INUNDO fills the geospatial information gap missing in today's risk models and facilitates the impact assessment during and after large flood events. The objective of INUNDO is to create, validate, update, organise, license, and provide access to geospatial flood disaster information based on Earth Observations, meteorological data, and social media for the insurance industry to enhance their risk modelling and reduce their expenses. Our target market are (re-)insurance companies and related businesses developing and using natural hazard models. Such users are global players and could eventually help INUNDO expand to markets on other continents. INUNDO is expected to impact the flood disaster risk insurance market because selling more accurate geospatial flood disaster information to insurance companies will provide the necessary details to improve flood risk related insurance analysis. INUNDO sells business-to-business information to enhance risk models, to allow tailored premiums, and eventually to reduce losses for insurances as well as exposed citizens. INUNDO is a business opportunity for us and a great benefit for Europe.<br><br>***This project also corresponds to the category 'EO Support'.*** |
| Website | http://www.terranea.de/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Terranea Ug (Haftungsbeschrankt) Gmbh (DE)<br>Consortium:<br>2. Eoxplore Ug (Haftungsbeschrankt) Gmbh (DE)<br>3. Kozyra Regina Maria (PL) |

| k-NOW-casting | |
|---|---|
| Title | k-NOW-casting |
| Contract details | Industrial Leadership – Innovation in SMEs. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-01-2016-2017. July 2016 / December 2016 - EUR: 50.000,00 GA 728651 |
| Abstract | Environmental monitoring is a key element of the EU agenda and its market is estimated to grow at a CAGR of 5.4% by 2018. Artys offers a disruptive Decision Support Service - DSS, to manage emergencies caused by extreme weather events, based on the analysis of Smart Rainfall System – SRS' measurements. SRS is the only nowcasting system (IT patented, EU pending; Artys uniquely owes its rights) providing real-time spatial rainfall maps on a detailed scale, by means of the analysis of satellite television's signals, received by commercial parabolic antennas. Artys provides real-time evidences on hydrological risks related to intense rainfall, integrating SRS with other real-time sensor networks (monitoring e.g. rivers' level and landslides), allowing timely alert validations and communications to citizens. Artys' services are a new dynamic risk evaluation tool for public and private entities; our business model is focused on value added services (loan for use for the HW and multiannual subscription for services). That's a disruptive market approach, because we make customers spread their investments, breaking market barriers. Artys has the ambition to become a reference EU service centre for nowcasting & alert validation. The feasibility study will analyse public (e.g. Civil Protection and Municipalities) and private (e.g. agriculture, industry, transports, aqueducts and waterways, mines and dumps, insurances) sectors, identify different classes of target customers, define marketing & communication strategy and market potentials. The good business models to face all the identified market segments will be identified, as well as a long-term strategy, insisting on the following issues: commercial plan, IPR, strategic partnerships, distribution channels, hiring policies. An operative plan for the pilots to be activated in PHASE2 (user sectors & target areas, needs & requirements, endorsers & partners) will be defined. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. ARTYS SRL (IT) |

| STARFLOOD | |
|---|---|
| Title | Space-Time scAling of the Rainfall to FLOOD transformation |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. August 2018 / July 2020 - EUR: 166.156,80 GA 793558 |
| Abstract | Floods are among the costliest of all natural hazards. The June 2013 flood in Central Europe, for example, incurred more than EUR 12 billion of economic losses, and flood risks are expected to increase significantly in the future. Reliable approaches for estimating flood probabilities in space and time are needed for optimising flood risk management. For almost a century, the standard method of flood estimation has been the purely statistical "flood frequency analysis". The method does not account for the spatio-temporal behaviour of floods which, however, is essential for trans-regional flood planning as stipulated in the EU Flood Directive (2007/60/EC). Also, flooding is a physical process in space and time, so future flood risk assessment requires a better understanding of the physical basis behind the space-time characteristics of flood probabilities. These have been explored only by a few studies, e.g. by coupling weather models with runoff models, but only at small spatial scales and ignoring the space-time characteristics of the weather fields, hydrological processes and flood peaks. My project "Space-Time scAling of the Rainfall to FLOOD transformation" (STARFLOOD) responds to this research gap by investigating, for the first time, how the probabilities of rainfall transform into probabilities of floods from a space-time perspective, and how they can be simulated by space-time stochastic weather models at large spatial scales. STARFLOOD is highly innovative as it (i) explores the performance of the full cascade of rainfall to flood probabilities, (ii) explores the physical causes of flood probabilities and (iii) significantly improves the understanding of the scaling behaviour of hydrological processes. STARFLOOD will become a pioneering framework for the improved implementation of the EU Flood Directive and thus significantly advance future trans-regional flood risk management across Europe. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Technische Universitaet Wien (AT) |

The projects were complemented by the following projects funded by INTERREG program:

| ADAPT | |
|---|---|
| Title | Assisting the adaptation to climate change of urban systems in the cross-border space |
| Contract details | 2014 - 2020 INTERREG V-A Italy - France (Maritime) 02/01/2017 - 01/01/2020 |
| Abstract | The challenges posed by climate change in urban environments are mainly attributable to sudden and intense rainfall, which is increasingly frequent in the cross-border area. Excessive waterproofing of cities actually amplifies the negative impact of this rainfall, contributing to the occurrence of flood disasters. Based on the know-how created by certain projects funded by PO IFM 07-13, ADAPT will provide the cross-border area with a joint plan for the prevention and reduction of risks arising from climate change with reference to urban floods, an effective tool for 1) management and governance, 2) reinforcing the knowledge and skills of institutional players and 3) communication and involvement of civil society. The ADAPT action plan is characterised by the joint and innovative approach of co-creation and experimentation between partners of integrated management and monitoring systems for adapting cities to climate change, contributing directly to achieving the objectives of Europe 2020, COP 1, the CSF 14-20 of the Cohesion Policy and LIFE 14-20, as well as the application of European Union environmental and climatic legislation. Under the coordination and supervision of ANCI Toscana, the partners will undertake local pilot actions useful for improving the resilience of the project territory and the cross-border area, as the urban environments of the cooperation zone will show similar flood disasters in the presence of intense meteorological phenomena. Furthermore, thanks to the joint pathway and the ability to standardise the process and the procedures for implementing the project, the ADAPT action plan and the pilot actions can be used as examples of good practice and guideline documents for all urban environments with climatic profiles, morphological and socio-economic characteristics similar to those of the territorial systems involved in the project. |
| Website | http://interreg-maritime.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Associazione Nazionale Comuni Italiani Toscana (IT)<br>Consortium members:<br>2. Stockholm County Council (SE);<br>3. The Government of Åland (FI);<br>4. Comune di Livorno (IT);<br>5. Comune di Rosignano Marittimo (IT);<br>6. CISPEL (IT);<br>7. Comune di Alghero (IT);<br>8. Comune di Sassari (IT);<br>9. Comune di Oristano (IT);<br>10. Comune di La Spezia (IT);<br>11. Comune di Savona (IT);<br>12. Comune di Vado Ligure (IT);<br>13. Communauté d''Agglomération de Bastia (FR);<br>14. Mairie d''Ajaccio (ET);<br>15. Département du Var (FR);<br>16. Fondazione CIMA – Centro Internazionale in Monitoraggio Ambientale (IT) |

| FLOODRESC | |
|---|---|
| Title | Logistic support system for flood crisis management in the Hernád/Hornád catchment |
| Contract details | 2014 - 2020 INTERREG V-A Slovakia - Hungary 01/11/2017 - 31/10/2019 |
| Abstract | The aim of the project is to support the disaster management authorities of B-A-Z and Kosice county and to improve the efficiency of their activities in case of flooding by the development of a demonstrative GIS tool. The project includes flood modelling to predict the size and location of the flooded area, the analysis of effects of floods on the natural and human environment, the optimization and planning of logistic tasks, and the handling of public health and epidemic effects of floods. The target area is the catchment area of Hernád/Hornád river. Due to the cross-border nature of disasters, the project objectives could be achieved more efficiently by the framework of a Hungarian-Slovakian joint cooperation. The results of the project will ensure prompt data and information to support the decision making of disaster management authorities, and provide a potentially secure environment for the inhabitants and enterprises. To achieve these aims, an integrated, multi-purpose GIS database will be developed, including all data necessary for flood modelling, the spatial data layers of key objects, buildings, infrastructural elements, available equipment and resources in sufficient detail. The flood modelling tool - on the basis of GIS database - will be capable to predict the extent of flooded area occurred by a potential dam failure. On the basis of the database and outputs of flood modelling, a logistical modelling tool will be developed to optimize and plan the logistics tasks and activities (e.g. transportation, evacuation). An EIA and a disaster-medicine protocol will be elaborated as well to manage better the public health and epidemic effects of floods. The entire decision support tool will be capable to provide up to date information for the disaster management authorities to make better decisions. The project objectives are in line with 2000/60/EC directive, establishing a framework for community action in the field of water policy (3), (23), Article 1). |

| FLOODRESC | |
|---|---|
| Website | http://www.skhu.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Miskolci Egyetem (HU)<br>Consortium members:<br>2. Technická univerzita v Košiciach (SK);<br>3. Vysoká škola bezpečnostného manažérstva v Košiciach (SK);<br>4. Holocén Természetvédelmi Egyesület (HU);<br>5. Borsod-Abaúj-Zemplén Megyei Katasztrófavédelmi Igazgatóság (HU) |

| FRISCO1 | |
|---|---|
| Title | Cross-Border Harmonized Slovenian-Croatian Flood Risk Reduction 1 - Non-Structural Measures |
| Contract details | 2014 - 2020 INTERREG V-A Slovenia - Croatia 11/04/2016 - 10/04/2019 |
| Abstract | The risk of floods is considered the greatest risk with the highest cross-border effect and need for joined risk management. The cross-border programme intends to focus to the river basins and flood risk management issues that can only be addressed through joint intervention of Slovenian and Croatian water authorities. Through its Priority Axis (PA) 1, Integrated Flood Risk Management in Transboundary River Basins, the Cooperation Programme provides an unique opportunity for these authorities to improve the transboundary flood risk management and achieve a reduction of flood risks. This Project (Flood RIsk Slovenia-Croatia Operations - Strategic Project 1 - Nonstructural Measures (FRISCO1)), will serve two key purposes: to improve coordinated flood risk management and reduce flood risks through implementation of non-structural measures, and to prepare documentation (studies and design) for the optimal structural measures that will be implemented in subsequent strategic project or projects. The main outputs will be sets of joint models, maps and tools for each of the six target transboundary river basins (Kupa/Kolpa, Sutla/Sotla, Drava, Mura, Dragonja and Bregana) with the associated design documentation for optimal structural measures, improved physical alert systems, and the outputs of awareness rising/capacity building activities. The Project will address the needs of a wide range of target groups, and the ultimate beneficiary of the Project is the affected population. The Project's objectives can only be achieved through cross-border cooperation because, in line with the Floods Directive, the flood risk management planning should be done following the river basin approach in order to determine the optimal measures. The Project is original because of its comprehensiveness, both in terms of the spatial coverage (all transboundary river basins) and in terms of the scope of the measures (all key non-structural measures covering preparedness, prevention and response). |
| Website | http://www.si-hr.eu/en2/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Croatian Waters (HR)<br>Consortium members:<br>2. Meteorological and Hydrological Service (HR);<br>3. Ministry of the Environment and Spatial Planning (SI);<br>4. Agency of the Republic of Slovenia for the Environment (SI);<br>5. National Protection and Rescue Directorate (HR);<br>6. Slovenian Water agency (SI);<br>7. 7. Administration of the Republic of Slovenia for Civil Protection and Disaster Relief (SI);<br>8. Institute for Hydraulic Research (SI) |

| PLATFORM | |
|---|---|
| Title | Proactive Lajta/Leitha Flood Risk Management |
| Contract details | 2014 - 2020 INTERREG V-A Austria - Hungary 01/07/2016 - 31/12/2018 |
| Abstract | In the last decades the joint river basin of the Leitha/Lajta River has been affected by several floods which caused widespread damage in the neighbouring regions of Austria and Hungary. The flood risk in the border region can only be reduced efficiently by transnational and coordinated flood risk management as stipulated in the EU Flood Directive.<br/>The necessary basic information, preliminary flood routing calculations and possible measures have been elaborated within the former "Ceframe" project and a bilateral Memorandum was signed with recommendations for future cooperation. Since the APSFR areas are not aligned at the border in this area, further common strategic activities are necessary for the adjustment of the safety level to the particular requirements of each of the two countries. The flood propagation of the last 37 km of the Leitha/Lajta river is a complex process where inundations, reservoirs, and several riverbeds are effective. Both countries' measures influence reciprocally the local conditions. Only coordinated efforts lead to mutual benefits.<br/>The main objective of the project is the implementation of the bilateral Memorandum for strategic flood risk management: support the Austrian-Hungarian Water Commission (AHWC) decision making procedure with necessary investigations and calculations, fix already known problems with direct field measures, involve and exchange information with the local communities, prepare up-to-date plans for the forecasted circumstances with the essential incorporation of the ecological aspects.<br/>It is a unique opportunity to establish a tangible international flood risk management strategy, where the integrated solutions really serve the regulations of the EU Flood Directive, Water Framework Directive and Habitat Directive. Furthermore the results fit the demands from the local till the macro-regional level. |

| PLATFORM | |
|---|---|
| Website | |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. North-Transdanubian Water Directorate (HU)<br>Consortium members:<br>2. PROVINCIAL GOVERNMENT BURGENLAND (AT) |

| PROTERINA-3 | |
|---|---|
| Title | The third step in protecting the territory from natural risks: participatory evolution |
| Contract details | 2014 - 2020 INTERREG V-A Italy - France (Maritime) 01/01/2017 - 31/12/2019 |
| Abstract | Proterina-3Évolution, an evolution of what was carried out in the 2007-2013 programme with the projects PROTERINA-Due, RESMAR and PROTERINA-C, is a project aimed at improving institutions' abilities to jointly prevent and manage flood risk. The general objective of the project is to reinforce the response capacity of the territory at risk of flooding through building awareness among institutions and communities. Specific objectives: - Improve the efficacy of the preventive measures against flood risk through the cross-border and trans-regional involvement of the institutional levels and the communities that actively make themselves available for a process of increasing awareness of the risk on their territory; - Strengthen the monitoring networks and integrate the data acquired into early warning models by capitalising on the results of the previous programme; - Increase the cross-border capacity for adaptation to climate change through the development of resilient communities. The beneficiaries (direct or indirect) are the responsible Authorities in the field of civil protection, soil and water cycle defence, the organisations that carry out forecasting and monitoring of meteorological phenomena and the citizens actively involved in decisional processes. The key words that describe the approach and the innovative nature of the project are: - Participatory. Participation, inclusion and involvement of population and administrators, as a tool for creating resilient communities: as per the objective of PROTERINA-Due, it is becoming an international model; - Cross-border. Flood events may be best managed by creating a system of shared skills and resources; - Consolidated. The project capitalises on and develops on how much good has been done in this area in previous Programmes in order to implement further effective actions. |
| Website | http://interreg-maritime.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Fondazione CIMA – Centro Internazionale in Monitoraggio Ambientale (IT)<br>Consortium members:<br>2. Regione Liguria (IT);<br>3. Città Metropolitana di Genova (IT);<br>4. Office de l''Environnement de la Corse (FR);<br>5. Mairie d'Ajaccio (ET);<br>6. Service Départemental d'Incendie et de Secours de la Haute-Corse (FR);<br>7. Conseil Régional Provence-Alpes-Côte d'Azur (FR);<br>8. Département du Var (FR);<br>9. Ville de Nice (FR);<br>10. Regione Autonoma della Sardegna- Presidenza (IT);<br>11. Regione Toscana (IT);<br>12. Consorzio LAMMA (IT);<br>13. Associazione Nazionale Comuni Italiani Toscana (IT);<br>14. Autorità di Bacino del Fiume Arno (IT) |

| Raab Flood 4cast | |
|---|---|
| Title | Grenzüberschreitende zeitliche und räumliche Vorhersage von Hochwasser Überflutungsflächen zur Unterstützung der Einsatzplanung des Hochwasser- und Katstrophenschutzes |
| Contract details | 2014 - 2020 INTERREG V-A Austria - Hungary 01/07/2016 - 30/06/2019 |

| Raab Flood 4cast | |
|---|---|
| Abstract | Flood events at both, the Austrian and the Hungarian part of the catchment area of the Raab, cause flooding and, consequently, result in a risk to life and infrastructure. Therefore, it is in the interest of the organizations which are responsible for flood control and disaster management, to inform in case of floods as early as possible, how the expected flooding is going to develop - to plan an efficiently disaster response, even across borders. The overall objective of the project is to reduce the risks of flooding in the catchment area of the Raab significantly by expected flooding in their spatial extent and temporal course are displayed in a to developing warning tool. The core outputs of the project are on the one hand the updated flood forecast model Raab, on the other hand the to be developed warning tool for displaying the expected flooding areas and the necessary precipitation and flooding scenarios catalogs on the Austrian side and the 1D-2D online models on the Hungarian side. There is a huge benefit from these developments on the one hand, for the operator of the forecast models, on the other hand, for the organizations of the flood and disaster management and the affected population of flood. The common approach of the project is to provide dynamic information for the organizations responsible for flood and disaster prevention. With such dynamic information it may predicted, which floods are expected. This information makes it possible to carry out the action planning across borders. This project makes it possible to not only provide flow forecasts at defined water bodies, but also in addition the expected flooding areas. |
| Website | http://www.interreg-athu.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Office of the Styrian Government, Department 14, Water management, resources and sustainability (AT)<br>Consortium members:<br>2. Budapest University of Technology and Economics (HU);<br>3. West-Transdanubian Water Directorate (HU);<br>4. Office of the Burgenland Provincial Government, Division 5 - Building Department, Main Referat Water Management (AT);<br>5. Emergency center Burgenland company (AT);<br>6. North-Transdanubian Water Directorate (HU) |

| RAINMAN | |
|---|---|
| Title | Integrated Heavy Rain Risk Management |
| Contract details | 2014 - 2020 INTERREG VB Central Europe 01/07/2017 - 30/06/2020 |
| Abstract | Risks of heavy rain events are increasing all over central Europe. The devastating impact of extreme rainfalls ranks among the most significant natural risks. RAINMAN aims to improve integrated management capacities of public authorities to mitigate heavy rain events and to reduce health and environmental damages. Partners and stakeholders from the regional, national and EU-level will jointly develop practice-oriented innovative methods and tools intended to map, assess and reduce heavy rain risks with the aim to cut down fatalities and damages. The project will also implement innovative forecast and smart warning tools designed to increase the risk management, emergency responsiveness and mitigation capacities of public institutions responsible for the management of environmental risks. Ultimately, recommendations for the integration of heavy rain risks into the EU floods directive will be developed and presented to the EU working group on floods. |
| Website | http://www.interreg-central.eu |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Saxon State Office for Environment, Agriculture and Geology (DE)<br>Consortium members:<br>2. The Region of South Bohemia (CZ);<br>3. Office of the Styrian Government (AT);<br>4. Environment Agency Austria (AT);<br>5. Saxon State Ministry of the Interior (DE);<br>6. Leibniz Institute of Ecological Urban and Regional Development (DE);<br>7. Middle Tisza District Water Directorate (HU);<br>8. Institute of Meteorology and Water Management - National Research Institute (PL);<br>9. Croatian Waters (HR); 10. T. G. Masaryk Water Research Institute, p.r.i. (CZ) |

| Risk management and flood protection in cross-border regions Calarasi and Polski Trambesh | |
|---|---|
| Title | Risk management and flood protection in cross-border regions Calarasi and Polski Trambesh |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 17/03/2017 - 16/03/2020 |
| Abstract | The project addresses the problem of emergency situations, mainly floods but also all kinds of natural and man made hazards potentially harmful to the environment such as: traffic accidents (e.g. involving tank trucks loaded with dangerous substances which should be immediately removed), unexploded ammunition (which by accidental explosion in case of mishandeling could cause disasters to environment and human life). In what concerns the floods, they are extremely dangerous in both regions envisaged by the project. In Polski Trambesh there are numerous floods on the Yantra river and its tributary Elija. In Calarasi County, more than 1,000 interventions of Inspectorate for Emergency Situations took place over the past 10 years while the overall damage caused by floods in the region amounts to millions of euros. The main problem blocking an effective mitigation of those consequences is the lack of a modern system for forecasting and early warning of flood events. The project main objective is to improve the joint risk management in the cross-border region. The main activities are related to Setting up the Flood Forecasting and Early Warning System in Polski Trambesh, setting up an emergency management system (including early warning and respons actions) in Calarasi County (the system will include an Information System and specialized equipment) and joint activities (exercises and concluding an Action plan). The result of the project will be a better protection of environment and population in the cross-border are against the natural and man-made hazards, thus contributing to the achievement of programme indicators for PA 3. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Municipality of Polski Trambesh (BG)<br>Consortium members:<br>2. Calarasi County Council (RO) |

| LIVING Vecht-Dinkel | |
|---|---|
| Title | LIVING Vecht-Dinkel |
| Contract details | 2014 - 2020 INTERREG V-A Germany - The Netherlands 01/02/2017 - 31/12/2020 |
| Abstract | The main topic in LIVING is the compatibility of and synergy between several different objectives, such as flood protection, regional economic development and environmental protection in the Vecht-Dinkel system. The objectives are realized in eleven measures and projects. Amongst other, the following cross-border results will be pursued in this project; a flood forecasting model to predict floods for the Vecht, a concept for development as well an implemented water retention measure for the Dinkel, improved cycling routes along the Vecht, and the realization of a tourist meeting point near the Vecht. Because of the nature of this project, which surmounts borders and topics, efficient and effective lines of communication between the project partners along the entire river system are necessary. The knowledge exchange between partners is therefore an important part of this project. |
| Website | https://www.deutschland-nederland.eu/home/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Waterschap Vechtstromen (NL) Consortium members:<br>2. Waterschap Drents Overijselse Delta (NL);<br>3. Stichting De Koppel (NL);<br>4. Landkreis Grafschaft Bentheim (DE);<br>5. Vechtdal Marketing (NL);<br>6. Samtgemeinde Emlichheim (DE);<br>7. Naturschutzstiftung Grafschaft Bentheim (DE);<br>8. NLWKN (DE);<br>9. Kreis Borken (DE);<br>10. Partner Provincie Overijssel (NL) |

The projects were complemented by the following projects funded by LIFE+ program:

| LIFE CERSUDS | |
|---|---|
| Title | LIFE CERSUDS - Ceramic Sustainable Urban Drainage System |
| Contract details | LIFE15 CCA/ES/000091<br><br>01-OCT-2016 to 30-SEP -2019<br><br>Total budget: EUR 1,817,972.00; EU contribution: EUR 986,947.00 |
| Abstract | The main objective of LIFE CERSUDS is to improve the resilience of cities to climate change and promote the use of green infrastructure in their urban planning as a means of managing surface water flooding. It aims to achieve this through the development and implementation of a demonstration low-carbon SUDS. The system will consist of an innovative permeable surface with a very low environmental impact, based on the use of tiles with low commercial value. Specific objectives are as follows: - To reduce flooding caused by torrential rain by increasing the number of permeable surfaces in cities; - To reuse water stored during the rainy season for use during periods of drought; - To reduce runoff volumes and peak flows which to treatment plants and receiving water bodies; - To integrate treatment of rainwater into the urban landscape; - To protect water quality by reducing the effects of diffuse pollution and so avoid problems in sewage treatment plants; - To reduce CO2 emissions linked with the manufacture of pavements for SUDS, given that the project will use ceramic materials with low commercial value, giving ceramic tiles manufacturers a new revenue stream; - To provide a SUDS with an aesthetic-quality finish and to prevent ponding, increasing the comfort and safety of streets in rainy weather; - To develop a ceramic SUDS with greater environmental efficiency; - To demonstrate that this ceramic SUDS is suitable for rehabilitating urban areas with light traffic and to enable better management of rainwater in areas with particular geo-economic conditions; - To guarantee transferability beyond the end of the project through training activities and a business plan aimed at engineers, architects and companies, and by increasing local authorities' awareness; and - To generate precise technical documentation to facilitate replication in other cities based on the principles of the LIFE CERSUDS demonstrator. Expected results: The project expects to achieve the following results: - A reduction in runoff through the use of permeable pavements with volumetric yield close to 90%. This will increase resilience to flooding; - A replicable demonstrator with storage capacity for rainwater which can be reused as irrigation water to maintain public spaces in periods of drought. When rainfall is high and the tank filled, the excess water will be redirected to the storm water network; - A major reduction in diffuse pollution and improved water quality compared to traditional systems. The contaminant removal efficiency can be expected to reach more than 70% for hydrocarbons, over 50% for phosphorus, more than 65% for nitrogen and above 60% for heavy metals; - Significant CO2 emissions reductions through the use of stored ceramic material (408 tonnes) with low commercial value to pave the entire surface of the demonstrator (3 000 m2), compared to existing solutions with draining concrete pavement (5 cm layer); Technical documentation on the functioning of the demonstrator and the results achieved to help local and regional governments across Europe include this type of green infrastructure as an option in their urban planning; - Educational materials on ceramic drainage to be disseminated via the six Ceramic Chairs of European Architecture (in Spain, Germany and UK); - More green surfaces in the demonstration area will be irrigated by stored rainwater; - Improved pedestrian safety by reducing the slipperiness of the pavement to a Pendulum UNE-ENV 12633 value of 45 to 65; - A reduction in the urban heat island effect through evaporation of water collected; and - A significant increase in turnover and employment in the ceramic industry in Spain and in other countries targeted for replication of the project, and the creation of new qualifications in this industry. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5665 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Asociación de Investigación de las Industrias Cerámicas (ES)<br>Partners:<br>Consorzio Universitario per la gestione del Centro di Ricerca e Sperimentazione per l'industria ceramica - Centro Ceramico (IT),<br>CHM OBRAS E INFRAESTRUCTURAS S.A. (ES),<br>TRENCADIS DE SEMPRE, S.L. (ES),<br>Centro Tecnológico da Cerâmica e do Vidro (PT),<br>Universitat Politècnica de València (ES),<br>Ajuntament de Benicàssim (ES) |

| RainBO Life | |
|---|---|
| Title | RainBO Life - RainBO Life |
| Contract details | LIFE15 CCA/IT/000035<br><br>01-JUL-2016 to 31-JUL -2019<br><br>Total budget: EUR 1,235,745.00; EU contribution: EUR 677,656.00 |

| RainBO Life | |
|---|---|
| Abstract | The RainBO Life project will analyse rainfall phenomena related to climate change and demonstrate its impact in the municipality of Bologna. The main objective of the project is the improvement of knowledge, methods and tools for the understanding and forecast of the potential impact of heavy rains, especially with regard to the hydrological response of small basins and to the vulnerability of assets in the urban area. Additional project objectives include: - Developing an information system to provide territorial and census data, risks maps and information on critical infrastructure and buildings; - Implementing advanced infrastructure for environmental monitoring; - Creating hydro-geological models based on fields of precipitation for the forecasting of flash floods in small basis; - Developing a flexible and scalable software platform to integrate data and models; and - Demonstrating the effectiveness of the proposed methods and tools. The project will contribute to EU policy objectives by supporting the development and implementation of local adaptation strategies and action plans against flood risks. This will be achieved through improved knowledge of the phenomena and the deployment of advanced technologies for environmental monitoring. RainBO life aims to support the implementation of the EU Floods Directive, which requires Member States to assess flooding risk for all watercourses and coast lines, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated countermeasures. Expected results: The project expects to achieve the following results: - Implementation of an advanced monitoring infrastructure aimed at increasing the ability to diagnose actual weather conditions and to predict their evolution, overcoming limits of sensors currently available and improving meteorological forecasting models; - Integration of a software platform of hydrological models to support the evaluation of the hydrological response of small basins and a number of vulnerability models for the main assets in the urban area potentially affected by flooding; - Development of a support system that allows the user to apply models, and development of an adequate knowledge base on the potential impact on vulnerable targets; - Monitoring of evolving conditions and the generation of watch alerts and warnings, using real-time data acquired by the monitoring infrastructure, the weather forecast and modelling; and - Application of prototype monitoring infrastructure and a software platform in the municipality of Bologna. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5671 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Lepida SpA (IT)<br>Partners: Comune di Bologna (IT), Meteorological and Environmental Earth Observation (IT), AGENZIA REGIONALE PER LA PREVENZIONE E L'AMBIENTE DELL'EMILIA-ROMAGNA (IT), NIER Ingegneria S.p.A. (IT) |

| LIFE FRANCA | |
|---|---|
| Title | LIFE FRANCA - Flood Risk ANticipation and Communication in the Alps |
| Contract details | LIFE15 GIC/IT/000030<br><br>01-JUL-2016 to 31-DEC -2019<br><br>Total budget: EUR 1,058,242.00; EU contribution: EUR 630,383.00 |
| Abstract | The LIFE FRANCA project aims to support the anticipation and awareness of flood risk, by identifying shortcomings and developing communication strategies on flood risk in selected areas of the Alps – specifically in the Autonomous Province of Trento. The project will focus particularly on the management of emergencies and attitudes to flood risk. Research has shown that different social groups have different understandings of flood risks and different degrees of acceptance of the necessary management measures). The project will address attitudes linked to the perception of "zero risk" conditions or the total delegation of responsibilities. Specific objectives of the project are: - To improve communications on flood risks, by supporting both providers of information (through training for public bodies) and those who receive the information (through education and awareness raising of different stakeholder groups); - To involve communities and stakeholders and encourage habits that can minimise the risks in a given territory; - To develop an attitude of co-responsibility between public and private actors when it comes to undertaking actions; and - To produce guidelines on communicating and anticipating flood risk. Expected results: The project expects to increase awareness of flood risk and the need for collaborative attitudes among different social actors in vulnerable Alpine areas. It will do this through the creation of long-term sustainable tools that will permanently improve awareness of and preparedness for climate change-related risks. These include the following: - Customised maps of flood risk in case study areas for different user groups (decision makers, technicians/ professionals, general public); - An analysis of how the different target stakeholder groups perceive flood risk; - Creation of a digital platform (app and webGIS module) to disseminate information about flood risk maps and scenarios; - Creation of an educational project with digital interactive exhibits/web media for schoolchildren and their families; - A model of anticipatory governance for flood risk in the Alps, including a support programme for involving stakeholders in anticipatory exercises; - A handbook for flood risk communication designed to be used by public bodies and professional groups in all Alpine regions; - A communication strategy that includes meetings with local communities, public servants and technicians, training events for planning officers, journalists and relevant professional groups (architects, engineers), and a range of information materials (leaflets/videos etc.) hosted on the project's website; and - Development of a collaboration network for preparing wider projects (with and without EU funds) involving other regions and entities (Basin Authority of Eastern Italian Alps, Centro Euro-Mediterraneo sui Cambiamenti Climatici, ARPA Emilia-Romagna, ARPA Veneto, ARPA Valle d'Aosta, ARPA Friuli Venezia Giulia, Fondazione Lombardia per l'Ambiente, and EURAC). |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5677 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Università degli Studi di Trento (IT)<br>Partners:<br>Autorità di Bacino dell' Adige (IT),<br>UNIVERSITA DEGLI STUDI DI PADOVA (IT),<br>Provincia Autonoma di Trento (IT),<br>MUSE – Museo delle Scienze (IT),<br>TRILOGIS SRL (IT) |

| LIFE AERFIT | |
|---|---|
| Title | LIFE AERFIT - Adaptation to extreme rainfall; demonstration of FHVI to prevent damage by urban pluvial flooding This project also corresponds to the category 'Critical infrastructure protection and urban built environment: Resilience (Resilience of urban built environments, including cultural heritage)'. |
| Contract details | LIFE15 CCA/NL/000052<br><br>01-JUL-2016 to 30-JUN -2021<br><br>Total budget: EUR 4,076,462.00; EU contribution: EUR 2,445,875.00 |
| Abstract | Climate change scenarios predict more frequent and larger extremes in rainfall. Already, cities in the EU face damage from pluvial flooding. Damages will increase due to climate change and continuing urbanisation. Urban pluvial flooding is a major problem that urgently requires effective, sustainable and cost-effective solutions. Putten regularly encounters climate change-induced problems with pluvial flooding. During heavy rainfall, large parts of the village are flooded. Heavy rainfall also regularly leads to discharge of untreated sewage into Lake Veluwe ("Veluwemeer") directly from the town, or from a forced bypass of the wastewater treatment plant. Putten has developed a comprehensive strategy to reduce disturbance and damage from pluvial flooding. Decoupling and infiltration of rainwater is at the heart of this strategy. The town has started decoupling and infiltration using state-of-the-art conventional technologies, and is interested in the Fast High Volume Infiltration (FHVI) technology and its capabilities for infiltration and damage prevention. FHVI directly injects rainwater into a permeable layer or aquifer, at a rate much higher than conventional injection. Thus, discharge capacity of urban rainwater can be vastly improved. FHVI is known from continuous recirculation in the construction sector, using pumps to bring previously pumped up water back into the ground as quickly as possible. A major innovation in the case of rainwater infiltration is the elimination of the pumps and driving infiltration with the pressure of the water column in the infiltration tube only. With its variable terrain, soil conditions and groundwater levels, a demonstration of FHVI would deliver results relevant to many areas in the EU. Small-scale testing has confirmed the ability of FHVI to deal with peak precipitation levels of T10 events (occurring once every 10 years). The technique must now be taken to the demonstration stage on a scale representative for use in a large city, to prove its added value and reliability. Importantly, the city council of Putten has also recently invested in conventional infiltration techniques in part of the town, which can serve as a benchmark for FHVI. LIFE AERFIT aims to demonstrate an innovative adaptation technology to prevent damage from urban pluvial flooding. The main objective is to prove that FHVI is an effective adaptation strategy. In this regard, through the project's actions and applications, the two main objectives are: - To provide sound evidence of the effectiveness of FHVI to deal with extreme rainfall, as well as its wide applicability (i.e. replicability) and favourable implementation costs; and - To disseminate the results and the applicability potential of the project to authorities and professionals throughout the EU. Expected results: The project expects to achieve the following results: - A successful demonstration of the FHVI technique as a cost-effective adaptation strategy for climate change (extreme rainfall) and prevention of damage from pluvial flooding in urban areas; - A reduction of frequency, duration and level of flooding events in Putten, the target being no water on the street at peak precipitation levels of a T10 event corresponding to a total quantity of 36 mm per hour; - Improved quality of effluent at the wastewater treatment plant; - Reduction of 5 200 m3/yr of discharge of excessive, untreated mixed rain and sewer water; - Prevention of desiccation, through 46 800 m3/yr of water added to groundwater reserves; - Resilience to spills (key in this respect is that a spill in a FHVI infiltration well can be 'reversed', i.e. used to pump back spills that penetrated the groundwater); - Dissemination of project and monitoring results to stakeholders and target audiences; - Creation of interest of at least 10 other European cities and municipalities to implement the FHVI technique to adapt to climate change; and - Provision of a blueprint, facilitating rapid replication and transferability to other European cities and municipalities. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5659 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Gemeente Putten<br>Partners:<br>Stichting Toegepast Onderzoek Waterbeheer (NL),<br>Henk van Tongeren B.V. (NL),<br>Hölscher Wasserbau GmbH (DE),<br>Stichting O2DIT-Onderzoek en Ontwikkeling Duurzame Infiltratie Technieken (NL) |

### 1.2.3 Drought risks

In the light of the Water Scarcity and Drought Communication, technological needs have been expressed regarding to drought risk assessment, trend studies and monitoring. Several research projects aimed to respond to these needs, namely projects by the FP7 Environment programme. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Drought risks | DEWFORA<br>DROUGHT-R&SPI |

## Complementing the above, research is continuing under H2020, namely:

| WATER DROP | |
|---|---|
| Title | Droughts and Water Scarcity in the EU: Economic Impact, Adaptation, Policy Implications and Integrated Assessment Modelling (WATER DROP) |
| Contract details | Excellent Science Call: H2020-MSCA-IF-2015 Topic code: MSCA-IF-2015-EF<br>October 2016 / October 2018 - EUR: 168.277,20<br><br>REA - 705408 |
| Abstract | The objective of the research is twofold: on the one hand, obtain quantitative measures of the economic impact of droughts and test for the existence of adapting behaviour and, on the other hand, respond the demands of the IPCC that urge for progress in the integration and modelling of adaptation into climate-economy models. To do so, in a first stage econometric techniques will be apllied envisaged by the new climate-economy literature to regional, European-wide data to obtain estimates of the economic consequences of droughts and unveil potential adapting behaviour. Then, sophisticated climate-economy models, like CGE and IAM models, will be used to shed light into the modelling of adapting behaviour under deterministic and stochastic scenarios. |
| Website | https://www.feem.it/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fondazione Eni Enrico Mattei (IT) |

## The projects were complemented by new projects funded in 2016-2017:

| DRY-2-DRY | |
|---|---|
| Title | Do droughts self-propagate and self-intensify? |
| Contract details | European Research Council - Starting Grant. Call: ERC-2016-STG. Topic code: ERC-2016-STG. February 2017 / January 2022 - EUR: 1.465.000,00 GA 715254 |
| Abstract | Droughts cause agricultural loss, forest mortality and drinking water scarcity. Their predicted increase in recurrence and intensity poses serious threats to future global food security. Several historically unprecedented droughts have already occurred over the last decade in Europe, Australia and the USA. The cost of the ongoing Californian drought is estimated to be about US$3 billion. Still today, the knowledge of how droughts start and evolve remains limited, and so does the understanding of how climate change may affect them. Positive feedbacks from land have been suggested as critical for the occurrence of recent droughts: as rainfall deficits dry out soil and vegetation, the evaporation of land water is reduced, then the local air becomes too dry to yield rainfall, which further enhances drought conditions. Importantly, this is not just a 'local' feedback, as remote regions may rely on evaporated water transported by winds from the drought-affected region. Following this rationale, droughts self-propagate and self-intensify. However, a global capacity to observe these processes is lacking. Furthermore, climate and forecast models are immature when it comes to representing the influences of land on rainfall. Do climate models underestimate this land feedback? If so, future drought aggravation will be greater than currently expected. At the moment, this remains largely speculative, given the limited number of studies of these processes. I propose to use novel in situ and satellite records of soil moisture, evaporation and precipitation, in combination with new mechanistic models that can map water vapour trajectories and explore multi-dimensional feedbacks. DRY-2-DRY will not only advance our fundamental knowledge of the mechanisms triggering droughts, it will also provide independent evidence of the extent to which managing land cover can help 'dampen' drought events, and enable progress towards more accurate short-term and long-term drought forecasts. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universiteit Gent (BE) |

### 1.2.4 Coastal risks

Catastrophic events such as the Xynthia event in France (February 2010) highlighted research needs in the prevention / preparedness of coastal risks (in particular marine submersions), that were reflected in previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Coastal risks | MICORE<br>PEARL<br>RISC-KIT<br>SIM.COAST<br>THESEUS |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of climate change-related coastal risks, which are nevertheless covered by some of the projects described in section 1.2.1.The projects were complemented by the following projects funded by INTERREG program:

| MAREGOT | |
|---|---|
| Title | Managing the Risks of Coastal Erosion and Cross-border Governance Actions |
| Contract details | 2014 - 2020 INTERREG V-A Italy - France (Maritime) 01/02/2017 - 31/01/2020 |
| Abstract | MAREGOT is a project aimed at the joint prevention and management of the risks arising from coastal erosion in the cooperation area. The strategic project intends to activate a shared planning action that, thanks to greater knowledge of erosive phenomena and the dynamics of coastlines, identifies optimal intervention solutions for managing the territory in relation to the morphological and hydro-dynamic characteristics of the cost. The main actors and beneficiaries of the actions are Public Authorities with skills in the field of programming, research centres, private entities involved in the integrated management of the coast and the population. Beginning with the critical analysis of existing monitoring systems and data we will define a cross-border methodology for monitoring. The most effective methods for building a cross-border model will be identified by valorising experiences, including those gained during projects. In line with GIZC principles, geomorphological, anthropological, socio-economic and cultural factors will be considered, with a focus on protecting the land and natural habitats. An innovative cross-border methodology to define the strategies and intervention plans in response to the territories' requirements will be defined. The public authorities involved will gain useful skills for managing the phenomenon of erosion in an integrated way and, by making use of governance processes, will seek out solutions for risk prevention and adaptation to climate changes. The cross-border approach is necessary as the natural dynamics related to erosive phenomena transcend the administrative national borders, are common to the regions in the Programme and require a joint approach. To complete the cross-border strategy awareness-raising initiatives will be activated to increase awareness among the target groups involved in integrated coastal management. |
| Website | http://interreg-maritime.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Regione Liguria (IT)<br>Consortium members:<br>2. Parco Nazionale Cinque Terre (IT);<br>3. Università di Genova (IT);<br>4. Regione Toscana (IT);<br>5. Università di Firenze (IT);<br>6. Laboratorio di Monitoraggio e Modellistica Ambientale per lo sviluppo sostenibile (IT);<br>7. Regione Autonoma Sardegna (IT);<br>8. Agenzia Regionale per la Protezione dell''Ambiente della Sardegna (IT);<br>9. Università di Cagliari (IT);<br>10. Office de l''Environnement de la Corse (FR);<br>11. Bureau de Recherche Géologique et Minières (FR);<br>12. Service Départemental d''Incendie et de Secours de la Haute-Corse (FR);<br>13. Département du Var (FR);<br>14. Conservatoire de l''Espace Littoral et des Rivages Lacustres (FR) |

### 1.2.5 Forest fire risk prevention

Research on forest fires (from both natural and man-made causes) has been funded by several programmes. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Forest fire risk prevention | AF3<br>FIRESENSE<br>FIRESMART<br>FUME<br>PREFER |

This area of research is pursued in H2020 in the framework of several projects, namely:

| FireSpec | |
|---|---|
| Title | Integrated spectroscopic sensors for the risk assessment of fires (FireSpec) |
| Contract details | Excellent Science Call: ERC-2015-PoC Topic code: ERC-PoC-2015<br>March 2016 / September 2017 - EUR: 149.685,00<br><br>ERCEA - 693447 |
| Abstract | FireSpec proposes the concept of an integrated wavelength modulation spectroscopic sensor for mobile, real time hazardous and toxic gas detection applications based on a silicon photonics integrated chip comprising a series of InP lasers, a gasprobe and an InP detector. The wavelengths of the lasers are matched with the mid-infrared (MIR) absorption lines of the gasses to be detected. The concept directly builds upon knowledge and technology developed in the ERC-project Miracle (Mid-InfraRed Active photonic integrated Circuits for Life sciences and Environment). |
| Website | https://www.ugent.be/en |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universiteit Gent (BE) |

| FireAndRiskPrevention | |
|---|---|
| Title | When the smoke clears: predicting and preventing catastrophic erosion and flooding after wildfires in volcanic terrains (FireAndRiskPrevention) |
| Contract details | Excellent Science Call: H2020-MSCA-IF-2014 Topic code: MSCA-IF-2014-EF<br>Augustus 2015 / Augustus 2017 - EUR: 195.454,80<br><br>REA - 655993 |
| Abstract | This project proposes to use an innovative field, laboratory and modelling approach and carefully chosen implementation programme, involving the validation and application of novel erosion-risk tools. Where applied, these tools will reduce risks to lives and properties, for southern European countries, savings of over €375 million per year can be expected. The collaborative work plan, involving global leaders in academia, industry and management, not only provides me with multidisciplinary and inter-sectorial training of the highest standard. It also ensures the application of the best science and effective knowledge transfer from academia to the end-users. |
| Website | http://www.swansea.ac.uk/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Swansea University (UK) |

| GEO-SAFE | |
|---|---|
| Title | Geospatial based Environment for Optimisation Systems Addressing Fire Emergencies (GEO-SAFE)<br><br>***This project also corresponds to the category 'EO support'.*** |
| Contract details | Excellent Science Call: H2020-MSCA-RISE-2015 Topic code: MSCA-RISE-2015<br>February 2016 / February 2020 - EUR: 1.080.000,00<br><br>REA - 691161 |
| Abstract | GEO SAFE aims at creating a network enabling the two regions to exchange knowledge, ideas and experience , thus boosting the progress of wildfires knowledge and the related development of innovative methods for dealing efficiently with such fires. The GEO SAFE project will focus on developing the tools enabling to set up an integrated decision support system optimizing the resources during the response phase through: 1) Developing a dynamic risk cartography of a region with regard to the possibility of a wildfire. The task will involve data collection, risk analysis and development of a tool enabling to forecast fire extension, and in particular to predict fire and risk evolution during the response phase, 2) Designing and testing a resource allocation tool for the response phase using the dynamic risk cartography. One of the problems to consider will be the resource allocation for securing key places given time dependent constraints. Problems will be identified through connections with final users, and the proposed solutions will be tested on simulated data. 3) Developing analyses of relevant management processes as well as training tools in order to facilitate the implementation of such solution to be completed. |
| Website | http://geosafe.lessonsonfire.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. University Of Greenwich (UK)<br>Consortium:<br>2. Bushfire And Natural Hazards Crc Limited (AU)<br>3. Centre National De La Recherche Scientifique Cnrs (FR)<br>4. Entente Pour La Forêt Méditerranéenne (FR)<br>5. Fundacio D'ecologia Del Foc I Gestio D'incendis Pau Costa Alcubierre (ES)<br>6. Royal Melbourne Institute Of Technology*Rmit University (AU)<br>7. Service Departemental D'incendie Et De Secours De La Haute-Corse (FR)<br>8. Universidad Complutense De Madrid (ES)<br>9. Universita Degli Studi Dell'aquila (IT)<br>10. Universita Degli Studi Di Perugia (IT)<br>11. Universite De Geneve (CH)<br>12. Universiteit Twente (NL)<br>13. University Of Melbourne (AU) |

## These projects were complemented by new projects funded in 2016-2017:

| FIRE-IN | |
|---|---|
| Title | FIRE-IN - Fire and Rescue Innovation Network |
| Contract details | Secure Societies Call: H2020-SEC-2016-2017-1 Topic code:SEC-21-GM-2016-2017<br>May 2017 / April 2022 - EUR: 3.496.241,25 GA 740575 |
| Abstract | FIRE-IN has been designed to raise the security level of EU citizens by improving the national and European Fire & Rescue (F&R) capability development process. FIRE-IN addresses the concern that capability-driven research and innovation in this area needs much stronger guidance from practitioners and better exploitation of the technology potentially available for the discipline. We argue that this is to be achieved by practitioners more effectively coordinating on operational needs, on available research and innovation, on standardisation, and on test & demonstration and training. Further, we claim the need for the development of a common research culture that is to be achieved by better cooperation between practitioner and research/industry organisations. FIRE-IN addresses these objectives through four main areas of activity: (i) the identification and harmonisation of operational capability gaps based on the contribution provided by a significant and heterogeneous practitioner network, (ii) the identification of promising solutions to address those gaps through monitoring and screening of research outcomes and the continuous involvement of research and industry representatives, (iii) the definition of a F&R Strategic Research and Standardisation Agenda (SRSA) based on the previous elements as well as (iv) the development of a concept for more efficient use of test & demonstration and training facilities to support innovation and joint skill development. The overarching result of the project will be a proven process for organising F&R capability-driven research based on a wide practitioner and research and innovation network. The network will be linked at cross-domain and cross-border level and will feed harmonised operational requirements (or challenges) into national and EU capability development, i.e. research, innovation, procurement and standardisation programmes. |
| Website | http://fire-in.eu/ |

| FIRE-IN | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Association Pegase (FR)<br>Consortium:<br>2. Bundesministerium des inner (DE)<br>3. Centrum Naukowo-Badawcze Ochrony Przeciwpozarowej Im. Jozefa Tuliszkowskiego - Panstwowy (PL)<br>4. Instytut Badawczy (PL)<br>5. Ceska Asociace Hasicskych Dustojniku Sdruzeni (CZ)<br>6. Departament d'Interior - Generalitat de Catalunya (ES)<br>7. Ecole National Superieure des Officiers de Sapeurs-Pompiers (FR)<br>8. European virtual Insitute for Integrated Risk Management EU Vri Ewiv (DE)<br>9. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>10. Fundacio d'Ecologia Del Foc I Gestio d'Incendis pau Costa Alcubierre (ES)<br>11. Ineris Developpement Sas (FR)<br>12. Inoo Tsd (FR)<br>13. Kentro Meleton Asfaleias (EL)<br>14. Max-Planck-Gesellschaft zur Forderung der Wissenschaften EV (DE)<br>15. Ministerio Dell'Interno (IT)<br>16. Myndigheten for Samhallskydd och beredskap (SE)<br>17. The Council of the Baltic Sea States Secretariat (SE)<br>18. The Main School of Fire Service (PL) |

| DANTE | |
|---|---|
| Title | DANTE: Digital Alarm Network and Tracking Equipment for forest fire detection |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SMEINST-1-2016-2017.<br>Topic code: SMEInst-11-2016-2017. February 2018 / July 2018 - EUR: 50.000,00 GA 807440 |
| Abstract | Wildfires are a global phenomenon which can have a devastating impact on a country's population, economy and environment. Although fire suppression costs are increasing every year, there is still a constant increment in the frequency and severity of wildfires. According to EM-DAT, 5.8 million people are affected worldwide every year by wildfires, with estimated economic costs of 45,000 million Euros. DANTE is the integrated low-cost solution for the early detection of wildfires that has received the awards Copernicus Masters 2017 and ESNC 2017. These are international competitions established on the initiative of ESA, GSA and the Copernicus Programme in which DANTE was rated as a business innovation to address EU challenges and an investment opportunity. DANTE is a prompt alarm system which features advanced methods to report and manage a fire within seconds of its starting. It provides the exact geo-referred coordinates of the fire source, tracks accurately the fire as it evolves and guides the firefighting extinguishing operations as a real-time navigator. The system is compatible with existing emergency control rooms and is managed remotely from either the control room or a smartphone with internet connectivity. DANTE has the potential to halve the yearly budget of public and private entities dedicated to wildfires extinction and detection (estimated to be of 10,600 million Euros extrapolating EM-DAT database). DANTE will be commercialised directly by AD TELECOM, including a network of official distributors to maximise the sales worldwide. This project will enhance the ambition of the company to grow and internationalise, targeting an inter-sectorial market in a B2B and B2B2B business model. First sales are expected in 2019, and the annual turnover is calculated to stay permanently above a million Euros after 2020. The company targets a total sale of 150,000 units within a lifetime of 12 years, which translates to a global turnover of 126 million Euros. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. AD Telecom SL (ES) |

| DroneHopper | |
|---|---|
| Title | DroneHopper: an innovative solution for firefighting through remote-controlled aircrafts. |
| Contract details | Industrial Leadership – Innovation in SMEs / Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-07-2016-2017. February 2017 / July 2017 - EUR: 50.000,00 GA 761656 |
| Abstract | Drone Hopper is remote-controlled aircraft that incorporates a container unit to hold liquids that can be used for firefighting, propelling nebulised liquid to be directed towards land. In Europe, fires destroy millions of hectares of forest woodlands causing the loss of many human and fauna lives and an immense economic damage. The company has created an innovative technology for wildfire extinguishment thanks to a patented release mechanism that convert the water into small water drops (water mist) and mixes it with the air creating a wet air flow that suffocates the fire by removing the oxygen from the chemical combustion reaction. Apart from the technical novelty, there are several operational and economic benefits that make it a viable commercial proposition to compete widely in the market for fire management with its primary customers being the public administrations responsible, or the subcontracted private companies. In addition to the application of the technology in firefighting, the systems are perfectly adaptable to discharge other types of liquid, such as fertilizers and fumigation for agricultural management. The main focus of the feasibility study is to identify the initial high-potential target European markets to trial and launch the service in the first 3 years of commercialization, as well as to assess in more detail the international competitive landscape and identify market risks to determine opportunities and threats. The next step would be to devise a marketing and sales strategy. Forest fires are the most important threat to forest and wooded area in Southern Europe. Our project will face the European challenges proposed by Legislation on protecting the EU's forests against fire. Investments in firefighting and fire prevention is essential. Europe is has supported forest fire research since the late 1980s with the aim of strengthening research activities and initiatives such as Drone Hopper. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Drone Hopper SL (ES) |

| DUF | |
|---|---|
| Title | Deep Learning UAV Networks for Autonomous Forest Firefighting |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. April 2017 / March 2019 - EUR: 145.845,60 GA 752669 |
| Abstract | Thousands of hectares of forest lands are lost to wildfires every year. Utilization of Unmanned Aerial Vehicles (UAVs) is an efficient tool for fighting fires, however the state-of-the-art techniques lack in ability to predict fire spread direction and coordinate multiple UAVs to suppress the fire under limited communication. DUF project aims to apply powerful tools from artificial intelligence domain to UAV firefighting problem, creating an innovative solution for autonomous firefighting, which will reduce the amount of lands lost to fires. DUF will use the deep learning techniques for estimating the fire spread direction from infrared camera streams obtained from UAVs. Deep learning is a mature technology for classical image recognition, but the use of deep learning to learn predictive models for fire spread is a novel approach. After the model is learned, a decentralized approximate dynamic planning algorithm will be utilized to coordinate UAV actions for suppressing the fire. The algorithm development, simulations and first phase of the flight experiments will be conducted at Istanbul Technical University (ITU) Aerospace Research Center (ARC). The project will conclude with flight tests conducted on natural forest fires, with operational support from Forest of Ministry of Turkey. Prof. Ure earned his Ph.D. degree from Massachusetts Institute of Technology, working on advanced UAV projects and collaborating with leading researchers in the world. He has extensive experience on autonomous systems and published more than 30 critically acclaimed journal and conference papers in this subject. Prof. Ure is currently working as assistant professor in ITU and through this innovative multidisciplinary research and with the help of experimental infrastructure provided by the ITU, Prof. Ure is expected to gain maturity in managing research projects and advance his career toward being an esteemed professor in the field of aeronautics and artificial intelligence in Europe. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Istanbul Teknik Universitesi (TR) |

| FIRE | |
|---|---|
| Title | Fighting Insurgency, Ruining the Environment: towards an understanding of the causal relationship between conflict and forest fires |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. September 2018 / August 2020 - EUR: 185.857,20 GA 796086 |
| Abstract | Despite the growing interest in the relationship between environmental degradation and political conflict, most discussions take the direction of causality for granted and try to understand whether or the extent to which environmental factors such as climate change-related drought lead or contribute to violent conflict. The aim of this project is to reverse the causality and look into how conflicts contribute to environmental degradation. It will do this by focusing on forest fires in the Middle East through a detailed study of the cases of Turkey, Syria and Israel. The questions that will be addressed in this context are: (1) Is there a positive correlation between inter- and intra-state conflict and forest fires? (2) How do conflicts affect ecosystems and biodiversity as well as the lives of inhabitants? (3) How are forest fires used discursively by conflicting groups? The proposed project is going to make a significant contribution to the existing literature in five ways: (1) It will explore whether actors deliberately damage the environment to gain the upperhand in a conflict; (2) it will focus on an underexplored aspect of the environment-conflict nexus, forest fires; (3) it will carry out fieldwork in three "non-European" cases which have spillover effects on European societies; (4) it will introduce novel techniques to the study of this problem, notably Geographical Information System (GIS) and digital Remote Sensing (RS); (5) it will combine "hard data" with qualitative analysis obtained through critical discourse analysis, elite interviews, and political ethnography to understand the political, economic and cultural dimensions of the environment-conflict relationship, thereby straddling the lines between natural and social sciences in a truly interdisciplinary spirit. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Lunds Universitet (SE) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| NET RISK WORK | |
|---|---|
| Title | Networking for the European Forest Risk Facility initiative (NET RISK WORK |
| Contract details | 2016/PREV/10 01/01/2017 - 31/11/2018; EUR: 608616 |
| Abstract | Under several climate change scenarios increased risk of different natural disasters seems undergo with higher severity events, new areas affected or new risks interactions. NET RISK WORK wants to provide a platform of knowledge and best experience exchange dealing with four main hazards; wildfire, storms, avalanches and floods. The project will perform a best practices capitalisation process on risk planning and management capabilities, as well as a crosslink assessment on how are these hazards interacting all across Europe. Operational guidelines for natural risk disaster reduction will be delivered meanwhile regional/ thematic networks of expertise will be consolidated at the end of the project. (Internal classification of DG Echo is FOREST FIRES) |
| Website | http://netriskwork.ctfc.cat/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>FOREST SCIENCES CENTRE OF CATALONIA (ES)<br>Consortium:<br>1. 1) European Forest Institute (EFI) (DE)<br>2. Forest Research Institute Baden - Württemberg (DE)<br>3. Regione Autonoma della Sardegna (IT)<br>4. Entente pour la forêt Mediterranéenne (FR)<br>5. Fundació d'Ecologia del Foc i Gestió d'Incendis Pau Costa Alcubierre (ES) |

| ASPIRES | |
|---|---|
| Title | Advanced systems for prevention & early detection of forest fires'' (ASPIRES) |
| Contract details | 2016/PREV/03 ; EUR: 622142 |
| Abstract | The goal of the project is to develop advanced concepts for early detection systems of forest fires that integrates sensor networks and mobile (drone) technologies for data collection and acquisition of those data at existing Crisis Management Information Systems (CMIS). The mobile (drone) technologies will allow covering much larger areas in order to raise the percentage of forest fires detections in area of particular importance, to monitor area with high fire weather index, and to monitor areas already affected by forest fires. Although initially implemented in our test bed in fYR of Macedonia and in our end-users, e.g. Bulgarian Ministry of Interior, our system will be open and available to all European countries. This system will help all CMIS in Europe to develop and to implement different methodologies for initial stage warning, localization and organization of the firefighting teams and tactics to suppress the disaster. (Internal classification of DG Echo is FOREST FIRES) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7476&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>HOCHSCHULE FULDA UNIVERSITY OF APPLIED SCIENCES (DE)<br>Consortium:<br>1. Military Academy, General Mihailo Apostolski Skopje (former Yugoslav Republic of Macedonia)<br>2. Comicon Ltd. (BG)<br>3. InterConsult Bulgaria Ltd (BG)<br>4. National Cluster for Intelligent Transport and Energy Systems (NCITES) (BG) |

## The projects were complemented by the following projects funded by LIFE+ program:

| LIFETEC | |
|---|---|
| Title | LIFETEC - Fighting Forest Fires Using Electronic and Communication Technologies: LIFETEC |
| Contract details | LIFE16 ENV/ES/000559<br><br>01-SEP-2017 to 30-SEP -2020<br><br>Total budget: EUR 1,239,813.00; EU contribution: EUR 659,828.00 |
| Abstract | LIFETEC aims to show that it is possible to use existing meteorological radars to detect forest fires at an early stage, thereby improving the usefulness of EFFIS. The project will also test the use of new communication and navigation systems that can improve the management and coordination of agents involved in fire-fighting, reducing their response time and the forest area burned. The project actions will be implemented in the region of Galicia in north-west Spain, and in Arouca, Portugal. The specific objectives of the project are: - To demonstrate the use of weather radars to detect forest fires at an early stage. For this, it will develop and test new early detection algorithms; and - To use TETRA (Terrestrial Trunked Radio) digital radio for communicating with and coordinating fire-fighting teams. This will avoid the problem of poor network coverage in rural areas that can hinder the use of mobile phone systems. LIFETEC will contribute to the implementation of the EU Regulation on the protection of forests against fire. The system being trialled by this LIFE project has significant scope to be replicated elsewhere. Expected results: - Weather radars to detect 20% of detected fires before other technologies; - Response times to be 20% quicker; - Reduction in the average wooded area burned per fire to no more than 1 ha; - Increase the proportion of fires of up to 1ha by 2%; - Less than 2% of fires to exceed 25 ha. In 2015, 2.55% of fires in Galicia were larger than 25 ha; - A 10% reduction in the use of fire-fighting aircraft; - A 15% reduction in the average area burned per fire and average carbon dioxide emission per fire (compared with fires in 2006-2015– average of 33.38ha); and - 25% less serious accidents compared to total number of intervention hours; and - 25% less time spent fighting forest fires. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6269 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Universidade de Vigo (ES)<br>Partners:<br>Dirección Xeral de Calidade Ambiental e Cambio Climático (ES),<br>Redes de Telecomunicación galegas Retegal S.A. (ES),<br>Axencia para a Modernización Tecnolóxica de Galicia (ES),<br>Instituto Português do Mar e da Atmosfera, I. P. (PT) |

## 1.3 Geological hazards

Research and studies about geological hazards have been mainly undertaken by the Space and Environment programmes, covering tools and technological developments supporting various steps of crisis and disaster risk management.

### 1.3.1 Multi-geo hazard risk prevention, awareness, preparedness, resilience

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-geo hazard risk prevention, awareness, preparedness, resilience | PanGEO |

Geohazard data gathering has been subject to other H2020 projects, namely:

| GEO-RAMP | |
|---|---|
| Title | Geohazards: Risk Assessment, Mitigation and Prevention (GEO-RAMP)<br><br>***This project also corresponds to the category 'Multi-climate hazard risk prevention, awareness, preparedness, resilience'.*** |
| Contract details | Excellent Science Call: H2020-MSCA-RISE-2014 Topic code: MSCA-RISE-2014<br>April 2015 / April 2019 - EUR: 1.804.500,00<br><br>REA - 645665 |
| Abstract | This proposal aims to provide a step change in terms of our capacity to assess and predict risks due to geohazards (landslides and rock slides, earthquakes, floods). The goals of this proposal are: 1) to investigate the key physical-mechanical aspects of major geohazards in order to bridge the current gaps in knowledge and enable a step-change in the current capabilities of risk assessment, prevention, and mitigation; 2) to generate new approaches to predicting geohazards by creating an international, interdisciplinary and intersectoral group which will combine existing knowledge to generate new research methodologies and applications by enabling knowledge exchange among researchers with expertise in complementary research fields; 3) to train several Early Stage Researches (ESRs); 4) to improve the current normative standards and codes ruling geohazard prevention; 5) to provide a competitive edge to European engineering software companies modelling geohazards. |
| Website | http://www.geohazard.ac.uk/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Warwick (UK)<br>Consortium:<br>2. Georgia Institute Of Technology (US)<br>3. Institut Polytechnique De Grenoble (FR)<br>4. Itasca Consultants (FR)<br>5. Itasca Consulting Ltd (UK)<br>6. Tongji University (CN)<br>7. Universidad Mayor De San Simon (BO)<br>8. Universidad Nacional De San Juan (AR)<br>9. Universitaet Fuer Bodenkultur Wien (AT)<br>10. Universitat Politecnica De Catalunya (ES) |

| SUBITOP | |
|---|---|
| Title | Understanding subduction zone topography through modelling of coupled shallow and deep processes (SUBITOP) |
| Contract details | Excellent Science Call: H2020-MSCA-ITN-2015 Topic code: MSCA-ITN-2015-ETN<br>March 2016 / March 2020 - EUR: 3.910.105,80<br><br>REA - 674899 |
| Abstract | The SUBITOP ETN is a framework for training and career development of young researchers in Geodynamics, Geophysics, Geology and Geomorphology. It has a scientific focus on the dynamics of continental margins where tectonic plates are recycled through subduction. The Training Network will imbue 15 young scientists with the ability to address the links between the geological processes within subduction zones and the processes that impact the Earth's surface above, using a comprehensive range of modelling and observation techniques and exploiting the full diversity of active and ancient subduction systems within Europe. This experience-based training is centred on PhD projects, covering a spectrum of topics from the deep mechanics of subduction zones to the erosion of their uplifted topography. |
| Website | http://www.subitop.eu/home/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE)<br>Consortium:<br>2. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>3. Eidgenoessische Technische Hochschule Zuerich (CH)<br>4. The University Of Edinburgh UK)<br>5. Universita Degli Studi Roma Tre (IT)<br>6. Universite De Montpellier (FR)<br>7. Universite De Rennes I (FR)<br>8. Universiteit Utrecht (NL)<br>9. Universitetet I Oslo (NO) |

## These projects were complemented by new projects funded in 2016-2017:

| QSave | |
|---|---|
| Title | QUAKE SAVER: Emergency System for Door opening in any critical condition. |
| Contract details | Secure Societies Call: H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>January 2017 / June 2017 - EUR: 50.000,00 GA 745186 |
| Abstract | A large geographical area of Italian territory, European and international level is known to be subject to natural disasters, such as earthquakes, hydrogeological, landslides. Unfortunately, in many cases, these circumstances have devastating effects on the population, on the basis of these events, the innovative proposal Quake Saver System (acronym QSave), anti-locking door system, it is proposed to strengthen the users' safety standards not only of high seismic risk and hydro territories, but also in the industrialized areas subject to greater stress (arson, attacks, and in some cases the production defects of the exit routes installed). The anti-locking door system, QSave, protected by an industrial patent (N. WO 2015/132758 A1), will soon become a certified anti-seismic system, not-structural, for escape routes, thereby enhancing the resilience of European citizens in cases of exceptional events caused by natural disaster. The QSave prevents the block of the opening door by structural failures, not only generated by earthquakes, but also from defects of building structures which affect the door frame. The QSave device, which is inserted at the top and bottom of the door, can be applied both to new doors to the existing ones. The device has been realized to not compromise the effraction safety of the doors. It does not underestimate the fact that the installation of the anti-lock system is a low cost solution, compatible with any type of locks and leaves intact the design of the door. Lately more and more are presenting the seismic events that jeopardize the security of entire communities/cities, and that is not easy social and economic recovery. The business opportunities that will be addressed after the preparation of an innovative BP, are the large-scale production and marketing of QSave system that will allow an increasing the level of employment youth and will be a little help to increase the G.D.P. (Gross Domestic Product) of European areas. |
| Website | http://www.lfsystemitalia.it/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. LF System Italia Societa a Responsabilita Limitata Semplificata (IT) |

| SLATE | |
|---|---|
| Title | Submarine LAndslides and Their impact on European continental margins |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): support for Innovative Training Networks. Call: H2020-MSCA-ITN-2016. Topic code: MSCA-ITN-2016. April 2017 / March 2021 - EUR: 3.894.543,36 GA 721403 |
| Abstract | The over-arching aim of the SLATE ETN is (i) to understand key factors triggering submarine landslides, the subsequent motion and evolution of failed material, and ensuing geohazards eg tsunamis and (ii) to integrate an innovative broad range of scientific disciplines and private sector needs into a novel training and co-supervision of 15 ESRs. SLATE will focus on investigating submarine landslides and associated geohazards as important natural risks that threaten offshore infrastructures and coastal regions in Europe. Submarine landslides can move much longer than any slope failure on land, and occur on remarkably low gradients, suggesting fundamental and still poorly understood differences from onshore counterparts. A wide spectrum of tectonic and marine environmental settings needs to be investigated. To master this holistic approach, SLATE will bring together a world-class team of leading experts from renowned academic institutions and key non-academic partners with an unusually comprehensive set of interdisciplinary expertise. This ETN comprises experts with outstanding backgrounds in marine geophysics, sedimentology, civil engineering, geotechnics, tsunami research, and hazard assessment as well as marine technology. SLATE partners offer excellent datasets and skills that include field observations, lab experiments, as well as analytical, mathematical and numerical modelling techniques. Training will cover various geoscientific methods, as well as assessment of consequences and impacts on coastal regions and society. Together with various transferable and complementary courses skilled in SLATE, this integrative approach will guide the research of all projects to train a new generation of highly motivated and excellent qualified young scientists to tackle challenges linked to landslide-initiated hazards. SLATE will cover European-wide project with 10 beneficiaries from academia and non-academia (incl. industry) and 4 partner organizations from 6 countries.<br><br>***This project also corresponds to the categories 'Tsunami risks' and 'Landslide risks'.*** |
| Website | http://itn-slate.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Bremen (DE)<br>Consortium:<br>2. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>3. Christian-Albrechts-Universitaet Zu Kiel (DE)<br>4. Consiglio Nazionale Delle Ricerche (IT)<br>5. Control Y Prospecciones Igeotest Sl (ES)<br>6. Institut Francais De Recherche Pour L'exploitation De La Mer (FR)<br>7. Istituto Nazionale Di Oceanografia E Di Geofisica Sperimentale (IT)<br>8. Natural Environment Research Council (UK)<br>9. Stiftelsen Norges Geotekniske Institutt (NO)<br>10. Universitaet Innsbruck (AT)<br>11. University Of Durham (UK) |

## 1.3.2 Volcanic risks

Risk assessment and management related to volcanic eruptions are closely related to observation capacities which space services can offer. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Volcanic risks | APhoRISM<br>CHRONOS<br>EVOSS<br>FUTUREVOLC<br>MED-SUV<br>MIAVITA<br>VUELCO |

These projects have been complemented by the following H2020 projects:

| FEVER | |
|---|---|
| Title | Forecasting the recurrence rate of volcanic eruptions (FEVER) |
| Contract details | Excellent Science Call: ERC-2015-STG Topic code: ERC-StG-2015<br>April 2016 / April 2021 - EUR: 1.458.192,00<br><br>ERCEA - 677493 |
| Abstract | The target of FEVER is to produce a physically based statistical model able to Forecast the recurrence rate of Volcanic Eruptions both at regional and global scale. This project builds on two main directions of research: 1) Thermo-mechanical and statistical modelling targeting the identification of the main physical factors controlling the recurrence rate of volcanic eruptions and 2) we developed a novel method to determine such magma fluxes. The high-gain target of FEVER is to mitigate the impact of volcanic eruptions on our society, by producing research of interest for governmental agencies dealing with location of strategic infrastructures, and for businesses such as aviation. |
| Website | https://www.unige.ch/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universite De Geneve (CH) |

| VOLCAPSE | |
|---|---|
| Title | Volcano dome growth, collapse and coupled processes (VOLCAPSE)<br><br>***This project also corresponds to the category 'Earth-surface ground deformations'.*** |
| Contract details | Excellent Science Call: ERC-2014-CoG Topic code: ERC-CoG-2014<br>September 2015 / September 2020 - EUR: 1.955.355,00<br><br>ERCEA - 646858 |
| Abstract | In VolCapse, small scale displacements (<1 m/yr) at dome building volcanoes will be quantified by new generation satellite radar data. Larger scale displacements (>.1 m/yr) will be determined by time-lapse camera arrays that allow the visual recording of volcano summits from different viewing geometries, together with photogrammetric and image correlation approaches. This displacement data will enable development of statistical and numerical models to investigate (1) how dome displacements affect the further magma extrusion position, (2) how large morphology changes in the volcano summit affect dome growth by topographic loading or unloading, (3) how dome growth is affected by extrinsic triggers such as tectonic quakes, and (4) how simultaneous displacement processes interfere. |
| Website | http://www.volcapse.de/welcome/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE) |

These projects were complemented by new projects funded in 2016-2017:

| ESPSI | |
|---|---|
| Title | Eruption Source Parameters for Explosive Eruptions in Iceland Over the Last 3 ka |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. June 2017 / June 2019 - EUR: 179.325,60 GA 750733 |
| Abstract | Eruption source parameters (ESPs)—such as erupted volume/mass, plume height, magma discharge, tephra dispersal, and total grain size distribution (TDGS)—are key information for characterizing explosive eruptions and essential input parameters in tephra dispersal models used for real-time forecasting by the Volcanic Ash Advisory Centers (VAACs) and for long-term hazard assessments. Iceland is one of the volcanically most active regions of the world, with over 20 events per century. About ~700 events are preserved in the post-glacial soil and lake sediments in Iceland. ESPs, however, have yet to be determined for most of the eruptions. ESPs are traditionally derived using empirical approaches, requiring detailed field measurements of the deposits. The objective of this action is to estimate, to the first order, the ESPs for explosive eruptions in Iceland using inversion modelling. The advantage of this approach is that it bypasses the compilation of detailed isopach maps through the use of optimization algorithms. It requires only a limited number of thickness measurements and grain size analyses. Consequently, ESPs can be established for a larger number of eruptions in a shorter time, than when using traditional empirical methods. This will result in a statistically robust data set on ESPs used for determining the magnitude and intensities of explosive eruptions in Iceland as well as for assessing risk and mitigating hazards associated with such events. |
| Website | https://www.hi.is/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Haskoli Islands (IS) |

| EUROVOLC | |
|---|---|
| Title | European Network of Observatories and Research Infrastructures for Volcanology |
| Contract details | Excellent science - European Research Infrastructures (including e-Infrastructures). Call: H2020-INFRAIA-2017-1-two-stage. Topic code: INFRAIA-02-2017. February 2018 / January 2021 - EUR: 4.997.292,50 GA 731070 |
| Abstract | EUROVOLC will construct an integrated and harmonized European volcanological community able to fully support, exploit and build-upon existing and emerging national and pan-European research infrastructures, including e-Infrastructures of the European Supersite volcanoes. The harmonization includes linking scientists and stakeholders and connecting still isolated volcanological infrastructures located at in situ volcano observatories (VO) and volcanological research institutions (VRIs). EUROVOLC will overcome fragmentation at various levels, including community, project and discipline fragmentation by addressing four main themes: Community building, volcano-atmosphere interaction, sub-surface processes and volcanic crisis preparedness and risk management. Examples of networking activities under these themes include collaboration and networking between VOs, VRIs and civil protection agencies, networking of atmospheric gas and aerosol observations as well as observations of subsurface processes, and initiation of access to multidisciplinary observations from Krafla Volcano Laboratory as a test bed. Joint research activities include production of services to initialize volcanic ash transport and dispersal models during eruptions, integrated modelling of pre-eruption data, and a complete catalogue of European Volcanoes. Trans-national access to European Volcano observatories will be facilitated and virtual access to various modelling and assessment tools for responding to volcanic unrest and eruptions will be offered. Through these activities EUROVOLC will integrate the European volcanological community and open up and provide a wider, simplified, and more efficient access to key, multidisciplinary European research infrastructures located at leading VOs and VRIs to conduct improved volcanological research, drive best practice at volcanological observatories and open pathways for enterprise to better exploit georesources in volcanic areas such as geothermal energy. |
| Website | |

| EUROVOLC | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vedurstofa Islands (IS)<br>Consortium:<br>2. The University of Manchester (UK)<br>3. Institouto Geologikon kai Metalleftikon Erevnon (EL)<br>4. Universite Clermont Auvergne (FR)<br>5. Universite de Geneve (CH)<br>6. Universita degli Studi di Firenze (IT)<br>7. Met Office (UK)<br>8. University of Leeds (UK)<br>9. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>10. Institut de Physique du Globe de Paris (FR)<br>11. Civisa - Centro de Informacao e Vigilancia Sismovulcanica dos Acores (PT)<br>12. Dublin Institute for Advanced Studies (IE)<br>13. Terradue SRL (IT)<br>14. Istituto Nazionale di Geofisica E Vulcanologia (IT)<br>15. Landsvirkjun Sameignarfelag (IS)<br>16. Haskoli Islands (IS)<br>17. Natural Environment Research Council (UK) |

| PERIL | |
|---|---|
| Title | Post ERuption Incision of Landscapes (PERIL) |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. September 2019 / August 2021 - EUR: 195.454,80 GA 800303 |
| Abstract | Although more than 11% of the world's population lives close enough to an active volcano to be at risk from a potentially hazardous eruption, little research has been done to understand the long-term and often devastating consequences eruptions can have on the local landscape. After a major volcanic eruption, the surrounding landscape is significantly destabilised by the mass of volcanic material deposited on it, which can dam rivers, destroy vegetation, and lie precariously on steep slopes. For example, the 1991 eruption of Mount Pinatubo in the Philippines left more than 700 people dead, but only ~50% lost their lives during the eruption itself. The rest were killed in the following months by mudflows and landslides that displaced >150,000 people. There are many other examples where such secondary hazards have proven just as deadly and disruptive as the initial volcanic eruption, and yet little research has been done into how post-eruptive landscapes evolve. Addressing this issue requires a cross-disciplinary approach that combines the fields of volcanology and geomorphology. The specific goal of this research is to create an accessible, user friendly computer model that can predict patterns and rates of landscape response after a volcanic event. The model will be refined from observations of how certain natural volcanic landscapes have evolved after recent eruptions. With this new model, government agencies, non-profit organisations, local businesses, and private citizens will have the capability to predict and mitigate post-eruption hazards in vulnerable communities around the world. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University Of Bristol (UK) |

| | TREMOR |
|---|---|
| Title | TRemor as Eruption MOnitoR |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. January 2019 / December 2020 - EUR: 179.325,60 GA 789887 |

| | TREMOR |
|---|---|
| Abstract | A small eruption in Iceland in 2010 had a big impact on the economy, airlines, and people in Europe and worldwide. Forecasting eruptions and mitigating their effects requires better understanding of the precursory signals and their detection amongst other signals. One of the key geophysical signals is volcanic tremor which is observed before and during eruptions but is only phenomenologically interpreted. The project TREMOR, based at the Icelandic Meteorological Office (IMO) and the University of Cambridge will exploit their extensive, multidisciplinary databases including recordings of recent eruptions and floods. It will overcome present shortcomings, such as badly constrained tremor locations through use of new location techniques, dense seismic networks and small source-receiver distances. These improvements are made possible by the FUTUREVOLC project (FP7, 2012-2016) which expanded existing networks in Iceland shortly before the Bardarbunga 2014/15 eruption. Preliminary results during the researchers PhD suggest that both pre-eruptive and eruptive tremor exist during this eruption and have different characteristics. The TREMOR project will continue from this point with the objectives to (i) systematically search for pre-eruptive tremor, (ii) characterise it with respect to eruptive tremor and other tremor sources such as floods, glaciers and hydrothermal boiling, (iii) find factors that affect its characteristics and (iv) understand the source mechanism better. If TREMOR is successful, pre-eruptive tremor can be introduced as an eruption precursor, not only with direct application at IMO, but potentially worldwide. This thorough study will form the basis of future research, as it will be disseminated through conference presentations, publication in peer-reviewed journals and communication to the public. It will further train and integrate the researcher into two effective, experienced, multidisciplinary research groups to strengthen professional maturity. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vedurstofa Islands (IS) |

| VOLCANOWAVES | |
|---|---|
| Title | State of unrest of active VOLCANOes through advanced seismic WAVES analysis - An application to eruption forecast modelling. |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. September 2018 / August 2020 - EUR: 170.121,60 GA 798480 |
| Abstract | Volcanic eruptions have a high social and economic impact on a global scale, and they can be responsible for severe consequences into climate changes and on population's life, determining severe damages to buildings, crops, telecommunications and air traffics. The security and protection of populations in sites exposed to risk requires the improvement of our ability to forecast volcanic eruptions and the development of better alert protocols, in order to take preventive measures and minimize their effects in both human and economic terms. Volcano monitoring is mainly based on the analysis of seismic signals, in order to found precursory events which appear before an eruption. Due to the big amount of seismic data nowadays acquired by the volcanic observatory, in a volcano crisis it became difficult the manual supervised detection and classification carried out by expert technicians. So an automatic volcano-seismic signal processing is crucial to quickly detect and analyse the precursory seismicity and to correctly assess the population risk. This project is conceived to advance beyond-the-state-of-the-art providing tools for a better and more accurate automatic volcano-seismic signals detection and classification to obtain Early Warning Decision Making algorithms. This is a highly interdisciplinary project, where the Signal Processing, Machine Learning, Big Data, and Knowledge Management are combined with the Volcanic Seismology science. In order to carry out this project, seismic records from some volcanoes (in particular, Etna, Colima, Montserrat volcanoes) are available. The proposed strategy includes a new philosophy in database creation and new and innovative signal processing techniques, and will improve our ability to forecast volcanic eruptions. The proposed methodologies are new in the field of volcano-seismology, but researchers involved in the project have already applied them successfully in different contexts. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universidad De Granada (ES) |

### 1.3.3 Seismic and earthquake risks

Seismic risks and related research on prevention, scenario building etc. have been subject to a wide range of research projects funded by various programmes, in particular the FP7 Environment programme. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Seismic and earthquake risks | BLACKSEAHAZNET<br>ICARUS<br>MARSITE<br>NERA<br>NIKER<br>PERPETUATE<br>PRE-EARTHQUAKES<br>REAKT<br>SEISMIC<br>SGL FOR USAR<br>SHARE<br>SYNER-G<br>TCAINMAND |

These projects have been complemented by the following H2020 projects:

| EQRESFRAME | |
|---|---|
| Title | Earthquake-resilient self-centering steel frame (EQRESFRAME) |
| Contract details | Excellent Science Call: H2020-MSCA-IF-2014 Topic code: MSCA-IF-2014-EF<br>September 2015 / September 2017 - EUR: 183.454,80<br><br>REA - 654426 |
| Abstract | This project aims to couple, for the first time, self-centring systems and modern seismic energy dissipation systems with the goal of developing a novel earthquake-resilient steel frame. The optimal combined design of the self-centering and energy dissipation mechanisms will lead to a steel frame with superior minimal-damage seismic performance. |
| Website | https://warwick.ac.uk/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Warwick (UK) |

| PARTNER | |
|---|---|
| Title | Probabilistic Assessment of Reduction and Transfer of Natural Earthquake Risk (PARTNER) |
| Contract details | Excellent Science Call: H2020-MSCA-IF-2015 Topic code: MSCA-IF-2015-EF<br>January 2017 / January 2019 - EUR: 183.454,80<br><br>REA - 704679 |

| PARTNER | |
|---|---|
| Abstract | The current proposal presents a compete framework to analyze the effects of resiliency measures on the overall risk of communities by (1) developing novel probabilistic model to characterize local seismic hazard by using site-specific records, (2) characterizing the exposed assets accurately at high resolution, (3) developing seismic vulnerability models consistent with the seismic hazard and (4) calculating probability distributions of seismic-performance metrics. Seismic risk-reduction will be achieved through implementation of seismic control devices to structures and risk-transfer is achieved through financing mechanisms, such as catastrophe bonds and other parametric models, used to carry over risk to risk-takers. |
| Website | http://www.bristol.ac.uk/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University Of Bristol (UK) |

## These projects were complemented by new projects funded in 2016-2017:

| CoQuake | |
|---|---|
| Title | Controlling earthQuakes |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG.<br>June 2018 / May 2023 - EUR: 1.499.999,00 GA 757848 |
| Abstract | According to the Centre for Research on the Epidemiology of Disasters (CRED), earthquakes are responsible for more than half of the total human losses due to natural disasters from 1994 to 2003. There is no doubt that earthquakes are lethal and costly. CoQuake proposes an alternative, ground-breaking approach for avoiding catastrophic earthquakes by inducing them at a lower energetic level. Earthquakes are a natural phenomenon that we cannot avoid, but –for the first time– in CoQuake I will show that it is possible to control them, hence reducing the seismic risk, fatalities and economic cost. CoQuake goes beyond the state-of-the-art by proposing an innovative methodology for investigating the effect and the controllability of various stimulating techniques that can reactivate seismic faults. It involves large-scale, accurate simulations of fault systems based on constitutive laws derived from micromechanical, grain-by-grain simulations under Thermo-Hydro-Chemo-Mechanical couplings (THMC), which are not calibrated on the basis of ad-hoc empirical and inaccurate constitutive laws. A pioneer experimental research programme and the design and construction of a new apparatus of metric scale, will demonstrate CoQuake's proof-of-principle and it will help to explore the transition from aseismic to seismic slip. CoQuake is an interdisciplinary project as it takes knowledge from various fields of engineering, computational mechanics, geomechanics, mathematics and geophysics. CoQuake opens a new field and new line of research in earthquake mechanics and engineering, with a direct impact on humanity and science. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ecole Nationale Des Ponts Et Chaussees (FR) |

| CSEM | |
|---|---|
| Title | The Collaborative Seismic Earth Model Project |
| Contract details | European Research Council - Starting Grant. Call: ERC-2016-STG. Topic code: ERC-2016-STG. January 2017 / December 2021 - EUR: 1.367.500,00 GA 714069 |

| CSEM | |
|---|---|
| Abstract | Seismic tomography images of the Earth's interior are key to the characterisation of earthquakes, natural resource exploration, seismic risk assessment, tsunami warning, and studies of geodynamic processes. While tomography has drawn a fascinating picture of our planet, today's individual researchers can exploit only a fraction of the rapidly expanding seismic data volume. Applications relying on tomographic images lag behind their potential; fundamental questions remain unanswered: Do mantle plumes exist in the deep Earth? What are the properties of active faults, and how do they affect earthquake ground motion? To address these questions and to ensure continued progress of seismic tomography in the 'Big Data' era, I propose new technological developments that enable a paradigm shift in Earth model construction towards a Collaborative Seismic Earth Model (CSEM). Fully accounting for the physics of wave propagation in the complex 3D Earth, the CSEM is envisioned to evolve successively through a systematic group effort of my team, thus going beyond the tomographic models that individual researchers may construct today. I will develop the technological foundation of the CSEM and integrate these developments in studies of large-earthquake rupture processes and the convective pattern of the Earth's mantle in relation to surface geology. The CSEM project will bridge the gap between regional and global tomography, and deliver the first multiscale model of the Earth where crust and mantle are jointly resolved. The CSEM will lead to a dramatic increase in the exploitable seismic data volume, and set new standards for the construction and reproducibility of tomographic Earth models. Beyond this project, the CSEM will be openly accessible through the European Plate Observing System (EPOS). It will then offer Earth scientists the unique opportunity to join forces in the discovery of multiscale Earth structure by systematically building on each other's results. |
| Website | https://www.ethz.ch/en.html |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Eidgenoessische Technische Hochschule Zuerich (CH) |

| DatA ESPerT | |
|---|---|
| Title | Database Analysis for Evaluation of Seismic Performance Assessment Tools |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. June 2017 / June 2019 - EUR: 159.460,80 GA 743458 |
| Abstract | In highly industrialised regions, earthquakes severely affect societies in terms of economic, social and environmental consequences due to the complex integrated and highly sensitive industries - even in areas of medium to low seismicity like Europe. Whereas the seismic behaviour of typical building structures is broadly understood and reflected in technical guidelines and damage prognosis tools worldwide, event reports and even assessment tools for industrial facilities are scarce, mainly because affected facilities are usually not generally accessible and are, thus, not covered by reconnaissance teams. After the 2012 Earthquake in the Italian Regione Emilia-Romagna (RE-R), however, the regional government gathered very detailed data on seismic damages to more than 3000 industrial / business facilities in order to distribute financial compensations. The data was collected in an extremely comprehensive database including – besides many other aspects – type, size and location of the business as well as damage to structures, components and stored goods and costs of reconstruction. Within the proposed DatA ESPerT project, the researcher will exploit this globally unique SFINGE-database in a rigorous way, in order to develop mathematical tools to assess the seismic performance of industrial facilities and to give damage prognoses for future earthquakes. Due to the comparable socio-economic context and similar seismic hazard levels, the research results will be valid for many regions in Southern Europe. Additional aspects of the project consider the development of cost/performance curves for seismic mitigation measures and the investigation of the geographical damage distribution in relation to the seismological circumstances in the Emilia-Romagna. The work is strongly supported by RWTH Aachen, by Munich RE reinsurance company and by RE-R who assured to the researcher within an official agreement access to the confidential SFINGE-database in the project's framework. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Rheinisch-Westfaelische Technische Hochschule Aachen (DE) |

| KaIROS | |
|---|---|
| Title | Keeping and Increasing Resilience Opportunities and Sustainability of communities against earthquakes |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. September 2018 / August 2020 - EUR: 170.121,60 GA 799553 |
| Abstract | KaIROS proposal focuses on earthquake disasters; its main purpose is to provide beyond-state-of-the-art approaches to reduce seismic risk worldwide. That is, keeping and increasing the opportunities for resilience and the sustainability of communities against earthquakes. The key to reducing seismic risk is decreasing the vulnerability of existing structures and providing new insights to improve the design of new structures. Thus, main specific goals and modules are inventory, assessment, strengthening and regulations. Each module embodies state-of-the-art knowledge and new advances to form a robust and efficient tool for risk assessment. Concerning inventory, a new comprehensive BTM will include the most relevant building types around the world. The assessment tool will be based on fully probabilistic Incremental dynamic analysis of realistic structural models subjected to realistic seismic actions, so that the simulation results approach real outcomes. Thus, an innovative outcome of KaIROS is that it will provide probabilistic damage curves for the enhanced BTM. Specific measures related to reinforcement and/or to protection devices will be analyzed within the Strengthening module. Concerning Regulations, the main contributions will be associated with specific recommendations for strengthening, retrofitting and designing buildings. In addition, simplified coefficients allowing considering the directionality and weakening effects in the expected physical damage will be developed. KaIROS is sensitive to the gender dimension of natural disasters and a special module will investigate this issue. An open access soft-ware that can be used to assess the expected damage at urban level by considering several structural typologies and to perform cost-benefit analyses of strengthening measures, amongst many other possibilities, will be created and promoted. Special attention will be devoted to dissemination so that policy-makers and stakeholders can benefit from KaIROS. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat Politecnica De Catalunya (ES) |

| SERA | |
|---|---|
| Title | Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe |
| Contract details | Excellent science - European Research Infrastructures (including e-Infrastructures). Call: H2020-INFRAIA-2016-1. Topic code: INFRAIA-01-2016-2017. May 2017 / April 2020 - EUR: 10.000.000,00 GA 730900 |
| Abstract | SERA is the 'Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe', responding to the priorities identified in the call INFRAIA-01-2016-2017 Research Infrastructure for Earthquake Hazard. The overall objective of SERA is to give a significant contribution to improve the access to data, services and research infrastructures, and deliver solutions based on innovative R&D in seismology and earthquake engineering, aiming at reducing the exposure of our society to the risk posed by natural and anthropogenic earthquakes. To this end, SERA will: Involve the communities involved in previous successful projects including NERA and SERIES; Offer transnational access to the largest collection of high-class experimental facilities in earthquake engineering; Offer virtual access to the main data and products in seismology and anthropogenic seismicity; Promote multi-disciplinary science across the domains of seismology, anthropogenic seismicity, near-fault observatories and deep underground laboratories, to achieve an improved understanding of earthquake occurrence; Revise the European Seismic Hazard reference model for consideration in the ongoing revision of the Eurocode 8; Develop the first comprehensive framework for seismic risk modeling at European scale; Develop the new standards for future experimental observations in earthquake engineering and for the design of future instruments and networks for observational seismology; Develop reliable methodologies for real-time assessment of shaking and damage; Expand access to seismological observations; Network infrastructures and communities in the fields of deep seismic sounding, experimental earthquake engineering and site characterization; Provide an important contribution to the construction and validation of EPOS; Provide effective communication and outreach to all stakeholders. |
| Website | |

| SERA | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Eidgenoessische Technische Hochschule Zuerich (CH)<br>Consortium:<br>2. Centro Europeo di Formazione e Ricerca in Ingegneria Sismica (IT)<br>3. The Chancellor Masters and Scholars of the University of Cambridge (UK)<br>4. Institutul National de Cercetare-Dezvoltare Pentru Fizica Pamantului (RO)<br>5. Aristotelio Panepistimio Thessalonikis (EL)<br>6. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>7. Universita Degli Studi di Napoli Federico II (IT)<br>8. Uppsala Universitet (SE)<br>9. Laboratorio Nacional de Engenharia Civil (PT)<br>10. Agencia Estatal Consejo Superior de Investigaciones Cientificas (ES)<br>11. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE)<br>12. Bureau de Recherches Geologiques et Minieres (FR)<br>13. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>14. Amra - Analisi e Monitoraggio del Rischio Ambientale SCARL (IT)<br>15. Euro-Mediterranean Seismological Centre (FR)<br>16. Universita degli Studi di Trento (IT)<br>17. Universidade do Porto (PT)<br>18. University of Bristol (UK)<br>19. Stiftelsen Norsar (NO)<br>20. Public Scientific Institute-Institute of Earthquake Engineering and Engineering Seismology SS Cyril and Methodius University Skopje Iziis (MK)<br>21. National Observatory of Athens (EL)<br>22. Istituto Nazionale di Geofisica e Vulcanologia (IT)<br>23. Bogazici Universitesi (TR)<br>24. Centre National de la Recherche Scientifique CNRS (FR)<br>25. Panepistimio Patron (EL)<br>26. Universidad Politecnica de Madrid (ES)<br>27. Instituto Superior Tecnico (PT)<br>28. Universitetet i Bergen (NO)<br>29. Instytut Geofizyki Polskiej Akademii Nauk (PL)<br>30. Natural Environment Research Council (UK)<br>31. JRC -Joint Research Centre- European Commission (BE) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| EASER | |
|---|---|
| Title | Enhancing Assessment in Search and Rescue (EASER) |
| Contract details | 2017/PREP/783273 01/02/2018 - 31/01/2020; EUR: 556635 |
| Abstract | EASeR targets a specific aspect of USAR assessment called "barrier effect" during emergency interventions in response to natural catastrophes, especially earthquakes. The term "barrier effect" refers to obstacles due to a wide range of environmental factors such as: heavy snow, traffic due to damage to the road system, escaping in narrow/limited escape routes, road interruptions, non-coherent management of the information flow (dissemination of false/fake information, correct information not taken into consideration, missing basic information). These factors can severely hamper the general assessment in SAR as demonstrated by a direct experience of the USAR team of the Fire Dep. of Pisa in both national and international interventions. EASeR intends to provide a practical strategy to carry more efficiently the assessment in SAR with a positive cascade effect on the general performance of all subsequent operations. (Internal classification of DG Echo is SAR assessment) |
| Website | http://www.easerproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Comando Provinciale die Vigili del fuoco di Pisa (IT) Via Matteotti 1 IT-56100 PISA ITALY<br>Consortium:<br>1. TIMESIS SRL (IT)<br>2. Centrum Naukowo— Badawcze Ochrony Przeciwpozarowej Im Jozefa Tuliszkowskiego- Panstwowy Instytut Badawczy (PL)<br>3. Hasicsky Zachranny Sbor Moravskoslezskeho Kraje (CZ) |

| ITERARE | |
|---|---|
| Title | Improved Tools for Disaster Risk Mitigation in Algeria (ITERARE) |
| Contract details | 2016/PREV/23 01/01/2017 - 31/12/2018; EUR: 426211 |
| Abstract | Regions with a significant percentage of non-seismically designed buildings, such as Algeria, are particularly vulnerable to natural hazards. Algeria has indeed been hit by past earthquakes in the northern part of the country (e.g. El Asnam 1980 Mw 7.1 or Boumerdés 2003 Mw 6.8). ITERATE aims at disaster risk prevention and reduction in Algeria, proposing an improved framework for seismic risk assessment, which makes use of a geographical and scientific privileged combination of expertise in Algeria, Portugal and Italy. The existing seismic hazard models will be fine-tuned and integrated with real exposure and physical & social vulnerability models. An open-source integrated tool for loss estimation and decision making will be set up. (Internal classification of DG Echo is DISASTER RISK) |
| Website | http://www.iterate-eu.org/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ISTITUTO UNIVERSITARIO DI STUDI SUPERIORI DI PAVIA (IT)<br>Consortium:<br>1. Universidade do Porto - Faculdade de Engenharia (PT)<br>2. Centre de Recherche en Astronomie Astrophysique et Géophysique (Algeria) (DZ) |

### 1.3.4 Tsunami risks

Fundamental research on tsunamis has been initiated in several programmes. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Tsunami risks | URBANWAVES<br>ASTARTE<br>SEISMIC |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of tsunami risks.

### 1.3.5 Landslide risks

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Landslide risks | LAMPRE |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of landslide risks.

### 1.3.6 Earth-surface ground deformations

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Earth-surface ground deformations | DORIS<br>MELINA<br>SEMEP<br>SENSUM<br>SUBCOAST |

These projects have been complemented by the following H2020 projects:

| STEADY | |
|---|---|
| Title | SaTEllyte synthetic Aperture radar interferometry to model Dam stabilitY |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. May 2017 / April 2019 - EUR: 175.419,60 GA 752363 |
| Abstract | Analyses of surface deformation can help to define the evolution of areas, structures and infrastructures menaced by hazardous phenomena. To this end, space-borne Synthetic Aperture Radar (SAR) data provides direct measures of surface movements. Specific techniques to handle SAR data have been recently applied to monitor not only natural hazardous phenomena, such as earthquakes, subsidence and landslides, but even structural health of buildings and infrastructure. The large spread of these techniques is supported by the non-invasiveness of radar signals, the possibility to cover vast areas and the availability of a large database of data acquired since the '90s, despite they do not give any indication about the triggering factors and the strain source or the tensile condition of a structure. STEADY Project (SaTEllyte synthetic Aperture radar interferometry to model Dam stability) is aimed to use SAR data to monitor dam structural health and, even more, to apply an innovative approach, exploiting deformation fields as a starting point to re-create a simplified analytical model, providing preliminary hints about the stress-strain status of the dam in a short time if compared with traditional finite element models. The relevance of this process emerges when environmental or logistic conditions do not allow to monitor dams through traditional geodetic and numerical techniques. In such cases, results obtained from SAR data combined with an analytical model constitute a reliable diagnostic tool of dam structural health to avoid any extraordinary failure that may lead to loss of lives. The method will be tested on an emblematic real case, the Mosul dam, facing the following goals: (i) analysis of satellite SAR data available over the area, (ii) identification of an analytical model to reproduce dam deformation behaviour and tensile condition, (iii) implementation of a semi-automatic tool to perform numerical simulations, applicable to further cases. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Sarmap SA (CH) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| U-GEOHAZ | |
|---|---|
| Title | Geohazard impact assessment for urban areas (U-GEOHAZ) |
| Contract details | 2017/PREV/783169 01/01/2016 - 01/01/2018; EUR: 742951.73 |
| Abstract | The U-Geohaz project is focused on monitoring geohazard-associated ground deformations, a key prevention action specifically addressed to urban areas and critical infrastructures. The project will propose a procedure to produce maps to assess continuously the potential impact of geohazard activity. These maps will provide essential inputs to support early warning. The main output of the project will be the development of new products for multi-geohazard prevention purposes and the validation of their potentialities. The project will include a review of the relation between the EU Geological Surveys and the CPAs, with the aim of contributing to improve their co-operations. (Internal classification of DG Echo is EARLY WARNING) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/u-geohaz_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Centre Tecnologic de Telecomunicacio ns de Catalunya (ES) Avinguda Carl Friedrich Gauss no. 7 Parc Mediterrani de Tecno ES- 08860 Castelldefels BARCELONA SPAIN<br>Consortium:<br>1. Instituto Geológico y Minero (ES)<br>2. Centro Nacional de Info. Geografica (ES)<br>3. Università degli Studi di Firenze (IT)<br>4. Consiglio Nazionale delle Ricerche (IT)<br>5. Gorbierno de Canarias (ES)<br>6. Regione Autonoma valle d'Aosta (IT)<br>7. Panstwowy Instytut Geologiczny (PL)<br>8. Bureau de Recherches Geologiques... (FR)<br>9. Institouto Geologikon & Metal Erevnon (GR)<br>10. Institut Cartografic i Geologic Catalunya (ES)<br>11. Lietuvos geologijos tarnyba prie Aplinkos ministerijos (LT)<br>12. Laboratorio Nacional de Energia e Geologia I.P.(PT)<br>13. Geologicka Sluzba (CZ)<br>14. Geoloski Zavod (SI)<br>15. Istituto Superiore per la Protezione e la Ricerca Ambientale(IT)<br>16. Institutul Geologic(RO)<br>17. Geologische Bundesanstalt (AT)<br>18. Natural Environment Research Council (UK) |

# 2. Health threats

The Decision 1082/2013 requires sharing best practice and experience in response planning among the Member States, and the establishment of early warning and response system (EWRS) for alerting, assessing public health risks and determining the measures that may be required to protect public health in consideration of relevant information. Besides, the CBRN Action Plan promotes strengthening sharing medical counter-measures across borders in the case of an incident. Recommendations also concern ways in which medical staff and other first responders can receive guidance on dealing with large scale CBRN emergencies and a rapid increase of the number of victims. Various projects support these goals:

## 2.1 Victims triage

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Victims triage | BIO-PROTECT<br>BOOSTER<br>FASTID<br>MIRACLE<br>MULTIBIODOSE |

In Horizon2020, dedicated research projects has started in the area of victims triage in case of a CBRN incident (see section 5.7).

## 2.2 Contagions, pandemics

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Contagions, pandemics | ANTIBOTABE<br>BIO-PROTECT<br>CONCORDE<br>EQUATOX<br>IMPRESS<br>PANDHUB<br>PULSE<br>S-HELP |

## These projects have been complemented by the following H2020 projects:

| PANDEM | |
|---|---|
| Title | Pandemic Risk and Emergency Management (PANDEM) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-04-2014<br>September 2015 / April 2017 - EUR: 1,277,307.50<br><br>REA - 652868 |
| Abstract | PANDEM will contribute to the reduction in the health, socio-economic and security consequences of future pandemics so that society will be better prepared at regional, national, EU and global level. PANDEM will assess current pandemic preparedness and response tools, systems and practice at national, EU and global level in priority areas including risk assessment and surveillance, communication and public information, governance and legal frameworks. PANDEM will then identify gaps and improvement needs leading to the development of viable innovative concepts and analysis of the feasibility of a future demonstration project to strengthen capacity-building for pandemic risk management in the EU. |
| Website | http://www.pandem.eu.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. National University of Ireland, Galway (IE)<br>Consortium:<br>2. Folkhalsomyndigheten (SE)<br>3. IGS Strategic Communications Limited (UK)<br>4. London School of Hygiene and Tropical Medicine (UK)<br>5. Totalforsvarets Forskningsinstitut (SE)<br>6. Universite Catholique de Louvain (BE)<br>7. World Health Organization (CH) |

| COMPARE | |
|---|---|
| Title | COllaborative Management Platform for detection and Analyses of (Re-) emerging and foodborne outbreaks in Europe (COMPARE) |
| Contract details | Health, demographic change and wellbeing Call: H2020-PHC-2014-single-stage Topic code: PHC-07-2014<br>December 2014 / December 2019 - EUR: 20.817.771,00<br><br>RTD - 643476 |
| Abstract | COMPARE will establish a “One serves all” analytical framework and data exchange platform that will allow real time analysis and interpretation of sequence-based pathogen data in combination with associated data in an integrated inter-sectorial, interdisciplinary, international, “one health” approach. The framework will link research, clinical and public health organisations active in human health, animal health, and food safety in Europe and beyond, to develop (1) integrated risk assessment and risk based collection of samples and data, (2) harmonised workflows for generating comparable sequence and associated data, (3) state-of-the-art analytical workflows and tools for generating actionable information for support of patient diagnosis, treatment, outbreak detection and -investigation and (4) risk communication tools. The analytical workflows will be linked to a flexible, scalable and open-source data- and information platform supporting rapid sharing, interrogation and analysis of sequence-based pathogen data in combination with other associated data. |
| Website | http://www.compare-europe.eu/ |

| COMPARE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Danmarks Tekniske Universitet (DK)<br>Consortium:<br>2. Academisch Medisch Centrum Bij De Universiteit Van Amsterdam (NL)<br>3. Agence Nationale De La Securite Sanitaire De L Alimentation De l'Environnement Et Du Travail (FR)<br>4. Alma Mater Studiorum - Universita Di Bologna (IT)<br>5. Aristotelio Panepistimio Thessalonikis (EL)<br>6. Artemis One Health Research BV (NL)<br>7. Civic Consulting Alleweldt & Kara Gbr (DE)<br>8. Erasmus Universitair Medisch Centrum Rotterdam (NL)<br>9. Erasmus Universiteit Rotterdam (NL)<br>10. European Molecular Biology Laboratory (DE)<br>11. Fondation Merieux (FR)<br>12. Friedrich Loeffler Institut - Bundesforschungsinstitut Fuer Tiergesundheit (DE)<br>13. Genome Research Limited (UK)<br>14. Institut Francais De Recherche Pour L'exploitation De La Mer (FR)<br>15. Istituto Superiore Di Sanita (IT)<br>16. Leibniz-Institut Dsmz-Deutsche Sammlung Von Mikroorganismen Und Zellkulturen GMBH (DE)<br>17. Magyar Tudomanyos Akademia Wigner Fizikai Kutatokozpont (HU)<br>18. Responsible Technology (FR)<br>19. Rijksinstituut Voor Volksgezondheid En Milieu (NL)<br>20. Robert Koch-Institut (DE)<br>21. Statens Serum Institut (DK)<br>22. Stiftung Tieraerztliche Hochschule Hannover (DE)<br>23. The Australian National University (AU)<br>24. The Chancellor, Masters And Scholars Of The University Of Cambridge (UK)<br>25. The Secretary Of State For Environment, Food And Rural Affairs (UK)<br>26. The University Of Edinburgh (UK)<br>27. Universidad De Castilla - La Mancha (ES)<br>28. Universitaetsklinikum Bonn (DE)<br>29. Universiteit Antwerpen (BE) |

## These projects were complemented by new projects funded in 2016-2017:

| CCHFVaccine | |
|---|---|
| Title | Crimean-Congo Haemorrhagic Fever Vaccine |
| Contract details | Health, Demographic Change and Wellbeing. Call: H2020-SC1-2016-RTD. Topic code: SC1-PM-06-2016. January 2017 / December 2022 - EUR: 5.979.607,30 GA 732732 |
| Abstract | Natural epidemics and outbreaks of emerging viral epidemics are growing problems internationally. The general aim of the CCHFVaccine project is to develop and deliver a vaccine, which can significantly increase our capacity to control the situation of Crimean Congo Haemorrhagic fever (CCHF) disease on a global basis. The proposed work program on CCHF virus aims to build a multidisciplinary research network, able to deliver vaccine candidates, methods and procedures eligible for clinical trials, with a special focus on prevention. Thanks to the background, unique facilities and tools available among the consortium participants, CCHFVaccine will deliver tools for countering the threat of this infection in Europe and endemic areas of the world. This work program will attempt to fill gaps in CCHFV virus research on immunology and vaccinology. To achieve this overall aim, an intensive work plan will be put in place with the following specific objectives: i) to produce vaccine candidates, ii) to bring several unique animal models into front line vaccine research, iii) to validate and bring the most promising vaccine candidates to clinical trials, iv) to ensure that an immune mediated protection is adequately understood, v) to perform clinical trials at Phase I and ensure a strategy for the effective deployment and utilization in resource-poor countries, and vi) to link this project to public health bodies, NGOs and vaccine companies. The proposed CCHFVaccine project will succeed in bringing together selected competitive advantages such as: operating capacity with appropriate facilities (state-of-the-art BSL-4s) and the only animal BSL-4 -with capacity to challenge domestic animals in Europe, highly experienced researchers in the development and evaluation of vaccine candidates, authorities and entities of human and animal health, clinical samples from endemic countries, and an international network proven to be functional by the previous EU-funded CCHFever and EDENext. |
| Website | http://www.cchfvaccine.eu/ |

| CCHFVaccine | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Folkhalsomyndigheten (SE)<br>Consortium:<br>2. Bundesinstitut Fur Impfstoffe Und Biomedizinische Arzneimittel (DE)<br>3. Cumhuriyet Universitesi (TR)<br>4. Department Of Health (UK)<br>5. Friedrich Loeffler Institut - Bundesforschungsinstitut Fuer Tiergesundheit (DE)<br>6. Inserm - Transfert SA (FR)<br>7. Justus-Liebig-Universitaet Giessen (DE)<br>8. Kafkas Universitesi (TR)<br>9. Karolinska Institutet (SE)<br>10. Ministria E Shendetesise (XK)<br>11. National Center Of Infectious And Parasitic Diseases (BG)<br>12. Statens Veterinaermedicinska Anstalt (SE)<br>13. Stockholms Lans Landsting (SE)<br>14. Tajik Research Institute Of Preventive Medicine (TJ)<br>15. United States Department Of Health And Human Services (US) |

| PIGSs | |
|---|---|
| Title | Program for Innovative Global Prevention of Streptococcus suis. |
| Contract details | Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy.<br>Call: H2020-SFS-2016-2. Topic code: SFS-14-2016. June 2017 / November 2021 - EUR: 4.998.103,75 GA 727966 |
| Abstract | Streptococcus suis is an endemic porcine disease causing causing significant economic losses to the pork meat production industry in all countries where pigs are reared on a large scale. In some countries S. suis is the primary cause of mortality and morbidity in young pigs and the most frequent reason to prescribe antibiotics of the amino-penicillin group as a preventative measure. S. suis is also a zoonotic pathogen of humans and infections reported worldwide has increased significantly in the past years. Within S. suis many different types (serotypes, genotypes, pathotypes) exist causing problems in the development of control strategies targeting all types. Asymptomatic carriage in adult pigs is common and combined with a lack of knowledge on the host-pathogen-environment interactions, are the main reasons for failure to control the endemic nature of this pathogen. The project outputs will impact on on understanding host-pathogen-environment interactions of S. suis infections through the genome sequencing of 1200-1500 S. suis isolates from representative geographic areas of the major pork producing countries and performing genome-wide-association studies with invasive disease and asymptomatic carriage. New diagnostic methods will be developed for global monitoring of infection risk and tested on case-farms. Epidemiology studies will determine risk factors for invasive S. suis disease, including the role of co-infections, and for the first time properly assess the dynamics of the disease on a representative farm. We will increase our understanding of the virulence mechanisms involved in pathogenesis including interactions of S. suis with the innate immune system. The project outputs will strengthen the evidence base for prevention and control strategies through testing of novel conserved vaccine antigens in pigs and prevention strategies based on manipulation of the microbiota and stimulation and maturation of the innate immune system. |
| Website | https://www.pigss-horizon2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Wageningen University (NL)<br>Consortium<br>2. The Chancellor, Masters and Scholars of the University of Cambridge (UK)<br>3. Stiftung Tieraerztliche Hochschule Hannover (DE)<br>4. Institut de Recerca i Tecnologia Agroalimentaries (ES)<br>5. Danmarks Tekniske Universitet (DK)<br>6. CHR. Hansen A/S (DK)<br>7. Academisch Medisch Centrum bij de Universiteit van Amsterdam (NL)<br>8. CEVA Sante Animale SA (FR)<br>9. Stichting Wageningen Research (NL) |

| THEMIS | |
|---|---|
| Title | Protecting Human Rights and Public Health in Global Pandemics: A Map of the Standards Applied by EU and US Courts |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. September 2018 / August 2020 - EUR: 195.454,80 GA 746014 |
| Abstract | THEMIS asks: How do judges resolve the conflict between individual human rights and public health caused by global pandemics such as Zika, Ebola and SARS? Building on the researcher's expertise in both EU law and risk regulation, and the supervisor's pioneering 'risk within rights' framework, it focuses on EU and US case-law to create the first comparative map of judicial standards in this challenging field. It develops the role of law in pandemic preparedness; a crucial issue affecting all of us, and meets the aims of the 3rd EU Health Programme. In so doing, THEMIS recognises that lawyers do not act alone, and that the scholarly and the practical have a reciprocal impact. Thus it utilizes a 'Lawyers meet Doctors' dissemination strategy, facilitating inter-disciplinary impact on academic and policy experts. It features two inter-sectoral secondments enabling access to both key EU and global policy-makers (WHO; the Public Health Agency in NI), and cross-disciplinary knowledge-transfer and networking via international workshops co-run with the host institution's Centre of Excellence for Public Health (one of five in the UK). The researcher's home at Queen's will be the Health & Human Rights Unit, the first such unit within a top 20 UK law school. Queen's also enjoys 'HR Excellence in Research Status' and boasts a Gender Initiative for women staff and a long-established Human Rights Centre. Each of these supports the skills and training plan, as do the project's varied outputs: including a monograph (essential for the researcher's independent academic position), journal articles, and presentations to both the lay public and policy experts during the secondments. In line with IF objectives, THEMIS enables the researcher to use international mobility, new networks and training to attain a position of leadership in the scholarly community, and contributes to the need for a better understanding of how to prepare for, and respond to, the risks of global pandemics. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The Queen's University Of Belfast (UK) |

| ZIKAVAX | |
|---|---|
| Title | Fast track development of a Zika vaccine based on measles vector |
| Contract details | Health, Demographic Change and Wellbeing. Call: H2020-SC1-2016-RTD. Topic code: SC1-PM-06-2016. October 2016 / September 2020 - EUR: 4.918.137,50 GA 732432 |
| Abstract | Zika virus is an emerging mosquito-borne flavivirus. Although already isolated in 1947, to date there are no specific treatments nor any vaccines available against Zika virus disease, making it a truly neglected infectious disease. The recent rapid spread of the Zika virus in previously unaffected regions has provided strong epidemiological evidence that infection with this virus might be associated with neurological complications in adults and with an increase in severe congenital brain malformations of new-borns. Consequently, the World Health Organization has declared the recent outbreak of the Zika virus a public health emergency. The ZIKAVAX proposal has the objective to address this urgent public health issue by promoting the rapid development of a safe, effective, and affordable preventive vaccine against Zika virus infection. To achieve this goal, ZIKAVAX will use a delivery platform technology based on a measles vaccine vector with demonstrated proof of principle in humans and a preclinical track record of rapid adaptability and effectiveness for a variety of pathogens. The manufacturing process for these measles vector-based vaccines has been developed to give high yield and purity using standard equipment. In ZIKAVAX, following antigen selection and expression, immunisation studies will be conducted with the Zika vaccine candidate in mice and in a challenge model in non-human primates that will developed by the consortium. The ultimate goal of ZIKAVAX is the demonstration of safety and immunogenicity of a recombinant measles-Zika vaccine candidate in adult volunteers in a phase Ia clinical trial. ZIKAVAX is driven by a strongly committed and effective consortium of four leading European organisations highly experienced in vaccine research and development. Its partners include the European Vaccine Initiative, Institut Pasteur, Themis Bioscience GmbH and the Institute of Emerging Diseases and Innovative Therapies from the Commissariat à l'Energie Atomique. |
| Website | http://www.zikavax.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. European Vaccine Initiative – EEIG (DE)<br>Consortium:<br>2. Themis Bioscience Gmbh (AT)<br>3. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>4. Institut Pasteur (FR) |

The projects were complemented by the following projects funded by INTERREG program:

| EurHealth-1Health | |
|---|---|
| Title | EurHealth-1Health |
| Contract details | 2014 - 2020 INTERREG V-A Germany - The Netherlands 31/03/2016 - 30/03/2020 |
| Abstract | All project activities are focused on the main subject of fighting infections caused by particularly resistant microorganisms (BRMO), as well as the avoidance of antimicrobial resistance in humans and animals and the associated risks for the patient and public health. In order to maintain or improve the current situation of health and healthcare in the German-Dutch border area, German and Dutch health and knowledge institutions from the whole program area (4 Euregios) over the project duration (4 years) have to cooperate intensely across the border and across sectors (human and veterinary). |
| Website | http://www.interregiva.eu/home/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. 1. Universitair Medisch Centrum Groningen (UMCG) (NL)<br>Consortium members:<br>2. LAVES - Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit (DE);<br>3. CWZ (Stichting Nijmeegs Interconfessioneel Ziekenhuis Canisius Wilhelmina) (NL);<br>4. Niedersächsisches Landesgesundheitsamt (NLGA) (DE);<br>5. Klinikum Oldenburg - Institut für Krankenhaushygiene (DE);<br>6. Landeszentrum Gesundheit NRW (LZG) (DE);<br>7. Universiteit Twente (NL);<br>8. RIVM - Rijksinstituut voor Volksgezondheid en Milieu (NL);<br>9. Universität Oldenburg - European Medical School (EMS) (DE);<br>10. Universitätsklinikum Münster (UKM) (DE);<br>11. Laboratorium Microbiologie Twente (Labmicta) (NL);<br>12. Rhein-Kreis Neuss (Gesundheitsamt) (DE) |

| INSECTRISK | |
|---|---|
| Title | Development and adoption of a joint institutionalized partnership on risk management on excessive proliferation of insects affecting public health and safety within the cross-border region Romania-Bulgaria |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 03/02/2016 - 02/02/2018 |
| Abstract | There is a great public health risk, posed by the high proliferation and spread of mosquitoes, ticks and other insects in the CBC area, namely, outbreak of exotic diseases and epidemics. To mitigate and manage this risk, a new integrated mechanism of control over insect population has to be set up and a strategy for the joint risk management developed. The main objective of the proposed action is to significantly improve joint risk management in the target region through development of a joint institutionalized partnership. Total project budget: 1,428,412.92 Euro. First, the proposed action is to elaborate a preliminary study of the conditions in the target area and to identify the risk zones, to study the best practices of joint control over insect population in conditions close to the CBC area, to produce a GIS of the treated territories. Second, a Strategy is elaborated to ensure sustainable practice of insect treatment and organizational measures. In implementation of the Strategy, a joint partnership of early warning and of disinsection in the CBC area is set up. The Project will attain the following results: 1 joint institutionalized partnership on insect population management, 1 preliminary study on the risk of increase in insect population, 1 common strategy on control over insect population, 2 surveys on the quality of joint risk management, 1 GIS on control over insect population, and 14 round tables and 1 conference. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Association of Danube River Municipalities “Danube” (ADRM) (BG)<br>Consortium members:<br>2. “LIVING NATURE” Foundation, (LNF) (RO) |

## 2.3 Medical Responses

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Medical Responses | CONCORDE f<br>IMPRESS<br>NMFRDISASTER<br>PULSE<br>S-HELP |

These projects have been complemented by the following H2020 projects:

| INNOPROCITI | |
|---|---|
| Title | Innovative enzymes to protect citizens and critical infrastructures (INNOPROCITI) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>September 2015 / March 2016 - EUR: 50,000.00<br><br>EASME - 684759 |
| Abstract | The main objective of the INNOPROCITI proposal is the set up of a business plan for the development and selling of (a) products: enzyme formulations for biosensing and decontamination /detoxification of nerve agents and (b) solutions: an integrated platform of decontamination and biosensing systems with procedures of fast assistance. |
| Website | http://www.detoxizymes.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Detoxizymes SRLS (IT) |

| Q4HEALTH | |
|---|---|
| Title | Quality of Service and prioritisation for emergency services in the LTE RAN stack (Q4HEALTH)<br><br>***This project also corresponds to the category 'Communication systems/response coordination first responders'.*** |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2015 Topic code: ICT-12-2015<br>January 2016 / January 2018 - EUR: 728.176,00<br><br>CNECT - 688624 |
| Abstract | Q4HEALTH project is an innovation action focused on the optimization of real time video for emergency services over LTE. The project is implemented as a set of experiments conducted over the FIRE platforms PerformLTE and OpenAirInterface. To achieve this goal six different experiments will be performed focused on resolving a set of six challenges. These challenges will be approached from different perspectives, the applications that will be extended to provide information regarding the type of traffic as well as their traffic requirements to the EPC and the scheduler in the RAN; the radio access where different scheduling strategies will be explored for emergency video; and the core network where mechanism to perform QoS reservation, techniques for seamless mobility between heterogeneous access technologies and SDN techniques to improve communication will be studied. |
| Website | http://www.redzinc.net/team/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Redzinc Services Limited (IE)<br>Consortium:<br>2. Eurecom (FR)<br>3. Universidad De Malaga (ES) |

## These projects were complemented by new projects funded in 2016-2017:

| NO FEAR | |
|---|---|
| Title | Network Of practitioners For Emergency medicAl systems and cRitical care |
| Contract details | Secure Societies Call: H2020-SEC-2016-2017-2 Topic code: SEC-21-GM-2016-2017<br>June 2018 / May 2023 - EUR: 3.495.957,50 GA 786670 |
| Abstract | The emergency medical care in the EU is a fragmented chain including population, emergency medical services, volunteers, hospitals and cooperation with fire services, police and authorities. It needs to prepare to respond to new threats and assist casualties after security incidents. In response to this challenge, NO-FEAR proposes to bring together a pan-European network of practitioners, decision and policy makers in the medical and security fields. They will collaborate to achieve a common understanding of needs, as well as - in collaboration with academia and industries – increase the EU innovation potential that could better fill the operational gaps and recommend areas for future innovations. NO-FEAR main objectives are to: - create a long-lasting community of practitioners, interacting with a network of suppliers and academia, - elaborate an innovation roadmap, with practical recommendations for uptake, - advise relevant Research and Innovation projects, - support market uptake of EU research results, - issue policy and regulatory recommendations enabling collective procurement, - indicate priorities for standardisation; - support quick wins and practical short term results, - implement a transactional dynamic portal providing fora, a catalogue, market place and flexibility to address new threats. The project will be conducted by a consortium of 18 partners, of which 11 and the coordinator are practitioners, under the advice of the EC Community of Users. It aggregates the various dimensions of the project (acute care, operations and training), supported by the already large networks. To disseminate and exploit the NO-FEAR recommendations, an ambitious strategy will be implemented, including workshops, demonstrations and communication events every 6 months. This will enable knowledge sharing, build a common understanding and promote innovation uptake by organising technology showcases and demonstrations in a real practitioner environment.<br><br>***This project also corresponds to the category 'Training and Networking'.*** |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universita degli Studi del Piemonte Orientale Amedeo Avogadro (IT)<br>Consortium:<br>2. Norges Rode Kors (NO)<br>3. Health Service Executive HSE (IE)<br>4. Ministerul Afacerilor Interne (RO)<br>5. Universite de Nice Sophia Antipolis (FR)<br>6. Vrije Universiteit Brussel (BE)<br>7. Assistance Publique - Hopitaux de Paris (FR)<br>8. Stichting Nederlands Normalisatie - Instituut (NL)<br>9. Albert-Ludwigs-Universitaet Freiburg (DE)<br>10. Rinicom Limited (UK)<br>11. Waismed Ltd (IL)<br>12. Ayuntamiento de Madrid (ES)<br>13. Trilateral Research Ltd (UK)<br>14. Magen David Adom In Israel (IL)<br>15. Universitaet Innsbruck (AT)<br>16. TFC Research and Innovation Limited (IE)<br>17. Ministere de L'interieur (FR)<br>18. Universita Cattolica del Sacro Cuore (IT) |

| OSAS | |
|---|---|
| Title | Olmedo Smart Ambulance real-time diagnosis System |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-10-2016-2017. December 2017 / March 2018 - EUR: 50.000,00 GA 791365 |
| Abstract | According to the current state of the art, ambulances are not fully exploited as part of first aid system. In mass trauma cases, e.g. after earthquakes or accidents, accurate diagnosis on site and an accurate system to prioritise the most critical cases can help save lives. However due to unavailability of real time diagnostic integrate system and remote expert assistance from a doctor, accident victims can be misdiagnosed and given inadequate treatment and hospitalization. Additionally, in case of serious injuries, it is very important to position the patient in the right way, and if the location floor is irregular the stretcher should help to overcome the barriers without any movement that can further damage the patient. We, Olmedo Special Vehicles S.p.A, an established company specialised in the transformation of vehicles for leisure, medical care and clients with disabilities, have developed the answer to these needs: OSAS. It is composed of 2 main components: 1) an ambulance equipped with our X-Link system to connect all the ambulance medical devices among them and with the hospitals; 2) a new stretcher with embedded sensors for detecting and transmitting patient's vital signs in real time, and a system that automatically adjusts posture to suit patient's condition and maintains it using is gyro-stabilising technology. OSAS will improve patient care since the first moment, logistic efficiency by 25% and ambulance availability by 20%. Journeys for staff and patients will be less stressful, due to availability of remote expert help and ergonomic design of ambulance. Additionally, the project will allow the company to increase its market share in the current markets and enter new profitable ones. By the end of the fifth year of commercialization we will earn cumulative profit of €6.2 M. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Olmedo Special Vehicles SPA (IT) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| EU MFH | |
|---|---|
| Title | European Union Medical Field Hospital (EU MFH) |
| Contract details | 2016/PREP/14 01/01/2017 - 31/12/2018; EUR: 784406 |
| Abstract | The project European Modular Field Hospital (EUMFH) aims to explore how the medical capacity of the Union Civil Protection Mechanism can be improved. Different Member States of the European Union combine their expertise and investigate the possibility to build a common deployable Emergency Medical Team (EMT) level 3. The EMT-working group under the lead of the World Health Organisation developed standards for EMT's and the variety of services they provide as well as a referral system. Current developments show that there is a clear lack of active deployable level 3 Emergency Medical Teams i.e. referral hospitals in the field. Therefore, there is a need for a high level medical module that can be deployed for a longer term mission without putting the burden on one single Member State or organisation. The project has the permanent support of the WHO-EMT working group, Handicap International, and the Greek National Centre of Emergency Care. (Internal classification of DG Echo is MEDICAL) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7481&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ITALIAN CIVIL PROTECTION DEPARTMENT (IT)<br>Consortium:<br>1. Belgian Federal Public Service of Health (BE)<br>2. Beredskabsstyrelsen (Danish Emergency Management Agency)<br>3. Health Board (EE)<br>4. Direction generale de la securité civile et de la gestion des crises (FR)<br>5. Johanniter-Unfall-Hilfe e.V. (DE)<br>6. Universität Leipzig (DE)<br>7. Ministry of Internal Affairs - Department for Emergency Situations (RO)<br>8. Asociácia samaritánov Slovenskej republiky (SI) |

The projects were complemented by the following projects funded by INTERREG program:

| i-4-1-Health | |
|---|---|
| Title | i-4-1-Health |
| Contract details | 2014 - 2020 INTERREG V-A Belgium - The Netherlands (Vlaanderen - Nederland) 01/01/2017 - 31/12/2019 |
| Abstract | In 2014, the World Health Organisation declared antibiotic resistance to be one of the greatest threats to human health. Without supplementary measures, it is predicted that, by 2050, more people will die due to antibiotic-resistant pathogens than from cancer. Despite increasing resistance, however, no new antibiotics are expected to be marketed in the short term. i-4-1-Health, organised by the Amphia Hospital, with its main location in Breda, aims to reveal resistance amongst healthy citizens and patients and in the pork and poultry sectors. Professor Jan Kluytmans, who is heading the project, explains: Cross-border collaboration is crucial, as the spreading of antibiotic-resistant pathogens does not stop at national borders. This is specifically relevant in the Flanders-Netherlands border area, in view of the close trade and movement of persons, the cross-border use of healthcare facilities and the intensive cattle farming in the region. Collaboration between various disciplines, such as biological and biotech sciences, medicine (human and veterinary), nano and micro technology and agrofood is important. In addition to reinforcing the network on both national borders, two concrete tools have been created. On the one hand and thanks to the development of the digital measuring tool Infection Risk Scan (IRIS), infection risks can be analysed objectively and uniformly. IRIS measures processes such as cleaning, hand hygiene among healthcare providers and the correct use of medical resources and antibiotics. On the other hand, insight is required into who gets sick where, when and why, and into how the underlying pathogens are spread. With a number of partners, the software company Applied Maths will be developing and validating a track and trace system (TTS) in testing grounds for healthcare, public health and cattle farming. A complete A-Z procedure – from sampling to interpretation of the data gathered – is being set up to promptly trace and tackle the transmission routes of antibiotic-resistant pathogens. |
| Website | http://www.i41health.eu |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Stichting Amphia (NL)<br>Consortium members:<br>2. Applied Maths NV (BE);<br>3. Stichting Avans (NL);<br>4. Vlaamse Overheid (BE);<br>5. Center for Infectious Disease Expertise and Research (CIDER) BV (NL);<br>6. Universiteit Gent (BE);<br>7. GGD Zuid Limburg (NL);<br>8. Katholieke Universiteit Leuven (BE);<br>9. Universitair Ziekenhuis Gent (BE);<br>10. University College Roosevelt (NL);<br>11. ZorgSaam Zeeuws-Vlaanderen (NL);<br>12. Universiteit Hasselt (BE);<br>13. Universitair Ziekenhuis Antwerpen (BE);<br>14. Admiraal De Ruyter Ziekenhuis (NL);<br>15. Universiteit Utrecht, Farm Animal Health (NL);<br>16. De Gezondheidsdienst voor Dieren (NL);<br>17. Elisabeth TweeSteden ziekenhuis (NL);<br>18. Proefbedrijf Pluimveehouderij (BE);<br>19. Elkerliek Ziekenhuis (NL);<br>20. GGD Zeeland (NL);<br>21. GGD Hart voor Brabant (NL);<br>22. GGD West-Brabant (NL);<br>23. GGD Limburg-Noord (NL);<br>24. GGD Brabant-Zuidoost (NL);<br>25. Universiteit Antwerpen (BE);<br>26. Academisch ziekenhuis Maastricht (NL) |

## 2.4 Digital security in Health Services

The following projects have been funded within H2020:

| CHINO | |
|---|---|
| Title | The Health Data Security Platform for EU Developers Enterprises |
| Contract details | Secure Societies Call: H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>January 2017 / June 2017 - EUR: 50.000,00 GA 763240 |
| Abstract | Digital health applications are disrupting the healthcare sector by bringing huge innovation and improving the quality of care. However, this innovation brings also some risks since those apps collect and store extremely privacy sensitive data in cloud and mobile environments. According to analysis performed by 39 Data Protection Authorities worldwide in 2014, 85% of the 1.211 analyzed mobile health apps do not comply with data protection laws and security requirements. This behavior puts at serious risk users' privacy and trust in digital health. Chino helps application developers and enterprises to solve security and privacy law compliance issues by offering a secure platform to manage application users and how they access, store and share health sensitive data. Developers can easily integrate the Chino platform (its API) into their apps to ensure compliance, increase security, speed up application development, shorten time to market, at affordable pay-per-use cost. To ensure security of data transfers and storage Chino applies security-by-design principles and state-of-the-art security mechanisms. From compliance point of view, Chino terms of service define its liabilities and it ensures that the data management is performed according to EU and Member States laws. In addition, Chino is working on ISO 9001 & 27001 certifications, giving more guarantees to its customers. Thanks to its innovative services, the market opportunity, and the EC support (which will speed up the adequate team growth, marketing plan, technological roadmap implementation and international commercialization), the company expect to create over 46 high qualified jobs and generate a turnover over 10M€ by 2020. Furthermore, the overall results of this project will catapult Chino company as a global leader on the digital health & cyber security market. |
| Website | https://chino.io/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Chino Societa a Responsabilita Limitata Semplificata (IT) |

| KONFIDO | |
|---|---|
| Title | KONFIDO - Secure and Trusted Paradigm for Interoperable eHealth Services |
| Contract details | Secure Societies Call: H2020-DS-SC1-2016 Topic code: DS-03-2016 November 2016 / October 2019 - EUR: 4.992.077,50 GA 727528 |
| Abstract | KONFIDO advances the state of the art of eHealth technology with respect to four key dimensions of digital security, namely: data preservation, data access and modification, data exchange, and interoperability and compliance. To address the challenges of secure storage and exchange of eHealth data, protection and control over personal data, and security of health related data gathered by mobile devices, KONFIDO takes a holistic approach – i.e. one targeting all the architectural layers of an IT infrastructure, and specifically: storage, dissemination, processing, and presentation. KONFIDO builds on and extends the results of a best of breed selection of successful projects, notably: epSOS, STORK, DECIPHER, EXPAND, and ANTILOPE. The approach will be implemented in a technological framework that relies on six technology pillars: 1) security extensions provided by main CPU vendors; 2) security solutions based on photonic technologies; 3) homomorphic encryption mechanisms; 4) customised STORK-compliant eID support; 5) customized extensions of selected SIEM solutions; and 6) disruptive logging and auditing mechanisms. The usability of the proposed solutions will be tested in a realistic setup, deployed on top of a federated cloud infrastructure, where data will be exchanged and services interoperate cross-border. Experimental evidence will be collected, proving that KONFIDO solutions provide effective protection even against attacks by privileged software (e.g. the Operating System or the Hypervisor) or privileged users (e.g. the System Administrator or the Cloud Provider). Since i) it builds on results that were already widely accepted, and ii) it relies on a handful of complementary technologies (some of which are already at a high level of maturity), KONFIDO has a dramatic potential in terms of innovation in the field of coordinated care towards improved quality of healthcare solutions. |
| Website | http://www.konfido-project.eu/konfido/ |

| KONFIDO | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Exus Softwarde Ltd (UK)<br>Consortium:<br>2. Agencia de Qualitat I Avaluacio Sanitaries de Catalunya (ES)<br>3. Bit4id Srl (IT)<br>4. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>5. Consorci Institut Dínvestigacions Biomediques August pi i Sunyer (ES)<br>6. Consorzio Interuniversidario Nazionale per l'Informatica (IT)<br>7. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>8. Eulambia Advanced Technologies Monoprosopi Etairia Periorismenis Efthinis (EL)<br>9. Fondazione Santoboto Pausilipon Onlus (IT)<br>10. Fundacio Ereucat (ES)<br>11. Hospital Clinic I Provincial de Barcelona (ES)<br>12. Imperial College of Science Technology and Medicine (UK)<br>13. MEdcom (DK)<br>14. Sundhed.DK is (DK)<br>15. Telbios SRL (IT)<br>16. Time.Lex (BE) |

| SHiELD | |
|---|---|
| Title | European Security in Health Data Exchange |
| Contract details | Secure Societies Call: H2020-DS-SC1-2016 Topic code:DS-03-2016 January 2017 / December 2019 - EUR: 3.897.267,50 GA 727301 |
| Abstract | SHiELD will unlock the value of health data to European citizens and businesses by overcoming security and regulatory challenges that today prevent this data being exchanged with those who need it. This will make it possible to provide better health care to mobile citizens across European borders, and facilitate legitimate commercial uses of health data. The exchange of health data is already possible, but rarely happens in practice because it is hard to ensure that the combined 'end-to-end' system will be secure and comply with data protection laws. SHiELD will address these security and compliance challenges: • providing models and analysis tools for automated identification of end-to-end security risks and compliance issues and supporting privacy and 'by design'; • defining an open and extensible data exchange architecture based on epSOS, able to support security measures to address these risks; • developing security mechanisms to deal with new and emerging risks, such as inference attacks on sensitive data, and risks from relatively unprotected mobile edge devices; • providing faster and more cost effective methods to verify and monitor compliance with multiple sets of applicable regulations; SHiELD case studies will address cross border scenarios in which a citizen needs health care while in one Member State, and care givers need access to their health data from different Member States. SHiELD will also consider how commercial providers of lifestyle services or wearable sensors may be involved in such data exchanges. SHiELD will thereby also create opportunities for using health data to create such products and services addressing the common European market. SHiELD will provide guidance in best practice to achieve end-to-end security and data protection compliance in health and health related applications. SHiELD will also feed into CEN-Cenelec and ETSI efforts to create EU standards for data protection by design in eHealth. |
| Website | http://www.project-shield.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacion Tecnalia Research & Innovation (ES)<br>Consortium:<br>2. Aimes Grid Services Community Interest Company (UK)<br>3. Fondazione Centro San Raffaele (IT)<br>4. Ibermatica Sa (ES)<br>5. Ibm Israel - Science and Technology Ltd (IL)<br>6. Instituto Ibermatica De Innovacion (ES)<br>7. Lancashire Care Nhs Foundation Trust (UK)<br>8. Metrarc Limited (UK)<br>9. Ospedale San Raffaele Srl (IT)<br>10. Servicio Vasco De Salud Osakidetza (ES)<br>11. Stelar Security Technology Law Research Ug (DE)<br>12. Symphonic Software Ltd (UK)<br>13. University Of Southampton (UK) |

| MH-MD | |
|---|---|
| Title | My Health - My Data |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Information and Communication Technologies.<br>Call: H2020-ICT-2016-1. Topic code: ICT-18-2016. November 2016 / October 2019 - EUR: 3.456.188,50 GA 732907 |
| Abstract | Issues of data subjects' privacy and data security represent a crucial challenge in the biomedical sector more than in other industries. The current IT landscape in this field shows a myriad of isolated, locally hosted patient data repositories, managed by clinical centres and other organisations, which are subject to frequent and massive data breaches. Patients are disenfranchised in this process, and are not able to have a clear understanding of who uses their personal information and for what purposes. This makes it the ideal field to build and test new models of privacy and data protection, and the technologies that encode them. MyHealthMyData (MHMD) aims at changing the existing scenario by introducing a distributed, peer-to-peer architecture, based on Blockchain and Personal Data Accounts. This approach will determine new mechanisms of trust and of direct, value-based relationships between people, hospitals, research centres and businesses, in what will be the first open biomedical information network centred on the connection between organisations and the individual. The system will develop a comprehensive methodology to guide the implementation of data and identity protection systems, specifically defining approaches and tools to profile and classify sensitive data based on their informational and economic value, to assess the most suitable and robust de-identification and encryption technologies needed to secure different types of information, to allow advanced analytics, and to evaluate the overall reliability of a generic multi modular architecture. MHMD will also analyse users' behavioural patterns alongside ethical and cultural orientations, to identify hidden dynamics in the interactions between humans and complex information services, to improve the design of data-driven platforms and to foster the development of a true information marketplace, in which individuals will be able to exercise full control on their personal data and leverage their value. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Lynkeus (IT)<br>Consortium:<br>2. Maat France (FR)<br>3. Athina-Erevnitiko Kentro Kainotomias Stis Technologies tis Plirofoforias, ton Epikolnonion Kai tis Gnosis (EL)<br>4. Negri-Clementi, Toffoletto, Montironi & Soci (IT)<br>5. DIGI.ME Limited (UK)<br>6. Consiglio Nazionale delle Ricerche (IT)<br>7. Deutsches Herzzentrum Berlin (DE)<br>8. Siemens Healthcare GMBH (DE)<br>9. Haute Ecole Specialisee de Suisse Occidentale (CH)<br>10. University College London (UK)<br>11. Queen Mary University of London (UK)<br>12. Universitatea Transilvania din Brasov (RO)<br>13. SBA Research Gemeinnutzige GMBH (AT)<br>14. Ospedale Pediatrico Bambino Gesu (IT)<br>15. H W Communications Limited (UK) |

These projects were complemented in the H2020 framework by the following projects funded by INTERREG programme:

| health-i-care | |
|---|---|
| Title | health-i-care |
| Contract details | 2014 - 2020 INTERREG V-A Germany - The Netherlands 31/03/2016 - 30/03/2020 |
| Abstract | Themes Health-i-care: innovations for safer healthcare All health-i-care project activities are devoted to the highly actual thematic focus of prevention and control of hospital infections and antibiotic resistance and the associated risks for patients and public health. Health-i-care focuses on developing innovative products and technologies that protect the population from infection and that cope with antibiotic resistance. This involves the innovative and different tools in the fields of diagnostics, therapy, cleaning, medical technology and information-based and persuasive communications. The project was conceived from concrete demands and needs of users and purchasing parties of future customers. Health -i- Care is committed by means of crossborder and cross-sector networking to strengthening the capacity for innovation in the border region and , related to this , the development of one strong health economic region. SMEs are the essential engine for these innovations. Only in conjunction with them the in health-i-care -defined 30 relevant innovative products and technologies, that contribute to the preservation of our for health so important hygienic standards, can be developed. |
| Website | http://www.interregiva.eu/home/ |

| health-i-care | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Universitair Medisch Centrum Groningen (UMCG) (NL)<br>Consortium members:<br>2. CWZ (Stichting Nijmeegs Interconfessioneel Ziekenhuis Canisius Wilhelmina) (NL);<br>3. Central Veterinary Institute (CVI) (NL);<br>4. Universiteit Twente (NL);<br>5. Universität Oldenburg - European Medical School (EMS) (DE);<br>6. Bananaa Opmerkelijke Communicatie B.V. (NL);<br>7. Biotrack B.V. (NL);<br>8. BioVisible B.V. (NL);<br>9. Brandes-Innovation i.G. (DE);<br>10. Checkbuster B.V. (NL);<br>11. Check-Points Health B.V. (NL);<br>12. Coolminds B.V. (NL);<br>13. eLABBS / Exxellence B.V. (NL);<br>14. Eno Zorgverzekering N.V. (NL);<br>15. Hycult Biotechnology B.V. (NL);<br>16. IDMC B.V. (NL);<br>17. Indietopia B.V. (NL);<br>18. initiate Development (DE);<br>19. KSYOS TeleMedisch Centrum (NL);<br>20. Lanthio-pharma B.V. (NL);<br>21. Mediaproducts B.V. (NL);<br>22. Novioscan B.V. (NL);<br>23. Ophardt Hygiene-Technik GmbH + Co. KG (DE);<br>24. ORTEC Consulting Group B.V. (NL);<br>25. PolyVation B.V. (NL);<br>26. RePoint B.V. (NL);<br>27. Ridom GmbH (DE);<br>28. S&F Datentechnik GmbH & Co. KG (DE);<br>29. T-Xchange B.V. (NL);<br>30. Virtask B.V. (NL);<br>31. Watter B.V. (NL);<br>32. Westfalen Gas AG (DE);<br>33. EasyMeasure B.V. (NL);<br>34. CKM GmbH (DE);<br>35. Wetsus (NL);<br>36. Duits-Nederlandse Handelskamer (DNHK) (NL);<br>37. Universität Bielefeld (Fakultät für Gesundheitswissenschaften) (DE);<br>38. Christophorus-Kliniken (Institut für Labormedizin, Mikrobiologie und Hygiene) (DE);<br>39. RadboudUMC, afdeling Medische Microbiologie (NL);<br>40. Cosine Research B.V. (NL) |

# 3. Food safety and security

## 3.1 Food safety

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Food safety | PLANTFOODSEC |

These projects have been complemented by the following H2020 projects:

| AUTHENT-NET | |
|---|---|
| Title | Food Authenticity Research Network (AUTHENT-NET) |
| Contract details | Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy<br>Call: H2020-SFS-2015-1 Topic code: SFS-14b-2015<br>April 2016 / April 2018 - EUR: 499.533,75<br><br>REA - 696371 |
| Abstract | AUTHENT-NET will:1) Bring together relevant MS R&D budget holders to coordinate inter-disciplinary research effort and build a cohesive and sustainable network 2) Undertake stocktaking of existing national research and assess against the international landscape 3) Establish transnational mechanisms and instruments for collating and exchanging information on food authenticity research 4) Develop a high level research and innovation strategy for transnational research and a rationale for a potential ERANET on food authenticity. Expectected impacts: improved coordination and communication between relevant MS research budget holders; enhanced cognisance of existing national research; joint strategy for food fraud R&D; agreed priorities and capability to deliver transnational European research on food fraud. |
| Website | http://www.authent-net.eu/ |

| AUTHENT-NET | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fera Science Limited (UK)<br>Consortium:<br>2. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>3. Alma Mater Studiorum - Universita Di Bologna (IT)<br>4. Centre De Cooperation Internationale En Recherche Agronomique Pour Ledeveloppement - C.I.R.A.D. Epic (FR)<br>5. Centre Wallon De Recherches Agronomiques (BE)<br>6. Food And Agriculture Organization Of The United Nations Fao (IT)<br>7. Food Safety Authority Of Ireland (IE)<br>8. Instituto Nacional De Investigacion Y Tecnologia Agraria y Alimentaria (ES)<br>9. Istituto Zooprofilattico Sperimentale Del Piemonte Liguria E Valle D'aosta (IT)<br>10. Matis Ohf (IS)<br>11. Michigan State University (US)<br>12. Ministere De L'economie, Des Finances Et De L'industrie (FR)<br>13. Ministerie Van Economische Zaken (NL)<br>14. Nofima AS (NO)<br>15. Stichting VU (NL)<br>16. Stichting Wgeningen Research (NL)<br>17. The Queen's University Of Belfast (UK)<br>18. The Secretary Of State For Environment, Food And Rural Affairs (UK)<br>19. Vysoka Skola Chemicko-Technologicka V Praze (CZ) |

| EuroMix | |
|---|---|
| Title | EuroMix (EuroMix) |
| Contract details | Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy<br>Call: H2020-SFS-2014-2 Topic code: SFS-12-2014<br>May 2015 / May 2019 - EUR: 7.999.097,00<br><br>REA - 633172 |
| Abstract | The aim is to develop a strategy for the risk assessment of mixtures of multiple chemicals derived from multiple sources across different life stages; provide a sound scientific basis for managing risks to public health from chemical mixtures, ultimately reducing use of laboratory animals; and support the global discussion of risk assessment policies for mixtures. The approach takes account of the gender dimension and balances the risk of chemicals present in foods against the benefits of those foods. Important concepts are prioritisation criteria for chemicals based on their exposure and hazard characteristics. New hazard and exposure models will be embedded in a model toolbox, made available for stakeholders through an openly accessible web-based platform. |
| Website | https://www.euromixproject.eu/ |

| EuroMix | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rijksinstituut Voor Volksgezondheid En Milieu (NL)<br>Consortium:<br>2. Agence Nationale De La Securite Sanitaire De L Alimentation De L'Environnement Et Du Travail (FR)<br>3. Benaki Phytopathological Institute (EL)<br>4. Bundesinstitut Fuer Risikobewertung (DE)<br>5. Danmarks Tekniske Universitet (DK)<br>6. Eidgenoessische Technische Hochschule Zuerich (CH)<br>7. European Fresh Produce Association Aisbl (BE)<br>8. Folkehelseinstituttet (NO)<br>9. Fundacao Universidade De Brasilia (BR)<br>10. Health And Safety Executive (UK)<br>11. Imperial College Of Science Technology And Medicine (UK)<br>12. Institut National De La Recherche Agronomique (FR)<br>13. Institut National De L Environnement Et Des Risques Ineris (FR)<br>14. Karolinska Institutet (SE)<br>15. Matis Ohf (IS)<br>16. Ministry Of Health Of The Republic Of Cyprus (CY)<br>17. Nacionalni Institut Za Javno Zdravje (SL)<br>18. Statni Zdravotni Ustav (CZ)<br>19. Stichting Wageningen Research (NL)<br>20. The Secretary Of State For Environment, Food And Rural Affairs (UK)<br>21. Universita Degli Studi Di Milano (IT)<br>22. Universitat Rovira I Virgili (ES)<br>23. Universiteit Gent (BE)<br>24. University Of Ottawa (CA)<br>25. U.S. Environmental Protection Agency – Epa (US)<br>26. World Health Organization (CH) |

| POnTE | |
|---|---|
| Title | Pest Organisms Threatening Europe (POnTE) |
| Contract details | Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy<br>Call: H2020-SFS-2014-2 Topic code: SFS-03a-2014<br>November 2015 / November 2019 - EUR: 6.850.000,00<br><br>REA - 635646 |
| Abstract | This proposal focuses to minimize the risk of introduction/impact of emerging pests threatening EU agriculture and forestry. Targeted pests, their vectors and the host response will be explored using innovative approaches (NGS, transcriptomic). Diseases surveillance and epidemiology given by current methods will integrate improved survey protocols and remote sensing. Innovative IPM will include studies of microbiome to develop sustainable solutions in line with the EU plant health legislation. New knowledge gained with POnTE will result in an outcome-based pest prevention and management work plan to: 1) implement area-wide pest risk assessments; 2) prevent the entry and develop surveillance and early detection tools (diagnostic kits, lab-on-chip, new biomarkers); 3) mitigate the spread and reduce the socio-economic impact; 4) IPM based on disease resistance, disease-free seeds, cultural practices and physical environmentally-friendly treatments; 5) support knowledge-based decision-making policies at EU level. |
| Website | https://www.ponteproject.eu/ |

| POnTE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Consiglio Nazionale Delle Ricerche (IT)<br>Consortium:<br>2. Acli Racale Societa Agricola Cooperativa (IT)<br>3. Agence Nationale De La Securite Sanitaire De L Alimentation De L Environnement Et Du Travail (FR)<br>4. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>5. Agricola Villena Cooperativa Valenciana (ES)<br>6. Agritest Srl (IT)<br>7. A L Tozer Ltd (UK)<br>8. Aurea Imaging Bvba (BE)<br>9. Bundesforschungs-Und Ausbildungszentrum Für Wald, Naturgefahren Und Landschaft (AT)<br>10. Certis Europe B.V. (NL)<br>11. Faculty Of Agriculture - University Of Belgrade (RS)<br>12. Forestry Commission Research Agency (UK)<br>13. Fundacion Citoliva, Centro De Innovacion Y Tecnologia Del Olivar Y Del Aceite (ES)<br>14. Institut National De La Recherche Agronomique (FR)<br>15. Instituto Valenciano De Investigaciones Agrarias (ES)<br>16. Jung Thomas (DE)<br>17. Loewe Biochemica Gmbh (DE)<br>18. Luonnonvarakeskus (FI)<br>19. Norwegian Institute Of Bioeconomy Research – Nibio (NO)<br>20. Scottish Government (UK)<br>21. The Agricultural Research Organisation Of Israel - The Volcani Centre (IL)<br>22. Universidad De Costa Rica (CR)<br>23. Universita Degli Studi Di Bari Aldo Moro (IT)<br>24. Vilmorin (FR)<br>25. Wageningen University (NL) |

## These projects were complemented by new projects funded in 2016-2017:

| EMPHASIS-PREP | |
|---|---|
| Title | Preparation for EMPHASIS: European Infrastructure for multi-scale Plant Phenomics and Simulation for food security in a changing climate |
| Contract details | Excellent science - European Research Infrastructures (including e-Infrastructures). Call: H2020-INFRADEV-2016-2.<br>Topic code: INFRADEV-02-2016. January 2017 / December 2020 - EUR: 4.000.000,00 GA 739514 |
| Abstract | Sustainable food security and increasing availability of plant biomass for human nutrition and bioindustries is the key challenge for the coming decades. The analysis of crop performance with respect to structure, function, quality and interaction with the environment ("phenotyping") remains the bottleneck for the exploitation of crop genetic diversity required for the enhancement of plant productivity and progress in plant breeding. This requires substantial and concerted action to develop and to increase the availability of phenotyping infrastructures. The European Strategic Forum for Research Infrastructure (ESFRI) has identified "Plant Phenotyping" as a priority for the European research area and EMPHASIS has been listed on the ESFRI ROADMAP as an infrastructure project to develop and implement a pan-European plant phenotyping infrastructure. The project EMPHASIS-PREP will provide the basis for the establishment the legal framework, the business plan and preparation of an information system for a sustainable and innovative pan-European infrastructure for plant phenotyping within the framework of EMPHASIS. EMPHASIS-PREP will establish a transparent, open and inclusive process, the project partners will foster efficient work in the project in close cooperation with the European plant phenotyping community and all stakeholders. EMPHASIS-PREP includes four major steps: i) mapping (infrastructure, funders, access procedure and models, stakeholder community, e-infrastructure, imaging approaches, legal and governance scenarios); ii) gapping - analysing the gaps and limitations based on the mapping activities; iii) developing strategies to address the gaps; iv) combining the strategies in a business plan for future operation of EPMPHASIS within a corresponding legal framework. |
| Website | https://emphasis.plant-phenotyping.eu/ |

| EMPHASIS-PREP | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Forschungszentrum Julich Gmbh (DE)<br>Consortium:<br>2. Universite Catholique de Louvain (BE)<br>3. Consiglio Nazionale delle Ricerche (IT)<br>4. VIB (BE)<br>5. Biotechnology and Biological Sciences Research Council (UK)<br>6. The University of Nottingham (UK)<br>7. Institut National de la Recherche Agronomique (FR)<br>8. Stichting Wageningen Research (NL) |

## 3.2 Supply chain

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Supply chain | SNIFFER 2<br>SPICED |

These projects have been complemented by the following H2020 projects:

| MycoKey | |
|---|---|
| Title | Integrated and innovative key actions for mycotoxin management in the food and feed chain (MycoKey) |
| Contract details | Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy<br>Call: H2020-SFS-2015-2 Topic code: SFS-13-2015<br>April 2016 / April 2020 - EUR: 5.000.000,00<br><br>REA - 678781 |
| Abstract | MycoKey aims to generate innovative and integrated solutions that will support stakeholders in effective and sustainable mycotoxin management along food and feed chains. The project will contribute to reduce mycotoxin contamination mainly in Europe and China, where frequent and severe mycotoxin contaminations occur in crops, and where international trade of commodities and contaminated batches are increasing. MycoKey will address the major affected crops maize, wheat and barley, their associated toxigenic fungi and related mycotoxins. The focus of Mycokey will be: 1) innovating communications of mycotoxin management by applying ICT, providing input for legislation, enhancing knowledge and networks; 2) selecting and improving a range of tools for mycotoxin monitoring; 3) assessing the use of reliable solutions, sustainable compounds/green technologies in prevention, intervention and remediation. |
| Website | http://www.mycokey.eu/ |

| MycoKey | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Consiglio Nazionale Delle Ricerche (IT)<br>Consortium:<br>2. Anhui Agricultural University (CN)<br>3. Austep-Austeam Environmental Protection Spa (IT)<br>4. Boortmalt Nv (BE<br>5. Buhler Ag (CH)<br>6. Chinese Academy Of Agricultural Sciences (CN)<br>7. Confederation Europeenne De La Production De Mais (FR)<br>8. Eidgenoessisches Departement Fuer Wirtschaft, Bildung Und Forschung (CH)<br>9. Faculty Of Agriculture - University Of Belgrade (RS)<br>10. Huazhong Agricultural University (CN)<br>11. Hubei Provincial Academy Of Agriculture (CN)<br>12. Institute Of Medicinal Plant Development , Chinese Academy Of Medical Sciences (CN)<br>13. Institute Of Plant Protection Chinese Academy Of Agriculture Sciences (CN)<br>14. Institutul National De Cercetare-Dezvoltare Pentru Bioresurse Alimentare (RO)<br>15. International Institute Of Tropical Agriculture (NG)<br>16. Jiangsu Academy Of Agricultural Sciences*Jaas (CN) |

| MyToolBox | |
|---|---|
| Title | Safe Food and Feed through an Integrated ToolBox for Mycotoxin Management (MyToolBox) |
| Contract details | Food Security, Sustainable Agriculture & Forestry, Marine, Maritime & Inland Water Research & the Bioeconomy<br>Call: H2020-SFS-2015-2 Topic code: SFS-13-2015<br>March 2016 / March 2020 - EUR: 4.997.660,75<br><br>REA - 678012 |
| Abstract | MyToolBox mobilises a multi-actor partnership (academia, farmers, technology SMEs, food industry and policy stakeholders) to develop novel interventions aimed at achieving a 20-90% reduction in crop losses due to fungal and mycotoxin contamination. A major component of MyToolBox is to provide the recommended measures to the end users along the food and feed chain in a web-based Toolbox. Research into post-harvest measures including real-time monitoring during storage, innovative sorting of crops using vision-technology and novel milling technology will enable cereals with higher mycotoxin levels to be processed without breaching regulatory limits in finished products. Research into the effects of baking on mycotoxin levels will provide better understanding of process factors used in mycotoxin risk assessment. |
| Website | https://www.mytoolbox.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Fuer Bodenkultur Wien (AT)<br>Consortium:<br>2. Academy Of State Administration Ofgrain (CN)<br>3. Agro Lv Limited (UA)<br>4. Axeb Biothech Sl (ES)<br>5. Barilla G. E R. Fratelli Spa (IT)<br>6. Biomin Holding Gmbh (AT)<br>7. Bundesinstitut Fuer Risikobewertung (DE)<br>8. Cranfield University (UK)<br>9. Drustvo Sa Ogranicenom Odgovornoscuagrocentrum Za Proizvodnju Prometi Poslovne Usluge (RS)<br>10. Feed Research Institute Chinese Academy Of Agricultural Sciences (CN)<br>11. Foodlife International Bilimsel Danismanlik Proje Yonetimi Egitim Arastirma Gelistirme Sanayi Ve Ticaretlimited Sirketi (TR)<br>12. Harper Adams University (UK)<br>13. Horta Srl (IT)<br>14. Icc-International Assocation For Cereal Science And Technology (AT)<br>15. Innovacio I Recerca Industrial I Sostenible Sl (ES)<br>16. Institute Of Agro-Products Processing Science And Technology, Chinese Academy Of Agricultural Sciences (CN)<br>17. Norwegian Institute Of Bioeconomy Research – Nibio (NO)<br>18. Stichting Wageningen Research (NL)<br>19. Sudzucker Ag (DE)<br>20. Suleyman Demirel University (TR)<br>21. Taris Figs Agricultural Sales Cooperatives Unions (TR)<br>22. Univerzitet U Novom Sadu, Poljoprivredni Fakultet Novi Sad (RS)<br>23. Wageningen University (NL) |

These projects were complemented by new projects funded in 2016-2017:

| DELTA-FLU | |
|---|---|
| Title | Dynamics of avian influenza in a changing world |
| Contract details | Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy.<br>Call: H2020-SFS-2016-2. Topic code: SFS-14-2016. June 2017 / May 2022 - EUR: 5.497.793,75 GA 727922 |
| Abstract | DELTA-FLU aims to determine the key viral, host-related, and environmental factors that determine the dynamics of avian influenza (AI) in poultry and other host species, with the goal of improving prevention and control strategies against this disease. As a result of rapidly changing dynamics, AI continues to cause unexpected and devastating outbreaks in poultry in the EU, as well as world-wide. Its potential to become pandemic is also of great concern to public health. The key viral, host-related, and environmental factors that drive AI dynamics are poorly understood, which currently impedes the development of effective control and prevention strategies. As the problems caused by AI require global solutions, DELTA-FLU is a consortium with top-level experts from Europe, North America, and Asia. Through interdisciplinary research focused on key questions of AI, DELTA-FLU will determine 1) potential for some highly pathogenic avian influenza viruses (HPAIV, e.g. H5N8 clade 2.3.4.4) to be maintained in wild bird populations and spread over long-distances, 2) key viral, host, and environmental factors for incursion of HPAIV from wild birds into poultry holdings, 3) roles of viral, host, and environmental factors in the transition of low pathogenic avian influenza virus to HPAIV in poultry, 4) effect of flock immunity against AI on early detection and viral genetic drift, and 5) viral genetic factors that allow reassortants of avian and mammalian influenza viruses to transmit efficiently among pigs. Primary sectors and end-users are involved through participation in the Multi-Actor Panel, which will also play an important role in the translation of the results into effective prevention and control strategies. As such, DELTA-FLU will make significant advances in knowledge of AIV dynamics and provide the evidence base for improved diagnosis, prevention, and control strategies for AI in poultry, as well as for reducing the possible risk of AI to become potentially pandemic. |
| Website | https://delta-flu.fli.de/de/home/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Friedrich Loeffler Institut - Bundesforschungsinstitut fuer Tiergesundheit (DE)<br>Consortium:<br>2. Linneuniversitetet (SE)<br>3. Universiteit Gent (BE)<br>4. United States Department of Agriculture (US)<br>5. Istituto Zooprofilattico Sperimentale delle Venezie (IT)<br>6. The Secretary of State for Environment, Food and Rural Affairs (UK)<br>7. The University of Hong Kong (HK)<br>8. Erasmus Universitair Medisch Centrum Rotterdam (NL<br>9. The University of Edinburgh (UK) |

# 4. Critical infrastructure protection and urban built environment

The **European Programme for Critical Infrastructure Protection** (see section XX) is an all-hazards programme with a broad range of activities and areas related to prevention, preparedness and response. In this respect, risk management is taking stock of existing research and innovation activities conducted notably in the FP7 Environment (including climate change) programme, in particular the Group on Earth Observation (GEO) such as the Supersites Initiative and research on "stress tests" for critical infrastructures. The programme is furthermore enhancing links with management activities undertaken within the Union Civil Protection Mechanism.

## 4.1 Urban soft targets and Urban critical infrastructures

### 4.1.1 Screening of persons, bags, vehicles

The following projects have been funded within H2020:

| AIRIMGO | |
|---|---|
| Title | ADVANCE IRIS RECOGNITION IN MOVE (AIRIMGO) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / December 2015 - EUR 50.000<br><br>EASME - 673751 |
| Abstract | Development of a new recognition system covering high throughput screening of people in reasonably real-time, as people approach entrances to buildings or enter public transportation system, to improve the security and speed of recognition, make the process more comfortable for users and more efficient for the management of the building. |
| Website | http://www.shsconsultores.es/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. S.H.S. CONSULTORES SL (ES) |

| ART | |
|---|---|
| Title | Feasibility assessment on Alarm Resolution Technology, using X-Ray Echo Methodology (ART) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>June 2015 / October 2015 - EUR 50,000<br><br>EASME - 674563 |
| Abstract | Exploitation of novel Alarm Resolution Technology (ART), using novel patented X-Ray Echo Methodology (all-new high-energy x-ray Rayleigh scattering technology) for high-throughput measuring and characterizing of materials and fluids applied to various security domains and applications. Particular emphasis on the air transport domain, with technologies capable of detecting explosives, narcotics and CRBN's solved in Liquid Aerosols & Gels (LAGs). |
| Website | http://www.entech-scientific.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Entech Scientific BV (NL) |

| Bio-AX | |
|---|---|
| Title | A new wearable, cost effective and non-invasive biometric solution for accurate and high throughput screening of people, bags and vehicles (Bio-AX) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>June 2015 / August 2015 - EUR 50,000<br><br>EASME - 673969 |
| Abstract | Development of a new wearable, cost-effective and non-invasive biometric solution for accurate and high throughput screening of people, bags and vehicles. Feasibility Study and Business Plan for the transition of the prototype into commercialisation. |
| Website | http://audaxsecurity.co.uk/bio-ax/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Audax Global Solutions Limited (UK) |

| HOLOSCAN | |
|---|---|
| Title | Holographic Scanner for Safe Real-Time High Throughput Screening of People and Their Bags (HOLOSCAN) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>December 2014 / June 2015 - EUR: 50,000.00<br><br>EASME - 651272 |
| Abstract | HOLOSCAN aims to provide the first commercial HOLOSCAN security scanning system that will allow true real-time scanning of multiple moving persons and their bags which novelty has been verified. Furthermore, it plans adapt this HOLOSCAN system to client's needs by varying diode panel size and image resolution. |
| Website | http://www.ideas.no/holoscan.pdf |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Integrated Detector Electronics AS (NO) |

| SPIDERS | |
|---|---|
| Title | Synthetic aPerture Interferometric raDiometer for sEcurity in cRitical infraStructures (SPIDERS) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2014 Topic code: DRS-17-2014<br>October 2015 / October 2017 - EUR: 816,000.00<br><br>EASME - 674274 |
| Abstract | SPIDERS aims at developing on the rising markets of PMMW technology for security applications and tackle challenges such as long queues at airports and bulky scanners by a fast 3D scanning system of walking people and detection of hidden objects and materials. |
| Website | http://www.mc2-technologies.com/rd-project/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Microwave Characterization Center SAS (FR) |

## These projects were complemented by new projects funded in 2016-2017:

| ColdNano-X | |
|---|---|
| Title | ZnO-nanotech cold cathode x-ray tube for the security market |
| Contract details | Secure Societies Call: H2020-SMEINST-2-2016-2017 Topic code: SMEInst-13-2016-2017<br>October 2016 / September 2018 - EUR: 1.911.457,10 GA 739367 |
| Abstract | Luxbright(LXB) has a disruptive nanomaterial X-ray tube w/ field emission,cold cathode, & electron beam focussing. It enables high freq pulsing, high flux micro focused beam. LXB tech includes X-ray tubes that are related to an innovative electron emitter & an X-ray device using it, & bring Luxbright to the forefront of X-ray imaging by offering low dose, low power consumption & fast switching. LXB has an electron guiding & receiving element, the "Eleenna" Embodiment, a micro focus beam with spatial steadiness & efficient internal cooling, LXB extends further with ultra high resolution X-ray imaging & to a broader market place & even high voltage applications. LXB identified that in the security screening, threat detection & non-destructive inspection space there lies some problems that officials & device manufacturers are trying to solve: Image clarity & processing intelligence limits effectiveness of systems-Throughput of scanners slow because of need to separate materials(liquids+tech) Bulkiness & size of scanners is non-portable, non-flexible, & 'permanent' Radiation exposure to personnel a concern Power footprint of scanners prevents portable imaging Expensive components & slowly evolving technology result in inefficient spending Postal risks are on the rise, as countries wish to have but cannot afford fast enough a 100% parcel scan solution, & must resort to 'spot checking' for threats. Recent Terror has increased the need for addressing these and it is becoming more urgent & critical. There are more risks, more travellers, more post & more need for security radiology scanners. Is there any new technological solutions that may enable cost, speed, portability or safety increases? LXB aims to address to these issues, innovating the core of radiology inspection: the x-ray source itself. ColdNano-X projects aims on commercializing security solutions for portable bag scanning, post scanning, & 3d CT. It seeks tight integration with the medipix & other detectors. |
| Website | http://luxbright.com/coldnanox/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Luxbright AB (SE) |

| PMT4NIIS | |
|---|---|
| Title | Predictive Maintenance Tool for Non-Intrusive Inspection Systems |
| Contract details | Secure Societies Call: H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>January 2018 / June 2018 - EUR: 50.000,00 GA 790798 |
| Abstract | The importance of providing for effective, time and cost-saving maintenance of Non-Intrusive Inspection Systems (NIIS) cannot be overstated. For the purpose of our proposal, NIIS are X-ray systems deployed to inspect all types of parcels, baggage, cargo, vehicles, containers, and trains, in a non-intrusive manner. Over the past 10 years Danlex has realised sales of NIIS equipment and NIIS maintenance services totalling more than EUR 40 million in Bulgaria, Macedonia, and Kosovo. Airports, customs administrations, border police, harbours, and other authorities responsible for protecting the freedom and security of societies worldwide (security organisations) in the European Union and worldwide have been charged with: preventing global terrorist threats and illegal human trafficking; detecting and identifying illicit or undeclared goods; increasing security to the global supply chain. To tackle these challenges security organisations have increasingly been utilising NIIS equipment over the last two decades, as the most effective equipment for fulfilling their duties in compliance with the applicable regulations and standards. With the average NIIS lifespan of 10 years the maintenance has proved to be high and lead to much higher than anticipated running costs over the equipment's lifetime, totalling to 100% of NIIS purchase price. To ensure value for money, it is important that NIIS operate with maximum efficiency and at the lowest possible level of maintenance and life-cycle costs. NIIS maintenance solution enabled by PMT (PMT4NIIS) will allow us to equip the security organisations and market stakeholders with the next generation of NIIS maintenance. Independent reports estimate that with reliability-centered maintenance powered by predictive models, stakeholders in other markets spend 15% of their overall maintenance time on Predictive Maintenance, yet achieve an impressive 50% decrease in maintenance costs. |
| Website | http://www.danlex.bg/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Danlex Eood (BG) |

### 4.1.2 Detection of potential CBRN-E threats at urban soft targets / urban critical infrastructures

'The following projects have been funded within H2020:

| EXTREMDRON | |
|---|---|
| Title | Unmanned Aerial Vehicle for protecting soft/critical urban infrastructures, and the general public in extreme environments (EXTREMDRON) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>April 2016 / August 2016 - EUR: 50,000.00<br><br>EASME - 717915 |
| Abstract | EXTREMDRON is an aerial monitoring solution. The project focuses on a creating a NexGen UAV for aerial monitoring applications in extreme operating environments. The EXTREMDRON provides a means to monitor and collect data in extreme environments for security agencies to analyze, collect data, identify threats, and means to rapidly respond to life critical situations which ground crews cannot enter an area for safety reasons. The EXTREMDRON also provides industries/government agencies the means to measure dangerous airborne substances at the disaster location, and its dissipation over populated areas. |
| Website | http://aerdron.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Aerdron SL (ES) |

### 4.1.3 Cyber and physical threats to urban critical infrastructures and urban soft targets

The following projects have been funded within H2020:

| CAPTOR | |
|---|---|
| Title | cAPTor captures Advanced System Threats (CAPTOR) |
| Contract details | H2020 Secure Societies Call: H2020-ICT-2015 Topic code: DRS-17-2014-1<br>January 2016 / December 2018 - EUR 1,963,982.50<br><br>CNECT - 688110 |
| Abstract | A Eurobarometer 2013 survey found that air pollution is the environmental topic that European citizens worry about most, however citizens' abilities to take action remain limited. Combining the concepts of citizen science, collaborative learning and environmental grassroots activism to leverage the collective intelligence of existing networks of local communities engaged in environmental issues, allowing them to understand reasons and consequences of air pollution; to stimulate debate; to address authorities with scientific, and robust data from citizens' network of monitoring stations; and to transform this discussion into solutions. |
| Website | https://www.captor-project.eu/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Politecnica de Catalunya (ES)<br>Consortium:<br>2. Agencia Estatal Consejo Superior de investigaciones Cientificas (ES)<br>3. Ecologistas en Accion (ES)<br>4. Fundacio Privada per a la Xarxa Oberta, Lliure i Neutral, Guifi.Net (ES)<br>5. Global 2000 Umweltschutzorganisation (AT)<br>6. Legambiente Associazione Onlus (IT)<br>7. Legambiente Emilia-Romagna (IT)<br>8. Legambiente Lombardia Onlus (IT)<br>9. Legambiente Piemonte e Valle D'aosta Onlus (IT)<br>10. Legambiente Volontariato Veneto (IT)<br>11. Univ. Blaise Pascal Clermont-Ferrand II (FR)<br>12. Univ. Clermont Auvergne (FR)<br>13. Zentrum fur Soziale Innovation Gmbh (AT) |

| SmartPatch | |
|---|---|
| Title | Use of a cost effective smart skin sensor system for remote Structural Health Monitoring and post event structural damage assessment in Soft Urban Targets and Critical Infrastructures Protection (SmartPatch) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2014 / January 2015 - EUR: 50,000.00<br><br>EASME - 650476 |
| Abstract | SmartPatch aims to do analysis and testing of the Smart Skin Sensor System for remote Structural Health Monitoring in the ambit of remote and real time Post Event Damage Assessment. The project proves the value of the Sensor System in case of a disastrous event causing damage to Soft Urban Targets and Critical Infrastructures. |
| Website | http://www.smart-patch.com/<br>http://aerdron.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Smartpatch SRLS (IT) |

## These projects were complemented by new projects funded in 2016-2017:

| StandBy-U | |
|---|---|
| Title | Real Time Response System towards Safety and Emergency Management Improvement in critical infrastructures and soft targets |
| Contract details | Secure Societies Call: H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>June 2016 / August 2016 - EUR: 50.000,00 GA 728673 |
| Abstract | Within this year 350,000 people in Europe will die of sudden cardiac arrest, 2.5 million workers will result injured at their workplace and safety and security incidents will cost business and citizens in Europe €204 Billion. Incident response requires speed. For example, if attended within the first five minutes, cardiac arrest survival rate is 50%. Growing security challenges will drive the market for safety and emergency management solutions reaching €2.14 billion revenues in 2021 the EU, growing at 5.4% Compound Annual Growth Rate (CAGR). At ASK Community Systems we are a team of 12 employees, delivering since 2003 adaptive solutions assisting companies to manage mobile workforce and field services. An optimal and fast communication and coordination between all stakeholders is essential for effective safety and security management. In lieu of the potential market application and societal impact of our expertise to the domain of emergency management, we started the development of Standby. Standby-U is a comprehensive support tool for effective security & safety management. Combines resource management with technology for achieving situation awareness, in order to provide a system to interact with a large number of users simultaneously. Standby-U will autonomously manage availability, ensuring there is no over/under staffing of qualified personnel; will reduce time response by using context information such as time to destination, pushing alarms directly from detectors and accurate indoor location; Will provide a multimodal communication device substituting the use of pagers and radio transceivers. As a result, StandBy-U will furnish emergency services and safety management teams with a tool to increase their effectiveness while reducing managing costs and hardware expenditure. Benefits vary depending on the typology or the organization. For a company with 250 employees, the cost of StandBy-U is recovered within 6 months and saves 1.8€ for each 1€ spent yearly. |
| Website | http://www.standbyu.nl/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ask Community Systems BV |

## 4.2 Critical Infrastructure Sectors

### 4.2.1 Critical Energy Infrastructure: Electrical Power (Electricity) and Smart Grids, Oil, Gas

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-caegory | FP7 projects |
|---|---|
| Critical Energy Infrastructure: Electrical Power (Electricity) and Smart Grids, Oil, Gas | AFTER<br>ARGOS<br>EURACOM<br>INSPIRE<br>INSPIRE-INTERNATIONAL<br>SESAME<br>SEGRID<br>SPARKS<br>VIKING |

These projects have been complemented by the following H2020 projects:

| CYPRES | |
|---|---|
| Title | CYPRES the ICS and SCADA security companion (CYPRES) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2015 Topic code: DRS-17-2015<br>September 2015 / March 2018 - EUR: 1,700,094.00<br><br>EASME: 684723 |
| Abstract | CYPRES is one of the first products able to protect specifically industrial automation systems. It uses Artificial Intelligence combined with the real condition of the process to detect discrepancies that reveal intrusions or attacks, even as slow or small as a malware can be. CYPRES must be engineered for each type of process. The development comprises design specifications and development of the CYPRES core-product subsequent to a thorough market study followed by a commercial product specific to electricity networks protection, then another for Water and wastewater systems. Cypres is a cost-worthy add-on solution for existing and new SCADA. |
| Website | http://www.cypres-security.fr/?lang=en |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. FPC Ingenierie (FR)<br>Consortium:<br>2. Netceler SAS (FR) |

| E-LOCKS | |
|---|---|
| Title | Electronic security for OIL/LPG tanks (E-LOCKS)<br><br>***This project also corresponds to the category 'Detection, prevention of intruders; Access Control'.*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>May 2015 / September 2015 - EUR: 50,000.00<br><br>EASME - 673413 |
| Abstract | As one of the major issues to be tackled by oil/gas distribution companies is the prevention of the theft and fraud associated with the distribution of their products, the proposal aims to prevent illegal practices and their direct economic consequences with an innovative security solution for oil/LPG tanks: the e-LockS solution. It is an integrated SW and HW architecture system based on two main components: (1) caplock®: cap with the electronic lock integrated to be installed in each tank; (2) e-key®: intelligent key which will be managed from the Oil/LPG distribution management system (assignment of the permission to open a single tank and/or group of tanks). |
| Website | http://www.wacngo.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Wacngo Ltd. (IL) |

| LineVu | |
|---|---|
| Title | A novel optical sensor platform for detection and measurement of contaminants in gas pipelines to protect critical infrastructure from disruption and damage (LineVu) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>March 2015 / September 2015 - EUR: 50,000.00<br><br>EASME - 663815 |
| Abstract | Liquid contamination in pipelines is a serious issue for safety, security, reliability of supply and commercially for gas supply and transportation companies. Existing technology is designed only to analyse dry gas. The Linevu system introduces a non-intruding vision system at various points in the pipeline in order to determine if a liquid is present in the pipeline, so that the correct course of action can be decided upon before it becomes an urgent safety or security issue. In 2 phases, the project will bring to market a novel pressurised window, containment system and vision system which can confirm the presence of liquid, while not interfering with routine "pigging" maintenance in the pipeline. The system can be retrofitted onto any existing pipelines in the global supply network. |
| Website | http://www.ima.co.uk/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. International Moisture Analysers Limited (UK) |

| MONOFFSHORE | |
|---|---|
| Title | Autonomous Monitoring Unit for Offshore Applications (MONOFFSHORE)<br><br>***This project also corresponds to the category 'Remote monitoring and surveillance tools /technologies'*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>May 2015 / November 2015 - EUR: 50,000.00<br><br>EASME - 673106 |
| Abstract | The aim of this project is to develop an autonomous, robust monitoring unit for offshore application that can be used to assess the design life of platforms, mooring lines, and wind industry structures. |
| Website | http://www.vce-consult.at/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. VCE Vienna Consulting Engineers Zt GMBH (AT) |

| NANO | |
|---|---|
| Title | Intelligent Low-Cost Real-Time Nanomagnetooptical Integrity Monitoring and Sensing System for Asset Integrity Management (NANO) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: SMEInst-13-2016-2017<br>September 2015 / March 2016 - EUR: 50,000.00<br><br>EASME - 684167 |
| Abstract | EQS aims to deliver a highly sensitive real-time remote monitoring tool for intelligent structural integrity monitoring, for the Oil, Gas and Energy markets. This solution, based on nanotechnology, will increase the resilience of critical energy installations and networks, allowing the reduction of human losses, avoiding energy production disruption, minimizing environmental and economic impact and material damage from natural and man-made disasters. Furthermore, it will be possible to obtain real-time detailed qualitative and quantitative information and 3D visualization of the asset's integrity. |
| Website | http://www.eqs-global.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. EQS – Servicios de Engenharia Qualidade e Seguranca Lda (PT) |

| OMIS | |
|---|---|
| Title | Optical Mid Infrared Spectrometer (OMIS) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>November 2015 / May 2016 - EUR: 50,000.00<br><br>EASME - 697593 |
| Abstract | The aim of this project is to develop a robust mobile device to address three main problems faced by Euroepan gas distributors to guarantee the safety of their grid in urban environments: (1) existing gas chromatographs are not mobile (lack of real time data) and costly; (2) small low cost devices deliver imprecise results in terms of temperature compensation and low gas concentration; (3) slow response time which creates a high potential of risk in case of upper scale of concentration. The development of this new technology will enable distributors to protect a critical infrastructure in urban environment to save human lives and should help to decrease gas losses during distribution process which will help to save valuable resources. The results of phase 1 will be to identify potential suppliers of NDIR sensors and other critical components, to solve existing problems like temperature compensation or sensitivity of gas concentration, and explore a business plan and budget and finally to identify more potential clients in both Europe and worldwide. |
| Website | http://www.tumourtrace.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Huberg Sas – Huber Guenther & C (IT) |

| ReCETT | |
|---|---|
| Title | Remote Control of Electrical Transmission Tower (ReCETT) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>April 2016 / October 2016 - EUR: 50,000.00<br><br>EASME - 718493 |
| Abstract | ReCETT is a small, automatic and autonomous, reliable and high precision, low energy consumption and low cost remote monitoring device to settle on transmission towers that measure various parameters as well as its surroundings using "slave" monitoring devices. Data are transmitted in real time to end-users through the cell phone/radio network on various types of devices. So ReCETT, by monitoring unstable towers and their surroundings and real time automatic transmission data, optimize efficiently the maintenance, the stability and the continuity of EU power lines, prevent power shutdown, and even more lead the possibility to create new power lines in all European areas. |
| Website | http://www.alphageomega.fr/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Alphageomega (FR) |

| SHEER | |
|---|---|
| Title | SHale gas Exploration and Exploitation induced Risks (SHEER) |
| Contract details | Secure, Clean and Efficient Energy Call: H2020-LCE-2014-1 Topic code: LCE-16-2014<br>May 2015 / May 2018 - EUR: 2.601.720,00<br><br>INEA - 640896 |
| Abstract | The objective is to develop best practices for assessing and mitigating the environmental footprint of shale gas exploration and exploitation. The project will develop a probabilistic procedure for assessing short and long-term risks associated with groundwater contamination, air pollution and induced seismicity. Development of methodologies and procedures to track and model fracture evolution around shale gas exploitation sites and a robust statistically based, multi-parameter methodology to assess environmental impacts and risks across the operational lifecycle of shale gas. |
| Website | http://www.sheerproject.eu/ |

| SHEER | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Amra - Analisi E Monitoraggio Del Rischio Ambientale Scarl (IT)<br>Consortium:<br>2. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum Gfz (DE)<br>3. Instytut Geofizyki Polskiej Akademii Nauk (PL)<br>4. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>5. Rskw Ltd (UK)<br>6. Universita Degli Studi Di Napoli Federico Ii. (IT)<br>7. University Of Glasgow (UK)<br>8. University Of Keele (UK)<br>9. University Of Wyoming (US) |

| SUCCESS | |
|---|---|
| Title | Securing Critical Energy Infrastructures (SUCCESS) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-12-2015<br>May 2016 / November 2018 - EUR: 4,999,946.25<br><br>REA - 700416 |
| Abstract | The SUCCESS project will develop an overarching approach to threat and countermeasure analysis with special focus on the vulnerabilities introduced by Smart Meters. SUCCESS will provide concrete guidelines to support the design of energy systems and linked communications networks to guide short, medium and long term initiatives. |
| Website | http://success-energy.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ericsson Gmbh (DE)<br>Consortium:<br>2. Asm Terni Spa (IT)<br>3. Centrul Roman al Energiei – Cre (RO)<br>4. Dnv Gl Netherlands B.V. (NL)<br>5. Ecro Srl (RO)<br>6. Engineering - Ingegneria Informatica Spa (IT)<br>7. Esb Networks Ltd (IE)<br>8. Istituto Superiore Mario Boella Sulle Tecnologie Dell'informazione e Delle Telecomunicazioni Associazione (IT)<br>9. Kema Nederland Bv (NL)<br>10. Kungliga Tekniska Hoegskolan (SE)<br>11. Oy L M Ericsson Ab (FI)<br>12. P3 Communications Gmbh (DE)<br>13. P3 Energy & Storage Gmbh (DE)<br>14. Rheinisch-Westfaelische Technische Hochschule Aachen (DE)<br>15. Societatea Energetica Electrica Sa (RO)<br>16. Synelixis Lyseis Pliroforikis Automatismou & Tilepikoinonion Monoprosopi Epe (EL)<br>17. Tw - Teamware Srl (IT)<br>18. Vrije Universiteit Brussel (BE) |

| TM Field Analyzer | |
|---|---|
| Title | Developing a monitoring system for urban gas pipelines by utilizing state of the art accelerometers, advanced signal processing, and advanced intelligent algorithm based recognition (TM Field Analyzer) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>October 2014 / March 2015 - EUR: 50,000.00<br><br>EASME - 651414 |
| Abstract | THE Systems developed a system through which it will be possible for grid operators to continuously detect and isolate faults in urban gas networks in an economically feasible manner. The broader impact will be an increase in urban gas grid safety, and at least a 50% reduction in respective grid maintenance costs. |

| TM Field Analyzer | |
|---|---|
| Website | http://www.the-systems.com/tms-analyzer/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. THE Systems OU (EE) |

| SCISSOR | |
|---|---|
| Title | Security In trusted SCADA and smart-grids (SCISSOR) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2014-1 Topic code: ICT-32-2014<br>January 2015 / January 2018 - EUR: 3.534.850,00<br><br>CNECT - 644425 |
| Abstract | SCISSOR designs a new generation SCADA security monitoring framework, comprising four layers: i) a monitoring layer supporting traffic probes providing programmable traffic analyses up to layer, new ultra low cost/energy pervasive sensing technologies, system and software integrity verification, and smart camera surveillance solutions for automatic detection and object classification; ii) a control and coordination layer adaptively orchestrating remote probes/sensors, iii) a decision and analysis layer in the form of an innovative SIEM fed by both highly heterogeneous monitoring events as well as the native control processes' signals, and supporting advanced correlation and detection methodologies; iv) a human-machine layer devised to present in real time the system behavior to the human end user in a simple and usable manner. SCISSOR's framework will leverage easy-to-deploy cloud-based development and integration, and will be designed with resilience and reliability in mind. SCISSOR will be assessed via i) an off-field SCADA platform and ii) an on-field, real world deployment within a running operational smart grid, to showcase usability, viability and deployability. |
| Website | https://scissor-project.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Assystem Engineering And Operation Services (FR)<br>Consortium:<br>2. Akademia Gorniczo-Hutnicza Im. Stanislawa Staszica W Krakowie (PL)<br>3. Consorzio Nazionale Interuniversitario Per Le Telecomunicazioni (IT)<br>4. Katholieke Universiteit Leuven (BE)<br>5. Radio6ensesrl (IT)<br>6. Salzburg Research Forschungsgesellschaft M.B.H. (AT)<br>7. Sea Società Elettrica Di Favignana Spa (IT)<br>8. Sixsq Sarl (CH)<br>9. Universite Pierre Et Marie Curie - Paris 6 (FR) |

## These projects were complemented by new projects funded in 2016-2017:

| DEFENDER | |
|---|---|
| Title | Defending the European Energy Infrastructures |
| Contract details | Secure Societies Call: CIP-2016-2017-1 Topic code: CIP-01-2016-2017 May 2017 / April 2020 - EUR: 6.790.837,50 GA 740898 |
| Abstract | Critical Energy infrastructures (CEI) protection and security are becoming of utmost importance in our everyday life. However, cyber and system-theoretic approaches fail to provide appropriate security levels to CEIs, since they are often used in isolation and build on incomplete attack models, resulting in silos-like security management fragmented operational policies. To face these challenges, DEFENDER will (i) model CEIs as distributed Cyber-Physical Systems for managing the potential reciprocal effects of cyber and physical threats (ii) deploy a novel security governance model, which leverages on lifecycle assessment for cost-effective security management over the time (iii) bring people at centre stage by empowering them as virtual sensors for threat detection, as first level emergency responders to attacks, or by considering workforce as potential threats. DEFENDER will adapt, integrate, upscale and validate a number of TRL 4-5 technologies and deploy them within a TRL7 integrated yet adaptable framework for CEI security, resilience and self-healing "by design", with a view to address, detect, and mitigate cyber-physical threats. To this aim DEFENDER framework will combine a range of devices/technologies for situational awareness (fixed sensors like PMUs, mobile devices like drones and advanced video surveillance) (ii) intelligent processing for cyber-physical threat detection with (iii) a toolbox for incident mitigation and emergency response and (iv) Human-In-The-Loop for managing people interaction with CEI, while leveraging on blockchain technology for peer-to-peer trustworthiness. The effectiveness of DEFENDER will be extensively validated on a CEI lab emulator (RWTH, Germany) and on 4 real life demonstrators (in Belgium, Italy and Slovenia) fully covering the overall energy value chain, ranging from a nuclear generation plant (ENGIE), to a decentralized RES generation one(BFP), a TSO HV network (ELES), to a DSO network (ASM) and a business prosumer. |
| Website | http://defender-project.eu/ |

| DEFENDER | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering – Ingegneria Informatica Spa (IT)<br>Consortium:<br>2. Asm Terni Spa (IT)<br>3. Dr Frucht Systems Ltd (IL)<br>4. Eles Doo Sistemski Operator Prenosnega Elektroenergetskega Omrezja (SI)<br>5. E-lex Studio Legale (IT)<br>6. Ineo Engineering & System SNC (FR)<br>7. Institut Jozef Stefan (SI)<br>8. Institut Za Korporativne Varnostnestudije Ljubljana (SI)<br>9. Mayor's Office For Policing and Crime (UK)<br>10. Power Operations Limited (UK)<br>11. Rheinisch-Westfaelische Technische Hochschule Aachen (DE)<br>12. Siemens SRL (RO)<br>13. Singularlogic Anonymi Etaireia Pliroforiakon Systimation Kai Efarmogon Pliroforikis (EL)<br>14. Studio Tecnico BFP Societa A Responoabilita Liitata (IT)<br>15. Technologiko Ekpedeftiko Idrima Stereas Elladas (EL)<br>16. Thales SA (FR)<br>17. Uninova-Instituto de Desenvolvimento de Novas Technologias-Associacao (PT)<br>18. Venaka Media Limited (UK) |

| MIMODETECT | |
|---|---|
| Title | Improved detection of underground pipes by Multiple Input Multiple Output (MIMO) radar for The Radar Networks |
| Contract details | Secure Societies Call: H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>August 2016 / November 2016 - EUR: 50.000,00 GA 736017 |
| Abstract | In February 2008, an explosion caused by the build-up of gas from an accidental leak killed one of the firemen investigating the scene and injured 26 people. In France alone, 4 500 accidental leaks occur every year through unthoughtful excavation of surrounding construction works, whilst in the UK alone 30 to 40 incidents happen each year where workmen are seriously injured by accidentally slicing through electricity cables. Without even factoring in the estimated time a cost expenses due to service outages, it has become a safety priority to improve underground utility (UU) network detection protocols. Developing better detection technologies, which reduce the reliance on the interpretation of the operator and have the ability to differentiate between types of pipelines in different soil conditions, has become an urgent priority. DetectReseaux aims to exploit the business opportunity brought forward by a national project to map underground utilities by 2020 (€1 billion investment) by developing a novel detection technology and an innovative franchise model to provide 44 direct jobs and €4.5 million in five years. Moreover, improved knowledge of geolocation of underground utilities will help prevent hundreds of injuries every year across the EU. The Radar Networks (TRN) is a non-intrusive, accurate (<40 cm) and compact solution providing detailed information of shape, size and material of pipes in a variety of soil conditions as well as a faster data analysis, allowing to reduce the training of the detection operators by 85%. TRN will position us ready to export our franchise business model to the international scene by 2020, when EU-wide legislation is expected to be introduced. |
| Website | http://www.detect-reseaux.fr/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Detect Reseaux 69 (FR) |

| NANO | |
|---|---|
| Title | Low-Cost Real-Time Nanomagnetooptical Integrity Monitoring Tool and Intelligent<br>Asset Integrity, Risk and Performance Management Software |
| Contract details | Secure Societies Call:H2020-SMEINST-2-2016-2017 Topic code: SMEInst-13-2016-2017<br>January 2017 / December 2018 - EUR: 2.266.312,83 GA 738956 |

| NANO | |
|---|---|
| Abstract | EQS aims to deliver a low-cost highly sensitive real-time remote monitoring tool and a intelligent web-based software to manage asset integrity, safety and performance, for the Oil, Gas, Chemicals and Energy markets. This new disruptive market solution, based on nanotechnology, will increase the resilience of critical energy installations and networks, allowing the reduction of human losses, avoiding energy production disruption, minimizing environmental and economic impact and material damage from natural and man-made disasters. Proximally 60% of the incidents in the EU's hazardous industries are due to integrity failures and in 50% of these cases, ageing is a significant factor. Structural integrity monitoring can provide far greater integrity knowledge than traditional inspection methods, critically increasing safety with significant maintenance cost reduction through the early detection of problems. These tools combined with advanced societal and individual risk assessment methods significantly improve the risk management over the asset lifetime. The NANO concept is to provide a cost-efficient real-time asset management solution, capable of performing the screening of degradation, condition assessment, safety and environmental monitoring in large pipelines, process equipment, industrial plants, terminals and offshore structures. The monitoring tool will be the first combining nanotechnology with magnetostrictive generated ultrasonic Guided Waves and Fibre Bragg Gratting. Through an advanced material fabrication process, it will be possible to have a low cost monitoring solution with higher sensitivity level than any other inspection tools. The Asset Management software will bring the novelty of combining physical and human assets risk management and asset integrity monitoring data. It will be also possible to obtain 3D web visualization of the asset's integrity, safety and performance, providing qualitative and quantitative information to improve decisions. |
| Website | http://www.eqs-global.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. EQS – Servicios de Engenharia Qualidade e Seguranca LDA (PT) |

| Safe2LPG | |
|---|---|
| Title | Device for safety and security in liquid petroleum gas systems |
| Contract details | Secure Societies Call:H2020-SMEINST-1-2016-2017 Topic code: SMEInst-13-2016-2017<br>January 2017 / March 2017 - EUR: 50.000,00 GA 744029 |
| Abstract | LPG leakages represent both a safety and a security global issue, often causing structure fires and explosions. A total of 1170 home fires were reported in 2010 by the US National Fire Protection Association stemming from liquid petroleum gas (LPG) leakages, resulting in an annual average of 34 civilian fire deaths and 135 injuries. More than 7000 accidental fires and explosions occur annually due to LPG leaks in grills systems, resulting in more than 20,000 emergency room visits and more than 20 deaths, solely in US. The Danish SME Integrated Gas Technology ApS (IGT) will target a major market opportunity through testing and demonstrating an innovative device to detect and shut-off gas leakages in LPG systems (Safe2LPG). The Safe2LPG solution has the potential to substitute current LPG gas regulators and become a step forward for safety and security standards of residential, commercial and public buildings supplied by LPG systems. The novel Safe2LPG is an advanced and highly sensitive mechanical shutoff gas valve, capable of detecting and automatically shutting off irregular gas consumption caused by gas leaks, including very small leaks (15 cm2/h). Safe2LPG will effectively mitigate the risk of long and dangerous gas leakages, and consequently their potentially serious consequences. By ensuring and demonstrating a maximum level of safety and security, we will attain a key differentiating factor in order to gain access to the market. Initially, this will require a Phase 1 feasibility study that will give us a clear direction for our demonstration and market replication strategies. Subsequently, based on proven feasibility, in the Phase 2 we will need to generate full-scale showcases, which demonstrate the technical and economic benefits of our solution to generate enough consumer confidence and facilitate broader market uptake. Accordingly, we foresee a cumulative revenue of more than €101 million, 5 years after commercialization of the novel Safe2LPG. |
| Website | http://www.igct-lpg.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Integrated Gas Technology APS (DK) |

| SPEAR | |
|---|---|
| Title | SPEAR: Secure and PrivatE smArt gRid |
| Contract details | Secure Societies Call:H2020-DS-SC7-2017 Topic code:DS-07-2017 May 2018 / April 2021 - EUR: 2.965.569,14 GA 787011 |
| Abstract | Over the last decade, cyber-attacks have become increasingly sophisticated, stealthy, targeted and multi-faceted which may leverage zero-day exploits and highly creative interdisciplinary attack methods. As our society is becoming increasingly dependent on Critical INfrastructures (CIN), new technologies are needed to increase our detection and response capabilities. Detecting and responding to such attacks by a highly motivated, skilled and well-funded attacker has however been proven highly challenging. One of the most vulnerable and high-impact CIN is the Smart Grid. Smart Grid is considered as the next-generation power system, which promises self-healing, resilience, sustainability and efficiency to the energy Critical Infrastructures (CIN). However, securing smart grids against cyber-attacks is of vital importance for National Security and Public Safety, since the collapse of an energy production utility may cause human lives, millions of euros, denial of a very important and common good such as energy and days or even months of recovering. To this end, the SPEAR proposal aims at a) detecting and responding to cyber-attacks using new technologies and capabilities, b) detecting threat and anomalies timely, c) developing all-in-one security detection solutions, d) leveraging advanced forensics subject to privacy-preserving, e) confronting Advanced Persistent Threat (APT) and targeted attacks in smart grids, f) increasing the resilience of the smart grid innovation, g) alleviating the lack of trust in smart grid operators and h) empowering EU-wide consensus. Within SPEAR, four proof-of-concept Use Cases are planned in order to validate and assess the implemented security and privacy tools. |
| Website | https://www.spear2020.eu/ |

| SPEAR | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Panepistimio Dytikis Makedonias (EL)<br>Consortium:<br>2. G.E. Pukhov Institute For Modelingin Energy Engineering of the National Academy of Sciences of Ukraine (UA)<br>3. Mvets Lenishta OOD (BG)<br>4. Schneider Electric France SAS (FR)<br>5. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>6. Public Power Corporation S.A. (EL)<br>7. Fundacion Tecnalia Research & Innovation (ES)<br>8. European Dynamics Luxembourg SA (LU)<br>9. ENEL Iberia SRL (ES)<br>10. Sidroco Holdings Limited (CY)<br>11. 0 Infinity Limited (UK)<br>12. Incites Consulting SARL (LU)<br>13. Eight Bells Ltd (CY)<br>14. University of Surrey (UK)<br>15. Technical University of Sofia (BG)<br>16. Gottfried Wilhelm Leibniz Universitaet Hannover (DE) |

| PRECISE | |
|---|---|
| Title | Pulsed eddy current inspection system for pipeline health monitoring |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SMEINST-1-2016-2017.<br>Topic code: SMEInst-11-2016-2017. March 2017 / August 2017 - EUR: 50.000,00 GA 763257 |
| Abstract | ETHER NDE Limited aims to commercialise PRECISE, an eddy current technology based inspection product for pipelines. The PRECISE device enables fast inspection of bond integrity, calculation of remaining wall thickness, examination of different pipe geometries, and inspection of non-steel and bare steel pipes. PRECISE technology eliminates the need to purchase multiple devices for inspection of pipeline assets, as the technology is able to inspect through every composite material used to reinforce pipelines. PRECISE will help prevent spillages from happening through early non-destructive detection; potentially preventing serious disasters and will reduce the negative impact of 280 gas leaks per year resulting in over €100 million in damages.<br>The objective of this project is to perform Phase 1 feasibility study will allow us to analyse the technical feasibility assessment and evaluate the commercial potential of PRECISE product that we want to commercialise and exploit in the NDT inspection market by taking advantage of already validated system at TRL6. During this feasibility study we will perform risk assessment, market studies, intellectual property assessment and business planning with the ultimate goal to commercialise and introduce PRECISE product on the market, through innovation in key enabling technology as Eddy current. Our targeted market of NDT inspection services sector generated €295.4 million in revenue in 2012 and is expected to generate €494.4 million in 2017 with a CAGR of 10.9%. Realistically, it is estimated that our turnover through PRECISE commercialisation will reach over €8.5M by 2023, generating profits of €6M in the same year creating 14 new jobs extra for us by 2023.Considering we are Eddy current based product specialist company, this product is aligned with our strategy of business growth and competitiveness. It is our strong belief that the SME instrument is the ideal financial instrument for us to accelerate commercialisation of PRECISE. |
| Website | http://www.ethernde.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ether NDE Limited (UK) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| MEREPUV | |
|---|---|
| Title | Methods and measures to enhance resilience against electric power outage in urban vital societal functions (MEREPUV) |
| Contract details | 2017/PREV/783153 01/01/2018 - 31/12/2019; EUR: 653514.43 |
| Abstract | The general objective of MEREPUV is to make cities more resilient to disruptions in electric power supply by improving knowledge of cities` role in protecting their vital societal functions from such disruptions, and by identifying efficient measures for protecting citizens against severe consequences of power outage. The participating cities will conduct one vulnerability assessment each. Three of the cities will examine vulnerability to electric power outage in health services, one city will focus on vulnerabilities in emergency services and one city will examine vulnerabilities in electronical communication systems. The results will shared and discussed between the partners, and will be compiled in a final project report. (Internal classification of DG Echo is URBAN RESILIENCE) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/methods-and-measures-enhance_en |

| MEREPUV | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator: Direktoratet for Samfunnssikkerh et Og Beredskap (DSB) (NO) Rambergveien 9 NO-3115 TONSBERG NORWAY<br>Consortium:<br>1. Oslo Commune (NO)<br>2. Stavanger commune (NO)<br>3. Bergen Kommune(NO)<br>4. Veiligheidsregio Zuid – Holland Zuid (NL)<br>5. Gemeente Dordrecht (NL)<br>6. Valmieras pilsetas pasvaldiba (LV)<br>7. State Fire and Rescue Service (LV) |

### 4.2.2 Critical Transport / Transportation Infrastructure

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Critical Transport / Transportation Infrastructure | CONSORTIS<br>DEMASST<br>ISTIMES<br>PROTECTRAIL<br>SECRET<br>SECUR-ED<br>SERON<br>STAR-TRANS |

These projects have been complemented by the following H2020 projects:

| SENSKIN | |
|---|---|
| Title | ' SENsing SKIN' for Monitoring-Based Maintenance of the Transport Infrastructure (SENSKIN) |
| Contract details | Smart, Green and Integrated Transport Call: H2020-MG-2014_TwoStages Topic code: MG-8.1a-2014<br>June 2015 / December 2018 - EUR: 3.883.041,63<br><br>INEA - 635844 |
| Abstract | SENSKIN aims to: (1) develop a dielectric-elastomer and micro-electronics-based skin-like sensing solution for the structural monitoring of the transport infrastructure that will offer spatial sensing of reversible (repeated) strains that requires little power to operate, is easy to install on an irregular surface, is low cost compared to existing sensors, allows simple signal processing and includes the ability of self-monitoring and self-reporting.(2) use the new and emerging technology of Delay Tolerant Network to secure that strain measurements acquired through the 'sensing skin' will reach the base station even under extreme environmental conditions and natural disaster events such as, high winds or an earthquake, where some communication networks could become inoperable. (3) develop a Decision-Support-System for proactive condition-based structural intervention under operating loads and intervention after extreme events. It will be based on an accurate structural assessment based on input from the strain sensors in (a) above and will examine the life-cycle economic, social and environmental implications of the feasible rehabilitation options and the resilience of the infrastructure to future changes in traffic demand that these options offer.(d) implement the above in the case of bridges and test, refine, evaluate and benchmark the monitoring system (integrated a and b) and package (integrated a, b and c) on actual bridges. |
| Website | http://www.senskin.eu/ |

| SENSKIN | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Institute Of Communication And Computer Systems (EL)<br>Consortium:<br>2. Democritus University Of Thrace (EL)<br>3. Egnatia Odos Ae (EL)<br>4. Forum Des Laboratoires Nationaux Europeens De Recherche Routiere (BE)<br>5. Instytut Badawczy Drog I Mostow (PL)<br>6. Karayollari Genel Mudurlugu (TR)<br>7. Mistras Group Hellas Anonymos Biomichaniki Kai Emporiki Etaireia (EL)<br>8. Risa Sicherheitsanalysen Gmbh (DE)<br>9. State Enterprise State Road Scientific Research Institute Named After M. P. Shulgin (UA)<br>10. T.E.C.N.I.C. Tecniche E Consulenzenell'ingegneria Civile-Consulting Engineers-Spa (IT)<br>11. Teletronic Rossendorf Gmbh (DE)<br>12. Trl Limited (UK)<br>13. Universitaet Potsdam (DE)<br>14. Universitaet Stuttgart (DE) |

| Tunnelsafe2020 | |
|---|---|
| Title | Road and rail tunnel fire protection (Tunnelsafe2020) |
| Contract details | Innovation in Industry, Transport Call: H2020-SMEINST-1-2014 Topic code: IT-1-2014-1<br>March 2015 / June 2015 - EUR: 50.000,00<br><br>EASME - 662659 |
| Abstract | The purpose of the project is a detailed feasibility study, to plan and engineer the test programme of an extinguishing solution that can extinguish fire anywhere inside tunnels, with a focus on rail and road tunnels. The project will define acceptance criteria with the customer, and search for consortium partners needed to supply the complete system package needed in this market. |
| Website | http://www.fire-eater.com/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fire Eater As (DK) |

## These projects were complemented by new projects funded in 2016-2017:

| SAFERtec | |
|---|---|
| Title | Security Assurance FramEwoRk for neTworked vEhicular teChnology |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2019 - EUR: 3.819.380,00 GA 732319 |
| Abstract | The assurance of security, privacy, reliability and safety features is key-point to unlock the enormous potential that the connected vehicles systems paradigm i.e., the dynamic Cyberphysical system of highly-equipped infrastructure-connected vehicles with numerous third-party components, can offer towards safer transportation. The emerging systems expose a variety of wireless-communication and hardware interfaces which result in a large attack surface; thus, attempts to assess the degree of confidence that security needs are satisfied come with prohibited cost for automotive stakeholders and OEMs. SAFERtec project will leverage a highly-skilled consortium to first model the varying exposure of a prototype connected vehicle system to numerous threats appearing under two generic instances of the increasingly pervasive V2I setting. One relates to road-side unit communication while the other involves the interaction with cloud application and passengers' smart devices. Then, adopting a systematic vertical approach SAFERtec will obtain an in-depth look of the possible vulnerabilities performing penetration-testing on individual hardware components and upper-layer V2I applications. Considering the available security mechanisms a third party provider already applies to each module, SAFERtec will determine a corresponding protection profile as a summary of the identified risks. An innovative framework appropriately designed for unified and thus, cost-effective use across all modules will employ statistical tools and security metrics to quantify the involved security assurance levels and also feed the incomplete automotive standards. Research on dependability methods will then allow the framework's transition from individual modules to the connected vehicle system. All above results will be incorporated and made available through an open-access toolkit that will pave the way towards the cost-effective identification of security assurance levels for connected vehicle systems. |
| Website | https://www.safertec-project.eu/ |

| SAFERtec | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Institute Of Communication And Computer Systems (EL)<br>Consortium:<br>2. Autotalks Ltd (IL)<br>3. Cassidian Cybersecurity Sas (FR)<br>4. Centro Ricerche Fiat Scpa (IL)<br>5. Commsignia Kft (HU)<br>6. Oppida (FR)<br>7. Swarco Mizar Srl (IT)<br>8. Tomtom Development Germany Gmbh (DE)<br>9. University Of Piraeus Research Center (EL) |

| SF-TLS | |
|---|---|
| Title | Bridge Reestablishment Solutions – Super Fast Telescopic Launching System (SF-TLS) |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017. April 2018 / September 2018 - EUR: 50.000,00 GA 809015 |
| Abstract | In our days, the effect of weather conditions, natural disasters, conflicts between peoples, refurbishment of degraded / weal structures requires daily bypasses to allow the freedom of movement of people. When a bridge collapse, the modular bridges available on the market are one of the conventional solutions that allow to restore the damaged infrastructures. In addition to the tragic human losses that these events often cause, there is always a high social and economic impact/cost due to the time between collapse and the bridge complete installation, that can reach several weeks or even months. BERD developed a new superfast launching system capable of launching an innovative modular bridge solution or even current modular bridges, based in a telescopic boom that can reduce the assembling and launching time up to 70%. Economic analysis shows that higher the importance of the road artery, higher is the payback of using the new Super Fast Telescopic Launching System (SF-TLS). Decision makers and roads and highways managers will have the opportunity to choose a fast reestablishment solution with a very important social and economic impact. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. BERD - Projecto, Investigacao e Engenharia de Pontes SA (PT) |

| SAFE-10-T | |
|---|---|
| Title | Safety of Transport Infrastructure on the TEN-T Network |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-MG-2016-Two-Stages. Topic code: MG-3.4-2016. May 2017 / April 2020 - EUR: 2.997.000,00 GA 723254 |
| Abstract | The SAFE-10-T project will develop a Safety Framework to ensure high safety performance while allowing longer life-cycles for critical infrastructure across the road, rail and inland waterway modes. Moving from considering critical infrastructure such as bridges, tunnels and earthworks as inert objects to being intelligent (self-learning objects) the SAFE-10-T project will provide a means of virtually eradicating sudden failures. This will be achieved by: • The Safety framework will incorporate remote monitoring data stored in a BIM model that feeds into a decision support framework (DST) that enables decisions to be made automatically with maintenance prioritised for elements exhibiting stress. • A major advance that will be achieved in the project is that the algorithms at an object level and at a network level will incorporate machine learning to train the system to evolve with time using available monitoring data. • A trans-disciplinary approach with experts in Artificial Intelligence and big data management working with owners, engineers with expertise in risk and modelling and sociologists to make decisions. • Our major European infrastructure managers (Rijkswaterstaat for roads and inland waterways and Network Rail) will undertake demonstration projects at critical interchanges and nodes of the TEN-T transport network. The project will achieve significant impact in asset management by: (i) By moving to intelligent objects that communicate their safety condition during extreme events we will provide a means of virtually eradicating sudden catastrophic failure of infrastructure objects. (ii) The project will use Open Linked Data formats to manage all data and inputs from other sources. Mitigation actions can be taken and warnings of the increased risk level can be transmitted to other agencies and the public. (iii) Demonstrate the concept of fully interconnected transport networks on the TEN-T |
| Website | http://www.safe10tproject.eu/ |

| SAFE-10-T | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Gavin And Doherty Geosolutions Ltd (IE)<br>Consortium:<br>2. Deutsches Forschungszentrum Fur Kunstliche Intelligenz Gmbh (DE)<br>3. Forum Des Laboratoires Nationaux Europeens De Recherche Routiere (BE)<br>4. Hz Infrastruktura D.O.O. (HR)<br>5. Infra Plan Konzaltnig Jdoo Za Usluge (HR)<br>6. Infrastructure Management Consultants Gmbh (CH)<br>7. Istituto Di Sociologia Internazionale Di Gorizia I.S.I.G (IT)<br>8. Ministerie Van Infrastructuur En Milieu (NL)<br>9. Network Rail Infrastructure Limited (UK)<br>10. Roughan & O'donovan Limited (IE)<br>11. Sveuciliste U Zagrebu Gradevinski Fakultet (HR)<br>12. Technische Universitaet Berlin (DE)<br>13. Technische Universiteit Delft (NL)<br>14. Trl Limited (UK)<br>15. Virtus It Limited (FR)<br>16. Centre d Etudes et d Expertise sur les RisquesIL Environnement la Mobilite et l'Amenagement (FR) |

| TRANSRISK | |
|---|---|
| Title | Vulnerability and risk assessment of transportation systems of assets (SoA) exposed to geo-hazards |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. September 2017 / August 2019 - EUR: 183.454,80 GA 746298 |
| Abstract | Available risk assessment frameworks typically consider individual assets of the transportation infrastructure, exposed to just one hazard and they neglect changes in the asset performance during its life. However, assets exist in systems (SoA) and they are usually exposed to multiple hazards, whilst their performance changes due to deterioration or improvements. Also, the vast majority of existing studies is qualitative and focuses on bridges. Hazards, such as ground movements, debris flow, earthquakes and floods are major threats to infrastructure around the world, causing significant physical and socio-economic losses. Thus, reliable assessment of the vulnerability and the associated risks of infrastructure subjected to critical hazards is of paramount importance toward resilient transportation networks. TRANSRISK aims to fill these acknowledged gaps and provide advanced vulnerability assessment of critical transportation SoA subjected to diverse geo- and climatic hazards with focus on geotechnical effects, taking into account the SoA performance changes during their life. In this context, advanced numerical models of representative SoA subjected to critical combinations of hazard effects will be generated and validated based on recorded events. Novel adaptable vulnerability models will be produced for as-built, deteriorated (e.g. past hazards) and improved (e.g. strengthened) SoA. These models will be applied to selected parts of a highway and/or railway network in Europe to estimate the risk and associated losses due to recorded hazards as a means to enable the unbiased allocation of resources in decision-making and disaster management. The research results will provide a better understanding of the response of critical SoA and a rational link of the individual asset response to the network performance. The outcomes will also benefit stakeholders and owners of transportation networks in line with the EU strategy on critical infrastructure protection. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Surrey (UK) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| INFRA-NAT | |
|---|---|
| Title | Increased Resilience of Critical Infrastructure to Natural and Human-Induced Hazards (INFRA-NAT) |
| Contract details | 2017/PREV/783298 01/01/2018 - 31/12/2019; EUR: 572129.29 |
| Abstract | Regions with large infrastructure networks exposed to different types of hazards and structural ageing/deteriorating over time are particularly vulnerable. Much of these are bridge infrastructures built prior to the introduction of seismic design guidelines in the 1970's (or later) meaning they are vulnerable to not just seismic action but also to the effects of ageing and deterioration. As such, INFRA-NAT aims at increased resilience of critical infrastructure, focusing on seismic hazard and ageing/deteriorating effects in bridges. The project consortium comprises of three countries very important to the broad European context: Italy, Former Yugoslav Republic of Macedonia (FYROM) and Israel. It will provide the necessary tools for local and regional bodies to assess the vulnerability of critical infrastructure and provide guidance on how to best allocate available resources. (Internal classification of DG Echo is CRITICAL INFRASTRUCTURE / URBAN RESILIENCE) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/increased-resilience_en |

| INFRA-NAT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator: CENTRO EUROPEO DI FORMAZIONE E RICERCA IN INGEGNERIA SISMICA (EUCENTRE) (IT) Via Via Adolfo Ferrata, 1 IT-27100 PAVIA ITALY<br>Consortium:<br>1. Ss. Cyril and Methodius University in Skopje (MK)<br>2. Yaron Offir Engineers (ISRAEL) |

### 4.2.3 Critical Water Infrastructure

The following projects have been funded within H2020:

| Tunnelsafe2020 | |
|---|---|
| Title | Road and rail tunnel fire protection (Tunnelsafe2020) |
| Contract details | Innovation in Industry, Transport Call: H2020-SMEINST-1-2014 Topic code: IT-1-2014-1<br>March 2015 / June 2015 - EUR: 50.000,00<br><br>EASME - 662659 |
| Abstract | Novel technology for automated and remote controlled valves in public networks, such as water, gas or district heating in order to protect vital urban infrastructure against unauthorized access. This technology to be brought to market following this phase 1 feasibility study addresses the public urban piping systems, e.g. for water, gas or district heating, which are today almost fully mechanical, manually controlled and extremely vulnerable with respect to criminal interventions or terroristic attacks ore of the innovation is a patented rotationally locked support plate ('System Berliner Kappe'), which enables retrofitting of automated actuators (optimized for low energy consumption and can operate fully decentralized powered by batteries) in already existing valves without flanging and without a manhole. The entire system is controlled by safety-approved wireless communication systems. |
| Website | http://www.3s-antriebe.de/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 3S ANTRIEBE GMBH (DE) |

| SEGU | |
|---|---|
| Title | SEwer inventory system to safeGUard waste water infrastructures (SEGU) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>January 2016/ July 2016 - EUR: 50,000.00<br><br>EASME - 718785 |
| Abstract | SEGU offers a solution to the European challenges in waste water management by allowing for accurate digital 3D data that can be obtained 4 times faster, less expensive and safer. Without this information crisis management plans for health threats, floods, collapses or calamities are hard to execute. Plans for water management (scarcity of water resources), next generation emergency services (fire brigades), rainwater drainage challenges (enlarging urban environments) or strategic use of sensor systems to detect gas, drugs or explosives are essential and complex tasks. The aim of the SEGU (SEwer inventory system to safeGUard waste water infrastructures) project is to ensure market introduction of a Waste Water Infrastructure Data Service within EU28 as well as proper management of waste water infrastructure. |
| Website | https://www.voxdale.be/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Voxdale BVBA (BE) |

| VIGI-LEAK | |
|---|---|
| Title | A Smart Technology Trained for Preventing Leakages from Sewer Systems (VIGI-LEAK) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>November 2015 / February 2016 - EUR: 50,000.00<br><br>EASME - 697140 |
| Abstract | Development of technology based on an ongoing monitoring plan to anticipate the consequences of sewerage system leakages and the impact on groundwater pollution, with the ambition of reducing the amount of Contaminants of Emerging Concern that can cause harm to the environment and human populations. The development of VIGI-LEAK aims to complement existing technology ("Any Geometry Flume", a system adapted to measure gravitational flows in a simple, precise and relatively inexpensive way) with a highly precise real-time flow measurement software. VIGI-LEAK is a correlation system located in the "internet cloud" to monitor sewage systems and alert if there is a fault or malfunction in some segment, calculating the magnitude of the leakage. It will release sewer operators from being dependant on expensive flow data delivery services providers, representing a powerful tool for engineers and decision makers. |
| Website | http://www.rz-ee.com/index.php/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Roberto Zimmerman Environmental Engineering LTD (IL) |

## These projects were complemented by new projects funded in 2016-2017:

| STOP-IT | |
|---|---|
| Title | Strategic, Tactical, Operational Protection of water Infrastructure against cyber-physical Threats |
| Contract details | Secure Societies. Call: CIP-2016-2017-1. Topic code: CIP-01-2016-2017. June 2017 / May 2021 - EUR: 8.255.757,00 GA 740610 |
| Abstract | Water critical infrastructures (CIs) are essential for human society, life and health and they can be endangered by physical/cyber threats with severe societal consequences. To address this, STOP-IT assembles a team of major Water Utilities, industrial technology developers, high tech SMEs and top EU R&D providers. It organizes communities of practice for water systems protection to identify current and future risk landscapes and to co-develop an all-hazards risk management framework for the physical and cyber protection of water CIs. Prevention, Detection, Response and Mitigation of relevant risks at strategic, tactical and operational levels of planning will be taken into account to generate modular solutions (technologies, tools and guidelines) and an integrated software platform. STOP-IT solutions are based on: a) mature technologies improved via their combination and embedment (incl. public warning systems, smart locks) and b) novel technologies whose TRL will be increased (incl. cyber threat incident services, secure wireless sensor communications modules, context-aware anomaly detection technologies; fault-tolerant control strategies for SCADA integrated sensors, high-volume real-time sensor data protection via blockchain schemes; authorization engines; irregular human detection using new computer vision methods and WiFi and efficient water contamination detection algorithms). STOP-IT solutions are demonstrated through a front-runner/follower approach where 4 advanced utilities, Aigües de Barcelona (ES), Berliner Wasserbetriebe (DE), MEKOROT (IL) and Oslo VAV (NO) are twinned with 4 less advanced, but ambitious ones, to stimulate mutual learning, transfer and uptake. Building on this solid basis STOP-IT delivers high impact through the creation of hands-on training, best practice guidelines, support for certification and standardization as well as by fostering market opportunities, also leveraging the EU water technology platform's multi-stakeholder network.<br><br>***This project also corresponds to the category 'Multi-sector cyber and physical threats to critical infrastructures, including ICT'.*** |
| Website | https://stop-it-project.eu/ |

| STOP-IT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Stiftelsen Sintef (NO)<br>Consortium:<br>2. Aigues de Barcelona, Empresa Metropolitana de Gestio del Cicle Integral de L'aigua Sa (ES)<br>3. Aplicatzia Software House Ltd (IL)<br>4. Aquae Security (ES)<br>5. Atos It Solutions and Services Iberia Sl (ES)<br>6. Atos Spain Sa (ES)<br>7. Bergen Kommune (NO)<br>8. Berliner Wasserbetriebe (DE<br>9. Centro Andaluz De Investigaciones Del Agua (ES)<br>10. Cetaqua, Centro Tecnologico Del Agua, Fundacion Privada (ES)<br>11. Empresa Municipal de Abastecimiento Y Saneamiento de Granada, S.A.(ES)<br>12. European Water Supply And Sanitation Technology Platform (BE)<br>13. Fundacio Eurecat (ES)<br>14. Hessenwasser Gmbh & Co. Kg (DE)<br>15. Institute Of Communication And Computer Systems (EL)<br>16. Iww Rheinisch Westfalisches Institut Fur Wasserforschung Gemeinnutzige Gmbh (DE)<br>17. Kwr Water B.V. (NL)<br>18. Mekorot Water Company Limited (IL)<br>19. Mnemonic As (NO)<br>20. Oslo Kommune (NO)<br>21. Pno Innovation (BE)<br>22. Risa Sicherheitsanalysen Gmbh (DE)<br>23. Technion - Israel Institute Of Technology (IL)<br>24. Vlaamse Maatschappij Voorwatervoorziening Cvba (BE)<br>25. Worldsensing S.L.N.E (ES) |

| BactiLine | |
|---|---|
| Title | BactiLine at-line system for automatic monitoring of microbial bacteria in water |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SMEINST-1-2016-2017.<br>Topic code: SMEInst-11-2016-2017. February 2017 / July 2017 - EUR: 50.000,00 GA 762031 |
| Abstract | The growing population is putting a strain on the world's water resources while at the same time the ever-developing industrialization is causing increasing occurences of water-contamination, both in potable water sources and in wastewater, which is discharged into rivers and oceans. To deal with these issues of water contamination, Mycometer has developed an automatic early-warning solution, the BactiLine at-line system, which promptly detects elevated levels of bacteria in water systems and sends out a warning when bacteria presence is above tolerated limits. BactiLine can be implemented at main control points in the distribution system, sample the water quality at pre-determined intervals and report to a control database. The BactiLine system is based on the existing and patented Bactiquant®-water method, which measures the total bacteria presence in a water sample by use of a sensitive fluorescence technology. For end-users the BactiLine solution presents the following benefits: i. Faster response time, as water is sampled several times a day and bacteria counts are reported within minutes of the sampling; ii. Larger sample sizes, with bacteria concentrated through filtration, minimizes the risk of false positives; iii. Improved possibility for remote water quality monitoring through automated sampling from the water source; iv. More resource-efficient sampling process with the elimination of manual work hours for lab technician; v. The assay sensitivity can be adjusted in real time, allowing the technology to be used in a broad range of water types and applications. With the BactiLine system, Mycometer will target utilities companies, wastewater treatment plants and industrial plants using large amounts of water for production processes, leading to a sales revenue of €7.2M, five years post project. |
| Website | http://www.mycometer.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Mycometer AS (DK) |

| ProbSenS | |
|---|---|
| Title | Probabilistic neuromorphic architecture for real-time Sensor fusion applied to Smart, water quality monitoring systems |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. September 2017 / August 2019 - EUR: 175.419,60 GA 747848 |
| Abstract | "ProbSenS" will develop a novel low-power event-driven probabilistic Very Large-Scale Integration (VLSI) architecture for real-time, adaptive and robust multisensor integration. Multisensor integration exploits the extended coverage of multiple detectors to increase perceptual confidence in Smart Systems, but embedded implementations are yet in their infancy due to the lack of hardware able to infer from the multivariate, nonlinear, time-dependent and noisy signals supplied by modern sensors. By using principles of how biological systems promptly combine multisensory information and generate meaningful features in dynamic and uncontrolled real-world conditions, bioinspired Generative Deep Neural Network (GDNN) models are emerging as a powerful, CMOS-amenable computing paradigm to accelerate sensor fusion and enable quick, reliable self-learning and context-awareness under these constraints. This project aims to develop such technology into a smaller, smarter, calibration-free multisensor solution, tolerant to sensor drifts and suited to process low-latency data from a varied set of solid-state transducers in critical real-world monitoring/diagnosis scenarios where information is acquired on-line and mostly unlabelled, e.g. security, health and environmental care. "ProbSenS" will broaden state-of-the-art insight in the following multidisciplinary areas: (i) The modelling of GDNNs as probabilistic processors for adaptive event-based sensor fusion in Smart Systems; (ii) the investigation of novel ultra-low-power VLSI circuits to realise their computational units in low-cost CMOS technologies; (iii) the yet unexplored event-driven fusion of electrochemical and optical microsensors using a GDNN; and (iv) the benchmark of this technology in a true EU societal challenge: the real-time monitoring of water pollutants. The final outcome will be a functional working prototype of the GDNN validated in the field together with Agbar, the largest water management company in Spain. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat Zurich |

## The projects were complemented by the following projects funded by LIFE+ program:

| LIFE CLEAN UP | |
|---|---|
| Title | LIFE CLEAN UP - Validation of adsorbent materials and advanced oxidation techniques to remove emerging pollutants in treated wastewater |
| Contract details | LIFE16 ENV/ES/000169 |
| 01-OCT-2017 to 30-SEP -2020 | |
| Total budget: EUR 1,492,512.00; EU contribution: EUR 895,506.00 | |
| Abstract | LIFE CLEAN UP aims to validate an innovative, efficient and environmentally friendly system to remove EPs and other pathogens from wastewater. The solution consists of an adsorption system coupled with an advanced oxidation technology. Different polymers, including cyclodextrins and hydrogels and biomaterials from agriculture, will be tested in order to devise an optimised adsorption system, which aims to retain a high concentration of different families of EPs. On its way out of the adsorption system, the project will test the treating of the water with an advanced oxidation process (AOP) involving light pulses, photocatalysis and photosensitisers to degrade pollutants and pathogens that were not previously retained. The project will demonstrate a system that integrates the proposed technologies – retention by adsorbent materials and destruction by AOPs – in a working WTTP on a semi-industrial scale, validating the process by comparing laboratory and plant results. This system will be fed by renewable energy and will not generate waste (as the materials will be re-usable). To support its ultimate aim of reducing negative impacts on ecosystems and human health, the project will produce guidance to support take up of the system by WWTPs on an industrial scale. By removing pollutants that are not targeted by current water management systems in this way, the project aims to directly contribute to the implementation of European Directives on priority substances in the field of water policy as well as to the Water Framework Directive. Expected results: - Validation, including economic and environmental feasibility, of a semi-industrial prototype of a depuration system that retains more than 90% of the EPs through adsorben - An energy self-sufficient system using photovoltaic panels (8 700 kWh/year);t materials; - Treatment capacity of the prototype at semi-industrial scale of 5 m3/h, treating around 43 000 m3/year or 14% of the wastewater treated in a WWTP for a small population (around 4 600 inhabitants); - Near total (98%) degradation by AOPs of adsorbed EPs and residual EPs still present in treated wastewater at the end of the process; - Demonstration of the feasibility of the system as well as its compatibility with current wastewater depuration systems and high transferability potential at industrial scale covering all the volumes treated in a WWTP; and - Support for take up of the technology by producing guidelines for different adsorbent materials of EPs, working protocols and operational criteria about light pulses, photocatalysis and photosensitisers to eliminate organic pollutants, a cost-benefit analysis, a market study, a business plan and an exploitation plan of the proposed system. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6185 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Fundación Universitaria San Antonio de Cartagena (ES)<br>Partners: Consiglio Nazionale delle Ricerche – Istituto per i processi Chimico Fisici (ES),<br>Asociación Empresarial de Investigación Centro Tecnológico Nacional de la Conserva y Alimentación (ES),<br>HIDROGEA, Gestión Integral de Aguas de Murcia, S.A., Spain<br>HIDROTEC TRATAMIENTO DE AGUAS, S.L. (ES),<br>Regenera Levante, S.L. (ES),<br>Università degli Studi "Aldo Moro" di Bari (ES) |

| LIFE-EMPORE | |
|---|---|
| Title | LIFE-EMPORE - Development of an efficient and sustainable methodology for EMerging POllutants REmoval in WWTPs (EMPORE) |
| Contract details | LIFE15 ENV/ES/000598 |
| 01-SEP-2016 to 31-AUG -2019 | |
| Total budget: EUR 1,783,824.00; EU contribution: EUR 1,030,407.00 | |
| Abstract | The LIFE EMPORE project will demonstrate an innovative, cost-efficient and highly replicable technology for the removal of EPs from urban wastewater. The pilot plant will be integrated into the WWTP of Benidorm (Spain). The prototype, which is mobile, will have a treatment capacity of up to 5 m3/h. It will consist of four principal processing units: filtration/adsorption by columns, filtration by membrane technology, Electrochemical Advanced Oxidation Processes (EAOPs) and Advanced Oxidation Processes (AOPs). The specific objectives of the project are to: - Demonstrate that the selected combination of four technologies is able to reduce the concentration of the following priority EPs regulated in Directive 2013/39/EC: chlorpyrifos, trifluralin, bis(2-ethylhexyl) phthalate (DEHP), and 4-tert-octylphenol; - Demonstrate that the combined technology is able to reduce the levels of diclofenac, 17-alfa-estradiol and 17-beta-estradiol, carbamazepine, 2-(p-isobutylphenyl) propionic acid, fluoxetine, estrone and chloramphenicol, to 99% of their original concentrations; - Characterise EPs and their yearly variability in the WWTP of Benidorm; - Analyse the feasibility of the technologies for removing these EPs from wastewater; - Assess the initial and final environmental situation in accordance with different organoleptic, physical and chemical parameters; - Assess the socio-economic impact of the implementation of the demonstration plant for EP removal for the local economy and also for other European regions with similar pollution problems; - Disseminate between stakeholders the benefits of using EMPORE technologies for the reduction of Emerging Pollutants presence in European WWTPs; and - Transfer the project results to other identified Europe places with a similar situation regarding Emerging Pollutants. Expected results: The LIFE EMPORE project will enable the achievement of these specific results relating to final concentrations of the following emerging pollutants in treated wastewater: - Chlorpyrifos-ethyl between 0.0-0.00069 µg/l; - Trifluralin between 0.0005-0.0006 µg/l; - 4-tert-Octylphenol between 0.0-0.005 µg/l; - DEHP between 0.09-0.26 µg/l; - 17-alfa-estradiol between 0.00045-0.006 µg/l; - 17-beta-estradiol between 0.205-2.4 µg/l; - Chloramphenicol between 0.08-0.12 µg/l; - Carbamazepine between 0.011-0.017 µg/l; - 2-(p-isobutylphenyl) propionic acid between 0.245-0.36 µg/l; - Fluoxetine < 0.000195 µg/l; - Estrone between 0.000029 µg/l-0,00015 µg/l; - Diclofenac between 0.05-0.08µg/l; - Reductions in the concentrations of chlorpyrifos, trifluralin and DEHP below the threshold established in Directive 2013/39/EC; - Greater than 95% reduction in the concentrations of diclofenac, 17-alfa-estradiol and 17-beta-estradiol (EPs in the watch list of Article 8b of Directive 2013/39/EC); - Greater than 95% reduction in the concentrations of carbamazepine, 2-(p-isobutylphenyl) propionic acid (Ibuprofen), fluoxetine (e.g. Prozac), estrone and chloramphenicol (emerging pharmaceutical pollutants); and - A feasibility report on the project's combination of technologies for EP removal. In order to transfer the demonstrated solution more widely across Europe it will provide an assessment of the legal framework for the transferability and replicability.The project is also expected to facilitate market uptake of technologies that can be replicated in other places and countries and thus help stimulate other companies at the forefront of environmental technology. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5756 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Laboratorios Tecnológicos de Levante, S.L (ES)<br>Partners:<br>Entidad Pública de Saneamiento de Aguas Residuales de la Comunitat Valenciana (ES),<br>Instituto Tecnológico Metalmecánico, Mueble, Madera, Embalaje y Afines (AIDIMME) (ES),<br>Stichting IHE Delft (NL),<br>CONSOMAR S.A., Spain UNIVERSITY OF ALICANTE (ES) |

### 4.2.4 Critical Finance Infrastructure

The following projects have been funded within H2020:

| Loca Credibilia | |
|---|---|
| Title | Data and document integrity for services provided through critical information infrastructures (Loca Credibilia) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>May 2015 / November 2015 - EUR: 50,000.00<br><br>EASME - 684849 |
| Abstract | Loca Credibilia will promote increased security and public trust in the critical financial services infrastructure, assuring document integrity and accountability. Loca Credibilia will further limit trust destroying instances of forgery, fraud and corruption. The system is proved to be an important tool to identify objects and the changes of their relations, status in the course of a legally controlled life cycle. The information management system based on ADNS coding and processes provides information for all participants of the document lifecycle by enabling access to the last valid version. |
| Website | http://www.locacredibilia.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Intersoft-Hungary Kereskedelmi es Szolgaltato Kft (HU) |

## These projects were complemented by new projects funded in 2016-2017:

| FINSEC | |
|---|---|
| Title | Integrated Framework for Predictive and Collaborative Security of Financial Infrastructures |
| Contract details | Secure Societies. Call: CIP-2016-2017-2. Topic code: CIP-01-2016-2017. May 2018 / April 2021 - EUR: 7.817.631,25 GA 786727 |
| Abstract | The infrastructures of the financial sector are nowadays more critical, sophisticated and interconnected than ever before, which makes them increasingly vulnerable to security attacks. Despite increased security, most security measures remain fragmented and static i.e. inappropriate for confronting sophisticated and asymmetric attacks. FINSEC is a joint effort of prominent stakeholders in the financial sector and global leaders in physical & IT security, towards introducing a novel standards-based reference architecture (RA) for integrated (cyber & physical) security. The RA will enable timely preparation against attacks, while at the same time facilitating stakeholders' collaboration for risk assessment/mitigation in the financial supply chain, as a means of confronting complex threats and their cascading effects. FINSEC will provide a mature implementation of the RA, based on the enhancement and integration of novel solutions of the partners (eg., Anomaly Detection, AI CCTV Analytics, Risk Assessment Engines, Collaborative Risk Analysis & Management, Compliance), which will be bundled in a toolbox. The RA implementation and the toolbox will be validated through realistic pilots involving stakeholders in the identification, assessment and mitigation of threats. The five pilots involve high-impact scenarios including SWIFT network protection, buildings and ATM networks security, peer-to-peer payments network protection, risk assessment for insurance purposes and securing financial SMEs. The pilots will engage >=500 security & finance experts, while providing a representative coverage of the financial services industry (ie. banking, capital management, insurance, card & P2P payments), which is a sound basis for FINSEC's broader impact. Towards maximum impact, FINSEC will establish an ecosystem of security solutions for the financial sector, which will be supported by the partners' dense network of sales, marketing, standardization and regulation channels worldwide. |
| Website | http://www.finsec-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. GFT Italia SRL (IT)<br>Consortium:<br>2. Fujitsu Technology Solutions Gmbh (DE)<br>3. Liberbank SA (ES)<br>4. Clear Communication Associates Limited - CCA (UK)<br>5. Wirecard Romania SA (RO)<br>6. Zanasi Alessandro SRL (IT)<br>7. JRC Capital Management Consultancy & Research Gmbh (DE)<br>8. Assentian Limited (UK)<br>9. Association O.R.T. (FR)<br>10. SIA SPA (IT)<br>11. Atos Spain SA (ES)<br>12. Hewlett Packard Italiana SRL (IT)<br>13. Innov-Acts Limited (CY)<br>14. Consiglio Nazionale Delle Ricerche (IT)<br>15. Nexi SPA Ovvero (IT)<br>16. Singularlogic Anonymi Etaireia Pliroforiakon Systimaton kai Efarmogon Pliroforikis (EL)<br>17. Norsk Regnesentral (NO)<br>18. Fondazione Bruno Kessler (IT)<br>19. IBM Israel - Science and Technology Ltd (IL)<br>20. Uti Grup SA (RO)<br>21. Consorzio Interuniversitario Nazionale per L'informatica (IT)<br>22. HDI Assicurazioni S.p.A. (IT) |

| REDSENTRY | |
|---|---|
| Title | Proactive Operational Intelligence Cybersecurity Platform for the Financial Services Industry |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / December 2017 - EUR: 50.000,00 GA 775251 |
| Abstract | REDSENTRY aims to provide a flexible, scalable and open solution to the ever-changing threat landscape faced by the financial services sector. The threats faced by the financial services industry are varied and constantly evolving and cybercrime is the 2nd most reported type of crime by financial institutions according to PWC. The potential impact of cybersecurity incidents is tremendous as the sector accounts for €731 billion (5.9%) of the EU's total GVA (Gross Value Added) and employs 6.4 million people. The size, potential for monetary gain and overall societal disruption of make the financial services sector a prime target for cyber criminals using the latest techniques which are often undetectable with current solutions. A recent report by GreAT found 140 enterprises, including banks, affected by "file-less attacks" which use the system's RAM to execute malicious code and are currently undetectable through conventional means. This is only one example of the numerous ways in which cyber criminals are innovating and developing new means of bypassing cybersecurity measures. REDSENTRY will provide a real-time networking monitoring platform to provide the ability to detect and manage any type of threat. By focusing on network monitoring REDSENTRY will provide enable financial sector institutions to manage their infrastructure in real time, proactively and with automatic security response protocols. |

| REDSENTRY | |
|---|---|
| Website | http://redborder.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. ENEO Tecnologia Sociedad de Responsabilidad Limitada (ES) |

## 4.3 Risk assessment and monitoring

### 4.3.1 Multi-sector cyber and physical threats to critical infrastructures, including ICT

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-sector cyber and physical threats to CI's, including ICT | HIPOW<br>INSPIRE<br>MICIE<br>PRECYSE<br>PROGRESS<br>SECRIT<br>SERENITI<br>SERSCIS<br>SPARKS<br>STRUCTURES<br>VIKING<br>WSAN4CIP |

These projects have been complemented by the following H2020 projects:

| ATENA | |
|---|---|
| Title | Advanced Tools to assEss and mitigate the criticality of ICT compoNents and their dependencies over Critical InfrAstructures (ATENA) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-03-2015<br>May 2016 / April 2019 - EUR 6,889,925<br><br>CNECT – 700581 |
| Abstract | Aim to achieve the desired level of security and resilience of Industrial and Automation Control Systems (IACS) adopted in Critical Infrastructures by exploiting advanced features of ICT algorithms and components and bringing them to operational industrial maturity level. Outputs include a suite of integrated market-ready ICT networked components and advanced tools embedding innovative algorithms both for correct static CI configuration and for fast dynamic CI reaction in presence of adverse events. Outcomes are tailored and validated in selected Use Cases: a Software Defined Security paradigm combining new anomaly detection algorithms and risk assessment methodologies within a distributed environment. |
| Website | https://www.atena-h2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Leonardo - Societa per Azioni (IT)<br>Consortium<br>2. Agenzia Nazionale per le Nuove Tecnologie, l'energia e lo Sviluppo Economico Sostenibile (IT)<br>3. Consorzio per la Ricerca nell' Automatica e Nelle Telecomunicazioni C.R.A.T. (IT)<br>4. Creos Luxembourg SA (LU)<br>5. Institute of Baltic Studies (EE)<br>6. ITRUST Consulting SARL (LU)<br>7. Societe Wallonne des Eaux (BE)<br>8. Multitel ASBL (BE)<br>9. Sapienza SL (SE)<br>10. Israel Electric Corporation Ltd (IL)<br>11. Univ. de Coimbra (PT)<br>12. Univ. degli Studi Roma (IT)<br>13. Univ. du Luxembourg (LU) |

| CIPSEC | |
|---|---|
| Title | Enhancing Critical Infrastructure Protection with innovative SECurity framework (CIPSEC) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-03-2015<br>May 2016 / April 2019 - EUR 5,258,316.25<br><br>REA - 700378 |
| Abstract | The main aim of CIPSEC is to create a unified security framework that orchestrates state-of-the-art heterogeneous security products to offer high levels of protection in IT (information technology) and OT (operational technology) departments of CIs. As part of this framework CIPSEC will offer a complete security ecosystem of additional services that can support the proposed technical solutions to work reliably and at professional quality. These services include vulnerability tests and recommendations, key personnel training courses, public-private partnerships (PPPs) forensics analysis, standardization and protection against cascading effects. |
| Website | http://www.cipsec.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Atos Spain SA (ES)<br>Consortium:<br>2. Aegis IT Research Ltd (UK)<br>3. Atos IT Solutions And Services Iberia SL (ES)<br>4. Bitdefender SRL (RO)<br>5. Comsec Limited (IL)<br>6. Consorzio per il Sistema Informativo (CSI Piemonte) (IT)<br>7. DB Netz AG (DE)<br>8. Empelor Gmbh (CH)<br>9. Foundation for Research and Technology Hellas (EL)<br>10. Hospital Clinic i Provincial de Barcelona (ES)<br>11. Panepistimio Patron (EL)<br>12. Technische Univ. Darmstadt (DE)<br>13. Univ. Politecnica de Catalunya (ES)<br>14. Worldsensing Limited (UK) |

| CITADEL | |
|---|---|
| Title | Critical Infrastructure Protection using Adaptive MILS (CITADEL) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-03-2015<br>June 2016 / May 2019 - EUR 4,812,849.47<br><br>REA - 700665 |
| Abstract | CITADEL will provide innovative platform technology, methodology and tools for development, deployment, and certification of adaptive MILS systems for CI, to be demonstrated in three industrial CI use cases. The solution enables robust and resilient CI through monitoring and adaptive self-healing mechanisms that respond to natural and malicious occurrences by intelligently reconfiguring hosts, functions, and networks, while maintaining essential functions and defences. CITADEL will extend the MILS approach by adding dynamic reconfiguration to the MILS platform, and Monitoring and Adaptation Systems enabling resilience to adversity while preserving vital system properties. |
| Website | http://www.citadel-project.org/ |

| CITADEL | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. X/Open Company Limited (UK)<br>Consortium:<br>2. ATSEC Information Security AB (SE)<br>3. Centre National de la Recherche Scientifique CNRS (FR)<br>4. Fondazione Bruno Kessler (IT)<br>5. Frequentis AG (AT)<br>6. Ikerlan SCI (ES)<br>7. Institut Für Angewandte Systemtechnik Bremen Gmbh (DE)<br>8. J.W. Ostendorf Gmbh & Co. KG (DE)<br>9. Kaspersky Lab Uk Ltd (UK)<br>10. OAS Aktiengesellschaft (DE)<br>11. Sysgo AG (DE)<br>12. Technische Universiteit Eindhoven (NL)<br>13. TTTech Computertechnik AG (AT)<br>14. Unicontrols A.S. (CZ)<br>15. Universite Grenoble Alpes (FR) |

| CyberWiz | |
|---|---|
| Title | Cyber-Security Visualization and CAD-Tool for the Vulnerability Assessment of Critical Infrastructures (CyberWiz) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2014 Topic code: DRS-17-2014<br>September 2015 / September 2017 - EUR: 1,595,562.50<br><br>EASME - 673980 |
| Abstract | The project will deliver and validate a tool that helps to 1) better understand current cyber security levels across complex enterprise-wide architectures, including relationships and interdependencies between systems, 2) prioritize areas to address and cyber security investments to pursue and 3) proactively manage cyber security e.g. when building or modifying architectures. The solution is based on a cybersecurity metamodel that 1) describes the qualitative structure (which assets, attacks and defences that should be included, and how these should be associated) and 2) populates this qualitative structure with quantitative data (how likely different attacks are to succeed given the system parameter values and the presence or absence of different defences, using Bayesian networks). The tool generates a vulnerability "heat map" for each system configuration, allowing a user-friendly and visual comparison of the different alternatives. |
| Website | https://www.cyberwiz.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Applied Security GMBH (DE)<br>Consortium:<br>2. Forseeti AB (SE) |

| DAPS | |
|---|---|
| Title | Drone Alarm and Protection System (DAPS) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>January 2016 / June 2016 - EUR: 50,000.00<br><br>EASME - 719382 |
| Abstract | MyDefence develops an innovative drone alarm and protection system (DAPS) to be used by security services providers and critical infrastructure owners - public and private sectors - in urban contexts. DAPS is a scalable, networked system with hardware and embedded software algorithms coupled to a graphical user interface. DAPS is able to detect and identify illegal drones around secure areas and to jam the device in a specific wireless frequency range without interfering with other mobile signals and forcing a controlled drone landing. Through a feasibility study the technical and economic viability of DAPs will be validated. |
| Website | http://www.mydefence.dk/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. MYDEFENCE Communication APS (DK) |

| POLARIS | |
|---|---|
| Title | Preventative OperationaL procedures for space weAtheR threats to CrItical InfraStructure (POLARIS) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>December 2014 / June 2015 - EUR: 50,000.00<br><br>EASME - 651823 |
| Abstract | The scope for this project is to focus on the development of a commercial service to operators of critical infrastructure that provides preventative operational procedures. The operational procedures are based upon threat assessments received from external sources and with a focus on the initial threat detection which shall be incorporated into the service which is based upon Space Weather analysis. POLARIS will provide a single point of contact for the alerting of threats, expert analysis and the issuing of operational procedures tailored to the needs of a particular urban critical infrastructure. |
| Website | http://www.skytek.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Skytek Limited |

| SAFURE | |
|---|---|
| Title | SAFety and secURity by design for interconnected mixed-critical cyber-physical systems (SAFURE) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2014-1 Topic code: ICT-01-2014<br>February 2015 / February 2018 - EUR: 5.231.375,00<br><br>CNECT - 644080 |
| Abstract | SAFURE targets the design of cyber-physical systems by implementing a methodology that ensures safety and security "by construction". The objectives of SAFURE are to (1) implement a holistic approach to safety and security of embedded dependable systems, preventing and detecting potential attacks; (2) to empower designers and developers with analysis methods, development tools and execution capabilities that jointly consider security and safety; (3) to set the ground for the development of SAFURE-compliant mixed-critical embedded products.The results of SAFURE will be (1) a framework with the capability to detect, prevent and protect from security threats on safety, able to monitor from application level down to the hardware level potential attacks to system integrity from time, energy, temperature and data threats; (2) a methodology that supports the joint design of safety and security of embedded systems, assisting the designer and developers with tools and modelling languages extensions; (3) proof-of concept through 3 industrial use cases in automotive and telecommunications; (4) recommendations for extensions of standards to integrate security on safety-critical systems; (5) specifications to design and develop SAFURE-compliant products. |
| Website | https://safure.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Technikon Forschungs- Und Planungsgesellschaft Mbh (AT)<br>Consortium:<br>2. Barcelona Supercomputing Center - Centro Nacional De Supercomputacion (ES)<br>3. Eidgenoessische Technische Hochschule Zuerich (CH)<br>4. Escrypt Gmbh Embedded Security (DE)<br>5. Magneti Marelli S.P.A. (IT)<br>6. Scuola Superiore Di Studi Universitari E Di Perfezionamento Sant'anna (IT)<br>7. Symtavision Gmbh (DE)<br>8. Sysgo Ag (DE)<br>9. Technische Universitat Braunschweig (DE)<br>10. Thales Communications & Security Sas (FR)<br>11. Thales Sa (FR)<br>12. Tttech Computertechnik Ag (AT) |

## These projects were complemented by new projects funded in 2016-2017:

| CorreAssess | |
|---|---|
| Title | A novel Holistic Automated Analytics System for IT infrastructure management<br>that proactively identifies and prevent IT operational threats. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>November 2017 / February 2018 - EUR: 50.000,00 GA 790083 |

| CorreAssess | |
|---|---|
| Abstract | A typical Data Centre is comprised of multiple hardware and software components from different manufacturers, each with their own management tools, silo dashboard and limited sharing capabilities of business operations control data. This problem seems to get worse as IT-based companies are moving towards dynamic and complex virtualized and cloud environments. Moreover, when working on system´s safety, disrupting even one element of this fragile infrastructure runs the risk of affecting other systems, causing serious damage to the business. The average reported incident length is of 86 minutes, resulting in an average cost per incident of about $690,200. CorreAssess™ is an innovative game-changing Data Center Optimization Management system for business IT leaders that empowers companies with a complete visibility and control on all their IT infrastructure, through accurate detailed analytics insights delivered on a daily basis. It helps to generate valuable information for wise usage of IT infrastructure investments, resource allocation efficiency, IT alignment to defined SLAs, compliance, service availability, data recovery risks and easier cloud migration, alerting in advance before threats impact the company business. With CorreAssess™ companies will be able to reduce up to 25% the infrastructure investment costs and prevent risks of business failure by improving business continuity up to 80%. So far, €2M million have been raised and invested into the development and testing of the system to ensure its robustness and efficiency and move into the next stages of commercialisation. Within the overall project, we intend to finalise systems engineering and conduct a wide pilot trial within Europe. Current IP portfolio will be expanded to EU. The proposed work in Phase 1 of the SME instrument fits into our overall plan to reach the market by contributing the financial resources needed to plan a fast sound wider deployment of CorreAssess™ and its market uptake. |
| Website | https://correlata.com/products/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Correlata Solutions Ltd (IL) |

| RESISTO | |
|---|---|
| Title | RESIlience enhancement and risk control platform for communication infraSTructure Operators |
| Contract details | Secure Societies. Call: CIP-2016-2017-2. Topic code: CIP-01-2016-2017. May 2018 / April 2021 - EUR: 7.999.970,00 GA 786409 |
| Abstract | Communications play a fundamental role in the economic and social well-being of the citizens and on operations of most of the CIs. Thus they are a primary target for criminals having a multiplier effect on the power of attacks and providing enormous resonance and gains. Also extreme weather events and natural disasters represents a challenge due to their increase in frequency and intensity requiring smarter resilience of the Communication CIs, which are extremely vulnerable due to the ever-increasing complexity of the architecture also in light of the evolution towards 5G, the extensive use of programmable platforms and exponential growth of connected devices. The fact that most enterprises still manage physical and cyber security independently represents a further challenge. RESISTO platform is an innovative solution for Communication CIs holistic situation awareness and enhanced resilience (aligned with ECSO objectives). Based on an Integrated Risk and Resilience analysis management and improvement process availing all resilience cycle phases (prepare, prevent, detect, absorb, etc.) and technical resilience capabilities (sense, model, infer, act, adopt), RESISTO implements an innovative Decision Support System to protect communication infrastructures from combined cyber-physical threats exploiting the Software Defined Security model on a suite of state of the art cyber/physical security components (Blockchain, Machine Learning, IoT security, Airborne threat detection, holistic audio-video analytics) and services (Responsible Disclosure Framework) for detection and reaction in presence of attacks or natural disasters. Through RESISTO Communications Operators, will be able to implement a set of mitigation actions and countermeasures that significantly reduce the impact of negative events in terms of performance losses, social consequences, and cascading effects in particular by bouncing efficiently back to original and forward to operational states of operation.<br><br>***This project also corresponds to the category 'Critical Infrastructure Resilience'.*** |
| Website | http://www.resistoproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator<br>1. Leonardo - Societa per Azioni (IT)<br>Consortium:<br>2. BIT Sentinel Security SRL (RO)<br>3. Retevision i SA (ES)<br>4. Treelogic Telematica y Logica Racional para la Empresa Europea SL (ES)<br>5. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>6. Aditess Advanced Integrated Technology Solutions & Services Ltd (CY)<br>7. Ernst & Young Financial Business Advisors SpA (IT)<br>8. Altice Labs SA (PT)<br>9. Integrasys SA (ES)<br>10. Universita degli Studi Roma TRE (IT)<br>11. Hellenic Telecommunications Organization S.A. - Ote Ae (Organismos Tilepikoinonion Tis Ellados Ote AE) (EL)<br>12. Bergische Universitaet Wuppertal (DE)<br>13. Ericsson Telecomunicazioni (IT)<br>14. Guardtime AS (EE)<br>15. Orange Romania SA (RO)<br>16. British Telecommunications Public Limited Company (UK)<br>17. Istituto Superiore delle Comunicazioni e delle Tecnologie dell'informazione (IT)<br>18. Telecom Italia SpA (IT)<br>19. Institute of Communication and Computer Systems (EL) |

| SAFECARE | |
|---|---|
| Title | SAFEguard of Critical heAlth infrastructure |
| Contract details | Secure Societies. Call: CIP-2016-2017-2. Topic code: CIP-01-2016-2017. September 2018 / August 2021 - EUR: 7.994.553,63 GA 787002 |
| Abstract | Over the last decade the European Union has faced numerous threats that quickly increased in their magnitude, changing the lives, the habits and the fears of hundreds of millions of citizens. The sources of these threats have been heterogeneous, as well as weapons to impact the population. As Europeans, we know now that we must increase our awareness against these attacks that can strike the places we rely upon the most and destabilize our institutions remotely. Today, the lines between physical and cyber worlds are increasingly blurred. Nearly everything is connected to the Internet and if not, physical intrusion might rub out the barriers. Threats cannot be analysed solely as physical or cyber, and therefore it is critical to develop an integrated approach in order to fight against such combination of threats. Health services are at the same time among the most critical infrastructures and the most vulnerable ones. They are widely relying on information systems to optimize organization and costs, whereas ethics and privacy constraints severely restrict security controls and thus increase vulnerability. The aim of this proposal is to provide solutions that will improve physical and cyber security in a seamless and cost-effective way. It will promote new technologies and novel approaches to enhance threat prevention, threat detection, incident response and mitigation of impacts. The project will also participate in increasing the compliance between security tools and European regulations about ethics and privacy for health services. Finally, project pilots will take place in the hospitals of Marseille, Turin and Amsterdam, involving security and health practitioners, in order to simulate attack scenarios in near-real conditions. These pilot sites will serve as reference examples to disseminate the results and find customers across Europe. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Centre Hospitalier Regional de Marseille Assistance Publique-Hopitaux Marseille (FR)<br>Consortium:<br>2. Milestone System AS (DK)<br>3. Cassidian Cybersecurity SAS (FR)<br>4. Beia Consult International SrL (RO)<br>5. Instituto Superior de Engenharia do Porto (PT)<br>6. European Organisation for Security SCRL (BE)<br>7. The Main School of Fire Service (PL)<br>8. Istituto Superiore Mario Boella Sulle Tecnologie dell'informazione e delle Telecomunicazioni Associazione (IT)<br>9. Conservatoire National des Arts et Metiers (FR)<br>10. Kentro Meleton Asfaleias (EL)<br>11. Philips Electronics Nederland B.V. (NL)<br>12. Agence Nationale de Sante Publique (FR)<br>13. Enovacom SAS (FR)<br>14. Philips Medical Systems Nederland BV (NL)<br>15. Katholieke Universiteit Leuven (BE)<br>16. Ernst-Moritz-Arndt-Universität Greifswald (DE)<br>17. Security Matters BV (NL)<br>18. Academisch Medisch Centrum bij de Universiteit van Amsterdam (NL)<br>19. ASL TO5 (IT)<br>20. Ministere de L'interieur (FR)<br>21. Consorzio per il Sistema Informativo (CSI Piemonte) (IT) |

| SAURON | |
|---|---|
| Title | Scalable multidimensionAl sitUation awaReness sOlution for protectiNg european ports |
| Contract details | Secure Societies. Call: CIP-2016-2017-1. Topic code: CIP-01-2016-2017. May 2017 / April 2020 - EUR: 6.926.369,50 GA 740477 |
| Abstract | Nowadays coordinated and every time more complex terrorist attacks are shocking the world. Due to the progressive rely of industrial sector and many critical infrastructures (CI) (e.g. EU ports) in ICT systems, the impact of a coordinated physical attack, a deliberate disruption of critical automation systems or even a combined scenario including both kind of attacks, could have disastrous consequences for the European Member States' regions and social wellbeing in general. Taking into account this fact and this real threat on EU ports as one of the main CI in Europe, SAURON project proposes the holistic situation awareness concept as an integrated, scalable and yet installation-specific solution for protecting EU ports and its surroundings. This solution combines the more advanced physical SA features with the newest techniques in prevention, detection and mitigation of cyber-threats, including the synthetic cyber space understanding through the use of new visualization techniques (immersive interfaces, cyber 3D models and so on). In addition, a Hybrid Situation Awareness (HSA) application capable of determine the potential consequences of any threat will show the potential cascading effect of a detected threat in the two different domains (physical and cyber). On the other hand, through SAURON approach the public in the surroundings and the rescue/security teams will be able to be informed on any potential event/situation that could put in risk their integrity. Thus, SAURON proposes as main objective to ensure an adequate level of both physical and cyber protection for the EU ports and limiting, as far as possible, the detrimental effects for the society and citizens of a combined attack (physical & cyber) to an EU port. Reducing the vulnerabilities of EU ports, as one of the main European critical infrastructures and increasing their systemic resilience in the face of a physical, cyber or combined threat will be also part of the SAURON main objective. |
| Website | https://sauronproject.eu/ |

| SAURON | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacion de la Comunidad Valenciana Para la Investigacion, Promocion y Estudios Comerciales De Valenciaport (ES)<br>Consortium:<br>2. Ait Austrian Institute of Technology Gmbh (AT)<br>3. Autorita Portuale Livorno (IT)<br>4. Etra Investigacion y Desarrollo Sa (ES)<br>5. Innovasec Ltd (UK)<br>6. Katholieke Universiteit Leuven (BE)<br>7. Luka Koper, Port And Logistic System, D.D. (SI)<br>8. Noatum Ports Valenciana, S.A.U. (ES)<br>9. Piraeus Port Authority Sa (EL)<br>10. S2 Grupo de Innovacion en Procesos Organizativos Sl (ES)<br>11. Safran Identity & Security (FR)<br>12. Thales Sa (FR)<br>13. Universitat Politecnica de Valencia (ES)<br>14. University Of Piraeus Research Center (EL) |

| SecTrap | |
|---|---|
| Title | Critical urban infrastructure and soft target cyber attack protection. Users and application Behavioural Analysis supported by artificial intelligence to preempt security cyber attacks. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>September 2016 / February 2017 - EUR: 50.000,00 GA 736395 |
| Abstract | SecTrap™ is a security suite that is built on our novel and proprietary Virtual Machine Behavioural Introspection (VMBI) technology and complements existing software security systems already invested by organisations. SecTrap™ ensures that protected assets are inaccessible to malicious software and uses advanced AI to detect, block and report abnormal behaviours. We want to be the first to commercialise this novel solution that is designed to protect critical urban infrastructures and soft targets against new and imminent cyber attacks. Through SME Instrument Phase 1, we are seeking finance to prepare a Feasibility Study and Business Plan to determine in-depth the possibility, feasibility, risk, viability, profitability and sustainability of this new project. |
| This project also corresponds to the category 'Detection, prevention of intruders; Access Control'. | |
| Website | http://www.sectrap.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Visionspace Technologies LDA (PT) |

| V-SPHERE | |
|---|---|
| Title | Vulnerability Search and Prevention through Holistic End-to-end Risk Evaluation |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>February 2018 / May 2018 - EUR: 50.000,00 GA 791208 |
| Abstract | In the so-called 'age of information', information and communication systems (ICT) are the backbone of our digitalised society. Especially from an industrial perspective, we entrust our most delicate details to these tools and, logically, we demand the highest level of integrity and availability to avoid any eventual data loss, unavailability or, maybe more important, misuse. However, cyberattacks in EU are costing businesses around €38 billion/ year. How can we maximise our protection against these risks?<br>Our company, Prosa Security, is developing V-SPHERE; a new solution for industrial cyber security that unveils and prevents vulnerabilities of any ICT system in a holistic way, i.e., covering all the development cycle and all company perspectives. Involving all the stakeholders in the security process, this unique approach has demonstrated to be 10 to 100 times more effective in detection than traditional methods, as well as to reduce by 3 the time allocated for quality and security assurance in SW development projects, resulting in saving from €45,000 to €300,000 per SW development project. The overall objectives of this project are: assessing the viability of V-SPHERE and building a solid business and operational plan (Phase 1); conducting the planned technical and commercial activities to prepare its commercialisation (Phase 2); and initiate the formal large scale commercialisation, seeking the promotion of V-SPHERE and the networking with financers (Phase 3). Our business opportunity is promising, with the European market of cybersecurity to reach €38.10 billion and the specific market of security testing solutions valued at €2.71 billion in 2022. The expected outcome of the project is estimated at €23.3 million by 2023, besides the creation of 27 job positions. |
| Website | http://www.prosasecurity.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Prosa Security AS (NO) |

| RESPONSE 5G | |
|---|---|
| Title | Resilient and Secure Multi-controller Communication Platform for 5G Networks |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. November 2018 / October 2020 - EUR: 187.866,00 GA 789658 |
| Abstract | In modern digital societies, mobile networks provide connectivity that is crucial for the operation of all other critical infrastructures such as energy, transport etc. Thus, a disruption in the telecommunication infrastructure will lead to severe social and economic consequences. These disruptions often have unpredictable causes such as cyber-attacks, natural catastrophes, technical and human errors. Thus, there is an urgent need to strengthen mobile networks against both cyber and physical threats. Responding to these threats has been identified as a priority by the EU. Future 5th-Generation (5G) mobile networks will be designed using Software Defined Networking (SDN) and network virtualization principles to transform rigid and disparate legacy mobile networks into scalable and dynamic ecosystems. In large-scale SDN networks such as mobile networks, multiple SDN controllers are used to control different network segments. Inter-Controller Communication (ICC) between these multiple SDN controllers is necessary to share control information and to perform important network management functions. If ICC is compromised, then the whole system will be compromised regardless of what happens in the rest of the network. Inevitably, 5G ICC is also vulnerable to a wide range of cyber and physical threats. Since, the exsisting SDN security systems cannot provide a sufficient level of security for 5G ICC against both cyber and physical threats, the RESPONSE-5G project will be the first research project to implement and validate a robust and secure Multi-Controller Communication Platform for 5G Networks which includes prevention and mitigation against both cyber and physical attacks. RESPONSE-5G has far-reaching potential impacts in the domains of 5G security. Through this fellowship and the planned secondments, the candidate will gain advanced research skills and develop abilities in technology transfer and industry engagement, in order to fully exploit these impacts. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University College Dublin, National University Of Ireland, Dublin (IE) |

| SealedGRID | |
|---|---|
| Title | Scalable, trustEd, and interoperAble pLatform for sEcureD smart GRID |
| Contract details | Marie Skłodowska-Curie actions - Research and Innovation Staff Exchange. Call: H2020-MSCA-RISE-2017. Topic code: MSCA-RISE-2017. January 2018 / December 2021 - EUR: 1.080.000,00 GA 777996 |
| Abstract | The rapid evolution of ICT has revealed the potential for centrally monitoring, controlling, and optimising the power grid. In this context, a more intelligent, responsive, and efficient, system has been devised, known as the Smart Grid (SG). As explained in the EU Third Energy Package the SG will support a dynamic two-way information exchange between utility companies and their customers, contributing towards a smart and sustainable energy management in Europe and the establishment of a wiser energy consumption mentality. However, besides the benefits of such an endeavour, the power grid will be exposed to security threats inherited from the ICT sector, while privacy issues and new vulnerabilities, related to the specific characteristics of the SG infrastructure, will emerge. The problem is assessed as crucial, if we consider that a potential attack to the SG may lead to cascading failures, ranging from destruction of other interconnected critical infrastructures to loss of human lives. Thus, the development of a security platform tailored to the SG is required, that i) can efficiently manage the plethora of SG nodes, ii) deal with potential malicious hardware or software modifications due to the physical access of the customers to the SG nodes, and iii) operate over heterogeneous systems. Considering all the above, SealedGRID aims at bringing together experts from industry and academia from cross-sectorial research areas having complementary background with the long-term goal to design, analyse, and implement a scalable, highly trusted and interoperable SG security platform. The platform will combine, for the very first time, technologies like Blockchain, Distributed Hash Tables, Trusted Execution Environments, and OpenID Connect, while for its realization the SealedGRID consortium is committed to a fully-integrated and multi-disciplinary secondment programme combined with a set of networking, dissemination, and exploitation activities. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Piraeus Research Center (EL)<br>Consortium:<br>2. Beia Consult International SRL (RO)<br>3. Universidad de Malaga (ES)<br>4. Neurosoft Software Productions SA (EL) |

### 4.3.2 Cascading effects from natural disasters related to critical infrastructures

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Cascading effects from natural disasters related to CI's | SERSCIS |

In the H2020 2014-2015 calls, no dedicated research projects or studies have been carried out in this area.

These projects were complemented by new projects funded in 2016-2017:

| ResFrameFireSeismic | |
|---|---|
| Title | Resilient steel frame against fire and seismic hazards |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. July 2017 / June 2019 - EUR: 183.454,80 GA 751904 |
| Abstract | Conventional seismic-resistant structures are designed to experience significant damage under moderate-to strong earthquakes and this results in socio-economic losses such as injuries, high repair costs and disruption of the building use or occupation. To address this issue, researchers have developed modern seismic-resilient frames that can avoid inelastic deformations (i.e. damage) in structural members. Fire is another type of loading, which can cause significant damage and collapse. Moreover, fire after strong earthquakes is also a highly probable catastrophic event as it has been seen after recent earthquakes (e.g. Indonesia 2009, Chile 2010). Despite the fact that the risk of fires is high after strong earthquakes, seismic resilient structural systems have not yet been studied against fire and fire after earthquake loading. This project will assess the behaviour of modern seismic-resilient self-centering post-tensioned steel frames against fire loading and will propose modifications of their structural details so that, apart from seismic resilience, fire robustness can be also achieved. The project aims to develop, for the first time, an innovative steel frame characterized by the unique combination of minimal damage seismic behaviour and robustness against fire and post-earthquake fire loading. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Southampton (UK) |

### 4.3.3 Multihazard assessment, stress tests

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multihazard assessment, stress tests | CIPRNET<br>HIPOW<br>INFRARISK<br>STREST<br>STRUCTURES<br>VIKING |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of multihazard assessment and stress tests.

### 4.3.4 Remote monitoring and surveillance tools / technologies

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Remote monitoring and surveillance tools / technologies | ARENA<br>BASYLIs<br>UAN |

## These projects have been complemented by the following H2020 projects:

| Invest | |
|---|---|
| Title | INtelligent Video analytics to analyse complex scenes and Enhance Security of critical infrastructure and urban soft Targets (Invest) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>January 2015 / July 2015 - EUR: 50,000.00<br><br>EASME - 662822 |
| Abstract | The INVEST project brings to market readiness innovative, disruptive, intelligent video analytics (IVA) technology to create a high performance system for threat detection to protect urban soft targets and critical infrastructure. It tackles a recognised need for advanced, retrofitable systems to enhance CCTV infrastructure performance. It will rapidly identify suspects in large volumes of video data track them in real time across multiple video systems, with reliable re-identification of targets moving between CCTV systems across a city. |
| Website | https://erncip-project.jrc.ec.europa.eu/networks/tgs/video |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. See Questor Limited |

| PROTECT-2 | |
|---|---|
| Title | PeRsonnel lOcation and Tracking for safEty of Critical InfrasTructures (PROTECT-2) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>March 2016 / September 2016 - EUR: 50,000.00<br><br>EASME - 71077 |
| Abstract | DUNE plans to introduce in the CIP scenario a new personal, autonomous, infrastructure-free, wearable and scalable localisation and tracking system in GPS-denied environments, with a modular structure capable of fulfilling a widespread ensemble of requirements, typical of various CIP applications. |
| Website | http://www.dune-sistemi.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Dune Srl (IT) |

| ROBIN | |
|---|---|
| Title | ROBotic security INnovative system (ROBIN) |

| ROBIN | |
|---|---|
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / January 2016 - EUR: 50,000.00<br><br>EASME - 673801 |
| Abstract | The objective of the project is the development of a mobile robot platform able to perform autonomous protection of critical infrastructures. The project will develop a detailed business plan that includes the following specific objectives: market study, strategy and implementation, SWOT analysis, revenue projections, manufacturing feasibility, user involvement, risk assessment, IP management, marketing plan (including distribution and sales channels) and study of the ability to increase profitability of the enterprise through ROBIN innovation. |
| Website | https://www.robotnik.es/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Robotnik Automation SLL (ES) |

| SafeSky | |
|---|---|
| Title | Integrated system for critical infrastructure and personal sphere monitoring and protection against aerial threats (SafeSky) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / November 2015 - EUR: 50,000.00<br><br>EASME - 673627 |
| Abstract | The aim of this project is to deliver SAFESKY, dedicated for critical infrastructure and personal sphere monitoring and protection against aerial threat in the light of the increasing amount of drones we encounter nowadays. The SAFESKY system will be delivered in two versions. Its high-end version will be dedicated for protection of critical infrastructures, while its basic deployment, considerably less expensive one, will be dedicated for private persons protection of their personal sphere, e.g. houses. |
| Website | https://si-research.eu/events/ict-proposers-day-2012/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Bonda. Pl - Spolka Zoo (PL)<br>Consortium:<br>2. Bioseco Sp Zoo (PL)<br>3. Sirc Sp Zoo (PL) |

| SMS | |
|---|---|
| Title | Safety Micro Sensor (SMS) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / January 2016 - EUR: 50,000.00<br><br>EASME - 674434 |
| Abstract | Objective of the Safety MicroSensor (SMS) project is to create a single miniature CBRNE sensor chip of only 3x3mm for the detection of hazardous chemical. This will be done by combining with the chip nanomaterials sensitive to a number Toxic Industrial Chemicals (TIC) and deadly Chemical Warfare Agents (CWA) such Sarin and Tabun. One chip can host up to 12 different sensors and it can connect to up 4 external sensing elements or detectors. The same chip will be interfaced to an external solid state Radiation Detector (i.e. a CZT or CdTe) for the concurrent monitoring of illicit radiation sources. The single chip CBRN-E microsensor is the basis to build easy to install and to operate through continuous monitoring of critical infrastructures or scanning portals of high passage area and for use at occasional crowds gatherings. |
| Website | https://www.sensichips.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Aero Sekur S.p.A.<br>Consortium:<br>2. SENSICHIPS Srl |

| Starlight | |
|---|---|
| Title | Demonstration of a High Definition Low Light Sensor (Starlight) for use in the Surveillance andProtection of Urban Soft Targets and Critical Infrastructures (Starlight) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>June 2015 / December 2015 - EUR: 50,000.00<br><br>EASME - 663680 |
| Abstract | Starlight provides a light sensitivesensor that produces high definition images of non-illuminated areas at night and in low light conditions. The aim is to improve sensitivity by using sensors with organic compounds that aresensitive to background sky radiation. This solution will reduce the energy required to illuminate urban soft targets and critical infrastructure. Added benefits includea reduction in light pollution and that surveillance can be carried out in areas which have lighting restrictions. |
| Website | http://www.overview.co.uk/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Overview Limited (UK) |

| SURVEIRON | |
|---|---|
| Title | Advanced surveillance system for the protection of urban soft targets and urban critical infrastructures (SURVEIRON) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2015 Topic code: DRS-17-2015<br>March 2016 / March 2018 - EUR: 1,735,714.75<br><br>EASME - 711264 |
| Abstract | SURVEIRON is an innovative solution for the protection of urban environments and critical infrastructures that provides those in charge of public and private security with an intelligent surveillance and decision making service in critical situations. SURVEIRON constitutes a tool for the prevention and management of potential disasters. The project is based in a set of AEORUMs intelligent robots embedded inside a fleet of unmanned aerial vehicles (UAVs). This fleet is deployed in fixed and mobile locations and supervised from an emergency command center. |
| Website | https://aeorum.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aeorum Espana SL (ES) |

| Theseus | |
|---|---|
| Title | Theseus (Theseus) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>May 2015 / September 2015 EUR: 50,000.00<br><br>EASME - 672398 |
| Abstract | Theseus is designed to bring commercial aviation-grade reliability, engineering standards and extreme operation safety into an unmanned air vehicle platform. |
| Website | http://onaircs.com/it/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. On Air Consulting & Solutions (IT) |

| UPAC S-100 | |
|---|---|
| Title | Feasibility study for urban protection aviation copter s-100 (UPAC S-100) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / January 2016 - EUR: 50,000.00<br><br>EASME - 672428 |
| Abstract | Development of a new unmanned aerial system (UAS) for civil market applications including urban security which will be more cost-effective, reliable and versatile than current solutions. UPAC S-100 will revolutionize disaster relief, protection and surveillance of critical infrastructure and other areas in urban environments, such as :(1) supporting first responders in monitoring disaster areas; (2) instantly creating a temporary mobile phone network in only 30 minutes, dropping leaflets and talking to people via loudspeakers in case of destroyed infrastructure; (3) entering contaminated areas and identifying biological/chemical hazard leaks; (4) fast and flexible response to criminal acts; (5) inspections/ maintenance of critical infrastructures; (6) improving coast guard activities, maritime emergency response and border. |
| Website | https://schiebel.net/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Schiebel Elektronische Geraete GMBH (AT) |

## These projects were complemented by new projects funded in 2016-2017:

| ALADDIN | |
|---|---|
| Title | Advanced hoListic Adverse Drone Detection, Identification Neutralization |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-12-FCT-2016-2017.<br>January 2017 / August 2021 - EUR: 4.998.240,00 GA 740859 |
| Abstract | ALADDIN will study, design, develop, and evaluate, in series of complementary pilots, a counter UAV system as a complete solution to the growing UAV threat problem, building upon a state-of-the-art system and enhancing it by researching on various technologies and functionalities. ALADDIN will follow a holistic and heavily user-centred methodology involving a large number of LEAs and critical infrastructure operators, as well as an expert Advisory Board panel ensuring end-user diversity, as they all face different kinds of threats and work within different regulatory frameworks. This diversity is important to shape EU-wide system specifications and the innovative training curricula and training that will be realised to share the knowledge gained and raise awareness. Furthermore, within the project all regulations, social, ethical and legal elements will be studied thoroughly and continuously with an impact assessment produced and its results monitored during the project's lifetime. ALADDIN's sensing arsenal is comprised of a set of custom, innovative, and unique technologies as well as established and standard sensors used for UAV detection and localisation: 1) 2D/3D paired radars; 2) Innovative optro and thermal panoramic imaging; 3) Custom designed acoustic sensors. These will be fused through novel deep learning techniques in order to provide excellent detection accuracy. Further, ALADDIN will study and offer a set of neutralization effectors (jammers, physical and hacking). These sensing and countering capabilities will be operated through an advanced command and control (C2) system. The C2 will achieve great detection and classification accuracy within a large range, by fusing data acquired from all sensors through state-of-the-art deep learning techniques. Operator's efficiency will be enhanced through a novel mixed reality interface with 3D cartographic and situational elements and will be complemented by support to operations like investigation and trainings |
| Website | http://aladdin2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. CS Systemes D'information Sa (FR)<br>Consortium:<br>2. Acciona Construccion Sa (ES)<br>3. Ayuntamiento de Madrid (ES)<br>4. Diginext Sarl (FR)<br>5. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>6. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>7. Fundacion Andaluzap para el Desarrollo Aeroespacial (ES)<br>8. Hgh Systemes Infrarouges (FR)<br>9. Home Office (UK)<br>10. I.D.S. - Ingegneria Dei Sistemi - S.P.A. (IT)<br>11. Kentro Meleton Asfaleias (EL)<br>12. Microwave Characterization Center Sas (FR)<br>13. Ministere de L'interieur (FR)<br>14. Ministério Da Justiça (PT)<br>15. Ministero Dell'interno (IT)<br>16. Przemyslowy Instytut Automatyki I Pomiarow Piap (PL)<br>17. Sirc Sp Zoo (PL)<br>18. Société D'exploitation De L'aéroport Du Castellet Seac (FR)<br>19. Vrije Universiteit Brussel (BE) |

| ePatriot | |
|---|---|
| Title | Evolved Sky Patriot – Phase 1 Feasibility Study |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / December 2017 - EUR: 50.000,00 GA 774256 |
| Abstract | The wide proliferation of commercial UAVs has led to numerous reports of airport traffic disruption, smuggling of illicit substances, illegal collection of video footage and disturbance of high-profile mass events.Law enforcement agencies (LEAs) and operators of critical infrastructures (OCIs) are growing highly concerned with the opportunity for criminal and terrorist groups to adopt and use UAVs in support of their illicit activities. Consequently, LEAs and OCIs expressed the need to improve UAV detection and monitoring capabilities. RNC Avionics (RNCA)responds to this market opportunity and growing societal concern by providing an affordable and high-performing automated and transportable counter-UAV solution, capable of effectively and efficiently detect, classify and track multiple UAVs, to assist LEAs and OCIs in maintaining public safety and security. The Evolved Sky Patriot Phase 1 (ePatriot1) Project aims to assess the technological and economic feasibility of the introduction of novel advanced features for the Detection, Tracking andClassification of Unmanned Aerial Vehicles (UAVs) in RNCA's existing Sky Patriot solution. ePatriot's innovations will focus on next generation ultra-high definition cameras and improved video analytics algorithms to deliver unprecedented levels of performance for continuous detection and tracking of UAVs based on optical systems; on a prototype for a camera array system able to deliver the full 360º coverage; and on advanced, robust and efficient UAV classification algorithms, based on machine learning using incremental concept learning.ePatriot thus promises to consolidate RNCA's leading market position as a beyond state-of-the-art provider of robust and trusted technologies and solutions to detect, classify, track and investigate deployed UAVs. Representing the best value for money, ePatriot is set to be a real game changer in the market, exhibiting unprecedented performance levels for camera-based counter-UAV systems.<br><br>***This project also corresponds to the category 'Support to Law enforcement'.*** |
| Website | http://www.rnc-avionic.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. RNC Avionics Limited (UK) |

| KNOX | |
|---|---|
| Title | Cost advantageous and scalable drone alarm and protection system for urban contexts |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>August 2017 / July 2019 - EUR: 1.258.775,00 GA 768242 |
| Abstract | The Danish SME MyDefence aims to pursue a major market opportunity through the optimization and demonstration of an innovative, cost advantageous and scalable drone alarm and protection system (KNOX) to be used by security services providers and infrastructure owners - public and private sectors - in urban contexts. KNOX detects and identifies civilian drones and protects infrastructures and mobile soft targets against drones' threats. Drones are quickly moving from being mainly a military technology to a mass market gadget. Whereas demand and applications for drones are fast-growing, the drone market also raises security and privacy concerns. Presently, there are obvious concerns about the possibility of using drones for illicit purposes and terrorist attacks in which drones could be equipped with explosives, biological or chemical weapons. MyDefence has developed an innovative drone alarm able to detect, identify and locate civilian drones around secure areas, and to jam in a specific wireless frequency range without interfering with other mobile signals and forcing a controlled drone landing. KNOX is also an early warning of drones' activity and helps to locate the pilot before the accident/attack takes place. KNOX is expected to be a game changing solution for drone detection and protection in urban contexts. The present innovation project will focus on demonstrating the full KNOX solution including tactical operating procedures in 2 prisons and in 2 sports stadiums in Denmark and UK. This will be the first step towards showcasing the full concept and validating the solution under real operational environments, thus representing a key milestone for overcoming prevailing market entrance barriers for MyDefence. In 5 years post-project, cumulative turnover from sales and maintenance service agreements are expected to reach 133 M€, with net profits of 55M€. |
| Website | http://mydefence.dk/research-development/horizon-2020/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Mydefence Communication APS (DK) |

| PATH | |
|---|---|
| Title | PAssive Tracking of people and things for physical beHavior analysis |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2015. Topic code: MSCA-IF-2015-GF. June 2016 / May 2019 - EUR: 244.269,00 GA 703893 |

| PATH | |
|---|---|
| Abstract | The main goal of passive tracking of people and things (PATH) is to define a new paradigm for physical behavior inference, where the dynamics of physical entities are tracked with minimal implementation cost, maximal privacy preservation, and intrinsically protected secrecy. PATH relies on the detection, tracking, and behavior analysis of targets without active devices, by integrating such capabilities in infrastructures for the Internet of things (IOT) that are already present in a monitored environment. This enables several applications including visitor counting and flow monitoring. The objectives of PATH are: (i) to develop a framework for system design and analysis, as well as to derive fundamental limits; (ii) to devise advanced techniques for detection and exploitation of networks of opportunity; (iii) to develop inference techniques based on wireless networks properties for intrinsically secure tracking; (iv) to recognize new patterns related to targets dynamics based on signal feature extraction; (v) to establish a proof-of-concept for an industrial-driven use case. PATH will enhance the potential of the experienced researcher (ER) by relying on: (i) the solid experience of the successful Ph.D. completed by the young ER, which included a year as a visiting student in the USA; (ii) a challenging, interdisciplinary, and multi-sectorial work program; (iii) a genuine mobility program with an outgoing phase at a top tier university, supervised by a world-renowned expert in the field, and with an incoming phase at a high ranked and growing research group; (iv) a secondment program at a leading industry in the field, which confirms the industrial interest and that is tailored to the ER, with an evident commitment in terms of supervision and infrastructures; (v) a rich, five-fold training program, not limited to training through research; (vi) an implementation plan agreed with an advisory board for an efficient achievement of the ambitious objectives. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universita degli Studi di Ferrara (IT)<br>Consortium:<br>2. Massachussetts Institute of Technology MIT Corporation (US) |

| | SOLOMON |
|---|---|
| Title | Self-Organisation and Learning Online in Mobile Observation Networks |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2015.<br>Topic code: MSCA-IF-2015-EF. February 2017 / January 2019 - EUR: 195.454,80 GA 705020 |
| Abstract | Smart cameras are embedded devices combining a visual sensor, a processing unit and a communication interface, allowing the processing of images on the device, such that only aggregated information, instead of raw video data, is transmitted. Smart camera networks are typically used for large-scale high value security applications such as person tracking in airports or amusement parks. However, current smart cameras are expensive and have only very limited mobility, acting as a barrier to their wider adoption. The SOLOMON project is driven by the rising demand for rapid-deployment camera networks which can adapt to provide security in the context of unforeseen situations and unfolding scenarios. This is evidenced by the rapid growth of leading body-cam company Edesix Ltd, whose VideoBadge technology is being adopted by police forces worldwide. However, recent research advances in smart camera networks have not yet been realised in dynamic body-worn camera networks, and still rely on prohibitively expensive static hardware. In the SOLOMON project we envision a novel type of lightweight, inexpensive smart camera network suitable for rapid deployment and reconfiguration, where low-cost camera devices such as Edesix's VideoBadge, are paired with the processing capabilities of smartphones. These are then worn by people (e.g. police, security guards) or mounted on mobile robots. This not only lowers cost, but allows us to introduce a feedback loop between the sensing cameras and the acting people/robots, enabling the camera network to adapt to changes during runtime, for example to prioritise or cover newly relevant areas sufficiently. Novel techniques in collective decision making and self-organisation as well as multi-objective online learning will need to be developed, in order to achieve this vision. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Aston University (UK) |

| GaSeS | |
|---|---|
| Title | The first low cost optical gas imager for fugitive emissions mitigation, increasing energy efficiency in industry |
| Contract details | Industrial Leadership – Innovation in SMEs / Secure, Clean and Efficient Energy and efficient energy system. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-09-2016-2017. February 2017 / January 2019 - EUR: 1.333.399,90 GA 756346 |
| Abstract | There is a growing demand of technological solutions to detect and identify gas leaks in different industries. It is expected that this market will grow from 5.818 M€ in 2015 to 8.000 M€ by 2020, at a CAGR of 6.6%. Products to be developed and demonstrated in this project respond to the specific needs and requirements from industries in the Oil&Gas and chemical (Sulphur dioxide, SO2) sectors. After phase 1 execution SENSIA has confirmed that these sectors are highly demanding a more efficient solution to cope with their fugitive emissions problems. SENSIA ambition is to commercialize an low cost (price reduction of among 70-80% compared with current alternatives) uncooled camera based on infrared imaging technology that can easily detect and identify fugitive gas emissions in the Oil&Gas, chemical (SO2) and many other industries. This device will be the first of its kind considering that solutions currently available are based on cooled technology, with much higher costs and complexity associated. Three different prototypes will be demonstrated in fully operational industrial environments provided by some of the largest and most representative EU companies such as GDF Suez, Enagas, Repsol or TOTAL. These prototypes respond to clear industrial needs identified during the feasibility study (SME instrument phase 1): • Business case 1: Handheld/portable equipment for punctual inspections. • Business case 2: Fixed closed circuit cameras system for large infrastructures surveillance and monitoring. • Business case 3: On board (UAV/drones) equipment for aerial inspections of large infrastructures. Finally, as profitability indicators this project obtains very positive figures such as NPV of \17 M€ or IRR of the 90%. We expect to leverage more than 35 M€ of profits during the first 6 years of commercialization. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Sensia Solutions SL (ES) |

## The projects were complemented by the following projects funded by LIFE+ program:

| LIFE SENSSEI | |
|---|---|
| Title | LIFE SENSSEI - FORMALDEHYDE SENSOR SYSTEM FOR SAFE ENVIRONMENTS IN INDUSTRY |
| Contract details | LIFE16 ENV/ES/000232<br><br>01-SEP-2017 to 31-MAR -2020<br><br>Total budget: EUR 1,537,313.00; EU contribution: EUR 916,628.00 |
| Abstract | The main objective of the SENSSEI project is to minimise environmental and health impacts linked to occupational exposure to formaldehyde in various sectors, especially through indoor air concentrations. The project will develop and demonstrate a real-time formaldehyde monitoring and alarm system to be tested in the timber industry. The system will consist of: - A detection unit that operates continuously in the factory, retrieving formaldehyde samples; - A process unit that analyses formaldehyde concentration levels; - An alarm unit, which is triggered when formaldehyde concentration limits are exceeded; and - A data storage and business intelligence unit, which enables analysis of the collected data (coloured maps, operation reports, statistics, etc.). Data from the monitoring system will be used to develop new health protection strategies and protocols for industry. In addition, the project will develop a series of methodological guidelines to underpin the replication of the approach in three other sectors: tyre manufacturing, the automotive industry and hospitals. The project is in line with the EU Safety and Health at Work Directive and will contribute to the implementation of the Industrial Emissions Directive (IED) 2010/75/UE, given that its results will be of use when updating Best Available Techniques Reference Documents (BREFs) for the production of wood-based panels, surface treatment using organic solvents and the production of pulp, paper and cardboard. Expected results: - A real-time formaldehyde monitoring and alarm system; - New occupational health and safety strategies to manage concentrations of and exposure to formaldehyde; - Two production lines equipped with the SENSSEI system, leading to a 20% reduction in the workforce's exposure to formaldehyde and an 80% reduction in the concentration of formaldehyde in air at the facilities; - Develop guidelines for the replication of the system in four sectors: timber, tyre manufacturing, automotive (other components) and hospitals; - A replication plan for application of the system in other sectors, with the following objectives: - A 20% reduction in the workforce's exposure to formaldehyde in the timber industry; - 80% reduction in the concentration of formaldehyde in air in the timber industry; - Limitation to 0.3 ppm of the workforce's exposure to formaldehyde in formaldehyde factories, other facilities covered by the Industrial Emissions Directive and hospitals; - Limitation to 0.03 ppm of the concentration of formaldehyde in air in formaldehyde factories and other facilities covered by the Industrial Emissions Directive; - Reduction by 75% of the workforce's exposure to formaldehyde in hospitals (pathological anatomy); - Reduction by 10% of sick days related to formaldehyde exposure in the workplace; - Reduction by 10% of the formaldehyde-related cancer incidence; and - A saving of €700 million in healthcare and overall costs related to the health effects of formaldehyde. - A business plan for commercial exploitation of the system; and |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6274 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Premap Seguridad y Salud, S.L.U. (ES)<br>Partners: FINANCIERA MADERERA S.A. (ES) |

### 4.3.5 Detection, prevention of intruders; Access Control

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Detection, prevention of intruders; Access Control | CRISALIS<br>IDETECT 4ALL<br>RIBS |

These projects have been complemented by the following H2020 projects:

| IMPRINT | |
|---|---|
| Title | Defeat of Insider Theft in Nuclear and Radioactive Sites (IMPRINT) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2015 Topic code: DRS-17-2015<br>December 2015 / December 2017 - EUR: 1,032,027.00<br><br>EASME - 696945 |
| Abstract | The project targets insider threats faced by nuclear security systems and the need to detect shielded and unshielded Special Nuclear Materials ("SNM") and radioactive materials from insider threats. Specifically, the project addresses the need for inspection systems that can penetrate high attenuating vehicles, be specific to nuclear and shielding materials and that can be steal from the sites. Lingacom is developing an innovative Muon Detection System for detecting high-Z materials used in nuclear bombs and shielded radioactive materials in containerized cargo and vehicles to combat insider theft. |
| Website | http://lingacom.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Lingacom Ltd (IL) |

| OneCard | |
|---|---|
| Title | Increasing the security of access to urban critical infrastructure with a Near Field Communication micro SD smart card for mobile devices using on-chip state of the art technology (OneCard) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>March 2016 / July 2016 - EUR: 50,000.00<br><br>EASME: 719660 |
| Abstract | OneCard is a microSD card that offers a full replacement of the classic NFC smart card for CI access control systems by integrating the NFC antenna and secure elements (SE) into one uSD card. It maintains the memory of the uSD card and offers the highest security for its users. Two SEs in OneCard assure hardware separation of application domains requiring extra safety, therefore it can be used instead of several smart cards. |
| Website | http://www.r-das.sk/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. R-DAS, s.r.o. (SK) |

| WARDIAM PERIMETER | |
|---|---|
| Title | Wardiam perimeter (WARDIAM PERIMETER) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>April 2016 / October 2016 - EUR: 50,000.00<br><br>EASME - 717736 |
| Abstract | WARDIAM PERIMETER is oriented to protection and security in infrastructures, able to protect large critical infrastructures through the use of a network of sensors with a disruptive technology called Controlled Magnetic Field (CMF). WARDIAM PERIMETER sensors allow preventive detection, continuous monitoring and discrimination, and are easily camouflaged, and in the case of an event, the cameras can start functioning to show the intruder to the security personnel. |
| Website | http://www.ontech.es/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ontech Security SL (ES) |

## These projects were complemented by new projects funded in 2016-2017:

| ARIA | |
|---|---|
| Title | Advanced ultra-wideband Radar for Integrated Applications |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>August 2017 / November 2017 - EUR: 50.000,00 GA 781027 |
| Abstract | Cover Sistemi Srl has managed to provide innovative solutions for its commercial clients in perimeter intruder detection but never has there been a solution to give a detailed, zone specific, multiple object sensing and precise 3D radar mapping of objects. ARIA is our novel radar sensor with disruptive technology enabling 3D mapping of objects and resulting in people identification, multiple people tracking and selection of zone of surveillance. This technology has never been attempted in any commercial device, making this innovation unchallenged in the perimeter intruder alarms market today. This will result in more safe, reliable and difficult to circumvent home, industrial and commercial perimeter intruder alarms, keeping at bay criminals and terrorists. ARIA will be able to perform this feat at micro-scale integration through strategic partnerships in Europe, making it the best sensor for use in perimeter intruder detection due to its capability of ease to hide in any casing. The small form factor to be packed with high-speed sensing and IoT capabilities gives it some buying drivers of low cost, remote sensing, precise and accurate small packaged sensor for use anywhere and low power consumption. An exhaustive Feasibility Study will bring ARIA into commercialization investment (which will see a positive ROI within 3 years). In 5 years, it shall achieve significant market share in its category as perimeter security system with a conservative accumulated turnover of €14 million for the 2020-2024 period. Cover Sistemi will also bring to the industry 18-20 new jobs in 5 years after commercialisation of ARIA. Besides its breakthrough in expanding perimeter intruder alarm functions, other great potentials (spin-offs) are use of ARIA in healthcare, industrial machine safety, and utility conservation control in homes/buildings. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Cover Sistemi SRL (IT) |

| iNTACT | |
|---|---|
| Title | Commercialisation of the world's first iNTelligent Access Cover Technology for the protection of ALL underground infrastructure. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>May 2016 / July 2016 - EUR: 50.000,00 GA 728408 |
| Abstract | All infrastructure that underpins life as we know it runs underground in some form whether it be telecoms, water, gas or electricity. All underground infrastructure is only accessible through one method – inspection chambers. These inspection chambers are common and 100s can exist within a small area. To prevent criminal damage to infrastructure and ensure safety, all of these chambers are covered with access covers. There have been no major innovations of access covers in recent times and most remain completely unsecure and vulnerable. Requests to increase security has resulted in simple measures taken in the form of padlocks and key-locks, which still leave significant vulnerabilities. Alongside these vulnerabilities, covers in strategic sites need daily monitoring. This is currently done manually with physical inspections. There is a significant cost incurred for this. We are Hugslock Systems and have developed a solution that will secure all underground infrastructure. We have created iNTelligent Access Cover Technology 'iNTACT' that will truly revolutionize the security of underground critical infrastructures. iNTACT is the world's first remote lockable access cover. It is secure, impenetrable and intelligent. Intelligence is embedded within the cover in the form of sensors that can offer various monitoring capabilities such as gas, heat, water sensors, Infrared CCTV, motion, bio-hazard and seismic. iNTACT completely removes the need for any physical inspections, as the remote-operated locks can be remotely monitored from a central control room. We have strong market-pull from utility providers such as SITEL of the Czech Republic and organizations such the Ministry of Defence. Based on early interest we have built bottom-up 5 year forecasts to generate cumulative turnover of €28.9m to generate €15.1m PBIT. Based on total investments of €1.85m, this will achieve a ROI of 7.2:1 and payback on investment in 29.8 months. |
| Website | http://www.intact-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Hugslock Systems Ltd (UK) |

## 4.4 Resilience

### 4.4.1 Resilience of urban built environments, including cultural heritage

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Resilience of urban built environments | BESECURE<br>DESURBS<br>ECOSSIAN<br>ELASSTIC<br>EU-SEC II<br>HARMONISE<br>SPIRIT<br>THE HOUSE<br>VASCO<br>VITRUV |

These projects have been complemented by the following H2020 projects:

| LIQUEFACT | |
|---|---|
| Title | Assessment and mitigation of liquefaction potential across Europe: a holistic approach to protect structures / infrastructures for improved resilience to earthquake-induced liquefaction disasters (LIQUEFACT) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-13-2015<br>May 2016 / November 2019 - EUR: 4,944,072.50<br><br>REA - 700748 |
| Abstract | The LIQUEFACT project addresses the mitigation of risks to EILD events in European communities with a holistic approach. The project not only deals with the resistance of structures to EILD events, but also, the resilience of the collective urban community in relation to their quick recovery from an occurrence. The LIQUEFACT project sets out to achieve a more comprehensive understanding of EILDs, the applications of the mitigation techniques, and the development of more appropriate techniques tailored to each specific scenario, for both Europe and global. |
| Website | http://www.liquefact.eu/ |

| LIQUEFACT | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Anglia Ruskin university Higher Education Corporation (UK)<br>Consortium:<br>2. Centro Europeo di Formazione e Ricerca in Ingegneria Sismica (IT)<br>3. Istanbul Universitesi (TR)<br>4. Insituto Spermentale Modelli Geotechnici Societa a Responsabilita Limitata (IT)<br>5. Slp Specializirano Podjetje za Temeljenje Objectov, doo, Ljubljana (SL)<br>6. Stifelsen Norsar (NO)<br>7. Trevi Societa per Azioni (IT)<br>8. Universidade do Porto (PT)<br>9. Universita Degli Studi di Cassino e Del Lazio Meridionale (IT)<br>10. Universita Degli Studi di Napoli Federico II (IT)<br>11. Universiza v Ljubljani (SL) |

## These projects were complemented by new projects funded in 2016-2017:

| LightningPro | |
|---|---|
| Title | Lightning inhibition for protection of urban soft targets and critical infrastructure against lightning strikes. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / December 2016 - EUR: 50.000,00 GA 729057 |
| Abstract | Since 1752, when Benjamin Franklin carried out his famous experiment with a kite, science has not gone much further in protection agains. Lightning strikes. Lightning Rod manufacturers have centered attention in obtaining maximum benefit from the so named Franklin–Rod, developing devices with greater lightning attraction to try to maximize the probability that the lightning will strike on it. Prototal has gone one step forward, developing the Inhibitor Lightning Rod to provide infrastructure and urban areas protection against lightning strikes, by means of a primary protection element, which impedes the creation of the conditions that produce a lightning strike, within the protected area. The Inhibitor Lightning Rod deionizes the environment, so the beam is not repelled elsewhere, but it simply doesn't get formed; the beam formation is inhibited. Our company, has been working in the sector of lightning protection since 1993. We have installed more than one thousand Inhibitor Lightning Rods with the 100% of success rate against lightning strikes. Currently, we want to develop a second generation of our product, having a bigger coverage area, a better design, reducing the cost of manufacturer process and including technical tests that confirm our technical specifications and clients' requirements. |
| Website | http://www.prototal.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Prototal (ES) |

| CLARITY | |
|---|---|
| Title | Integrated Climate Adaptation Service Tools for Improving Resilience Measure Efficiency |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2016-TwoStage.<br>Topic code: SC5-01-2016-2017. June 2017 / May 2020 - EUR: 4.999.998,75 GA 730355 |

| CLARITY | |
|---|---|
| Abstract | Urban areas and traffic infrastructure linking such areas are highly vulnerable to climate change. Smart use of existing climate intelligence can increase urban resilience and generate added value for businesses and society at large. Based on the results of FP7 climate change, future internet and crisis preparedness projects (SUDPLAN, ENVIROFI, CRISMA) with an average TRL of 4-5 and following an agile and user-centred design process, end-users, purveyors and providers of climate intelligence will co-create an integrated Climate Services Information System (CSIS) to integrate resilience into urban infrastructure. As a result, CLARITY will provide an operational eco-system of cloud-based climate services to calculate and present the expected effects of CC-induced and -amplified hazards at the level of risk, vulnerability and impact functions. CLARITY will offer what-If decision support functions to investigate the effects of adaptation measures and risk reduction options in the specific project context, and allow the comparison of alternative strategies. Four demonstration cases will showcase CLARITY climate services in different climatic, regional, infrastructure and hazard contexts in Italy, Sweden, Austria and Spain; focusing on the planning and implementation of urban infrastructure development projects. CLARITY will provide the practical means to include the effects of CC hazards and possible adaptation and risk management strategies into planning and implementation of such projects, focusing on increasing CC resilience. Decision makers involved in these projects will be empowered to perform climate proof and adaptive planning of adaptation and risk reduction options. |
| Website | http://www.clarity-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. AIT Austrian Institute of Technology GMBH (AT)<br>Consortium:<br>2. Centro de Estudios y Experimentacion de Obras Publicas – CEDEX (ES)<br>3. Zentralanstalt fur Meteorologie Undgeodynamik (AT)<br>4. Cismet GmbH (DE)<br>WSP Sverige AB (SE)<br>Eureka Comunicazione Telematica SRL (IT)<br>Lansstyrelsen I Jonkopings LAN (SE)<br>Universita degli Studi di Napoli Federico II (IT)<br>Sveriges Meteorologiska och Hydrologiska Institut (SE)<br>Smart Cities Consulting GMBH (AT)<br>ATOS Spain SA (ES)<br>Agencia Estatal de Meteorologia (ES)<br>Stockholms Stad (SE)<br>Comune di Napoli (IT)<br>Farisa Asesores Y Consultores SL (ES)<br>Acciona Construccion SA (ES)<br>Stadt Linz (AT) |

| DUST | |
|---|---|
| Title | Data Assimilation for Agent-Based Models: Applications to Civil Emergencies |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG. January 2018 / December 2022 - EUR: 1.499.840,00 GA 757455 |
| Abstract | Civil emergencies such as flooding, terrorist attacks, fire, etc., can have devastating impacts on people, infrastructure, and economies. Knowing how to best respond to an emergency can be extremely difficult because building a clear picture of the emerging situation is challenging with the limited data and modelling capabilities that are available. Agent-based modelling (ABM) is a field that excels in its ability to simulate human systems and has therefore become a popular tool for simulating disasters and for modelling strategies that are aimed at mitigating developing problems. However, the field suffers from a serious drawback: models are not able to incorporate up-to-date data (e.g. social media, mobile telephone use, public transport records, etc.). Instead they are initialised with historical data and therefore their forecasts diverge rapidly from reality. To address this major shortcoming, this research will develop dynamic data assimilation methods for use in ABMs. These techniques have already revolutionised weather forecasts and could offer the same advantages for ABMs of social systems. There are serious methodological barriers that must be overcome, but this research has the potential to produce a step change in the ability of models to create accurate short-term forecasts of social systems. The project is largely methodological, and will evidence the efficacy of the new methods by developing a cutting-edge simulation of a city – entitled the Dynamic Urban Simulation Technique (DUST) – that can be dynamically optimised with streaming 'big' data. The model will ultimately be used in three areas of important policy impact: (1) as a tool for understanding and managing cities; (2) as a planning tool for exploring and preparing for potential emergency situations; and (3) as a real-time management tool, drawing on current data as they emerge to create the most reliable picture of the current situation. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Leeds (UK) |

| PUCS | |
|---|---|
| Title | Pan-European Urban Climate Services |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SC5-2016-TwoStage.<br>Topic code: SC5-01-2016-2017. June 2017 / November 2019 - EUR: 2.936.600,63 GA 730004 |
| Abstract | Urban areas are very vulnerable to climate change impacts, because of the high concentration of people, infrastructure, and economic activity, but also because cities tend to exacerbate climate extremes such as heat waves and flash floods. The objective of the Pan-European Urban Climate Service (PUCS) project is to establish a service that translates the best available scientific urban climate data into relevant information for public and private end-users operating in cities. This will be achieved by demonstrating the benefits of urban climate information to end-users, considering the sectors of energy, cultural heritage, mobility, energy, health, and urban planning. During the first half of the 30-month project, end-users (included as partners) and climate service providers will be involved in the co-design/-development of six concrete sectoral cases, to be implemented in Antwerp, Barcelona, Bern, Prague, Rome, and Vienna. Each of these cases will be subject to a detailed socio-economic impact analysis, quantifying the benefits of using urban climate information. The second half of the project will focus on upscaling and market replication, initially aiming at the extension with six new cases, involving new (non-financed) end-users. Through a business development strategy, supported by dissemination and marketing activities, we ultimately aim at acquiring six more cases by the end of the project, involving new business intermediaries without PUCS project financing, and demonstrating the long-term market viability of the service. PUCS aims at a genuine market uptake of (urban) climate services, based on a distributed network of local business intermediaries throughout Europe, enhancing the awareness for urban climate-related issues in the end-user community, and converting (mature) research results into tailored added-value information, thus removing important barriers for the deployment of urban climate services. |
| Website | https://www.isglobal.org/en/project/~/asset_publisher/qf6QOKuKkIC3/content/pan-european-urban-climate-service-pucs- |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vlaamse Instelling voor Technologisch Onderzoek N.V. (BE)<br>Consortium:<br>2. Stad Antwerpen (BE)<br>3. Joanneum Research Forschungsgesellschaft MBH (AT)<br>4. IURS - Institut Pro Udrzitelny Rozvoj Sidel ZS (CZ)<br>5. Fundacion Privada Instituto De Salud Global Barcelona (ES)<br>6. Meteotest Societe Cooperative (CH)<br>7. Ines Energieplanung GMBH (CH)<br>8. T6 Ecosystems SRL (IT)<br>9. Gisat S.R.O. (CZ)<br>10. Arctik SPRL (BE)<br>11. Agencia de Salut Publica de Barcelona (ES)<br>12. Katholieke Universiteit Leuven (BE)<br>13. Bikecityguide Apps GMBH (AT)<br>14. Soprintendenza Speciale per il Colosseo il Museo Nazionale Romano e l'area Archeologica di Roma (IT) |

| Warmest | |
|---|---|
| Title | loW Altitude Remote sensing for the Monitoring of the state of Cultural hEritage Sites: building aninTegrated model for maintenance. |
| Contract details | Marie Skłodowska-Curie actions - Research and Innovation Staff Exchange. Call: H2020-MSCA-RISE-2017.<br>Topic code: MSCA-RISE-2017. December 2017 / November 2021 - EUR: 1.296.000,00 GA 777981 |
| Abstract | WARMEST strategic goal is to create a novel comprehensive Decision Support System that will carry out a Cultural Heritage Risk Analsys (CHRA) and suggest improvements in maintenance and disaster management procedures for cultural and natural heritage sites. The maintenance and disaster management plans developed with the support of the Decision Support System, will consider current and future scenarios, setting priorities for the actions to be taken, both on economic and art historical grounds, delivering required information where and when needed, in a user-friendly way. To this end the consortium will develop new technologies to collect data on the conservation status of the sites and new tools to analyse it, as there is presently a lack of data that is specifically relevant to understanding climate change impacts; these technologies in case of emergence, can help to assess the impact of events quickly and on large areas. WARMEST is challenging from a management and from an engineering point of view, given that regulations are strict (to preserve the natural, archaeological and historical values), the factors to take into consideration are complex and not homogenous (technical, economic, historical), the information to deliver differentiated according to users and concise or detailed when needed. The goals set by WARMEST can be met only by creating an heterogeneus consortium, involving knowledgeable experts from various fields from private and public institutions. 9 beneficiaries will participate to the WARMEST consortium; 3 academic institutions, 2 association involved in heritage management and 4 private companies. 4 end users will be commited to the project as external partners to obtain the right mixing of knowledge. |
| Website | |

| Warmest | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universidad de Granada (ES)<br>Consortium:<br>2. Associazione Microcosmi Onlus (IT)<br>3. Asociacion Arte Tecnologia y Sociedad Artes (ES)<br>4. Enginlife-Engineering Solutions (IT)<br>5. Athina-Erevnitiko Kentro Kainotomias Stis Technologies tis Plirofoforias, ton Epikolnonion kai tis Gnosis (EL)<br>6. Zephyro SpA (IT)<br>7. Universita degli Studi di Enna Kore (IT)<br>8. CTAdventure SP ZOO (PL) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| UD-RASP | |
|---|---|
| Title | Urban Disaster Resilience through Risk Assessment and Sustainable Planning (UD-RASP) |
| Contract details | 2016/PREV/19 01/01/2017 - 31/12/2018; EUR: 365483 |
| Abstract | The goal of the project is to enhance urban multi-hazard disaster prevention and resilience in Tunisia, using the city of Monastir as a pilot case. The project will develop a standardized procedure to provide reliable data and information on urban growth and disaster risk trends in this pilot area. This will be achieved by integrating geospatial data derived from high resolution satellite imagery, available socioeconomic data, and information obtained from expert interviews into a multi-hazard risk assessment. The project will provide a methodology for resilient cities through the integration of risk information into urban disaster risk reduction (DRR) strategies in accordance with the Global Sendai Framework for Disaster Risk Reduction (2015-2030), applicable to urban environments in Tunisia and further North African countries. (Internal classification of DG Echo is DISASTER RISK REDUCTION) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7463&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: INDUSTRIEANLAGENBETRIEBSGESELLSCH AFT (IABG mbH) (DE)<br>Consortium:<br>1. United Nations University, Institute for Environment and Human Security (DE)<br>2. Municipality of Monastir (Tunisia) (TN) |

| RESCULT | |
|---|---|
| Title | Increasing Resilience of Cultural heritage: a supporting decision tool for the safeguarding of cultural assets (RESCULT) |
| Contract details | 2016/PREV/12 ; EUR: 593919.83 |
| Abstract | The RESCULT project aims at enhancing the capability of Civil Protection (CP) to prevent/mitigate disasters impacts on Cultural Heritage (CH).This will be done through the realization of an integrated European Interoperable Database for CH, designed to provide a unique framework (now inexistent) for CP, national Ministries of CH, the EU and local authorities: it will be a supporting decision tool to understand the risk of damage to CH as well as its impact on social cohesion, sustainable cultural tourism and engagement with local communities in protecting the environment, as envisaged by the Union Civil Protection Mechanism. (Internal classification of DG Echo is URBAN RESILIENCE) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7473&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ISTITUTO SUPERIORE SUI SISTEMI TERRITORIALI PER L'INNOVAZIONE TORINO (SITI) (IT)<br>Consortium:<br>1. The United Nations Office for Disaster Risk Reduction (Switzerland)<br>2. Technische Universität Berlin (DE)<br>3. Politecnico di Torino (IT)<br>4. Consorzio per il Coordinamento delle Ricerche inerenti al Sistema Lagunare di Venezia (IT)<br>5. Service Départemental d'Incendie et de Secours des Alpes de Haute Provence (FR) |

| SEE URBAN | |
|---|---|
| Title | South East Europe Urban Resilience Building Action Network (SEE URBAN) |
| Contract details | 2016/PREV/01 01/01/2017 - 31/12/2018; EUR: 429661 |
| Abstract | SEE URBAN project primarily targets local level Disaster Management Authorities in 7 countries/territories of South East Europe aiming to formalize local level cooperation in urban DRR (both at city/municipality/county and cross-border/regional level). In doing so, project is to, inter alia, develop SEE URBAN electronic DRR library and strengthen local level DRR practitioners´ knowledge on urban risks. Besides that, public awareness campaigns on urban DRR risks will be implemented which will be beneficial for citizens and all other socio-economic sectors vulnerable to urban disasters. And finally, as the work of "local level DRR platforms" is to feed into national DRR platforms a network of urban local level DRR stakeholders will be formed at the regional level of South East Europe. (Internal classification of DG Echo is DISASTER RISK REDUCTION) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7477&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: UN DEVELOPMENT PROGRAMME<br>Consortium:<br>1. Platforma Hrvatskih Županija i Gradova za smanjenje rizika od katastrofa (HR)<br>2. Centre for Development of the South-East planning region, Strumica (fYRoM)<br>3. Association of Municipalities and Cities of the Federation of BiH (Bosnia and Herzegovina)<br>4. Association of municipalities and towns of Republic of Srpska (Bosnia and Herzegovina) |

| EPICURO | |
|---|---|
| Title | European Partnership for Innovative Cities within an Urban Resilience Outlook (EPICURO) |
| Contract details | 2016/PREV/20 01/02/2017 - 31/01/2019; EUR: 616958 |
| Abstract | The project aims to foster multi-actor transnational cooperation and enhance knowledge about technology solutions available to local communities, that can help local authorities and Civil Protection operators in monitoring and managing natural disasters, decreasing side effects and making communities across Europe more resilient. Moreover the project aims to increase Civil Protection teams' specialisation and role, in support to decision makers, local communities and relevant stakeholders, and enhance policy and institutional commitment for increasing citizens' capacities in building resilience within their communities. (Internal classification of DG Echo is URBAN RESILIENCE) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7471&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: MUNICIPALITY OF VICENZA (IT)<br>Consortium:<br>1. City of Skopje (MK)<br>2. Provincia di Potenza (IT)<br>3. Vejle Kommune (DK)<br>4. Ekodoma (LV)<br>5. Municipality of Salaspils (LV)<br>6. EPC – European Project Consulting – SRL UNIPERSONALE (IT)<br>7. Town and Country Planning Association (UK)<br>8. Alba Iulia Municipality (RO)<br>9. AS Cyprus College Ltd (European University Cyprus) (CY) |

These projects were complemented in the H2020 framework by the following projects funded by INTERREG program:

| Adapt Northern Heritage | |
|---|---|
| Title | ADAPTing NORTHERN cultural HERITAGE to the environmental impacts of climate change and associated natural hazards through community engagement and informed conservation planning |
| Contract details | 2014 - 2020 INTERREG VB Northern Periphery and Arctic 01/06/2017 - 31/05/2020 |

| Adapt Northern Heritage | |
|---|---|
| Abstract | Adapt Northern Heritage is concerned with adapting northern cultural heritage to the environmental impacts of climate change and associated natural hazards through community engagement and informed conservation planning. The project will develop an online tool to assess the risks for and vulnerabilities of historic places and provide guidance for the planning of strategic adaption measures that takes into account cultural, economic, environmental and social sustainability. The tool will be develop, test and demonstrated in nine case studies, in Iceland, Ireland, Norway, Russia, Sweden and Scotland, for which adaptation actions plans will be produced. The project will also create a community network with a networking platform, round table workshops and training events. "Climate change will have a direct effect on heritage sites, through physical changes in the environment that change the conservation conditions for the materials of the site. We have only seen the beginning of the physical change", notes the 2010 report Climate Change and Cultural Heritage in the Nordic Countries. Action is urgently needed to prevent or at least minimise accelerated deterioration and loss of historic places in the northern world regions. Due to the remoteness and geographical dispersedness, communities and authorities in Europe's Arctic area and northern periphery and other northern world regions are finding it particularly difficult to develop the required capacities, and allocate sufficient resources, to manage their cultural heritage in ways which actively takes climate change into account. Adapt Northern Heritage will support stakeholders by helping to build capacity and providing tools that will enable communities and authorities in northern world regions to cope better with the complexities added to historic place management in times of a changing climate. |
| Website | http://www.interreg-npa.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Historic Environment Scotland (UK)<br>Consortium members:<br>2. Directorate for Cultural Heritage (NO);<br>3. Cultural Heritage Agency of Iceland (IS);<br>4. Norwegian Institute for Cultural Heritage Research (NO) |

| NOTE | |
|---|---|
| Title | NeighbOurhoods on Thin IcE – Heritage and Naturally Valued Climate-Sensitive Built Environments |
| Contract details | 2014 - 2020 INTERREG VB Northern Periphery and Arctic 15/03/2016 - 30/11/2016 |
| Abstract | Neighbourhood's on Thin Ice will result in new evidence-based planning methods, a decision-making framework and toolkit for heritage sensitive and healthy urban planning/design, customized to sparsely populated communities, northern climate conditions and climate change. These communities face dilemmas regarding natural resources, a source of economic growth which also greatly affects the local environment and involves multi-national companies. The project is centred on case studies in several countries involving local stakeholders, national design organisations and academia. The results will be both context-specific and provide general insights regarding how to deal with heritage, climate and demographic challenges in the northern periphery. The awareness, knowledge and networking among local stakeholders will also increase. It is new and original due to trans-sectoral cooperation between local communities and professionals of conservation, urban design, health promotion, industries. |
| Website | http://www.interreg-npa.eu |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Luleå University of Technology (SE)<br>Consortium members:<br>2. Agricultural University of Iceland (IS);<br>3. Oulun yliopisto (FI);<br>4. Ulster University (UK) |

| ProteCHt2save | |
|---|---|
| Title | Risk assessment and sustainable protection of Cultural Heritage in changing environment |
| Contract details | 2014 - 2020 INTERREG VB Central Europe 01/07/2017 - 30/06/2020 |
| Abstract | Disasters and catastrophes pose risks not only to the conservation of cultural heritage assets with its cultural, historic and artistic values, but also to the safety of visitors, staff and local communities. Additionally, they cause undoubtedly negative consequences for the local economies. The ProteCHt2save project contributes to an improvement of capacities of the public and private sectors to mitigate the impacts of climate change and natural hazards on cultural heritage sites, structures and artefacts. The project focuses primarily on the development of feasible and tailored solutions for building resilience of cultural heritage to floods and events of heavy rain. It will help regional and local authorities to prepare measures and evacuation plans in case of emergencies. ProteCHt will deliver ICT solutions (web-based inventory and maps) and tools (decision support tool, best practices manual, handbook on transnational rescue procedures) for risk management and protection of cultural heritage in central Europe. Pilot actions will test the approach and tools in risk prone areas and areas with cultural heritage vulnerabilities to improve the existing disaster risk management plans and policies in municipalities. |
| Website | http://www.interreg-central.eu |

| ProteCHt2save | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Institute of Atmospheric Sciences and Climate - National Research Council of Italy (IT)<br>Consortium members:<br>2. Government of Baranya County (HU);<br>3. Regional Development Agency Bielsko-Biala (PL);<br>4. Municipality of Kocevje (SI);<br>5. Municipal District Praha - Troja (CZ);<br>6. University for Continuing Education Krems Danube University Krems (AT);<br>7. Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences (CZ);<br>8. Municipality of Ferrara (IT);<br>9. City of Kastela (HR);<br>10. Bielsko – Biala District (PL) |

## 4.4.2 Critical Infrastructure Resilience

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Critical Infrastructure Resilience | COCKPITCI<br>INSPIRE<br>PROGRESS<br>SERENITI<br>SERSCIS |

These projects have been complemented by the following H2020 projects:

| DARWIN | |
|---|---|
| Title | Expecting the unexpected and know how to respond (DARWIN) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-07-2014<br>June 2015 / June 2018 - EUR: 4,998,896.25<br><br>REA - 653289 |
| Abstract | DARWIN will improve response to expected and unexpected crises affecting critical infrastructures and social structures. It addresses the management of both man-made and natural events. The main objective is the development of European resilience management guidelines. These will improve the ability of stakeholders to anticipate, monitor, respond, adapt, learn and evolve, to operate efficiently in the face of crises. The project will adapt innovative tools, test and validate the guidelines, and establish knowledge about how organisations can implement guidelines to improve resilience.Also a Community of Crisis and Resilience Practitioners (CoCRP) will be established, including stakeholders and end-users from other domains and critical infrastructures and resilience experts. The CoCRP will be involved in an iterative evaluation process to provide feedback on the guidelines. |
| Website | https://h2020darwin.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Stiftelsen Sintef (NO)<br>Consortium:<br>2. Ben-Gurion University of the Negev (IL)<br>3. C.C.I.C.C. Limited (IE)<br>4. Consorzio Sicta Sistemi Innovativiper il Controllo Deltraffico Aereo (IT)<br>5. Deel Blue SRL (IT)<br>6. Enav Spa (IT)<br>7. Instituto Speriore Di Sanita (IT)<br>8. Ostergotlands Lan (SE)<br>9. Technische Universitat Braunschweig (DE)<br>10. Totalforsvarets Forsknigsinstitut (SE) |

| IMPROVER | |
|---|---|
| Title | Improved risk evaluation and implementation of resilience concepts to critical infrastructure (IMPROVER) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-07-2014<br>June 2015 / June 2018 - EUR: 4,323,978.75<br><br>HOME - 653390 |
| Abstract | The overall objective is to improve European critical infrastructure resilience to crises and disasters through the implementation of combinations of societal, organisational and technological resilience concepts to real life examples of pan-European significance, including cross-border examples. This implementation will be enabled through the development of a methodology based on risk evaluation techniques and informed by a review of the positive impact of different resilience concepts on critical infrastructures. The methodology will be cross sectoral and will provide much needed input to standardisation of security of infrastructure. |
| Website | http://improverproject.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. SP Sveriges Tekniska Forskningsinstitut AB (SE)<br>Consortium:<br>2. Dansk Brand-og Sikringsteknisk Institut Forening (DK)<br>3. Euro-Mediterranean Seismological Centre (FR)<br>4. INOV Inesc Inovacao – Instiuto de Novas Tecnologias (PT)<br>5. Institut National de l'Environnement et des Riques Ineris (FR)<br>6. JRC – Joint Research Centre – European commission (BE)<br>7. SP Fire Research AS (NO)<br>8. Univ. of Sheffield (UK)<br>9. Univ. I Tromsoe (NO)<br>10. University College London (UK)<br>11. Univ. of Leicester (UK) |

| RESILENS | |
|---|---|
| Title | Realising European ReSiliencE for CritIcaL INfraStructure (RESILENS) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-07-2014<br>May 2015 / May 2018 - EUR: 4,091,842.50<br><br>REA - 653260 |
| Abstract | RESILENS will develop a European Resilience Management Guideline (ERMG) to support the practical application of resilience to all CI sectors. Accompanying the ERMG will be a Resilience Management Matrix and Audit Toolkit which will enable a resilience score to be attached to an individual CI, organisation and at different spatial scales which can then be iteratively used to direct users to resilience measures that will increase their benchmarked future score. The ERMG and accompanying resilience methods will be hosted on an interactive web based platform, the RESILENS Decision Support Platform (RES-DSP). The RES-DSP will also host an e-learning hub that will provide further guidance and training on CI resilience. |
| Website | http://resilens.eu/ |

| RESILENS | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Future Analytics Consulting Limited (IE)<br>Consortium:<br>2. Bundesanstalt fuer Strassenwesen (DE)<br>3. Camara Municipal de Lisboa (PT)<br>4. Eastern and Midland Regional Assembly (IE)<br>5. EDP Distribuicao Energia SA (PT)<br>6. Factor Social – Consultoria em Psico – Sociologia e Ambiente LDA (PT)<br>7. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>8. Irish Water (IE)<br>9. M T R S 3 Solutions and Services Ltd (IL)<br>10. Skills for Justice (Enterprises) Limited (UK)<br>11. The Provost, Fellows, Foundation Scholars & the other Members of Board of the College of the Holy & Undivided Trinity of Quen Elizabeth near Dublin (IE)<br>12. Univ. of Warwick (UK) |

| RESOLUTE | |
|---|---|
| Title | RESilience management guidelines and Operationalization appLied to Urban Transport Environment (RESOLUTE) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-07-2014<br>May 2015 / May 2018 - EUR: 3,848,581.00<br><br>REA - 653460 |
| Abstract | RESOLUTE proposes to conduct a systematic review and assessment of the resilience assessment and management concepts, as a basis for the deployment of an European Resilience Management Guide (ERMG).The final goal of RESOLUTE is to adapt and adopt the identified concepts and methods from the defined guidelines for their operationalization and evaluation when addressing Critical Infrastructure (CI) of the Urban Transport System (UTS), through the implementation of the RESOLUTE Collaborative Resilience Assessment and Management Support System (CRAMSS), that adopts a highly synergic approach towards the definition of a resilience model for the next-generation of collaborative emergency services and decision making process. |
| Website | http://www.resolute-eu.org/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universita Degli Studi Di Firenze (IT)<br>Consortium:<br>2. Associacao Para o Desenvolvimento Da Investigacao No Instituto Superior de Gestao (PT)<br>3. Attiko Metro Ae (EL)<br>4. Citta Metropolitana Di Firenze (IT)<br>5. Cofac Cooperativa De Formacao e Animacao Cultural Crl (PT)<br>6. Comune Di Firenze (IT)<br>7. Consorzio Milano Ricerche (IT)<br>8. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>9. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V.(DE)<br>10. Humanist (FR)<br>11. Swarco Mizar Srl (IT)<br>12. Thales Italia Spa (IT) |

| SmartResilience | |
|---|---|
| Title | Smart Resilience Indicators for Smart Critical Infrastructures (SmartResilience) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-14-2015<br>May 2016 / May 2019 - EUR: 4,809,948.75<br><br>REA - 700621 |
| Abstract | The project aims to provide an answer to pressing questions in the field of resilience of (smart) critical infrastructures by: (1) by identifying existing indicators suitable for assessing resilience of SCIs; (2) identifying new "smart" resilience indicators (RIs) – including those from Big Data; (3) developing a new advanced resilience assessment methodology based on smart RIs; (4) developing the interactive "SCI Dashboard" tool; (5) applying the methodology/tools in 8 case studies, integrated under one virtual, smart-city-like, European case study.This approach will allow benchmarking the best-practice solutions and identifying the early warnings, improving resilience of SCIs against new threats and cascading and ripple effects. |
| Website | http://www.smartresilience.eu-vri.eu/ |

| SmartResilience | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. European Virtual Institute For Integrated Risk Management Eu Vri Ewiv (DE)<br>Consortium:<br>2. Applied Intelligence Analytics Limited (IE)<br>3. Bay Zoltan Alkalmazott Kutatasi Kozhasznu Nonprofit Kft. (HU)<br>4. Bergische Universitaet Wuppertal (DE)<br>5. Cork City Council (IE)<br>6. European Dynamics Advanced Systems Of Telecommunications Informatics And Telematics Sa (EL)<br>7. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (DE)<br>8. Ibm Israel - Science And Technology Ltd (IL)<br>9. Ivl Svenska Miljoeinstitutet Ab (SE)<br>10. Medizinische Universitaet Wien (AT)<br>11. Nis Ad Novi Sad (RS)<br>12. Orszagos Rendor – Fokapitanysag (HU)<br>13. Schweizerische Ruckversicherungs-Gesellschaft Ag (CH)<br>14. Srh Hochschulen Gmbh Univeristy Of Applied Sciences (DE)<br>15. Stadtwerke Heidelberg Gmbh (DE)<br>16. Steinbeis Advanced Risk Technologies Gmbh (DE)<br>17. Stiftelsen Sintef (NO)<br>18. Teknologian Tutkimuskeskus Vtt Oy (FI)<br>19. The Mayor And Commonalty And Citizens of the City Of London (UK)<br>20. Universitaet Stuttgart (DE) |

| TRUEPIVOT | |
|---|---|
| Title | Advanced engineering analytics for the detection of errors in the structural design of critical urban infrastructure (TRUEPIVOT) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>February 2016 / August 2016 - EUR: 50,000.00<br><br>EASME -712120 |
| Abstract | TruePivot software can ensure that structural failures or collapse resulting from defective designs are completely eliminated for new critical infrastructure projects, and that historic design defects in existing infrastructure can be detected and amended before a catastrophic disruption occurs, for example ensuring a building has sufficient structural redundancy to resist a terrorist attack or natural disasteruses statistical analysis and advanced engineering algorithms to identify errors in structural designs. |
| Website | |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Truepivot LTD (IE) |

# 5. CBRNE threats

The **CBRN Action Plan** as well as the **Explosives Action Plan** include various requirements regarding detection, surveillance and control, for example requirements for appropriate measures to ensure that security plans/ security management systems are in place in high-risk chemical facilities. Controls also concern the delivery of high-risk chemicals and equipment by chemical industry to legitimate users and licensing schemes in particular for Chemical Warfare Agents (CWA) precursors. In the radiological and nuclear areas, controlling measures are focused on e.g. the causes and consequences of the loss of control over radioactive sources, on current status of used and disused sources in the EU and transport patterns for legal uses of radioactive sources.

## 5.1 Major accident hazards

Related to the major accident hazards and its risk management, the **Directive 2012/18/EU on major-accidents hazards involving dangerous substances** sets a number of obligations both to the Member States (e.g., legislation, organisation of the Inspections, reporting to the EC, etc.) as well as to the industrial establishments. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Major accident hazards | INTeg-Risk<br>MIRACLE<br>SECURENV<br>SNIFFER 2<br>TOSCA |

In the H2020 2014-2015 calls, no dedicated research projects or studies have been carried out in this area.

These projects were complemented by projects funded in 2016-2017:

| | OILBLOCK |
|---|---|
| Title | Immediate Oil Spill containment to mitigate impact on the marine ecosystem |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SMEINST-1-2016-2017.<br>Topic code: SMEInst-11-2016-2017. August 2016 / November 2016 - EUR: 50.000,00 GA 735832 |
| Abstract | In Europe alone, about 20,000 oil spills were detected over a period of 6 years. Oil spills turn into major disasters because no immediate containment equipment is housed on-board large ships and oil rigs, and nothing that can prevent oil from spreading during the first hours of a spill and thus the damage grows exponentially with time of response. OILBLOCK project goal is to address the highly significant ecological, social and economic problems caused by oil spills. HARBO's system starts operating within minutes of spill detection. In less than 30 minutes, it deploys 2,000 meters of a revolutionary containment boom (floating barrier), smallest and lightest than any of current solutions. HARBO's patented technology has already been proven at the world's best testing facility for oil spill response. It is the first that can be pre-installed at standby positions in any place at risk for oil spills and therefore will multiply oil recovery rates and significantly decrease the environmental impact of spills. The solution has raised the interest of different stakeholders such as emergency response organizations, coast guards, shipping lines, oil rig operators and coastal infrastructure facilities among others. OILBLOCK project focus on searching strong European partnerships for ensuring the demonstration of the system in different real scenarios and closing commercial agreements for a fast commercialization once project is finished. |
| Website | http://www.harbo-technologies.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Harbo Technologies Ltd (IL) |

| XP-RESILIENCE | |
|---|---|
| Title | EXTREME LOADING ANALYSIS OF PETROCHEMICAL PLANTS AND DESIGN OF METAMATERIAL-BASED SHIELDS FOR ENHANCED RESILIENCE |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): support for Innovative Training Networks. Call: H2020-MSCA-ITN-2016. Topic code: MSCA-ITN-2016. September 2016 / August 2020 - EUR: 3.393.811,98 GA 721816 |
| Abstract | The tremendous impact of natural hazards, such as earthquakes, tsunamis, flooding, etc, which triggered technological accidents, referred to as natural-technological (NaTech) events, was demonstrated by: i) the recent Tohoku earthquake and the following Fukushima disaster in 2011; ii) the UK's 2015 winter floods which topped £5bn, with thousands of families and businesses that faced financial problems because of inadequate or non-existent insurance. The NaTech problem is quite relevant as up to 10% of industrial accidents, involving the release of Chemical, Biological, Radiological, Nuclear and high-yield Explosives (CBRNE) substances, were triggered by natural hazards. To implement and support the Seveso II Directive 2012/18/EU which regulates the control of major accident hazards involving dangerous substances, XP-RESILIENCE intends to establish a network of individual research projects working towards Advanced Modelling and Protection –via metamaterial-based isolators/layouts- of Complex Engineering Systems for Disaster Reduction and Resilient Communities. In fact, today there is a stronger need than ever to grow researchers that combine a robust academic foundation in reliability/resilience with practical experiences, technological expertise with awareness of the socio-economical context and conviction to furthering research with an entrepreneurial spirit. Hence, the objective of XP-RESILIENCE is to offer innovative research training ground as well as attractive career development and knowledge exchange opportunities for Early Stage Researchers (ESRs) through cross-border and cross-sector mobility for future growth in Europe. XP-RESILIENCE is an inter/multi-disciplinary and intersectoral programme as it includes seven academic partners, one Institute of Applied Science and seven private companies from ten different European countries. |
| Website | http://www.unitn.it/en |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universita Degli Studi Di Trento (IT)<br>Consortium:<br>2. Arcelormittal Belval & Differdange Sa (LU)<br>3. Columbian Carbon Europa Srl (IT)<br>4. Institut National Des Sciences Appliquees De Rennes (FR)<br>5. Panepistimio Patron (EL)<br>6. Politechnika Slaska (PL)<br>7. Universita Degli Studi Del Sannio (IT)<br>8. Universita Degli Studi Roma Tre (IT)<br>9. Univerza V Ljubljani (SL)<br>10. Vce Vienna Consulting Engineers Zt Gmbh (AT) |

| EU-SENSE | |
|---|---|
| Title | European Sensor System for CBRN Applications |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-05-DRS-2016-2017.<br>May 2018 / April 2021 - EUR: 3.428.100,00 GA 787031 |
| Abstract | The EU-SENSE project will provide an innovative technical solution to deal with selected shortcomings in CBRNe protection indicated in the ENCIRCLE Catalogue of Technologies. The created system will be a step-forward in chemical detection by developing a novel network of sensors that exploits advanced machine-learning and modelling algorithms for improved performance. The salient objectives of the project include development of an adaptable and multipurpose threat detection system (network of sensors, comprising both stationary and person-worn sensor nodes supported by environmental noise learning algorithm for false alarm rate reduction) and tools for enhancing situational awareness based on the sensor data (threat source location estimation and hazard prediction solutions). In general, the developed system will improve the threat detection capabilities and will increase state-of-the-art sensors reliability by networking and novel algorithms. Moreover, the project will implement a dedicated mode covering CBRNe practitioners training aspect. The mode will be an integral part of the system and will allow for familiarization with the equipment (the system) as well as training and rehearsal for specific situations. The EU-SENSE will be strongly user-driven and the demonstration of the developed system will be conducted in the realistic working conditions, in the professional firefighters training centre and with the use of chemical simulants. The project will also consider the issue of interoperability between various chemical sensors and will propose a concept for standardisation of sensor network description. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. ITTI SP ZOO (PL)<br>Consortium:<br>2. Totalforsvarets Forskningsinstitut (SE)<br>3. Uniwersytet Warszawski (PL)<br>4. Airsense Analytics GmbH (DE)<br>5. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>6. The Main School of Fire Service (PL)<br>7. Forsvarets Forskninginstitutt (NO)<br>8. Police Service of Northern Ireland (UK)<br>9. Technisch-Mathematische Studiengesellschaft mit Beschrankter Haftung (DE) |

| HBM4EU | |
|---|---|
| Title | European Human Biomonitoring Initiative |
| Contract details | Health, Demographic Change and Wellbeing. Call: H2020-SC1-2016-RTD. Topic code: SC1-PM-05-2016. January 2017 / December 2021 - EUR: 49.933.776,00 GA 733032 |
| Abstract | The overarching goal of the European Human Biomonitoring Initiative (HBM4EU) is to generate knowledge to inform the safe management of chemicals and so protect human health. We will use human biomonitoring to understand human exposure to chemicals and resulting health impacts and will communicate with policy makers to ensure that our results are exploited in the design of new chemicals policies and the evaluation of existing measures. Key objectives include: • Harmonizing procedures for human biomonitoring across 26 countries, to provide policy makers with comparable data on human internal exposure to chemicals and mixtures of chemicals at EU level; • Linking data on internal exposure to chemicals to aggregate external exposure and identifying exposure pathways and upstream sources. Information on exposure pathways is critical to the design of targeted policy measures to reduce exposure; • Generating scientific evidence on the causal links between human exposure to chemicals and negative health outcomes; and • Adapting chemical risk assessment methodologies to use human biomonitoring data and account for the contribution of multiple external exposure pathways to the total chemical body burden. We will achieve these objectives by harmonizing human biomonitoring initiatives in 26 countries, drawing on existing expertise and building new capacities. By establishing National Hubs in each country to coordinate activities, we will create a robust Human Biomonitoring Platform at European level. This initiative contributes directly to the improvement of health and well-being for all age groups, by investigating how exposure to chemicals affects the health of different groups, such as children, pregnant women, foetuses and workers. We will also investigate how factor such as behavior, lifestyle and socio-economic status influence internal exposure to chemicals across the EU population. This knowledge will support policy action to reduce chemical exposure and protect health. |
| Website | https://www.hbm4eu.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Umweltbundesamt (DE)<br>Consortium:<br>2. Region Hovedstaden (DK)<br>3. Folkehelseinstituttet (NO)<br>4. Vlaamse Instelling voor Technologisch Onderzoek N.V. (BE)<br>5. Urad Verejneho Zdravotnictva Slovenskej Republiky (SK)<br>6. Institut National de la Sante et de la Recherche Medicale (FR)<br>7. Ministry of Health (IL)<br>8. Masarykova univerzita (CZ)<br>9. Institut Scientifique de Sante Publique (BE)<br>10. Institut Jozef Stefan (SL)<br>11. Ethniko Kai Kapodistriako Panepistimio Athinon (EL)<br>12. Mokslo Inovaciju ir Technologiju Agentura (LT)<br>13. Health Service Executive (IE)<br>14. Nacionalni Institut Za Javno Zdravje (SL)<br>15. Instituto de Salud Carlos III (ES)<br>16. Aristotelio Panepistimio Thessalonikis (EL)<br>17. Istituto Superiore di Sanita (IT)<br>18. European Environment Agency (DK)<br>19. Valsts Izglitibas Attistibas Agentura (LV)<br>20. Department of Health (UK)<br>21. Rigas Stradina Universitate (LV)<br>22. Schweizerisches Tropen- und Public Health-Institut (CH)<br>23. Terveyden ja Hyvinvoinnin Laitos (FI)<br>24. Nacionaline Visuomenes Sveikatos Prieziuros Laboratorija (LT)<br>25. Rijksinstituut voor Volksgezondheid en Milieu (NL)<br>26. Instituto Nacional de Saude Dr. Ricardo Jorge (PT)<br>27. Naturvardsverket (SE)<br>28. Hrvatski Zavod za Javno Zdravstvo (HR)<br>29. Ministry of Health of the Republic of Cyprus (CY)<br>30. Instytut Medycyny Pracy Imienia Prof. Dra Med. Jerzego Nofera W Lodzi (PL)<br>31. Danmarks Tekniske Universitet (DK)<br>32. Slovenska Zdravotnicka Univerzita V Bratislave (SK)<br>33. Ministero della Salute (IT)<br>34. Umweltbundesamt Gesellschaft Mit Beschrankter Haftung (UBA GMBH) (AT)<br>35. Det Nationale Forskningscenter Forarbejdsmiljo (DK)<br>36. Haskoli Islands (IS)<br>37. Tyoterveyslaitos (FI)<br>38. Fundacao para a Ciencia e a Tecnologia (PT) |

| NANOELECTROCHEM | |
|---|---|
| Title | Electrocatalytic Nanoreactors for Absorption, Detection and Decontamination of Hazardous Compounds |
| Contract details | European Research Council - Proof of Concept Grant. Call: ERC-2016-PoC. Topic code: ERC-PoC-2016. December 2017 / May 2019 - EUR: 149.912,00 GA 754682 |
| Abstract | Chemical warfare agents (CWA) are one of the most odious weapons of mass destruction, designed to incapacitate humans by causing blistering, choking, internal bleeding and vomiting on a grand scale. CWA are inexpensive and relatively easy to synthesise making them accessible to terrorist groups, providing a means for the administration of large scale damage with only small quantities of materials. Current state-of-the-art methods to detect or decontaminate CWA lack efficiency and flexibility and, with tensions in numerous war zones pushed to breaking point. By building on the fundamental scientific discoveries made in the ERC Consolidator grant (No 277784, NANOMOL), we shall extend and develop the application of electrochemically active carbon nanoreactors for the detection and decontamination of CWA, such as mustard gas and other agents. The nanoscale electrochemical platform (NANOELECTROCHEM) developed in this Proof of Concept (PoC) project is expected to be universally applicable for the triple-use (absorption \ detection \ decontamination) of a wide spectrum of CWA and many other harmful anthropogenic compounds, within the single platform allowing for an extremely portable device for a range of practical applications. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Nottingham (UK) |

## The projects were complemented by the following projects funded by LIFE+ program:

| LIFE-FLAREX | |
|---|---|
| Title | LIFE-FLAREX - Mitigation of environmental impact caused by Flame Retardant textile finishing chemicals |
| Contract details | LIFE16 ENV/ES/000374 |
| 01-JUL-2017 to 30-JUN -2020 | |
| Total budget: EUR 1,163,879.00; EU contribution: EUR 697,515.00 | |
| Abstract | The main objective of the LIFE-FLAREX project is to promote the use of safer alternative flame retardants (FRs) in order to mitigate the environmental and health impacts caused by toxic compounds in FRs containing bromine, formaldehyde and antimony in textile finishing products. To this aim, the project plans to apply the substitution principle to FR chemicals listed on the REACH Substance of Very High Concern (SVHC) and Candidate lists. It will identify potential substitute chemicals, both on the basis of the state of the art and by contacting R&D stakeholders. The project will test potential alternatives in six pilots at pre-industrial and industrial textile mills. Their technical, environmental and economic performance will be evaluated in order to assess the feasibility of suitable chemicals for replacing conventional FRs in the home textile sector on an industrial scale. The results and conclusions to be yielded by the project are expected to hold high replicability potential and be of great interest to the EU textile sector. The textile industry will be involved with the project and its findings through the organisation of local/regional professional workshops and guidance produced on alternative FRs. Expected results: - Successful demonstration of safer alternative products to conventional BFRs; - An evaluation of the properties and environmental impact of three conventional FRs used in textile finishing processes and six non-toxic and economically viable alternatives; - The companies in the pilots reducing the use of BFR (currently at 180-220 t/year) by 20 t/year (10%) by project end and another 20 t/year (10%) three years after the end of the project; - A reduction of the emission and the exposure to toxic compounds derived from conventional toxic FRs; - A complete guide for European textile finishing and formulating companies to consolidate their knowledge on halogenated and non-halogenated harmful chemicals and on FR use, selection and disposal; - Direct contribution to the implementation of the REACH legislative framework on the substitution principle, enabling the REACH requirements for the registration dossier of chemical substances to be updated to cover current information gaps; - Recommendations provided to update the BREF associated with the Industrial Emissions Directive in relation to the selection of chemicals, FR treatments and environmental issues etc.; - Support achievement of the objectives of the Water and Waste Framework Directives; - A socio-economic impact assessment of the project actions on the local economy and population; and - Collaboration established with a wide network of stakeholders, clothing and textile industry and European initiatives to ensure the continuation of LIFE-FLAREX activities. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6182 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: ASSOCIACIÓ AGRUPACIÓ D'EMPRESES INNOVADORES TÈXTILS (ES)<br>Partners:<br>1. ASOCIACION DE EMPRESARIOS TEXTILES DE LA COMUNIDAD VALENCIANA (ES),<br>2. AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (ES),<br>3. Città Studi S.p.A. (IT),<br>4. CLUTEX – klastr technické textilie (CZ),<br>5. CENTEXBEL: CENTRE SCIENTIFIQUE & TECHNIQUE DE L'INDUSTRIE TEXTILE BELGE (BE),<br>6. Acondicionamiento Tarrasense (ES) |

| LIFE VERMEER | |
|---|---|
| Title | LIFE VERMEER - Integrating VEGA, toxRead, MERLIN-Expo, and ERICA in a platform for risk assessment and substitution of risky substance |
| Contract details | LIFE16 ENV/IT/000167<br><br>01-SEP-2017 to 30-JUN -2021<br><br>Total budget: EUR 2,475,044.00; EU contribution: EUR 1,482,445.00 |
| Abstract | The objective of the LIFE VERMEER project is to deliver flexible and user-friendly software tools, called SPHERA and ToxEraser, for the substitution of harmful chemicals. SPHERA will be a diagnostic tool for identifying the adverse effects related to chemicals, and ToxEraser will provide the remedy by suggesting suitable alternative chemicals. Together, these QSAR software modelling tools will enable multiple assessments to be conducted to determine risks and hazards towards human health or to other species, and the persistence or bioaccumulation of chemicals taking into account different exposure scenarios. The tools will have broad application, which will be demonstrated through a series of heterogeneous studies. Both tools will be validated within six case studies (food contact materials, biocides, petroleum and oil fraction, greener solvents, dispersants and cosmetics), so that they can become part of the VEGA (Virtual models for property Evaluation of chemicals within a Global Architecture) platform for QSAR models. The project will provide great benefits throughout Europe by integrating exposure and hazard into a single advanced tool for risk assessment and for the harmonisation of human and environmental approaches, in particular, for the implementation of the REACH regulation. Expected results: The LIFE VERMEER project aims to achieve the following results: - Reduction of irritant, corrosive and toxic substances; - Reduction of carcinogenic, mutagenic or toxic to reproduction substances; - Reduction of persistent or bioaccumulative substances; - Identification of candidate chemicals to substitute for risky substances in the following chemical categories: food contact materials, biocides, petroleum & oil fractions, solvents, dispersants and cosmetics; - Screening of 3 000 food contact materials and 10 000 cosmetic substances; - Reduction in the costs of the procedure to assess chemical substances; - Development of a new software tool (ToxEraser) to identify substitutes for critical substances, so abating their adverse impacts; and - Development of a new software tool (SPHERA) that determines the hazards (toxicological and ecotoxicological) and the environmental behaviour of chemicals in terms of exposure. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6191 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: IRCCS-Istituto di Ricerche Farmacologiche Mario Negri (IT)<br>Partners:<br>1. Electricité de France SA (FR), Kode s.r.l.,<br>2. Italy Institut Scientifique de Santé Publique (BE),<br>3. SC Sviluppo chimica S.p.A. (IT), Federal Institute for Risk Assessment (DE),<br>4. Angel Consulting SAS di Matteo Zanotti Russo & C (IT),<br>5. Institut National de l'Environnement industriel et des Risques (FR),<br>6. Facilia AB (SE) |

| LIFE MATHER | |
|---|---|
| Title | LIFE MATHER - Full material and chemical monitoring data and disclosure for the protection of the human health and environment |
| Contract details | LIFE16 ENV/IT/000211<br><br>01-JUL-2017 to 31-DEC -2020 –<br><br>Total budget: EUR 1,580,774.00; EU contribution: EUR 935,521.00 |
| Abstract | The LIFE MATHER project aims to design, implement and demonstrate a new data monitoring tool that will create a link between the chemicals used by a company in its products with known human health and environmental impacts, as well as pertinent regulations. The chemical monitoring data will be accessible and comparable, allowing the exposure assessment of chemicals. In particular, the new tool will help manufacturing companies to: - Raise their awareness of the health and environmental impacts of materials and chemicals used in components purchased to make their products, to facilitate a more informed decision-making process during the product design and production phases; - Reduce internal costs, related to the continuous updating of in-house materials databases and inventories based on regulatory updates, and the purchase of new components to replace withdrawn non-compliant components; - Reduce time-to-compliance with regulations for products before accessing the market, avoiding related risks to health and the environment as well as legal consequences and impacts on the EU's industrial reputation and related competitiveness; and - Provide EU Health Units with data about exact composition, quantity and possible environmental/health impacts to allow exposure from chemical mixtures to be assessed. - In particular, the new tool will be in line with Directive 2002/95/EC on the Restriction of Hazardous Substances, which restricts the use of hazardous materials in the manufacturing of various types of electronic and electrical equipment, and the EC Regulation No. 1907/2006, the so called REACH Regulation, concerning the registration, evaluation, authorisation and restriction of chemicals. The project also contributes to the Circular Economy Action Plan, as it helps to detect and substitute chemical substances in products that are of concern because they create obstacles for recyclers. Expected results: - Development of a new chemical monitoring data tool, linking each chemical substance used by a company with both the regulatory framework and its impacts on human health and environment; - Visibility of composition of the materials in the manufactured products, covering up to 95% of the total material; - Shared knowledge of all restricted and controlled substances along the whole supply chain; - More effective, faster and flexible compliance of the manufactured products with EU environmental and chemicals directives and regulations, with time to identify products impacted by a new regulation reduced by more than 90%; - Proactive reaction to the updating of EU environmental and chemicals directives and regulations, reducing the risk of non-compliance for manufactured appliances by up to 90%; - At least 10 EU Health Units to be provided with chemical monitoring data that is accessible, comparable, and linked with environment and health assessment; - Elimination (100%) of lead contained in the 15-20 WHEMEA appliances chosen for the validation actions, to be substituted with silicon; and - Reduction of the global warming potential (GWP) associated with the WHEMEA products, considering that the GWP associated with the use of silicon is only 2% of that of lead. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6201 |

| LIFE MATHER | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator: Whirlpool EMEA SpA (ES)<br>Partners:<br>1. t2i – trasferimento tecnologico e innovazione s.c.a r.l. (IT),<br>2. National Technical University of Athens (EL) |

| LIFE CHEREE | |
|---|---|
| Title | LIFE CHEREE - Chemicals Regulations Enforcement & Inspections - Building Authority Capacity for REACH/CLP and SEVESO III Compliance |
| Contract details | LIFE15 GIE/GR/000943<br><br>01-OCT-2016 to 31-MAR -2020<br><br>Total budget: EUR 1,055,041.00; EU contribution: EUR 633,024.00 |
| Abstract | The LIFE CHEREE project aims to support the harmonisation of knowledge in order to help enforce EU regulations on the sustainable use of chemicals and to expand the added value of environmental prevention in handling hazardous chemicals. The specific objectives are to build the following: knowledge within the inspection community, the capacity of relevant authorities, efficiency and a culture of compliance for effective enforcement of the REACH/CLP regulations and the SEVESO-III Directive. Particular attention will be paid to the development and implementation of good practices, including guidance, training and support for inspectors and duty holders in Greece and Cyprus. The project will also implement Best Available Techniques (BATs) in REACH/CLP and SEVESO-III enforcement strategies, practices and infringement identification, and compliance procedures. Actions will consist of supporting, enhancing and disseminating the following: - The efficiency and effectiveness of inspections in Greece and Cyprus and the cooperation of all relevant authorities, by developing a structured inspection system for REACH/CLP and SEVESO-III inspections and Health Safety & Environment (HSE) chemicals-related issues; - The quality of inspections through a series of inspectors' training courses, common visits and pilot inspections, organised and performed in the two Member States based on the "good-practice programme" and other project outputs, in line with the European Chemicals Agency Forum and the programmes and priorities of EU Competent Authorities (CAs); and - Sharing of knowledge and good practices via an e-platform with two Information Centres, customised e-tools and an extended e-campaign tailor-made for inspectors and duty holders. The project expects to achieve the following results: - A set of common inspection criteria for Greece and Cyprus covering all stages of a representative inspection system to satisfy REACH/CLP and SEVESO-III legislation and meet the requirements of SMEs and large companies; - Analysis of the needs of the core target audience (National Enforcement Authorities - NEAs - and duty holders) in Cyprus and Greece as regards national priorities, inspection strategies, best practices, training, IT applications for reporting of inspections, and transfer of knowledge among CAs; - Development of a structured program for REACH/CLP and SEVESO-III inspections, including good practices, guidelines and training for inspectors on HSE issues common with other inspections; - Four inspectors' training courses in the two Member States (producing 110 trained inspectors from five enforcing/cooperating authorities in REACH/CLP and SEVESO-III controls); - Four common visits by inspectors and 10 pilot inspections by local inspectors in different industrial sectors in Greece and Cyprus , with 100 inspectors participating; - Four workshops in Greece and Cyprus tailor-made for duty holders and authorities (with 240 participants from eight industrial sectors); - Development of an e-platform including two Information Centres (an "Inspectors' e-Centre" and a "HazChem Information Centre" with five e-tools for systematic support on the control of chemical risks, including the outcomes of the LIFE PROTEAS project (LIFE09 ENV/GR/000291) on the systematic support of SMEs handling hazardous chemicals. The web-based platform and its materials will be available in Greek and English for widespread dissemination; and - An e-campaign targeting 15 NEAs and other inspection bodies and 500 duty holders (via the e-platform and e-tools) to support effective implementation of inspections and systematic information for the control of chemical hazards, with pilot implementation of the HazChem Information Centre in the two Member States. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5822 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Technical University of Crete (EL)<br>Partners:<br>1. Ministry of finance - General Secretariat for Public Revenue - General Chemical State Laboratory (EL),<br>2. Department of Labour Inspection - Ministry of Labour, Welfare and Social Insurance (CY) |

## 5.2 Chemical threats

The following projects have been funded within H2020

| ChemSniff | |
|---|---|
| Title | Chemical sniffer device for multi-mode analysis of threat compounds (ChemSniff) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2014 Topic code: DRS-17-2014<br>September 2015 / August 2017 - EUR 1,577,030.00<br><br>EASME - 674716 |
| Abstract | ChemSniff will develop a multi-mode sniffer device for real-time detection of chemical compounds contained in CBRN-E substances. This will enable high throughput screening of soft targets such as vehicles, people and their personal effects. The instrument will allow reduced acquisition/operating costs, greater mobility, user friendliness and flexibility. Performance will be benchmarked against a conventional MS system for in-field analysis The project outcome will be an automated portable MS-based sniffer device, tested and evaluated for a range of security applications and markets by end-users. |

| ChemSniff | |
|---|---|
| Website | http://www.chemsniff.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Da Vinci Europe Laboratory Solutions BV (NL)<br>Consortium:<br>2. Q Technologies Ltd (UK) |

## 5.3 Biological threats

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Biological threats | ANTIBOTABE<br>BIO-PROTECT<br>EQUATOX<br>MULTISENSE CHIP<br>PLANTFOOSEC<br>SPICED<br>TWOBIAS |

In the H2020 2014-2015 calls, no dedicated research projects or studies have been carried out in this area.

The projects were complemented by new projects funded in 2016-2017:

| EuroBioTox | |
|---|---|
| Title | European programme for the establishment of validated procedures for the detection and identification of biological toxins |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-03-DRS-2016.<br>June 2017 / May 2022 - EUR: 7.998.747,00 GA 740189 |
| Abstract | Recent incidents in Europe and worldwide have threatened civil society by the attempted use of different biological toxins and have thereby shown that increased vigilance and adequate preparation is of increasing importance in a world facing growing risks of man-made disasters. Previous studies which the consortium is well acquainted with showed that there is a lack of robustness in European preparedness for biotoxin incidents. There is a need for standard analytical tools and procedures, reference materials, state-of-the-art training and establishment of a European proficiency testing scheme. Using current best practice, the EuroBioTox core members will develop and validate improved analytical tools, reagents and standard operating procedures based on realistic incident scenarios. Certified Reference Materials for the threat biotoxins will be developed and, by establishing a European repository, will be made available to the EuroBioTox network including more than 50 European organisations, expert laboratories, industrial partners and end-users. Training courses at basic and advanced levels will be developed and attended by the EuroBioTox network partners, followed by a series of proficiency tests which, through these "outer circle" associates, will disseminate best practice methods across Europe. The current animal test for botulinum neurotoxin is ethically unacceptable and alternative in vitro tests will be evaluated. After this project there will be a pan-European network of competence, certified reference materials, standard operating procedures and a common way of handling biotoxin incidents. |
| Website | https://eurobiotox.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Robert Koch-Institut (DE)<br>Consortium:<br>2. Agence Nationale de la Securite Sanitaire de l'Alimentation de l'Environnement et du Travail (FR)<br>3. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>4. Eidgenossisches Departement fur Verteidigung, Bevolkerungsschutz und Sport (CH)<br>5. Helsinging Yliopisto (FI)<br>6. Insititut Pasteur (FR)<br>7. Insitutut Scientifique de Sante Publique (BE)<br>8. JRC – Joint Research Centre – European Commission (BE)<br>9. Luginbuehl Werner (CH)<br>10. The Queen's University of Belfast (UK)<br>11. Totalforsvaerts Forskningsinstitut (SE)<br>12. Toxogen Gmbh (DE)<br>13. Zurher Hochschule fur Angewandte Wissenschaften (CH) |

| Glyco-DeCon | |
|---|---|
| Title | Decontamination by glycosylation based wipes |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2018 / June 2018 - EUR: 50.000,00 GA 791486 |
| Abstract | The increasing cross-border and cross-continental movement of people, goods and food, together with the global terrorism threat, have enormous potential to affect the emergence and spread of infectious diseases, including those caused by biothreat agents. Filling the need and gap in the marker for highly-portable, broadly-specific decontamination methods, Aquila BioScience has developed a novel Glyco-DeCon system. At the development stage the unique combination of sugars capturing biothreat agents was identified by using a novel microarray technology. In the Glyco-DeCon wipe, the sugars are chemically attached to the surface of a pre-treated, self-contained cellulose-based material. This approach targets natural binding sites of the biothreat agents and offers a non-toxic alternative to the harsh chemical decontamination methods. The Glyco-DeCon wipe is the safest method for biological decontamination described so far and can be used on human skin as well as the delicate surfaces of the mucosal epithelia or the human eye. Moreover, the product uses natural compounds like cotton and purified proteins reducing the environmental burden of toxic chemical approaches. The Glyco-DeCon kit is intended to become part of all first responder kits. The Glyco-DeCon wipes have already been tested in Defence accredited labs and confirmed to be effective against persistent biothreat agents, including anthrax cells and spores. Over the next six months Aquila BioScience is intending to perform field testing for the prototype developed with support of Irish Defence Forces and will discuss the most suitable formats with the end users. Moreover, a patent application is being submitted for protecting the invented technology. The team will look into business and production feasibility to indicate the best distribution partner and to introduce the product into the market within the following year. The findings will be summarized in Feasibility Report and elaborated Business Plan. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aquila Bioscience Limited (IE) |

## 5.4 RN emergency

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| RN emergency | COCAE<br>DETECT<br>MODES-SNM<br>MULTIBIODOSE<br>NERIS-TP<br>PREPARE<br>REWARD<br>SCINTILLA |

In the H2020 2014-2015 calls, no dedicated research projects or studies have been carried out in this area.

The projects were complemented by new projects funded in 2016-2017:

| NESPINT | |
|---|---|
| Title | NEutron Spectrometry to Prevent Illicit Nuclear Trafficking |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2017 / June 2017 - EUR: 50.000,00 GA 740146 |
| Abstract | The project aims at developing an innovative detector capable of playing a fundamental role in detecting illicit trafficking of nuclear materials across international borders. This detector, called NESPINT (Neutron Spectrometry to Prevent Illicit Nuclear Trafficking), will be constituted by a neutron spectrometer that passively interrogate items in the framework of port, airport and border security screening procedures. The project is expected to develop an industrialised version of NESPINT, tested in operational workplaces and ready for the market, to be implemented in different systems employed for security screenings. NESPINT will enter the business of detectors employed for homeland security, which is constantly increasing especially for what concerns illegal trafficking. Indeed, at the state of the art there are no commercial detectors that can compete with the characteristics of NESPINT, neither in terms of performance and efficiency, nor in terms of price and ease of use. NESPINT will satisfy the needs of the users involved in the homeland security market, as it will be characterised by fast and precise measurements, ease of use and reduced cost. The feasibility assessment to be carried out in phase 1 will be aimed at: elaborating a clear, measureable and realistic business plan; precisely determining the budget requirements for the funding request to be submitted during phase 2; precisely determining the total and the serviceable available market, split in the submarkets (airports, ports and others); finding potentially interested partners for phase 2; defining the national and international applicable standards to be respected for bringing NESPINT on the market. |

| NESPINT | |
|---|---|
| Website | http://www.elsenuclear.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Else Nuclear Srl (IT) |

| INSIDER | |
|---|---|
| Title | Improved Nuclear SIte characterization for waste minimization in DD operations under constrained EnviRonment |
| Contract details | Euratom. Call: NFRP-2016-2017-1. Topic code: NFRP-7. June 2017 / May 2021 - EUR: 3.781.064,64 GA 755554 |
| Abstract | Decommissioning and dismantling (D&D) operations are strongly dependent on the facilities history and the inventory of present radionuclides. The D&D processes are significant source of radioactive waste and their management is a major challenge from technical, economical, financial and societal point of view. This is recognized in a number of reference documents and studies on EU and international level. These challenges are naturally subject for further optimisation and the ambition of INSIDER project is to contribute to it as follows. For constrained environments new methodologies are necessary for more accurate initial estimation of contaminated materials, resulting waste volumes and timely planning. This will be based on advanced statistical processing and modelling, coupled with adapted and innovative analytical and measurement methods, with respect to sustainability and economic objectives. The envisaged project outcomes will enable building of a fit-for-purpose representation of the radiological status of facilities (or components), at a relevant precision level allowing making decisions concerning different D&D scenario options. The overall project methodology is based on common case studies in the form of interlaboratory comparisons on matrix representative reference samples and benchmarking. Industrial partners (selected D&D actors) in close cooperation with major EU R&D organisations will drive comprehensive and realistic conclusions formalised in guidelines, recommendations and elements for pre-standardisation initiatives. These will be validated at different scientific and industrial levels and widely disseminated to the broad D&D community and beyond. |
| Website | http://insider-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>Consortium:<br>2. NPL Management Limited (UK)<br>3. Forschungszentrum Julich Gmbh (DE)<br>4. Brenk Systemplanung Gmbh (DE)<br>5. Electricite de France (FR)<br>6. LGI Consulting SARL (FR)<br>7. Magyar Tudomanyos Akademia Energiatudomanyi Kutatokozpont (HU)<br>8. Limited Liability Company Energorisk (UA)<br>9. Studiecentrum voor Kernenergie/Centre d'Etude de l'Energie Nucléaire (BE)<br>10. Karlsruher Institut fuer Technologie (DE)<br>11. Onet Technologies (FR)<br>12. Laboratoire National de Metrologie et d'essais (FR)<br>13. Paul Scherrer Institut (CH)<br>14. Geovariances SA (FR)<br>15. Universidad del Pais Vasco/ Euskal Herriko Unibertsitatea (ES)<br>16. Helmholtz-Zentrum Dresden-Rossendorf EV (DE)<br>17. Cesky Metrologicky Institut BRNO (CZ)<br>18. JRC -Joint Research Centre- European Commission (BE) |

| NARSIS | |
|---|---|
| Title | New Approach to Reactor Safety ImprovementS |
| Contract details | Euratom. Call: NFRP-2016-2017-1. Topic code: NFRP-1. September 2017 / August 2021 - EUR: 4.965.472,14 GA 755439 |

| NARSIS | |
|---|---|
| Abstract | Probabilistic Safety Assessment (PSA) procedures allow to better understand and estimate the likelihood of the most causes prone to initiate nuclear accidents and to identify the most critical elements of the systems. However, despite of the remarkable reliability of current procedures, the 2011 Fukushima Daiichi accident highlighted a number of challenging issues with respect to their application and validity of their results. From this nuclear disaster the upgrading of the current methodological framework appeared to be necessary in areas such as cascading/conjunct events characterization, fragility analyses and uncertainties treatment. New developments in those areas would even enable the extension of their use in accident management. Based on recent theoretical progresses, the NARSIS project aims at making significant scientific updates of some elements required for the PSA, focusing on external natural events (earthquake, tsunami, flooding, high speed winds...). These improvements mainly concern: • Natural hazards characterization, considering concomitant external (simultaneous-yet-independent or cascading) events, and the correlation in intra-event intensity parameters; • Fragility and functionality assessment of main critical NPPs' elements, accounting for conjunct effects (including ageing effects) and interdependencies under single or multiple external aggressions; • Risk integration combined with uncertainty characterization and quantification, to allow efficient risks comparison and account for all possible interactions and cascade effects; • Better processing/integration of expert-based information within PSA, through modern uncertainty theories both to represent in flexible manner experts' judgments and to aggregate them to be used in a comprehensive manner. The proposed improvements will be tested and validated on simplified and real NPP case studies. Demonstration supporting tools for operational & severe accident management will be also provided. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>Consortium:<br>2. Institut de Radioprotection et de Surete Nucleaire (FR)<br>3. Areva Gmbh (DE)<br>4. Electricite de France (FR)<br>5. Institut Jozef Stefan (SI)<br>6. Nuccon GMBH (AT)<br>7. Teknologian tutkimuskeskus VTT Oy (FI)<br>8. Narodowe Centrum Badan Jadrowych (PL)<br>9. Agenzia Nazionale Per Le Nuove Tecnologie, L'energia E Lo Sviluppo Economico Sostenibile (IT)<br>10. Universita di Pisa (IT)<br>11. Bureau de Recherches Geologiques et Minieres (FR)<br>12. Aposs-Analize Pouzdakosti i Sigurnosti Sustava Drustvo s Ogranicenom Odgovornoscu za Usluge i Inzenjering (HR)<br>13. Karlsruher Institut fuer Technologie (DE)<br>14. Nuclear Research and Consultancy Group (NL)<br>15. Politechnika Warszawska (PL)<br>16. EDF Energy R&D UK Centre Limited (UK)<br>17. Gen Energija DOO (SI)<br>18. Technische Universiteit Delft (NL) |

| Radiation detector | |
|---|---|
| Title | Novel radioactive radiation technology feasibility verification |
| Contract details | Industrial Leadership – Innovation in SMEs. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-01-2016-2017. March 2018 / June 2018 - EUR: 50.000,00 GA 808316 |
| Abstract | Sensinite develops and manufactures nuclear radiation detection technology revolutionizing the usability and application locations of the radiation detectors. With the Sensinite detection technology illicit nuclear material trafficking will be harder and the Europe will be safer from terrorist attacks. The border security of Europe will improve drastically, allowing even 25x higher number of inspected sea containers. Company's clients are manufacturing partners integrating technology of the company to their own end products. The company expects of achieving sales of 35 million EUR by 2023. This grant applied is to fund the study of commercial and technological feasibility. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Sensinite OY (FI) |

The projects were complemented by the following projects funded by LIFE+ program:

| LIFE ALCHEMIA | |
|---|---|
| Title | LIFE ALCHEMIA - Toward a smart & integral treatment of natural radioactivity in water provision services. |
| Contract details | LIFE16 ENV/ES/000437<br><br>02-OCT-2017 to 31-DEC -2020<br><br>Total budget: EUR 1,523,450.00; EU contribution: EUR 803,960.00 |
| Abstract | Life ALCHEMIA aims to demonstrate integrated and cost effective solutions for removing naturally-occurring radioactivity from drinking water. It will test four different configurations at pilot plants in Spain and Estonia. These will be based on the use of bed filters and hydrous manganese oxide (HMO) technology. Specific objectives are as follows: - To implement four pilot plants (three bed filters and one HMO plant) to reduce the generation of naturally-occurring radioactive materials - To analyse and manage the waste generated by the new water treatment process, as part of a life-cycle approach to radioactivity in water; and in water by 90%; - To reduce the cost of water depuration by up to five times compared to RO treatment; - To replicate the results of the project at water treatment plants in five other European countries Life ALCHEMIA will promote the protection of human health against radioactive substances in drinking water, contributing directly to the implementation of 2013 EU Directive on radioactive substances in drinking water. Expected results: - Implementation and demonstration of three filter-based pilot plants and one HMO pilot plant, with removal rates of 90% of gross alpha and beta activity, and 75-90% reductions in the concentrations of specific radionuclides (U and Ra); - Water indicative doses below 0.1 mSv/yr, making the treated water safe for human consumption (drinking water); - An 80% reduction in treatment costs compared to RO systems; - An 80-90% reduction in the general environmental impact compared to RO systems; - An 80% reduction in greenhouse gas emissions compared to RO systems, producing savings of 60 tCO2eq per year of operation; - A cost benefit analysis of the new systems and transfer of results to at least five facilities in different EU Member States; - Establishment of a thematic network (LinkedIn group) on the removal of radioactivity in drinking water services; and - Better management of radioactivity by competent authorities. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6192 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Fundación CARTIF (ES)<br>Partners:<br>1. DIPUTACIÓN DE ALMERIA (ES), Tallinn University of Technology (EE),<br>2. Estonia University of Tartu (EE),<br>3. VWL(Viimsi Vesi Ltd) (EE),<br>4. Centro de Investigación en Energía Solar - Centro Mixto Universidad de Almeria/Plataforma Solar de Almería (ES) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Illicit Trafficking Radiation Assessment Program + 10 phase II Round Robin Tests | |
|---|---|
| Title | Illicit Trafficking Radiation Assessment Program + 10 phase II Round Robin Tests |
| Project number | HOME/2015/ISFP/AG/CBRN/8453 |
| Contract details | € 513,551.03 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Agence Française d'Expertise Technique Internationale<br>Consortium:<br>Institut de Radioprotection et de Sûreté nucléaire (FR), Seibersdorf Labor (AT), Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung (DE) |

## 5.5 Explosives and their precursors

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Explosives and their precursors | AVERT<br>BONAS<br>COMMONSENSE<br>D-BOX<br>EMPHASIS<br>ENCOUNTER<br>HOMER<br>LOTUS<br>OPTIX<br>PREVAIL<br>ROSFEN<br>SALIANT<br>SUBCOP<br>TIRAMISU |

These projects have been complemented by the following H2020 projects:

| ACES | |
|---|---|
| Title | ACES: Air Cargo Explosive Screener (ACES) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2014 Topic code: DRS-17-2014<br>October 2015 / September 2017 - EUR 863.330<br><br>EASME – 672001 |
| Abstract | Certification of a new generation of explosive screeners for aeronautical cargo loaded in passenger aircrafts based on vapor detection, targeting the airport security market for cargo screening. |
| Website | http://www.sedet.com/index.html |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Sociedad Europea de Deteccion SL (ES) |

| AIRS | |
|---|---|
| Title | Advanced Intelligent Raman System for detection of explosives and harmful substances at urban soft targets (AIRS)<br><br>***This project also corresponds to the category 'Detection of potential CBRN-E threats at urban soft targets and urban CIs.'*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>September 2015 / February 2016 - EUR 50.000<br><br>EASME - 684441 |
| Abstract | Development of an Advanced Intelligent Raman system (AIRS), a new, reliable and portable, non-invasive in-situ method for the detection of hazardous materials, including explosives, especially at soft targets (including at borders, ports and other sensitive targets). The solution combines three technology developments: (1) time resolved measurement technique using advanced detector technologies to remove the fluorescence and improve the signal to noise of observations; (2) machine learning analysis tools to interpret instrument returns in the field quickly and efficiently allowing for multiple species to be identified; (3) combined with a new class of static Fourier transform spectrometer to increase the light capture and hence the sensitivity of the instrument. |
| Website | http://www.is-instruments.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. IS-INSTRUMENTS LIMITED (UK) |

| SENEX | |
|---|---|
| Title | Table Top Device based on Nanostructured Sensors for the continuous ENvironmental monitoring of EXplosive substances in sensitive areas (SENEX) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / January 2016 - EUR: 50,000.00<br><br>EASME - 673138 |
| Abstract | SENEX Project aims at the industrialization of an table top explosive trace detector. The SENEX device is based on surface plasmonic resonance phenomenon and it fills the growing need of security professionals to have the ability to detect a wide range of explosive substances and to be able to adapt as threats and their needs change. SENEX technology first key market application is transportation security in airports and harbours to detect explosives, weapons, and illegal items in baggage or on passengers, airports threat areas are; another key market application is the freight terminal sectors where currently security explosive controls are often lacking. |
| Website | http://www.arc-projects.it/senex-project/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. ARC – Centro Ricerche Applicate (IT) |

## These projects were complemented by new projects funded in 2016-2017:

| ENTRAP | |
|---|---|
| Title | Enhanced Neutralisation of explosive Threats Reaching Across the Plot |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-11-FCT-2016.<br>May 2017 / April 2020 - EUR: 4.978.248,75 GA 740560 |
| Abstract | ENTRAP will deliver combined operational research (OR) methods for assessing and identifying emerging and future counter-measures. The tools will be used for identifying the needed step-changes for countering present, emerging and future explosive threats. The OR tools will encompass methods including morphological analysis, attack-defence trees, Bow-tie diagrams and wargaming. The tools have been well-established for decades and they will be further developed and adapted for explosive threats. The proposed research aims to assess the effectiveness of counter-tools and their combinations across the plot. This will give a value on the efficiency they can provide for historical cases or emerging and future scenarios for an attack. The project will strive to identify commonalities in the timeline where a counter-tool can be effective for several different scenarios. Thus, an effectiveness assessment will be made not only across the timeline for one scenario but also across different scenarios. The research and development efforts on a European level over the last decades will be a main source of background data. A gap analysis over the plot will in combination with the OR methods identify the need of required preventive counter-measures. A gap bridging assessment will together with the researcher and practitioner think-tank in ENTRAP ensure a step-change vision of counter-tools for important gaps. Historical attacks, scenarios defined in FP 7 projects, the EU Matrix group and NDE will be used as the basis. A cost assessment will be included giving an estimate for the required further developments. The ENTRAP consortium will bring together a world-leading team where the consortium includes 11 practitioners supported by an advisory board of key entities whereof 18 Letter of Supports have been obtained. |
| Website | https://www.entrap-h2020.eu/en |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Totalforsvarets Forskningsinstitut (SE)<br>Consortium:<br>2. Agenzia Nazionale per le Nuove Technologie, L'energia e lo sviluppo economico sostenibile (IT)<br>3. CBRNE ltd (UK)<br>4. Commissariat a l'Energie Atomique et aux energies alternatives (FR)<br>5. Forsvarets Forskningsinstitutt (NO)<br>6. Fraunhofer Gesellscaft zur Foerderung der angewandten Forschung E.V. (DE)<br>7. Home Office (UK)<br>8. Insitituto Nacional de Tecnica Aeroespacial Esteban Terradas (ES)<br>9. Kentro Meleton Asfaleias (EL)<br>10. Ministerio del Interior (ES)<br>11. Ministry of Defense (NL)<br>12. Nederlandse Organisatie voor toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>13. Netherlands Forensic Institute (NL)<br>14. Polismyndigheten Swedish Police Autority (SE)<br>15. The International Criminal Police Organization (FR)<br>16. Universidad Carlos III de Madrid (SE) |

| I-MUST | |
|---|---|
| Title | A handheld, ultra-sensitive device for rapid contactless explosive vapour detection in open air, based on Ion Mobility Universal Sensor Technology |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>December 2016 / March 2017 - EUR: 50.000,00 GA 744926 |
| Abstract | Explosives detection currently represents the biggest security challenge, being easy to acquire with limited resources and difficult to be detected in real-time. Recommended procedures for explosive detection are inherently unsafe: due to current technological limitations, EU regulations only prescribe screenings on a variable percentage of randomly chosen passengers. Being not portable, such devices can only be installed at screening lines - but in Brussels 2016 explosions happened way before them. Moreover, existing devices just allow to analyse swabbed points instead of the passengers' total body. In the meantime, those procedures are slow (up to 30 s/passenger) and intrusive, requiring physical contact (swabbing): two major drawbacks, considering that airports competition is based today on passenger experience. Eye on Air developed I-MUST, a handheld disruptive device based on a proprietary, ultra-thin and high sensitive Ion Mobility Spectrometry sensor. Embedded into I-MUST, it ensures the most secure detection of explosives, with a sensitivity 500 times higher than its competitors (0.1 ppb) and the detection of >150 compounds, i.e. 3 to 5 times more compounds than currently used technology. I-MUST can be used not only at screening lines, but everywhere in public places, allowing to introduce the concept of a "distributed security" and, thanks to the brief time of analysis (2 s), 100% passengers can be scanned. By using short ion beams and a small, annular drift space, Eye on Air obtained such performing, enabling technology, whose features have already been confirmed in October 2015 by TNO, the Dutch research institute devoted to the certification of airport screening devices. During Phase 1 project, Eye on Air will assess the scale-up industrialization plan and will evaluate a sound go-to-market strategy to ensure successful commercialization of the I-MUST device for airport explosive detection. |
| Website | http://www.eyeonair.nl/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Eye on Air BV (NL) |

| | NASUM |
|---|---|
| Title | Innovative nanotech-based detection equipment in the area of homeland security |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / January 2017 - EUR: 50.000,00 GA 735472 |
| Abstract | Following the January and November 2015 terror attacks in Paris, the need of Governments for identification and security checking systems to provide safety and control to critical infrastructure and people have increased dramatically. It is expected in next years that nations will invest billions of dollars in security systems to upgrade and improve the safety and security of the country (European ETD market will be worth $4.2 billion with a CAGR of 14% during 2015-2020). NTA strategic intent is to develop, manufacture and sell sophisticated systems for the security, safety and defense industries. NTA has developed proprietary technologies used in explosives and narcotics trace detection ("ETD" and "NTD", respectively) applications. These systems are used by private companies and government agencies to screen baggage, cargo, other objects and people for the detection of trace amounts of explosives and narcotics. More specifically, NTA aims at launching on the market a new generation of universal instruments for pressure and chemical measurements providing at the same time huge system simplification and high effectiveness. NTA Value Proposition is to provide its customers with instruments for selective and sensitive detection of explosives that are characterized by significant design simplification and high cost efficiency. The proposed feasibility study has the aim to evaluate the technological, economic and financial sustainability of the project. In particular, the specific objectives of the feasibility study are: - complete final layout and product design, prototype experimental set up and select key suppliers; - define the certification phases; - enhance all measures to protect company's knowledge; - fine tune the executive dissemination and exploitation plan; - elaborate the executive business plan. The overall project will allow NTA to reach a leadership role in the ETD sector, attaining a strong growth in market share, turnover and employment. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Nanotech Analysis Societa a Responsabilita Limitata Semplificata (IT) |

| EXERTER | |
|---|---|
| Title | Security of Explosives pan-European Specialists Network |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-21-GM-2016-2017.<br>June 2018 / May 2023 - EUR: 3.498.868,75 GA 786805 |

| EXERTER | |
|---|---|
| Abstract | EXERTER connects 22 practitioners from 13 EU Member States into a Network with Explosives Specialists within the Security of Explosives (SoE) area. The objective of the EXERTER Network is to bridge the difficulties for security practitioners to capture and utilize research results and to direct the industry's innovation efforts to address the most pressing needs in the fight against terrorism and serious crime. Practitioners will via EXERTER get improved operational capability via novel technologies, methods and knowledge to aid them in executing more efficient countermeasures in a changing threat environment. In cooperation with key practitioners in the Network, the project will each year define one unique scenario based on past events to facilitate the identification of capability gaps along different counter-terrorist phases associated with PREVENT, DETECT, MITIGATE and REACT. With its explosives expertise, EXERTER will provide recommendations to the SoE community on how these gaps can be countered by (i) directing innovators into targeted areas to which research programmes should focus, (ii) proposing standardization priority areas and (iii) advising on exploitation and commercialisation opportunities. Ongoing research activities will continuously be reviewed to promote practitioners' uptake of results and knowledge. Academia and research institutes will be supported by the technical expertise within EXERTER to lower exploitation barriers for promising research by enhancing their interaction with security industry. EXERTER will assess evolving threats requiring immediate attention of the SoE community - thus widely addressing emerging technologies and trends. Annual interaction workshops will be held where explosives practitioners, research institutes and academia as well as industry gather to discuss the current state of play and future roadmaps to answer to urgent capability requirements.<br><br>***This project also corresponds to the category 'Training and Networking'.*** |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Totalforsvarets Forskningsinstitut (SE)<br>Consortium:<br>2. Ministry of Defense (NL)<br>3. Komenda Stoleczna Policji (PL)<br>4. The International Criminal Police Organization (FR)<br>5. Inspectoratul General al Politiei Romane (RO)<br>6. Sveuciliste U Zagrebu Rudarsko-Geolosko-Naftni Fakultet (HR)<br>7. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>8. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>9. Stichting Nederlands Normalisatie - Instituut (NL)<br>10. Ministry of Interior (HR)<br>11. Agenzia Nazionale per le Nuove Tecnologie, L'energia e lo Sviluppo Economico Sostenibile (IT)<br>12. Bundeskriminalamt (DE)<br>13. Forsvarets Forskninginstitutt (NO)<br>14. Ministerio da Administracao Interna (PT)<br>15. Kentro Meleton Asfaleias (EL)<br>16. Ministerio del Interior (ES)<br>17. Police Service of Northern Ireland (UK)<br>18. Academia Tehnica Militara (RO)<br>19. Instituto Nacional de Tecnica Aeroespacial Esteban Terradas (ES)<br>20. Polismyndigheten Swedish Police Authority (SE)<br>21. Wojskowa Akademia Techniczna im Jaroslawa Dabrowskiego (PL) |

| PyroProf | |
|---|---|
| Title | Chemical Profiling of Inorganic and Pyrotechnic Explosives |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016.<br>Topic code: MSCA-IF-2016. September 2017 / September 2019 - EUR: 177.598,80 GA 747249 |
| Abstract | The criminal law system has shown interest in the recent scientific developments with respect to chemical profiling of explosives. This approach goes beyond explosive material chemical identification, providing key intelligence to a counter-terrorism or forensic investigation on the basis of chemical clues in the form of impurities and degradation products. Explosive profiling can reveal relationships between samples obtained from a crime scene and material associated with a suspect. If such profiles can be linked to the production process and the raw materials used such intelligence information can even assist law enforcement in stopping attacks from being successfully executed. However, explosive profiling is challenging since it requires suitable analytical strategies, unbiased interpretation of the results, substantial sample collections and comprehensive knowledge on the chemical variation of explosives, precursors and environmental background levels. The main research objective of the PyroProf project is to offer suitable analytical tools for the chemical profiling of inorganic explosives of forensic interest (e.g., ammonium nitrate based and pyrotechnic mixtures) for their use in forensic casework. This project will yield selective sampling strategies, novel separation methodologies by state-of-the-art CE-MS and IC-MS instruments, complementary statistical approaches and databases with further knowledge on explosive, precursor, and background compositions useful for forensic interpretation. This outcome will benefit the experienced researcher to boost his career as a professional researcher in the analytical and forensic chemistry fields as well as will have impact on the European society since the results will be disseminated and used to/by scientific and forensic communities, improving the criminal justice system and the public awareness of the safety and security issued associated with the use of certain explosives (e.g., legal/illegal consumer fireworks). |
| Website | |

| PyroProf | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Netherlands Forensic Institute (NL) |

The projects were complemented by the following projects funded by INTERREG program:

| JEROME | |
|---|---|
| Title | Capabilities and interoperability for joint Romanian-Bulgarian cross-border first responder intervention to chemical-biological-radiological- nuclear–high yield explosive |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 30/12/2016 - 29/06/2018 |
| Abstract | The project addresses the need for enhancement of response and recovery capabilities of emergency services, derived from the recent national legislations. It aims at improving specific field activities conducted by specialized Police structures immediately after an event implying chemical-biological-radiological-nuclear-high yield explosives (CBRNe). With 5.999.763,78 EUR funding, the project strategic objective is to set-up in Romania-Bulgaria cross-border area a fully interoperable, rapid reaction system to CBRNe emergencies, able to provide/accept services from both parts and to effectively use them to the benefit of the whole area population. Identical mobile equipment will be provided to CBRNe police intervention units from both border sides, enabling them to collect data to characterize the situation in terms of event type, amplitude and responsibility, while gaining control of situation and securing the area. Rapid detection devices of CBR contaminants will be provided along with means for data transfer to emergency management authorities, enabling an adequate and effective response. Dedicated equipment for analyses of samples collected by operative units will be used by LB to produce the required assessments for evaluation and mitigation of longer term effects. Thus, the project provides means of E.C. Decision 2008/617/JHA implementation for cross-border cooperation between specialintervention units, realizing an integrated regional management of CBRNe emergencies. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. National Research-Development Institute for Materials Physics - NIMP (RO)<br>Consortium members:<br>2. Ministry of Interior (MoI) (BG);<br>3. General Inspectorate of Romanian Police (GIRP) (RO) |

### *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Minimising insider threats within the supply chain of the precursors for explosives | |
|---|---|
| Title | Minimising insider threats within the supply chain of the precursors for explosives |
| Project number | HOME/2015/ISFP/AG/CBRN/8463 |
| Contract details | € 434,795.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Studiecentrum voor Kernergie<br>Consortium:<br>Enconet Consulting GmbH (Austria) |

## 5.6 Water Safety & Security

Water security threats are directly related to the risks of quality degradation, either from an user's viewpoint (quality of drinking water) or ecological standpoint (ecological or chemical water status). While intentional degradation of water quality is not specifically covered by EU water policies, the quality deterioration is nevertheless regulated by the Water Framework Directive and its parent directives dealing with drinking water, priority substances and groundwater. As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Water safety and security Security | ISIS<br>SAFEWATER<br>SECUREAU<br>TAWARA_RTM |

These projects have been complemented by the following H2020 projects:

| AquaSHIELD | |
|---|---|
| Title | Protecting citizens against intentional drinking water contamination with a water quality firewall (AquaSHIELD)<br><br>***This project also corresponds to the category 'Critical Water Infastructure'.*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2014 Topic code: DRS-17-2014<br>January 2015 / May 2017-10-01 - EUR 786,195<br><br>EASME - 666490 |
| Abstract | Critical water infrastructures and high profile (soft) targets are vulnerable to intentional drinking water contamination, while physical access is difficult to control and traditional water quality monitoring solutions are largely inadequate to protect the water distribution process and its consumers. The project addresses the need for a contaminant warning system that can be deployed in the distribution network and that provides real-time water quality information and event classification to support rapid decision making and protect the health of citizens. The solution consists of a generic sensor for 24/7 online real-time detection of contamination events, online monitoring of chlorine residual as indicator for micro-biological contaminations, and rapid screening capability for a set of high priority threat substances. |
| Website | http://www.optiqua.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Optisense BV (NL) |

| BIWAS | |
|---|---|
| Title | Biological Water Alarm System (BiWAS) for protection of urban drinking water infrastructure against CBRN threats (BIWAS)<br><br>***This project also corresponds to the categories 'Detection of potential CBRN-E threats at urban soft targets/urban critical infrastructures'and 'Critical Water Infrastructure'.*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>February 2015 / July 2015 - EUR 50,000<br><br>EASME - 664032 |
| Abstract | Feasibility study (market investigation, business plan development, risk assessment, intellectual property management and innovation strategy development) for the technical and economic viability of Biological Water Alarm System (BiWAS): An innovative low-cost, automatic and portable early warning device for monitoring of drinking water safety over a broad spectrum of harmful substances, including (1) acute toxicant chemicals, (2) chronic carcinogenic chemicals, and (3) waterborne pathogens. |
| Website | http://www.sensovann.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. SensoVANN AS<br>Consortium:<br>2. Mandalon Technologies AB |

| REGROUND | |
|---|---|
| Title | Colloidal Iron Oxide Nanoparticles for the REclamation of Toxic Metal Contaminated GROUNDwater Aquifers, Drinking Water Wells, and River Bank Filtrations (REGROUND) |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials Call: H2020-WATER-2014-two-stage Topic code: WATER-1a-2014<br>September 2015 / September 2018 - EUR: 2.734.222,50<br><br>EASME - 641768 |
| Abstract | The main objective of the presented innovation action is the first application and near-market replication of a novel water nanogeotechnology for the immobilization of toxic metals in groundwater aquifers, drinking water wells, and river bank filtration sites. The basic concept of the technology is the creation of an adsorptive in situ barrier for the immobilization of toxic metal contaminations. The very core of this effort is the performance of two industrial-scale applications of our technology at two different types of contaminated sites. |
| Website | http://reground-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Duisburg-Essen (DE)<br>Consortium:<br>2. Acondicionamiento Tarrasense Associacion (ES)<br>3. Friedrich-Schiller-Universitat Jena (DE)<br>4. Fundacion Tecnalia Research & Innovation (ES)<br>5. Geoplano Consultores Sa (PT)<br>6. Katholieke Universiteit Leuven (BE)<br>7. Knowledge Innovation Market S.L. (ES)<br>8. Politecnico Di Torino (IT) |

| WATERGUARD | |
|---|---|
| Title | Safeguarding Water Distribution Systems from Contamination Threatsusing the SmartTap Platform (WATERGUARD) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>July 2015 / January 2016 - EUR: 50,000.00<br><br>EASME - 672922 |
| Abstract | SmartTap Platform is an early-warning real-time water contamination monitoring system for the protection of water distribution systems against accidental or malicious chemical contamination events, provided as a service to utilities. The goal is to provide real-time water quality monitoring information to consumers and utilities and to reliably detect any contamination events within 1-2 hours, instead of days, thus significantly reducing the financial and societal impact of that event. |
| Website | http://www.aqualligence.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aqualligence Limited (CY) |

## These projects were complemented by new projects funded in 2016-2017:

| CyanoAlert | |
|---|---|
| Title | Space Based Cyanobacteria Information & Services |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2016.<br>Topic code: EO-1-2016. November 2016 / October 2019 - EUR: 1.040.484,13 GA 730141 |
| Abstract | CyanoLakes will be a global service for the environmental authorities and commercial sector, concerned by health risks and quality of water resources. The proposed project will deliver a fully automated application for assessing toxin producing cyanobacteria blooms in water resources globally, using ground-breaking Copernicus Earth Observation technology.<br>The service foresees a dual dissemination system that provides user-specific information for monitoring and reporting purposes to customers, and a free and open information service for the public based on mobile telecommunication. South African and European SMEs will partner with users in the environmental authority and commercial sector, in order to establish a sustainable supply chain, based on a sound business model, to bring this innovative service to market. |
| Website | http://www.cyanoalert.com/ |

| CyanoAlert | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Cyanolakes (PTY) LTD (ZA)<br>Consortium:<br>2. Brockmann Geomatics Sweden AB (SE)<br>3. Brockmann Consult GMBH (DE)<br>4. Lansstyrelsen i Stockholms LAN (SE)<br>5. Odermatt & Brockmann GMBH (CH)<br>6. Istituto Superiore di Sanita (IT)<br>7. Institutul National de Cercetare-Dezvoltare Delta Dunarii (RO) |

| | EnviroALARM |
|---|---|
| Title | Early alarm system for groundwater contamination monitoring |
| Contract details | Climate Action, Environment, Resource Efficiency and Raw Materials. Call: H2020-SMEINST-1-2016-2017.<br>Topic code: SMEInst-11-2016-2017. June 2016 / November 2016 - EUR: 50.000,00 GA 727211 |
| Abstract | EnviroALARM is an eco-innovative online monitoring system specially developed to significantly improve the existing technologies for groundwater (GW) pollution surveillance, contributing to radically reduce the potential environmental impact of contaminant leakages from hydrocarbon and/or chemical storage sites. There are over 1 million sites with high potential to contaminate GW worldwide (petrol stations, refineries, storage centres, etc.). At present, there is not an affordable and reliable system to daily detect hydrocarbon leakages to groundwater. EnviroALARM fits within the European priorities to prevent and minimize environmental impacts, developing an eco-innovative product to continuously monitor the potential presence of hydrocarbons in the GW. The main advantages of EnviroALARM over current competitors are: i) Daily monitoring, promoting the early detection and hence the measures to mitigate the contamination; ii) High sensitivity to the presence of contaminants, detecting leaks below 0.4 l/h. iii) Reliable without false alarm based on a proprietary sensor technology; iv) Wireless system not requiring civil work installation; v) Significant cost reduction (up to 80%) over current market competitive solutions. EnviroALARM innovative sensor based on a physicochemical reactions is unique in the world. This solution present a huge market opportunity, since it applies to a worldwide problem offering an easily replicable and transferable technology that fulfils the increasing regulations at EU and international level. The main objective of the present proposal is the determination of EnviroALARM technological and economic feasibility. After checking its feasibility, an upgraded EnviroALARM prototype will be developed in order to conduct several demonstration activities. |
| Website | http://www.sst-system.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Smart Sensor Technology, Sociedad Limitada (ES) |

| WATERPROTECT | |
|---|---|
| Title | Innovative tools enabling drinking WATER PROTECTion in rural and urban environments |
| Contract details | Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy.<br>Call: H2020-RUR-2016-2. Topic code: RUR-04-2016. June 2017 / May 2020 - EUR: 4.997.006,50 GA 727450 |
| Abstract | High-quality, safe, and sufficient drinking water is essential for life: we use it for drinking, food preparation and cleaning. Agriculture is the biggest source of pesticides and nitrate pollution in European fresh waters. The overarching objective of WATERPROTECT is to contribute to effective uptake and realisation of management practices and mitigation measures to protect drinking water resources. Therefore WATERPROTECT will create an integrative multi-actor participatory framework including innovative instruments that enable actors to monitor, to finance and to effectively implement management practices and measures for the protection of water sources. We propose seven case studies involving multiple actors in implementing good practices (land management, farming, product stewardship, point source pollution prevention) to ensure safe drinking water supply. The seven case studies cover different pedo-climatic conditions, different types of farming systems, different legal frameworks, larger and smaller water collection areas across the EU. In close cooperation with actors in the field in the case studies (farmers associations, local authorities, water producing companies, private water companies, consumer organisations) and other stakeholders (fertilizer and plant protection industry, environment agencies, nature conservation agencies, agricultural administrations) at local and EU level, WATERPROTECT will develop innovative water governance models investigating alternative pathways from focusing on the 'costs of water treatment' to 'rewarding water quality delivering farming systems'. Water governance structures will be built upon cost-efficiency analysis related to mitigation and cost-benefit analysis for society, and will be supported by spatially explicit GIS analyses and predictive models that account for temporal and spatial scaling issues. The outcome will be improved participatory methods and public policy instruments to protect drinking water resources. |
| Website | https://water-protect.eu/ |

| WATERPROTECT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vlaamse Instelling Voor Technologisch Onderzoek N.V. (BE)<br>Consortium:<br>2. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>3. Agenzia Regionale Prevenzione E Ambiente Dell'emilia-Romagna (IT)<br>4. Aigues De Barcelona, Empresa Metropolitana De Gestio Del Cicle Integral De L'aigua Sa (ES)<br>5. Associazione Piace Cibo Sano (IT)<br>6. Comunitat D' Usuaris D'aigües De La Vall Baixa I Delta Del Llobregat (ES)<br>7. Consorci Del Parc Agrari Del Baix Llobregat (ES)<br>8. Danish Waterworks (DK)<br>9. Ecologic Association (RO)<br>10. Eigen Vermogen Van Het Instituut Voor Landbouw En Visserijonderzoek (BE)<br>11. European Federation Of Bottled Waters (BE)<br>12. Geological Survey Of Denmark And Greenland (DK)<br>13. Glanbia Ingredients Ireland Ltd. (IE)<br>14. Inagro, Provinciaal Extern Verzelfstandigd Agentschap In Privaatrechtelijke Vorm Vzw (BE)<br>15. Instytut Technologiczno-Przyrodniczy (PL)<br>16. Kobenhavns Universitet (DK)<br>17. Landbo Limfjord (DK)<br>18. Panstwowy Instytut Geologiczny - Panstwowy Instytut Badawczy (PL)<br>19. Skive Kommune (DK)<br>20. Teagasc - Agriculture And Food Development Authority (IE)<br>21. The European Water Partnership Aisbl (BE)<br>22. Universita Cattolica Del Sacro Cuore (IT)<br>23. Universitatea Tehnica Cluj-Napoca (RO)<br>24. University Of Ulster (UK)<br>25. Vlaamse Maatschappij Voorwatervoorziening Cvba (BE)<br>26. Vlaamse Milieumaatschappij (BE)<br>27. Wexford County Council (IE)<br>28. Zachodniopomorski Uniwersytet<br>29. Technologiczny W Szczecinie (PL) |

## 5.7 CBRNE (Cross-cutting)

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| CBRNE (Cross-cutting) | CATO<br>COUNTERFOG<br>DECOTESSC1<br>EDEN<br>HANDHOLD<br>IMSK<br>PRACTICE<br>SNIFFER 2 |

These projects have been complemented by the following H2020 projects:

| ERNCIP CBRN<br>STDS 16 | |
|---|---|
| Title | ERNCIP thematic group activities in 2016 supporting development of Mandate 487 for standards in security (ERNCIP CBRN) (STDS 16)<br><br>*This project also corresponds to the category 'Detection of potential CBRN-E threats at urban soft targets/ urban critical infrastructures'.* |

| ERNCIP CBRN<br>STDS 16 | |
|---|---|
| Contract details | H2020 Secure Societies Call: H2020-Adhoc-2014-20 Topic code: SECURITY<br>January 2016 / January 2017 - EUR: 250,000.00<br><br>HOME - 714048 |
| Abstract | The European Reference Network for Critical Infrastructure Protection (ERNCIP) has the mission to foster the emergence of innovative, qualified, efficient and competitive security solutions, through the networking of European experimental capabilities. This proposal will enable ERNCIP to focus its efforts on preparing concrete recommendations, pre-norms or workshop agreements, in the thematic areas of RN threat detection and analysis; the detection of chemical or biological agents in drinking water; testing the resistance of building glazing materials to explosive effects; and detection of explosives and weapons at secure locations. |
| Website | https://erncip-project.jrc.ec.europa.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. JRC – Joint Research Centre – European Commission (BE) |

| ROCSAFE | |
|---|---|
| Title | Remotely Operated CBRNe Scene Assessment Forensic Examination (ROCSAFE)<br><br>***This project also corresponds to the category 'Forensics'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-03-2015<br>July 2016 / July 2019 - EUR: 4,781,061.25<br><br>HOME - 700264 |
| Abstract | ROCSAFE aims change how CBRNe events are assessed, in order to ensure the safety of crime scene investigators by reducing the need for them to enter high-risk scenes when they have to determine the nature of threats and gather forensics. For this, ROCSAFE will make use of remotely-controlled robotic air and ground vehicles. Also, ROCSAFE will include new Central Decision Management software and a Command Centre. All images and data will be streamed to this, where it will be analysed and displayed. This will enable the scene commander to assess the nature of threats, develop an Action Plan and an Evidence Plan, supported as needed by the Central Decision Management. It will also assist in coordinating sensors and mobile units. Thus, ROCSAFE will ensure that CBRNe scenes are assessed more rapidly and thoroughly than is currently possible, and that forensic evidence is collected in a manner that stands up in court, without putting personnel at risk. |
| Website | http://www.nuigalway.ie/remoteforensics/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. National University Of Ireland, Galway (IE)<br>Consortium:<br>2. Aeorum Espana S.L. (ES)<br>3. Ayuntamiento De Valencia (ES)<br>4. Consiglio Nazionale Delle Ricerche (IT)<br>5. Consorzio Creo-Centro Ricerche Elettro Ottiche (IT)<br>6. Department Of Defence (IE)<br>7. Health Service Executive Hse (IE)<br>8. Ibatech Tecnologia Sl (ES)<br>9. Inov Inesc Inovacao - Instituto De Novas Tecnologias (PT)<br>10. Microfluidic Chipshop Gmbh (DE)<br>11. Reamda Limited (IE)<br>12. Scorpion Networks Ltd (IE)<br>13. University College Cork - National (IE)<br>14. University Of Ireland, Cork |

| TOXI-triage | |
|---|---|
| Title | Integrated and adaptive responses to toxic emergencies for rapid triage: Engineering the roadmap from casualty to patient to survivor (TOXI-triage)<br><br>***This project also corresponds to the category 'Victim triage'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-02-2014<br>September 2015 / September 2019 - EUR: 11,966,510.50<br><br>HOME - 653409 |

| TOXI-triage | |
|---|---|
| Abstract | The seven specific objectives of TOXI-triage address the operational; technological; ethical and societal dimensions of CBRN response and recovery, and importantly the economic base from which sustainable CBRN and multi-use systems are derived.The approach defines a concept of operations that envisages accelerated delivery of situational awareness through an ensemble of embedded sensors, drones, standoff detectors (including cameras), artificial intelligence for processing sensor signals and web-traffic from social media, and centralised command and control. TOXI-triage intends that its outcomes will be used routinely in medical/environmental/urban and search and rescue emergencies. |
| Website | http://toxi-triage.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Loughborough University (UK)<br>Consortium:<br>2. Airsense Analytics Gmbh (DE)<br>3. Atos Spain Sa (ES<br>4. Environics Oy (FI)<br>5. G.A.S. Gesellschaft fur Analytischesensorsysteme M.B.H. (DE)<br>6. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>7. Hasicsky Zachranny Sbor Moravskoslezskeho Kraje (CZ)<br>8. Helmholtz-Zentrum Fuer Umweltforschung Gmbh – Ufz (DE)<br>9. Helsingin Yliopisto (FI)<br>10. Jyvaskylan Yliopisto (FI)<br>11. Lothian Health Board (UK)<br>12. Mikkelin Kaupunki (FI)<br>13. Mikkelin Kehitysyhtio Miksei Oy (FI)<br>14. Ministry of National Defence, Greece (EL)<br>15. National Technical University Of Athens – Ntua (EL)<br>16. Oslo Universitetssykehus Hf (NO)<br>17. Prometech Bv (NL)<br>18. T4i Engineering Ltd (UK)<br>19. The University Of Edinburgh (UK)<br>20. Universitaet Paderborn (DE) |

## These projects were complemented by new projects funded in 2016-2017:

| ENCIRCLE | |
|---|---|
| Title | European Cbrn Innovation for the maRket CLuster |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-05-DRS-2016-2017.<br>March 2017 / March 2021 - EUR: 1.997.085,00 GA 740450 |
| Abstract | To improve its resilience to new CBRN attacks and threats, the EU needs a specialized, efficient and sustainable industry, competitive on a less fragmented EU market and globally. Capitalizing on its experience in the EDEN Demonstration Project, in other CBRN relevant projects, and in the CBRN market and supply chain, the ENCIRCLE consortium proposes an innovative approach to reach this goal in a short to long term perspective so that SMEs and large industries can propose and invest in the best innovations on the market. This approach results in 5 objectives aimed at prompting the innovation and business development, and filling market gaps in the project timeframe: 1. Create an open and neutral EU CBRN cluster, 2. Provide a sustainable and flexible vision and roadmap for the development of the European CBRN market and innovations, 3. Provide integration with platforms (systems, tools, services, products) by proposing standardized interfaces and future EU standards to integrate CBRN technologies and innovations developed from the Part b projects, 4. Support CBRN safety, security and defence commercial and market services, 5. Improve and facilitate European CBRN dissemination and exploitation. The project will be conducted by a consortium of specialized industries, trade associations and research organisations with flexible and lean procedures under the advice of the EC Community of Users. It will rely on two large interactive communities: practitioners and customers, and industrial and technological providers, the latter including many SMEs. To optimize the needs and gaps assessment and the innovation development, acceptance and success, ENCIRCLE will establish formal links with other consortia such as the future Part b projects. The main expected impact is to enhance the EU CBRN industry competitiveness and enlarge its market while increasing the benefits of the EU research and innovation to improve CBRN preparedness, response, resilience and recovery efficiency. |
| Website | http://encircle-cbrn.eu/ |

| ENCIRCLE | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universite Caholique de Louvain (BE)<br>Consortium:<br>2. ADS Group Limited Lbg (UK)<br>3. BAE Systems (Operations) Ltd (UK)<br>4. Environics OY (FI)<br>5. Eureopean Virtual Institute for Integrated risk Management EU Vri Ewiv (DE)<br>6. Falcon Communications Limited (UK)<br>7. Istituto Affari Internazionali (IT)<br>8. Mikkelin Kehitysyhtio Miksei Oy (FI)<br>9. Ouvry Sas (FR)<br>10. Przemyslowy Instytut Automatyki I Pomiarow Piap (PL)<br>11. Smiths Detection Watford Ltd (UK)<br>12. Tecnoalimenti S.C.P.A. (IT)<br>13. Universita Cattolica del Sacro Cuore (IT)<br>14. Universite de Nice Sophia Antipolis (FR)<br>15. Wojskowa Akademia techniczna im Jaroslawa Dabrowskiego (PL) |

| eNOTICE | |
|---|---|
| Title | European Network Of CBRN TraIning CEnters |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-21-GM-2016-2017.<br>September 2017 / August 2022 - EUR: 3.497.735,00 GA 740521 |
| Abstract | This project aims to build a dynamic, functional and sustainable pan European network of CBRN training centres, testing and demonstration sites (CBRN TC) strengthening capacity building in training and users-driven innovation and research, based on well-identified needs. We seek to better European preparedness, resilience and incident response to CBRN attacks and emerging threats through close multi- (stakeholders) and single-discipline (practitioners) interactions. This makes CBRN TC the perfect operational intermediary between all civilian and military CBRN actors, EU relevant bodies and policy-makers, as well as the best cradle for expansion of a CBRN network of professionals. Main pillars for the network and confidence building will be to pool and share resources, effective practices and lessons learned, to map and label EU CBRN TC based on their capabilities and specificities, and to use a dedicated web based information and communication platform for exchanges and dissemination. Rather than usual workshops that are of no interest for task-focused, busy practitioners, the CBRN TC network will organize joint activities, training and debriefing in well-adapted infrastructures, using real-life or simulated situations (e.g., field exercises, table top, serious gaming and simulations), with external partners, in order to foster the identification of genuine users' needs with users-driven technological solutions. This network will also benefit to national and EU CBRN projects, thereby expanding network scope and size, fast-tracking innovations and dissemination. Whilst using efficiently investments made across Europe in demonstration, testing, and training facilities for practitioners, this novel concept will issue meaningful users-guided recommendations to the EU R&D programme, enhance CBRN product performance and competitiveness, and decrease EU market fragmentation. Only such an interactive and collaborative approach is expected to reach long term sustainability. |
| Website | https://www.h2020-enotice.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universite Catholique de Louvain (BE)<br>Consortium:<br>2. Akademia Sztuki Wojennej (PL)<br>3. Association Pour la Recherce et le Developpement des Methodes et Processus Industriels (FR)<br>4. Autonoom Provinciebedrijf Campus (BE)<br>5. Centrum Naukowo-Badawcze Ochrony Przeciwpozarowej Im. Jozefa Tuliszkowskiego – Panstwowy Instytut Badawczy<br>6. Insitutut Mines – Telecom (FR)<br>7. Joint Chemical, Biological, Radiological and Nuclear Defence Centre of Excellence (CZ)<br>8. Middle East Technical University (TR)<br>9. Service Départemental d'Incendie et Secours de Seine-et-Marne (FR)<br>10. Stadt Dortmund (DE)<br>11. Umea Universitet (SE)<br>12. Universita Degli Studi de Roma tor Vergata (IT)<br>13. Universitaet Paderborn (DE)<br>14. West Midlands Police Authority (UK) |

The projects were complemented by the following projects funded by INTERREG program:

| ATOM | |
|---|---|
| Title | Liquidation of CBRN accidents and pollution in Latvia – Lithuania cross-border area |
| Contract details | 2014 - 2020 INTERREG V-A Latvia - Lithuania 01/06/2017 - 31/05/2019 |
| Abstract | Effective joint environmental resource management is essential to ensure environmental sustainability and reduce environmental accidents. According to statistics, CBRN accident rates in the Latvia and Lithuania is increasing every year, which oblige us to think about the development of joint actions in order to reduce such accidents. Therefore State Fire and Rescue Service of Latvia, Utena county Fire and Rescue board and Visaginas county Fire and Rescue board joint project aim is to reduce environmental risks and to fight together against environmental accidents of chemical, biological and, in particular radioactive material leakage and contamination. That can be achieved with cooperation and strengthening the capacities and capabilities during CBRN accidents on Latvian and Lithuanian border area. During project implementation, it is planned to do joint exercises, training courses, and workshops and purchase a compatible equipment. Since through the Latvian and Lithuanian borders are frequently transported hazardous substances, as well as the border area is located in high-risk sites such as the Ignalina nuclear power plant in Visaginas, it is particularly important to improve cooperation between both countries and service capabilities of CBRN incidents and decontamination. This project will not only improve the Latvian and Lithuanian Fire and Rescue Service and co-operation skills, but also promote public awareness and knowledge of the behavior and safety of CBRN contamination and accidents. |
| Website | http://latlit.eu/liquidation-of-cbrn-accidents-and-pollution-in-latvia-lithuania-cross-border-area/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. State Fire and Rescue Service of Latvia (LV)<br>Consortium members:<br>2. Visaginas Fire and Rescue Board (LT);<br>3. Utena County Fire and Rescue Board (LT) |

| D-EMERSYS | |
|---|---|
| Title | Rapid intervention force to chemical, biological, radiological and nuclear emergencies on the Danube river |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 30/12/2016 - 29/06/2018 |
| Abstract | To rapidly and efficiently manage the chemical-biological-nuclear emergencies (CBRN) on the Danube river, the Romanian-Bulgarian emergency authorities are setting up in the cross-border area a joint intervention rapid force, D-EMERSYS, resulting from interconnection of 2 specialized units, the on-the water reaction unit provided to Romanian emergency authorities and the on-the land support unit provided to Bulgarian emergency authorities. Both units will act coordinated under the command of the authority from the country where the intervention is taking place. The core of on-the-water reaction unit are 3 rapid CBRN intervention boats equipped with capabilities for in-situ detection of contaminants and devices for decontamination of floating structures and fire-extinguishing/contaminant cloud dispersal. The land-based unit comprises 5 specialized mobile CBRN platforms provided with capabilities for analyses of CBRN toxic elements from water, soil and air, as well as with devices for decontamination of both intervention personnel and technique. Further specialized analyses of contaminants will be performed by a new "environmental forensic" laboratory set-up by LB. With 5.995.156,46 € funding, the project will also deliver the training for intervention personnel and will prepare the tools required by the legal framework for the operationalization of D-EMERSYS, establishing a strong partnership on Danube river CBRN emergency response, for the benefit of population and environment. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. National Research-Development Institute for Materials Physics (RO)<br>Consortium members:<br>2. Directorate General Fire safety and Civil Protection –Ministry of the Interior (BG);<br>3. General Inspectorate for Emergency Situation – Ministry of Internal Affairs (RO); |

| | DAIMON |
|---|---|
| Title | Decision Aid for Marine Munitions |
| Contract details | 2014 - 2020 INTERREG VB Baltic Sea 01/03/2016 - 28/02/2019 |
| Abstract | The project aims at supporting maritime, defence and environmental administrations in making decisions on management strategies for dumped chemical and conventional warfare in the Baltic Sea and the Skagerrak to assess the risk associated with corroding warfare objects, such as dumped containers filled with munitions. Chemical and conventional ammunition dumped in the Baltic Sea and in the Skagerrak contains a wide range of hazardous substances. Considering the growing use of the seabed for economic purposes, such as offshore wind farms and pipelines, the likelihood of disturbing dumped containers with chemical warfare agents (CWA), causing direct emissions to the surrounding environment and risk of human and wildlife exposure, is increasing. In addition, the containers are deteriorating due to e.g. corrosion. For these reasons there is an ongoing discussion on how to assess and manage the environmental risk of dumped ammunition, especially in areas where their location is likely to cause a conflict with maritime activities. DAIMON aims to increase the knowledge base on how to evaluate the risks and benefits of various management options. The environmental effects of some of these substances, such as arsenic compounds, are well known, while in other cases the knowledge is insufficient to make proper risk assessments. DAIMON will develop techniques for the assessment of impacts of the dumped ammunition on ecosystem, maritime activities and humans as seafood consumers. This will be done by performing laboratory and studies in both shallow and deep waters for chemical and conventional munitions, and development of biological and chemical assessment methods. During case studies the risk associated with selected corroding warfare objects (individual and wrecks filled with munitions) will be closely examined. Management scenarios will then be developed for each object, and assessed regarding their possible impact on environment, and cost vs. cost of no-action. Also the cost of lost environmental services will be estimated, which in the case of some methods will be higher than the short term savings. On the basis of all this information an intelligent decision aid software will be created for, and in consultation with the relevant maritime authorities, which will be at all stages involved in project activities. This tool will propose and describe a management strategy most feasible for the given case and framework conditions. It will be tested on all six DAIMON case study areas in order to create a best practice collection on the management of marine ammunitions in the Baltic Sea Region and beyond. |
| Website | http://www.daimonproject.com/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Institute of Oceanology, Polish Academy of Sciences (PL) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Aviation Insider Threat Recognition and Prevention - EU AITRAP | |
|---|---|
| Title | Aviation Insider Threat Recognition and Prevention - EU AITRAP |
| Project number | HOME/2015/ISFP/AG/CBRN/8460 |
| Contract details | € 749,550.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>CoESS<br>Consortium:<br>Securitas (BE), DHL (DE), IMFRA (BE) |

| CBRNE Law Enforcement Training Initiative - CELECTIVE | |
|---|---|
| Title | CBRNE Law Enforcement Training Initiative - CELECTIVE |
| Project number | HOME/2015/ISFP/AG/CBRN/8446 |
| Contract details | € 531,268.80 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Umeå University, European CBRNE Center<br>Consortium:<br>Totalförsvarets Forskningsinstitut - FOI (SE), Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek -TNO (NL), Statni Ustav Jaderne, Chemicke A Biologicke Ochrany vvi -SUJCHBO (CZ) |

| Coordinated trans-national training programme for prevention and mitigation of CBR release induced by non-state actors | |
|---|---|
| Title | Coordinated trans-national training programme for prevention and mitigation of CBR release induced by non-state actors |
| Project number | HOME/2015/ISFP/AG/CBRN/8464 |
| Contract details | € 549,970.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Instytut Chemii Przemysłowej im. Prof. Ignacego Mościckiego/ Industrial Chemistry Research Institute/ ICRI<br>Consortium:<br>Fundacja Miedzynarodowe Centrum Bezpieczenstwa Chemicznego/ International Centre for Chemical Safety and Security (PL); Fachhochschule fur Offentliche Verwaltung und Rechtspflege in Bayern/ University of Applied Sciences for Public Administration and Legal Affairs, Police Department (DE); Hotzone Solutions BV (NL). |

| EU Police Intervention and Response Training Centre of Excellence | |
|---|---|
| Title | EU Police Intervention and Response Training Centre of Excellence |
| Project number | HOME/2015/ISFP/AG/CBRN/8458 |
| Contract details | € 849,358.30 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Belgian Federal Police<br>Consortium:<br>Grand-ducal Police (LU), Dutch National Police (NL) |

| Preventing and fighting CBRN-E terrorism – building capacity of actors involved in the detection and mitigation of CBRN-E risks at air and road border crossings on European level | |
|---|---|
| Title | Preventing and fighting CBRN-E terrorism – building capacity of actors involved in the detection and mitigation of CBRN-E risks at air and road border crossings on European level |
| Project number | HOME/2015/ISFP/AG/CBRN/8456 |
| Contract details | € 328,884.74 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>KOMENDA WOJEWÓDZKA POLICJI W LUBLINIE / REGIONAL POLICE HEADQUARTERS IN LUBLIN<br>Consortium:<br>Riaditeľstvo hraničnej a cudzineckej polície Sobrance / Border and Alian Police Directorate Sobrance (SK); Nadbużański Oddział Straży Granicznej / Nadbużański Border Guard Regional Unit (PL); Port Lotniczy Lublin S.A. / Lublin airport (PL); Politsei – ja Piirivalveamet / Estonian Police and Border Guard Board (EE) |

| Shielding South-east Europe from CBRN-E threats | |
|---|---|
| Title | Shielding South-east Europe from CBRN-E threats |
| Project number | HOME/2015/ISFP/AG/CBRN/8457 |
| Contract details | € 524,248.31 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Kentro Meleton Asfaleias/ Center for Security Studies<br>Consortium:<br>Advanced Integrated Technology Solutions and Services Ltd (ADITES) (CY); Cyprus Police - Emergency Response Unit (CY); Piraeus Port Authority S.A. (EL) |

## 5.8 Marine Pollution

In Horizon2020, no dedicated research projects or studies have been carried out in this area. Several projects were funded by DG ECHO:

| NAMIRG | |
|---|---|
| Title | North Adriatic MIRG (Maritime Incident Response Group) (NAMIRG) |
| Contract details | 2017/PREP/783149 01/01/2018 - 31/12/2019; EUR: 678524.18 |
| Abstract | Incidents on board of ships at sea can have devastating effects for the lives of crew, passengers and for the environment. In particular, this is the case for closed seas like the Northern Adriatic Sea, where the spill over of pollutants and the relative proximity of the shores, in case of ship fires, would provoke serious consequences, not only on the marine environment, but also for the citizens living on the coastal areas. Against this background, MIRGs - Maritime Incident Response Groups–represents an important solution for the Adriatic Sea. Therefore, the NAMIRG project aims at establishing a North Adriatic efficient system of emergency response as to overcome this gap and ensure safety, security and environmental protection in the region. (Internal classification of DG Echo is MARINE POLLUTION) |
| Website | http://www.cei.int/content/namirg-north-adriatic-mirg-maritime-incident-response-group |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Ince Iniziativa Centro European – Segretariato Esecutive (IT) Via Genova 9 IT-34121 TRIESTE ITALY<br>Consortium:<br>1. Direzione Regionale VVF FVG (IT)<br>2. Javni zavod Gasilska brigada Koper (SI)<br>3. Contry fire departmen of Istria (HR) |

| | eURready4OS |
|---|---|
| Title | Expanded Underwater Robotics Ready for Oil Spill (eURready4OS) |
| Contract details | 2016/PREP/21 ; EUR: 581054.4 |
| Abstract | The e-URready4OS is an extension of the previous project EC DG-ECHO funded "Underwater Robotics Ready for Oil Spills –URready4OS" (http://www.upct.es/urready4os) that provided a proof-of-concept to build up a highly accurate and dynamic image of an underwater oil spill using autonomous underwater vehicles. The challenge of this new project is to expand the current fleet of vehicles, from 5 to 12 assets, with a larger geographical extension, to increase preparedness against in-water oil spill. Fleet training and know-how transferring to Maritime Safety Agencies will be performed through two exercises on board of their rescue vessels (SASEMAR, Spain and Irish Coast Guards, Ireland) and giving courses to their technical personnel (also to Cyprus Civil Defence). (Internal classification of DG Echo is MARINE POLLUTION) |
| Website | http://www.upct.es/urready4os/?lang=en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: UNIVERSIDAD POLITECNICA DE CARTAGENA (ES)<br>Consortium:<br>1. University of Cyprus (CY)<br>2. Universidade do Porto (PT)<br>3. University of Zagreb (HR)<br>4. The Scottish Association for Marine Science (charity registered) (UK)<br>5. Tallin University of Technology (EE)<br>6. Universitat de Girona (ES)<br>7. Universitat de les Illes Balears (ES)<br>8. Norges Teknisk-Naturvitenskatelige Universitet (NO)<br>9. Sociedad Española de Salvamento y Seguridad Marítima (ES)<br>10. Irish Coast Guard (IR) |

| OPENRISK | |
|---|---|
| Title | Open-Source tools for regional risk assessments for improved European preparedness and response at sea (OPENRISK) |
| Contract details | 2016/PREV/26 01/01/2017 - 31/12/2018; EUR: 397467 |
| Abstract | Based on the development of an open source software and other open access material and fully transparent method toolbox for risk assessments, the project will enable risk assessments for a) locating high risk areas for shipping accidents and b) identify best risk reduction measures for reducing risk in these areas. (MARINE POLLUTION) (Internal classification of DG Echo is MARINE POLLUTION) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7462&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: BALTIC MARINE ENVIRONMENT PROTECTION COMMISSION – HELSINKI COMMISSION (HELCOM) (FI)<br>Consortium:<br>1. Suomen Ympäristökeskus (FI)<br>2. World Maritime University (SE)<br>3. Stichting Maritiem Research Instituut Nederland (NL) |

The projects were complemented by the following projects funded by INTERREG program:

| APP4SEA | |
|---|---|
| Title | Arctic Preparedness Platform for oil Spill and other Environmental Accidents |
| Contract details | 2014 - 2020 INTERREG VB Northern Periphery and Arctic 01/05/2017 - 30/04/2020 |
| Abstract | APP4SEA is a transnational competence project, which aims to strengthen the preparedness of environmental authorities and the awareness of general public in the coastal areas of the NPA region regarding oil spill response. Combating oil spills in harsh, northern conditions is challenging with current technologies. Oil spills do not recognize national borders, and inefficiencies are brought by different practices and methods, which are used by different countries, as well as the challenges due to different sea and environmental conditions, and the variety of oil types used and transported by ship across the NPA region. APP4SEA will unite coastal authorities, pool their competences and data on oil weathering, share best practices in oil spill response technologies and models. By learning from each other, the authorities can response faster and more efficiently in order to minimize environmental and social impacts of oil-in-water accidents. The project will produce an interactive smart map, which will be an open access platform showing search and rescue centres along the NPA coastline, their equipment and level of preparedness for oil spill accidents, weather conditions in accident zones, as well as information about important ecological areas and species that can be affected by oil spills. The smart application will also have a predictive function to advise in case of accident what equipment of deploy considering the place and scale of spill and environmental conditions. The project will also produce a gap analysis and improvement suggestions to improve OSR infra and preparedeness level in the NPA region. The end users of the project are local authorities responsible for oil spill response; social groups, educational institutions and the general public. APP4SEA will also involve local entrepreneurs, to support northern entrepreneurship and attract interest to environmental issues. In additon the general public will be provided access to illustrative educational tools. |
| Website | http://www.interreg-npa.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. University of Oulu (FI)<br>Consortium members:<br>2. North Highland College UHI (UK);<br>3. Finnish Environment Insitute (FI);<br>4. University of Iceland (IS);<br>5. Norwegian Meteorological Institute (NO) |

| CHEMSAR | |
|---|---|
| Title | Operational plans and procedures for maritime search and rescue in hazardous and noxious substances (HNS) incidents |
| Contract details | 2014 - 2020 INTERREG VB Baltic Sea 01/03/2016 - 28/02/2019 |
| Abstract | 100 – 200 incidents are reported involving commercial traffic but the number of near miss situations is many times higher. This, combined with the increasing amount of traffic in the Baltic Sea, the traffic intersecting at several nodes, difficult waters, and the harsh winter conditions in the northern Baltic Sea increase both the probability of a largescale maritime incident and the difficulty of conducting search and rescue operations. Currently there is a lack of operational plans and standard operational procedures (SOP) for search and rescue (SAR) operations applicable to cases of hazardous and noxious substances (HNS) incidents in Baltic Sea Region (BSR) according to rescue authorities and study reports. Demanding maritime incidents are in this area almost always international in nature, which emphasizes the significance of common procedures and common level of knowhow. Countries have some national practices for maritime chemical incidents but these incidents call for joint rescue operations and common guidelines. It is important to know how chemicals react in different environments and with other substances, how one should protect oneself against chemicals and how to treat persons having been in contact with HNS, how to handle contaminated gear and vessels. Lack of appropriate knowledge may, in worst case, lead into disastrous consequences. The project will create operational plans and standard operational procedures (SOP) needed in SAR operations of HNS incidents. By creating plans and SOPs for the rescue operations related to maritime HNS incidents the project will tackle the above mentioned lack of operational procedures. By developing the e-learning material for the different international actors in the rescue operations the project will enhance and harmonize the level of knowhow to ensure safe rescue operations. The chemical data bank will act as the basis for information seeking in rescue operations and e-learning. The desk exercises and the international rescue exercise/s at sea will test the applicability of the project results in practice. The project will increase the capacities of maritime rescue authorities and services and improve the competence and transnational cooperation capabilities in the Baltic Sea countries. The project partners represent the rescue authorities and services, i.e. the project's main target groups. This increases the durability of the project results. The project outcome will also benefit other actors, such as environmental and maritime authorities, shipping companies, SAR training and maritime academies and other maritime stakeholders. |
| Website | https://blogit.utu.fi/chemsar/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Centre for Maritime Studies of the Brahea Centre at the University of Turku (FI) |

| SAFE SEA | |
|---|---|
| Title | Safe coast and sea in Latvia and Estonia |
| Contract details | 2014 - 2020 INTERREG V-A Estonia - Latvia 01/05/2017 - 31/12/2018 |
| Abstract | Projects background: Gulf of Riga and Irbe Strait are among the shallowest waters in the Baltic Sea and includes multiple marine protected areas both on Latvias and Estonias coasts. However those territories are intensely used for ship traffic, multiple harbors are working in the area and other potential pollution objects are located on the coast, so this territory is possibly endangered by environmental accidents. State Fire and Rescue Service of Latvia (VUGD) have to ensure effective response at least 2 hours till the Coast guards involves and take the lead in ecological accidents in ports and sea coast line. Estonia and Latvia has jioned with HELCOM convention, so the Rescue services must guarantee localizing the oil spill at least 10 km of oil boom with the speed of response no longer than 6 hours. Estonian coast is endangered through Ferries activity in tankers fairway between Russia. The appliances in command of the Estonian Rescue Board (ERB) and State Fire and Rescue Service of Latvia are not equipped efficiently in respect to the conceptualised harbors for wrecked vessels on the coast. For effective response during ecological accidents at small ports VUGD and ERB have a lack of capacity and there is necessity for better capability as well as there are necessity to improve oil spill readiness in Gulf of Riga and Irbe Strait, which are the common water resources and nearby to the potential places of refuge for wrecked vessels. Cross-border nature: Countries of the Baltic Sea region share the responsibility for the protection of the marine environment. In case of environmental accident it is crucial to have a coordinated cross-border reaction. By implementing SAFE SEA project it will be ensured that Estonian and Latvian actors know the drill in emergency situations and are informed about action plan of the other country. Joint trainings will improve cooperation among both countries. Project SAFE SEA contributes to the implementation of the EU Strategy for the Baltic Sea Region. Under the objective Save the Sea, sub-objective Better Cooperation it is emphasized that transboundary collaboration is crucial in case of environmental accidents. Cross-border challenges: -establish in common basis Standard operations procedures; -develop common tactics and organizing joint practical and theoretical exercises, thereby ensuring efficient support for the removal of pollution and oil spills. Objectives: The main goal of this project is to improve environmental security in marine and coastal waters in the Gulf of Riga and Irbe Strait by strenghening coordination between Latvian and Estonian rescue services and infrastructure managers (ports, small harbours, local governments). State Fire and Rescue Service of Latvia (VUGD) in cooperation with other state and municipal institutions has to ensure disaster management (response and pollution clean-up) in internal waters to the sea shoreline, while Estonian Rescue Board (ERB) in close cooperation with Estonian Small Harbour Development Centre (EVAK) has to ensure response measures and to deal with consequence management of pollution at least 2 hours till the Coast guard and environmental agencies take over the lead in ecological accidents. For that reason SAFE SEA aims to increase their capacity and strengthen coordination not only between VUGD, ERB and EVAK, but also with other actors that are involved in rescue operations in case of environmental accidents. Among the involved actors are Coast Guards, MRCC, police and border guards, environmental agencies, harbours, local municipalities as well as local voluntary organizations which may be a crucial help to rescue services in case of environmental accidents. SAFE SEA would ensure raising of awareness and skills of involved actors for a more coordinated and effective response. Main activities: In this project we have nominated 5 main activities: 1. Acquisition of equipment for the VUGD and ERB so that they can localize the oil spill in the project territory within a reasonable time. The VUGD purchased equipment will be stored in 6 divisions - Salacgrīva, Saulkrasti, Jaunciems, Sloka, Dundaga, Roja. ERB equipment will be located in three ERB units and 2 ports - Kuressaare, Kuhelkonna, Orissaare, Kuivastu and Mõntu. 2. Building and preparation of 4 access roads (driveways) to the beach in Latvia - Roja County Municipality, Ventspils County Municipality, Engure County Municipality and Salacgrīva County Municipality. 3. Elaboration of common Standard Operational Procedure (SOP) and training materials to improve cross-border collaboration between rescue services. 4. Two international joint trainings (1 in Latvia and 1 in Estonia) with partner organizations (coast guards, police, border guards, environmental agencies, harbors) and Oil spill clean-up theoretical trainings in Estonia. 5. Awareness raising campaigne for Local Governments, volunteers and coastal inhabitants, media coverage about environmental pollution, protection, risk and crisis communication. |
| Website | http://www.estlat.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Kurzeme Planning Region (LV)<br>Consortium members:<br>2. Salacgrīva County Municipality (LV);<br>3. State Fire and Rescue Service of Latvia (LV);<br>4. Engure County Municipality (LV);<br>5. Roja County Municipality (LV);<br>6. Estonian Small Harbour Development Centre (EE);<br>7. Ventspils County Municip ality (LV);<br>8. Estonian Rescue Board (EE) |

# 6. Crime and terrorism

## 6.1 Terrorist threats

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Terrorist threats | ADABTS<br>ADVISE<br>COREPOL<br>DECOTESSC1<br>DETECTER<br>EWISA<br>EXPEDIA<br>GIFT-CBRN<br>HYPERION<br>INDECT<br>PRIME<br>PROACTIVE<br>RAPTOR<br>RECONASS<br>SAFE-COMMS<br>SAMURAI<br>SMARTPREVENT<br>TACTICS<br>VOX-POL |

These projects have been complemented by the following H2020 projects:

| TENSOR | |
|---|---|
| Title | Retrieval and Analysis of Heterogeneous Online Content for Terrorist Activity Recognition (TENSOR)<br><br>***This project also corresponds to the category 'Radicalisation'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-06-2015<br>September 2016 / September 2019 - EUR: 4,977,200.50<br><br>HOME - 700024 |
| Abstract | The main objective of the TENSOR project is to provide a powerful terrorism intelligence platform offering LEAs fast and reliable planning and prevention functionalities for the early detection of terrorist organised activities, radicalisation and recruitment. The platform integrates a set of automated and semi-automated tools for efficient and effective searching, crawling, monitoring and gathering online terrorist-generated content from the Surface and the Darkweb.The project brings together industry, LEAs, legal exerts and research institutions. |
| Website | http://tensor-project.eu/ |

| TENSOR | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Police Service of Northern Ireland (UK)<br>Consortium<br>2. Cybercrime Research Institute Gmbh (DE)<br>3. Departament D'interior - Generalitat De Catalunya (ES)<br>4. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>5. European Organisation For Security Scrl (BE)<br>6. Fachhochschule fur Offentliche Verwaltung und Rechtspflege in Bayern (DE)<br>7. Kentro Meleton Asfaleias (EL)<br>8. Leonardo - Societa Per Azioni (IT)<br>9. Linguatec Gmbh (DE)<br>10. National Crime Agency (UK)<br>11. Police and Crime Commissioner for West Yorkshire (UK)<br>12. Rinicom Limited (UK)<br>13. Service Public Federal Interieur (BE)<br>14. Sheffield Hallam University (UK)<br>15. Thales Communications & Security Sas (FR)<br>16. Thales Sa (FR)<br>17. Universidad Pompeu Fabra (ES) |

| GTCMR | |
|---|---|
| Title | Global Terrorism and Collective Moral Responsibility: Redesigning Military, Police and Intelligence Institutions in Liberal Democracies (GTCMR)<br><br>***This project also corresponds to the category 'Ethics, Societal implications'.*** |
| Contract details | Excellent Science Call: ERC-2014-ADG Topic code: ERC-ADG-2014<br>January 2016 / January 2021 - EUR: 2.479.810,00<br><br>ERCEA - 670172 |
| Abstract | Examination of counter-terrorism as a morally complex enterprise involving police, military, intelligence agencies and non-security agencies. The research endeavour argues that counter-terrorism should be framed as a collective moral responsibility of governments, security institutions and citizens. |
| Website | https://www.tudelft.nl/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Technische Universiteit Delft (NL)<br>Consortium:<br>2. The Chancellor, Masters And Scholars Of The University Of Oxford (UK) |

## These projects were complemented by new projects funded in 2016-2017:

| VICTORIA | |
|---|---|
| Title | Video analysis for Investigation of Criminal and TerrORIst Activities |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-12-FCT-2016-2017.<br>May 2017 / April 2020 - EUR: 5.007.125,00 GA 740754 |

| VICTORIA | |
|---|---|
| Abstract | Video recordings have become a major resource for legal investigations. Since no mature video investigation tools are available and trusted by LEAs, investigators still need to carry out the analysis of videos almost exclusively manually. Current practices are too resource intensive to handle the yet huge and steadily increasing volume of videos that need to be analysed after crimes and terrorist acts. The consequence is that LEAs cannot analyse all available videos because of the huge effort needed, and the extraction of first clues from videos after a terrorist attack takes more time. VICTORIA will address this need and deliver a Video Analysis Platform (VAP) that will accelerate video analysis tasks by a factor of 15 to 100 (depending on the use case), while providing very reliable results. To achieve this, VICTORIA will 1) develop a set of TRL-6 video analytics selected for their relevance in video investigation related to crimes and terrorist acts, 2) increase significantly the usability of delivered tools by involving LEAs directly in all stages of the development process, from specifications, over assessment of several VAP prototype versions, up to field trials in LEA operational conditions, 3) create an ecosystem around an open VAP concept, that will facilitate sustainable innovation and market growth for video investigation products, 4) train LEA investigators in the use of the VAP, 5) ensure that VICTORIA activities and results meet EU Legal-Ethical-Privacy rules. The VAP will have a scalable architecture based on big data technologies, feature new user interface paradigms allowing complex semantic investigation queries and 4D crime scene reconstruction, be adaptable to specific user needs, and be future proof thanks to an open analytics plug-in feature, based on standardized interfaces and open to third party suppliers. The consortium includes 4 LEAs, 6 renowned research groups, 2 SMEs and 2 industrial companies, world-leaders in security markets. |
| Website | https://www.victoria-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Safran Identity & Security (FR)<br>Consortium:<br>2. Ait Austrian Institute of Technology Gmbh (AT)<br>3. Arttic (FR)<br>4. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>5. Home Office (UK)<br>6. Intellio Technologies Zartkoruen Mukodo Reszvenytarsasag (HU)<br>7. Katholieke Universiteit Leuven (BE)<br>8. L-1 Identity Solutions Ag (DE)<br>9. Ministere de L'interieur (FR)<br>10. Ministerio del Interior (ES)<br>11. Serviciul De Protectie Si Paza (RO)<br>12. Thales Communications & Security Sas (FR)<br>13. Thales Services Sas (FR)<br>14. Universitat Konstanz (DE)<br>15. Universitat Politecnica de Valencia (ES)<br>16. Universite Paul Sabatier Toulouse III (FR) |

| TransSec | |
|---|---|
| Title | Autonomous emergency manoeuvring and movement monitoring for road transport security |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-GALILEO-GSA-2017-1. Topic code: GALILEO-1-2017. February 2018 / January 2021 - EUR: 2.527.229,38 GA 776355 |
| Abstract | The TransSec project addresses a new danger in European countries, the increasing number of terror attacks. Recent terror attacks with trucks in Nice and Berlin have shown drastically the damage a heavy truck can cause, how easy it is to misuse a truck for attacks and that newest safety systems cannot prevent these attacks. As a consequence road transport safety has to be supplemented by road transport security. TransSec aims to initiate the development of this Security Truck. The project objective is: Development and evaluation of systems built-in or to be used by trucks for secure road transport of (dangerous) goods. Preventing trucks and transport of goods to be misused for other purposes such as terror attacks. Specific objectives are: • Precise vehicle positioning and navigation on road (lane) and off road. • Vehicle movement monitoring for dangerous goods with critical area alarm/eCall. • Vehicle communication security for critical information exchange. • Onboard precrash environment detection of vulnerable objects on/ off road. • Non-defeatable autonomous emergency manoeuvring for crash prevention on/off road. The implementation is done in an explorative and incremental development cycle with early prototypes adding functionality step by step. Demonstrations with a truck on and off road will show solutions after 12, 24 and 36 months. Testing and pilots on public roads and public areas will prove a higher level of security. |
| Website | http://www.transsec.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Daimler AG (DE)<br>Consortium:<br>2. Waterford Institute of Technology (IE)<br>3. Fundacion Centro de Tecnologias de Interaccion Visual y Comunicaciones Vicomtech (ES)<br>4. Universitaet Stuttgart (DE)<br>5. TeleConsult Austria GmbH (AT) |

### *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| ATLAS | |
|---|---|
| Title | ATLAS |
| Project number | 7242 |
| Contract details | € 1,452,704.81 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>GSG 9 OF THE FEDERAL POLICE |

| ATLAS 2015 | |
|---|---|
| Title | ATLAS 2015 |
| Project number | HOME/2015/ISFP/AG/ATLS/0001 |
| Contract details | € 999,977.17 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>GSG 9 OF THE FEDERAL POLICE |

## 6.2 Forensics

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Forensics | 3D-FORENSICS<br>BEAT<br>CRIM-TRACK<br>EPOOLICE<br>EUROFORGEN-NOE<br>FORLAB<br>GIFT-CBRN<br>GRAFFOLUTION<br>LASIE<br>MEPROCS<br>MIDAS<br>MISAFE<br>ODYSSEY<br>P-REACT<br>RECOBIA<br>SAWSOC<br>SCIIMS<br>SIIP<br>TRACE<br>VALCRI |

These projects have been complemented by the following H2020 projects:

| ASGARD | |
|---|---|
| Title | Analysis System for Gathered Raw Data (ASGARD) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-01-2015<br>September 2016 / February 2020 - EUR 11,992,553.25<br><br>HOME - 700381 |
| Abstract | Development of a community of LEA users, using technology as a focal point for cooperation. Technologies are transferred to LEA users under a restricted open source community scheme focusing on Forensics, Intelligence and Foresight (Intelligence led prevention and anticipation). Research areas will focus on driving progress in the processing of seized data, availability of massive amounts of data and big data solutions. Results are demonstrated in traditional Use Cases, trials and Hackathons. |
| Website | http://www.asgard-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacion Centro de Tecnologias de Interaccion Visual y Comunicaciones Vicomtech<br>Consortium:<br>2. Aditess Advanced Integrated Technology Solutions & Services Ltd (CY)<br>3. Ait Austrian Institute Of Technology Gmbh (AT)<br>4. Centro Nacional de Supercomputación – Barcelona (ES)<br>5. Bundeskriminalamt (DE)<br>6. Bundesministerium fuer Inneres (AT)<br>7. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>8. Le Service Public Federal Justice (BE)<br>9. Dublin City Univ. (IE)<br>10. Ingegneria Informatica SPA (IT)<br>11. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>12. Home Office (UK)<br>13. IBM Ireland (IE)<br>14. INOV Inesc Inovacao (PT)<br>15. Kentro Meleton Asfaleias (EL)<br>16. L-1 Identity Solutions AG (DE)<br>17. Ministere de l'interieur (FR)<br>18. Ministério da Justiça (PT)<br>19. Ministerio del Interior (ES)<br>20. Ministero della Difesa (IT)<br>21. TNO (NL)<br>22. Netherlands Forensic Institute (NL)<br>23. PDM e FC Projecto Desenvolvimento Manutencao Formacao e Consultadorialda (PT)<br>24. Poliisihallitus (FI)<br>25. Polismyndigheten Swedish Police Authority (SE)<br>26. Rikskpolisstyrelsen - Rikskriminalpolisen National (SE)<br>27. Securiq Sistemas SL (ES)<br>28. Service Public Federal Interieur (BE)<br>29. Totalforsvarets Forskningsinstitut (DE)<br>30. Univ. degli Studi di Modena e Reggio Emilia (IT)<br>31. Univ. Konstanz (DE)<br>32. Univ. van Amsterdam (NL)<br>33. Univ. College Dublin (IE)<br>34. Univ. of Ulster (UK)<br>35. Zentrum fur Risiko- und Krisenmanagement – ZRK (AT) |

| FORENSOR | |
|---|---|
| Title | FOREnsic evidence gathering autonomous seNSOR (FORENSOR) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-05-2014<br>September 2015 / September 2018 - EUR: 4,043,546.25<br><br>REA - 653355 |
| Abstract | FORENSOR is a novel, ultra-low-power, intelligent, miniaturised, low-cost, wireless, autonomous sensor for evidence gathering. It contains an ultra-sensitive camera and built-in intelligence that allows it to operate at remote locations, automatically identify pre-defined criminal events, and alert LEAs in real time while providing and storing the relevant video, location and timing evidence. The combination of built-in intelligence with ultra-low power consumption could help LEAs take the next step in fighting severe crimes. |
| Website | http://forensor-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>Consortium:<br>2. Almaviva – The Italian Innovation Company spa (IT)<br>3. Ayuntamiento de Valencia (ES)<br>4. Emza Visual Sense Ltd (IL)<br>5. Fondazione Bruno Kessler (IT)<br>6. JCP-Connect (FR)<br>7. Ministério da Justiça (PT)<br>8. Stmicroelectronics SRL (IT)<br>9. Synelixis Lyseis Pliroforikis Automatismou & Tilepikoinonion Monoprosopi Epe (EL)<br>10. Visionware-sistemas de informacao SA (PT)<br>11. Vrije Universiteit Brussel (BE) |

| RAMSES | |
|---|---|
| Title | Internet Forensic platform for tracking the money flow of financially-motivated malware (RAMSES) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-04-2015<br>September 2016 / September 2019 - EUR: 3,532,000.00<br><br>HOME - 700326 |
| Abstract | The objective of RAMSES is to design and develop a holistic, intelligent, scalable and modular platform for LEAs to facilitate digital Forensic Investigations. The system will extract, analyse, link and interpret information extracted from Internet related with financially-motivated malware. Customers, developers and malware victims will be included in order to obtain a better understanding of how and where malware is spread and to get to the source of the threat. To achieve these objectives, this project will rely on disruptive Big Data technologies to firstly extract and storage, and secondly look for patterns of fraudulent behaviour in enormous amounts of unstructured and structured data. |
| Website | https://ramses2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Treelogic Telematica y Logica Racional para la Emprese Europea Sl (ES)<br>Consortium:<br>2. Fachhochschule fur Offentliche Verwaltung und Rechtspflege in Bayern (DE)<br>3. Ministério da Justiça (PT)<br>4. Ministerio del Interior (ES)<br>5. Politecnico di Milano (IT)<br>6. RISSC – Centro Ricerche e Studi Susicureza e Criminalita Associazione (IT)<br>7. Service Public Federal Interieur (BE)<br>8. Trilateral Research Ltd (UK)<br>9. Univ. Complutense de Madrid (ES)<br>10. Univ. des Saarlandes (DE)<br>11. Univ. of Kent (UK) |

| IDENTITY | |
|---|---|
| Title | Computer Vision Enabled Multimedia Forensics and People Identification (IDENTITY) |
| Contract details | Excellent Science Call: H2020-MSCA-RISE-2015 Topic code: MSCA-RISE-2015<br>January 2016 / January 2020 - EUR: 2.025.000,00<br><br>REA - 690907 |
| Abstract | This proposal also aims at consolidating the integration of multimedia forensics into the forensic science. Multimedia forensics is concerned with the development of scientific methods to extract, analyse and categorize digital evidence derived from multimedia sources, such as imaging devices. For example, developing technologies to identify, categorise and classify the source of images and video, as well as to authenticate and verify the integrity of their content. Since the enabling technologies in multimedia forensics are similar to those used for identification and verification purposes in biometric forensics, the integration of these areas is seamless. |
| Website | dcs/research/df/identity/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Warwick (UK)<br>Consortium:<br>2. Eurecom (FR)<br>3. Hong Kong Baptist University (HK)<br>4. Indraprastha Institute Of Information Technology Dehli (IN)<br>5. Institute Of Automation Chinese Academy Of Sciences (CN)<br>6. Michigan State University (US)<br>7. Nanyang Technological University (SG)<br>8. New Jersey Institute Of Technology (US)<br>9. Paris-Lodron-Universitat Salzburg (AT)<br>10. Social Currencies Management S.L. (ES)<br>11. South China University Of Technology (CN)<br>12. Universidade Estadual De Campinas (BR)<br>13. Universita Degli Studi Di Sassari (IT)<br>14. Xlab Razvoj Programske Opreme In Svetovanje Doo (SL) |

## These projects were complemented by new projects funded in 2016-2017:

| Genomcore Identity | |
|---|---|
| Title | Genomcore Identity: databank proxy for DNA fingerprinting from whole exome/genome for biometric identifica-tion |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2018 / June 2018 - EUR: 50.000,00 GA 790554 |
| Abstract | Genomcore aims at creating a new compatible interface for DNA-based biometrical identification consider-ing the exponential growth of public (governmental) and private repositories of complete genomic se-quences. These genomic databanks, containing Whole Exome Sequencing (WES) and Whole Genome Sequencing (WGS) data, commonly used for healthcare and biomedical purposes, can be a massive source of inexpensive and reliable DNA fingerprints with broad applications in forensics, law enforcement and identification purposes. This system will be based in the count of short-tandem repeats (STRs) allowing collation with existing CODIS and CODIS-based databases . Additionally, the company wants to explore a method for generating DNA fingerprinting based on the hashing of Single Nucleotide Polymorphisms (SNPs), which can lead to a potentially cheaper and fast-er mechanism for collating biological samples with the database. The generated fingerprints will always be complete-ly devoid of any personal, health or private information, thus enabling identification while ensuring privacy protec-tion. Genomcore Identity can represent a qualitative leap in biometric identification since: 1. |
| Website | https://genomcore.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Genomcore SL (ES) |

| SALUS | |
|---|---|
| Title | Portable, high-performance, and all-in-one digital data recovery lab for digital forensics to greatly enhance efficiency and capabilities of European investigation authorities |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>April 2018 / September 2018 - EUR: 50.000,00 GA 808099 |
| Abstract | The digital revolution is fundamentally changing the world regarding quality of life, efficiency of our economy, communication and data handling. It's not surprising, that digital data is nowadays - intentionally or not - involved in most criminal activities and is of upmost importance in the investigation process. Moreover, with Cybercrimes, a whole new area of criminal offences is emerging. To face this fast-growing threat, and close the "digital gap" in investigations, law enforcement agencies established digital forensics units to find, extract and analyse digital data for fighting crimes, terrorism, espionage and improve cyber defence. Here, forensics experts are also confronted with damaged disks, deleted or compromised data. Most of them are not even looked upon, because forensic units are understaffed, lack data recovery specialists and don't have the necessary hard- and software infrastructure, to legally suitable extract the evidence inhouse. This could mean the failure of the investigation or a crucial time delay! mh SERVICE, a leading specialist for digital forensics, developed the fastest, most efficient and powerful data recovery device that ever existed: SALUS. The portable system is designed for usage at any forensics lab and in the field by trained forensics experts. The system covers nearly all types of media interfaces, data storage technologies and recovery techniques. The fool-proof software guidance and performant hardware allows to significantly enhance efficiency and capabilities of forensic units. In the feasibility study, a detailed analysis of the best-fitting market segments within the IT forensics market will be conducted, including the involvement of pilot customers for the validation of the business idea, as well as the elaboration of a thorough business plan for commercialisation. The findings of the feasibility study will be integrated into the subsequent SME Phase 2 project to perfectly facilitate the market introduction of SALUS. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. MH Service GMBH (DE) |

| VISAGE | |
|---|---|
| Title | Visible Attributes through Genomics: Broadened Forensic Use of DNA for Constructing Composite Sketches from Traces |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-08-FCT-2016.<br>January 2017 / April 2021 - EUR: 5.000.000,00 GA 740580 |
| Abstract | Unknown perpetrators of crime cannot be identified with the current forensic use of DNA. The VISAGE Project aims to overcome this major limitation by developing, validating, and implementing in the relevant forensic DNA service environment a set of prototype tools for predicting appearance, age, and ancestry in as much detail and as accurately, and effectively as possible from DNA traces. This VISAGE Toolkit will allow the construction of composite sketches of unknown trace donors directly from their crime scene traces, which will guide and focus criminal investigations towards finding them. The VISAGE Toolkit will include analysis prototype tools based on massively parallel sequencing for genotyping the large number of DNA predictors for appearance, age, and ancestry established within the Project, as well as an integrated statistical framework with prototype software for translating these genotype data into statistical probabilities on appearance, age and ancestry, which represents the intelligence information finally used for guiding criminal investigations towards the most probable group of suspects. The VISAGE Toolkit will consider ethical, societal, and legal dimensions of Forensic DNA Phenotyping as identified within the Project, by applying a privacy-by-design strategy. The interdisciplinary VISAGE Consortium includes European (and global) scientific leaders in Forensic DNA Phenotyping as well as in forensic massively parallel sequencing, leading European forensic DNA service providers, and one of the leading social scientists in the field of forensic DNA analysis, ensuring that the Project goals will be achieved on time. The outcome of the VISAGE Project will have a major impact on solving more crimes more rapidly by providing previously unused intelligence information from trace DNA to find unknown perpetrators, which will lead to reduced impact on victims, reduced societal distress, preventing miscarriages of justice, thereby avoiding unnecessary costs. |
| Website | http://www.visage-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Erasmus Universitair Medisch Centrum Rotterdam (NL)<br>Consortium:<br>2. Bundeskriminalamt (DE)<br>3. Centralne Laboratorium Kryminalistyczne Policji (PL)<br>4. Institut National de Police Scientifique (FR)<br>5. King's College London (UK)<br>6. Klinikum Der Universitaet zu Koeln (DE)<br>7. Mayor's Office for Policing and Crime (UK)<br>8. Medizinische Universitat Innsbruck (AT)<br>9. Netherlands Forensic Institute (NL)<br>10. Polismyndigheten Swedish Police Authority (SE)<br>11. Universidad de Santiago de Compostela (ES)<br>12. Universitaet zu Koeln (DE)<br>13. Uniwersytet Jagiellonski (PL) |

| SHUTTLE | |
|---|---|
| Title | Scientific High-throughput and Unified Toolkit for Trace analysis by forensic Laboratories in Europe |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-09-FCT-2017.<br>May 2018 / April 2022 - EUR: 9.511.053,77 GA 786913 |
| Abstract | Transfer traces analysis currently suffers from several limitations: highly subjective and selective, this process is also very time-consuming, hence inefficient, whereas results are difficult, if not impossible, to compare and share among forensic laboratories. As a consequence, the use of forensic data in cross-border investigations, and in foreign courts is limited. Creating a unified transfer traces automated analysis toolkit would allow for a higher productivity of forensic workers, better crime resolution and enable further collaboration across end-users. In addition to the lack of maturity of its potential components, the economical question is the barrier that hinders the development of such a toolkit as a sole forensic service can't afford funding the corresponding R&D activities.<br>the SHUTTLE project then intends to run a Pre-Commercial Procurement (PCP) action between forensic institutes across Europe to mitigate these technical and financial barriers and jointly carry out the procurement of the necessary Research and Development (R&D) activities to develop a machine\toolkit that will integrate different tape analysis tools to automate the routine part of the work of trace evidence examiners and, eventually, strengthen further judicial and police cooperation. The SHUTTLE toolkit will be scientific, as the results obtained will be objective and validated, which will strengthen their usefulness and usability. It will be high-throughput, as the instrumentation will be built to process large amounts of samples and data. The acquired data will be stored in a database together with the results of other methods. These databases can be shared and maintained together, and be used to provide a scientifically justified, numerical evidential value. Finally, SHUTTLE, which will be validated in conformity with ISO17025, will unify the methodology used in several European countries and will foster collaboration across countries and institutions in Europe. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ministere de L'interieur (FR)<br>Consortium:<br>2. Ministry of Public Security (IL)<br>3. Ministério da Justiça (PT)<br>4. Lietuvos Teismo Ekspertizes Centras (LT)<br>5. Stichting Hogeschool van Amsterdam (NL)<br>6. ARTTIC (FR)<br>7. Kentro Meleton Asfaleias (EL)<br>8. Netherlands Forensic Institute (NL) |

## 6.3 Cybercrime & cyber security

### 6.3.1 NIS - Cyber Security Management (for SMEs / business, local public authorities)

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Cyber Security Management<br>(for SMEs / business, local public authorities) | PRECYSE<br>SERENITI |

These projects have been complemented by the following H2020 projects:

| C3ISP | |
|---|---|
| Title | Collaborative and Confidential Information Sharing and Analysis for Cyber Protection (C3ISP) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-04-2015<br>October 2016 / September 2019 - EUR 4,176,445.63<br><br>REA - 700294 |
| Abstract | Definition of a collaborative, multi-domain and confidential information sharing, analysis and protection framework as a service for cyber security management and improved detection of cyber threats and response capabilities. Creation of a framework for secure data analytics where data access and data analytics operations are regulated by data sharing agreements. The framework is validated through four Pilots covering several relevant areas as enterprise security, governmental CERTS, Internet Service Providers (ISPs) and, in particular, for SMEs interested in holistic cyber protection solutions (including managed security services). |
| Website | http://c3isp.eu/ |

| C3ISP | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Consiglio Nazionale delle Ricerche (IT)<br>Consortium:<br>2. 3D Repo Ltd (UK)<br>3. British Telecommunications Public Limited Company (UK)<br>4. Chino Societa a Responsabilita Limitata Semplificata (IT)<br>5. Commissariat a l' Energie Atomique et aux Energies Alternatives (FR)<br>6. Gridpocket Systems Spolka Akcyjna (PL)<br>7. Hewlett Packard Italiana SRL (IT)<br>8. Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione (IT)<br>9. SAP SE (DE)<br>10. Connected Digital Economy Catapult Ltd (UK)<br>11. Univ. of Kent (UK) |

| CANVAS | |
|---|---|
| Title | Constructing an Alliance for Value-driven Cybersecurity (CANVAS) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-07-2015<br>September 2016 / August 2019 - EUR 1,000,000.00<br><br>REA - 700540 |
| Abstract | Construction of a community that unifies different scientific traditions (ethical, legal, empirical and technological) in pursuit of value-driven cyber security objectives from the presupposition that technology development in cybersecurity should incorporate European values and fundamental rights. Focus on three application domains with unique value-profiles and complementing cyber security exigencies: the health system, finance, and police / national security. Following a three-step process (1) structure existing knowledge, (2) design a network for exchanging knowledge and generating insights across domains, and (3) disseminate the insights gained through three means), a reference curriculum for value-driven cybersecurity is developed, with a focus on industry-training, briefing packages for policy stakeholders, and a MOOC (massive open online course) on value-driven cybersecurity. |
| Website | https://canvas-project.eu/canvas/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Zuerich (CH)<br>Consortium:<br>2. Berner Fachhochschule (CH)<br>3. Dublin City Univ. (IE)<br>4. F-SECURE OYJ (FI)<br>5. Ostbayerische Technische Hochschule Regensburg (DE)<br>6. Technische Univ. Delft (NL)<br>7. Unabhangiges Landeszentrum fur Datenschutz (DE)<br>8. Univ. Hamburg (DE)<br>9. Univ. Rovira i Virgili (ES)<br>10. Univ. de Lausanne (CH)<br>11. Vrije Univ. Brussel (BE) |

| CIPSEC | |
|---|---|
| Title | Enhancing Critical Infrastructure Protection with innovative SECurity framework (CIPSEC) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-03-2015<br>May 2016 / April 2019 - EUR 5,258,316.25<br><br>REA - 700378 |
| Abstract | The main aim of CIPSEC is to create a unified security framework that orchestrates state-of-the-art heterogeneous security products to offer high levels of protection in IT (information technology) and OT (operational technology) departments of CIs. As part of this framework CIPSEC will offer a complete security ecosystem of additional services that can support the proposed technical solutions to work reliably and at professional quality. These services include vulnerability tests and recommendations, key personnel training courses, public-private partnerships (PPPs) forensics analysis, standardization and protection against cascading effects. |
| Website | http://www.cipsec.eu/ |

| CIPSEC | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Atos Spain SA (ES)<br>Consortium:<br>2. Aegis IT Research Ltd (UK)<br>3. Atos IT Solutions And Services Iberia SL (ES)<br>4. Bitdefender SRL (RO)<br>5. Comsec Limited (IL)<br>6. Consorzio per il Sistema Informativo (CSI Piemonte) (IT)<br>7. DB Netz AG (DE)<br>8. Empelor Gmbh (CH)<br>9. Foundation for Research and Technology Hellas (EL)<br>10. Hospital Clinic i Provincial de Barcelona (ES)<br>11. Panepistimio Patron (EL)<br>12. Technische Univ. Darmstadt (DE)<br>13. Univ. Politecnica de Catalunya (ES)<br>14. Worldsensing Limited (UK) |

| DiSIEM | |
|---|---|
| Title | Diversity Enhancements for SIEMs (DiSIEM) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-04-2015<br>September 2016 / September2019 - EUR: 3,445,875.75<br><br>REA - 700692 |
| Abstract | The DiSIEM project aims to enhance existing SIEM systems with diversity-related technology. The project aims to (1) enhance the quality of events collected using a diverse set of sensors and novel anomaly detectors, (2) add support for collecting infrastructure-related information from open-source intelligence data available on diverse sources from the internet, (3) create new ways for visualising the information collected in the SIEM and provide high-level security metrics and models for improving security-related decision project, and (4) allow the use of multiple storage clouds for secure long-term archival of the raw events feed to the SIEM. |
| Website | http://disiem-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacao da Faculdade de Ciencias da Universidade de Lisboa FP (PT)<br>Consortium:<br>2. Amadeus IT Group SA (ES)<br>3. Atos Spain SA (ES)<br>4. City University of London (UK)<br>5. Digitalmr Limited (UK)<br>6. EDP – Energias de Portugal SA (PT)<br>7. Faculdade de Ciencias da Universidade de Lisboa (PT)<br>8. Frauhofer Gesellschaft Zur Foerderung der Angewandten Forschung E.V. (DE) |

| DOGANA | |
|---|---|
| Title | aDvanced sOcial enGineering And vulNerability Assesment Framework (DOGANA) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-06-2014<br>September 2015 / September 2018 - EUR: 4,599,806.38<br><br>REA - 653618 |
| Abstract | DOGANA develops a framework that delivers "aDvanced sOcial enGineering And vulNerability Assessment". The underlying concept of DOGANA is that Social Vulnerabilities Assessments (SVAs), when regularly performed with the help of an efficient framework, help deploy effective mitigation strategies and lead to reducing the risk created by modern Social Engineering 2.0 attack techniques. Two relevant features of the proposed framework are: (1) the presence of the "awareness" component within the framework as the cornerstone of the mitigation activities; (2) the legal compliance by design of the whole framework.The outcomes of the project are also expected to provide a solid basis to revise the insurance models for cyber-attacks related risks. |
| Website | https://www.dogana-project.eu/ |

| DOGANA | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering International Belgium SA (BE)<br>Consortium:<br>2. AIT Austrian Institute of Technology GMBH (AT)<br>3. CEFRIEL – Societa Consortile a Responsabilita Limitata (IT)<br>4. Consorzio Nazionale Interuniversitario Per le Telecomunicazioni (IT)<br>5. Dansk Brand – OG Sikringsteknisk Institut Forening (DK)<br>6. Elta Systems Ltd (IL)<br>7. Engineering – Ingegneria Informatica Spa (IT)<br>8. Gabinete Nacional de Seguranca (PT)<br>9. Hewlett Packard Italiana Srl (IT)<br>10. Inov Inesc Inovacao – Instituto de Novas Technologias (PT)<br>11. Katholieke Universiteit Leuven (BE)<br>12. Ministry of National Defence, Greece (EL)<br>13. National Center for Scientific Research 'Demokritos' (EL)<br>14. Proprs Ltd. (UK)<br>15. Regia Autonoma de Transport Bucuresti (RO)<br>16. Scuola Aniversitaria Professionale Della Svizzera Italiana (SUPSI) (CH)<br>17. Thales Communications & Security SAS (FR)<br>18. Thales Services SAS (FR)<br>19. Visonware-Sistemas de Informacao SA (PT) |

| HDIV | |
|---|---|
| Title | HDIV: SELF-PROTECTED WEB APPLICATIONS (HDIV)<br><br>***This project also corresponds to the category 'Multi-sector cyber and physical threats to CI's, including ICT'.*** |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-2-2015 Topic code: DRS-17-2015<br>November 2015 / November 2017 - EUR: 927,500.00<br><br>EASME - 696973 |
| Abstract | HDIV is a technology that follows a security by design approach, generating self-protected web applications. HDIV is integrated within the web applications and within the web application development environments. It eliminates the complexity and maintenance cost of WAF solutions and increases the protection levels. The main objective of the project is to accelerate the introduction into the worldwide market of a set of products based on HDIV, contributing to solve the important threats derived from web application weaknesses. |
| Website | https://www.arima.eu/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. ARIMA Software Design SLL (ES)<br>Consortium:<br>2. 2. HDIV Security SL (ES) |

| LIGHTest | |
|---|---|
| Title | Lightweight Infrastructure for Global Heterogeneous Trust management in support of an open Ecosystem of Stakeholders and Trust schemes (LIGHTest) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-05-2015<br>September 2016 / September 2019 - EUR: 7,595,955.63<br><br>REA - 700321 |
| Abstract | LIGHTest aims to create a global cross-domain trust infrastructure that renders it transparent and easy for verifiers to evaluate electronic transactions. By querying different trust authorities world-wide and combining trust aspects related to identity, business, reputation etc. it will become possible to conduct domain-specific trust decisions. This is achieved by reusing existing governance, organization, infrastructure, standards, software, community, and know-how of the existing Domain Name System, combined with new innovative building blocks. This approach allows an efficient global rollout of a solution that assists decision makers in their trust decisions. By integrating mobile identities into the scheme, LIGHTest also enables domain-specific assessments on Levels of Assurance for these identities. |
| Website | http://www.lightest-community.org/ |

| LIGHTest | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>Consortium:<br>2. Atos Spain SA (ES)<br>3. Danmarks Tekniske Universitet (DK)<br>4. European Electronic Messaging Association AISBL (BE)<br>5. Giesecke & Devrient Gesellschat mit Beschrankter Haftung (DE)<br>6. GMO Globalsign OY (FI)<br>7. IBM Danmark APS (DK)<br>8. Open Identity Exchange Europe (UK)<br>9. Sociedad Estatal Correos y Telegrafos SA (ES)<br>10. Stichting NLNET Labs (NL)<br>11. Technishe Universitaet Graz (AT)<br>12. Time.Lex (BE)<br>13. Turkye Bilimsel ve Teknolojik Arastirma Kurumu (TR)<br>14. Universitaet Stuttgart (DE) |

| OCTAVE | |
|---|---|
| Title | Objective Control for TAlker VErification (OCTAVE) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-02-2014<br>June 2015 / August 2017 - EUR: 4,406,116.00<br><br>REA - 647850 |
| Abstract | OCTAVE will integrate hybrid ASV systems with environmental robustness and anti-spoofing technologies to deliver a scalable, trusted biometric authentication service (TBAS). The OCTAVE platform will reduce the economic and practical burdens related to password loss and recovery. The delegation of authentication to a single, yet distributed TBAS, will increase trust and privacy, avoid single points of failure and allow for rapid breach notification and remediation. OCTAVE will thus fuel new opportunities for commercial services making use of electronic identification and authentication. |
| Website | https://www.octave-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fondazione ugo Bordoni (IT)<br>Consortium:<br>2. Aalborg Universitet (DK)<br>3. Advalia Srl (IT)<br>4. Aplcomp OY (FI)<br>5. Atos Spain SA (ES)<br>6. Eurecom (FR)<br>7. Findomestic Baca SPA (IT)<br>8. Ita-Suomen Yliopisto (FI)<br>9. Research and Education Laboratory in Information Technologies (EL)<br>10. Societa per Azioni Esercizi Aeroportuali Sea spa (IT)<br>11. Univ. of Hertfordshie Higher Education Corporation (UK)<br>12. Validsoft UK Limited (UK) |

| PROTECTIVE | |
|---|---|
| Title | Proactive Risk Management through Improved Cyber Situational Awareness (PROTECTIVE) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-04-2015<br>September 2016 / September 2019 - EUR: 4,160,596.88<br><br>REA - 700071 |
| Abstract | PROTECTIVE is designed to improve an organisations ongoing awareness of the risk posed to its business by cyber security attacks. PROTECTIVE (1) increases the computer security incident response team's (CSIRT) threat awareness through improved security monitoring and increased sharing of threat intelligence between organisations within a community and (2) it ranks critical alerts based on the potential damage the attack can inflict. Hereby, organisations are better prepared to handle incoming attacks, malware outbreaks and other security problems and to guide the development of the prevention and remediation processes. |
| Website | https://protective-h2020.eu/ |

| PROTECTIVE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Athlone Institute of Technology (IE)<br>Consortium:<br>2. Agentia de Administrare a Retelei Nationale de Informatica Pentru Educatie si Cercetare (RO)<br>3. Cesnet Zajmove Sdruzeni Pravnickychob (CH)<br>4. Clean Communications Limited (IE)<br>5. Gmv Soluciones Globales Internet sau (ES)<br>6. Instytut Chemii Bioorganicznej Polskiej Aakademii Nauk (PL)<br>7. Itti Sp Zoo (PL)<br>8. Synyo Gmbh (AT)<br>9. Technische Universitat Darmstadt (DE)<br>10. The Chancellor, Masters and Scholars of the University of Oxford (UK) |

| SHIELD | |
|---|---|
| Title | Securing against intruders and other threats through a NFV-enabled environment (SHIELD) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-04-2015<br>September 2016 / March 2019 - EUR: 3,607,245.00<br><br>REA - 700199 |
| Abstract | The SHIELD project proposes a universal solution for dynamically establishing and deploying virtual security infrastructures into ISP and corporate networks. SHIELD virtualises security appliances into virtual Network Security Functions (vNSFs), to be instantiated within the network infrastructure using NFV technologies and concepts, effectively monitoring and filtering network traffic in a distributed manner. This approach promotes openness and interoperability of security functions and offers a zero-CAPEX security solution for citizens and SMEs. |
| Website | https://www.shield-h2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Space Hellas Anonymi Etaireia Systimata Kai Ypiresies Tilepikoinonionpliroforik-is Asfaleias - Idiotiki Epicheirisi Parochis Yperision Asfa (EL)<br>Consortium:<br>2. Agenzia per L'italia Digitale (IT)<br>3. Fundacio Privada I2cat, Internet i Innovacio Digital a Catalunya (ES)<br>4. Hewlett-Packard Limited (UK)<br>5. Hp Information Security UK Limited (UK)<br>6. Incites Consulting Sarl (LU)<br>7. Infili Technologies Private Company (EL)<br>8. National Center For Scientific Research "Demokritos" (EL)<br>9. Orion Innovations Private Company (EL)<br>10. Politecnico Di Torino (IT)<br>11. Telefonica Investigacion Y Desarrollo Sa (ES)<br>12. Ubiwhere Lda (PT) |

| SISSDEN | |
|---|---|
| Title | Secure Information Sharing Sensor Delivery event Network (SISSDEN) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-04-2015<br>May 2016 / May 2019 - EUR: 4,912,692.50<br><br>REA - 700176 |
| Abstract | SISSDEN is a project aimed at improving the cybersecurity posture of EU entities and end users through development of situational awareness and sharing of actionable information.The main goal of the project is creation of multiple high-quality feeds of actionable security information that will be used for remediation purposes and for proactive tightening of computer defences. This will be achieved through development and deployment of a distributed sensor network based honeypot/darknet technologies and creation of a high-throughput data processing center. SISSDEN will provide in-depth analytics on the collected data and develop metrics that will be used to establish the scale of most important security issues in the EU, and impact of the project itself. |
| Website | https://sissden.eu/ |

| SISSDEN | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Naukowa I Akademicka Siec Komputerowa (PL)<br>Consortium:<br>2. Cyberdefcon Limited (UK)<br>3. Deutsche Telekom AG (DE)<br>4. Eclexys Sagl (CH)<br>5. Montimage Eurl (FR)<br>6. Poste Italiane - Societa Per Azioni (IT)<br>7. Stichting The Shadowserver Foundation Europe (NL)<br>8. Universitat Des Saarlandes (DE) |

| WISER | |
|---|---|
| Title | Wide-Impact cyber SEcurity Risk framework (WISER) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-06-2014<br>June 2015 / December 2017 - EUR: 2,562,596.00<br><br>REA - 653321 |
| Abstract | WISER delivers a cyber-risk management framework able to assess, monitor and mitigate the risks in real time, in multiple industries. The WISER framework will ensure cyber risk management becomes an integral part to good business practice in both critical infrastructure and process owners and ICT-intensive SMEs. Ultimately, WISER implements on-demand service composition and ignites innovative assurance models, also from the point of view of premiums determination targeting. |
| Website | http://www.cyberwiser.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Atos Spain Sa (ES)<br>Consortium:<br>2. Aon Spa Insurance & Reinsurance Brokers (IT)<br>3. Aon Uk Limited (UK)<br>4. Atos It Solutions and Services Iberia Sl (ES)<br>5. Domotecnica Spa (IT)<br>6. Enervalis (BE)<br>7. Rexel Developpement Sas (FR)<br>8. Rexel Finland Oy (FI)<br>9. Stiftelsen Sintef (NO)<br>10. Trust-It Services Limited (UK)<br>11. Xlab Razvoj Programske Opreme In Svetovanje Doo (SL) |

## These projects were complemented by new projects funded in 2016-2017:

| ANASTACIA | |
|---|---|
| Title | Advanced Networked Agents for Security and Trust Assessment in CPS/IOT Architectures |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2019 - EUR: 3.999.208,75 GA 731558 |
| Abstract | The main objective of the ANASTACIA is to address the constant discovery of vulnerabilities in ICT components providing assurance that ICT systems are secure and trustworthy by design. To this end, ANASTACIA will research and develop a holistic security framework, which will address all the phases of the ICT Systems Development Lifecycle and will be able to take autonomous decisions using new networking technologies (SDN/NFV), and dynamic security enforcement and monitoring methodologies and tools. The ANASTACIA framework will include a comprehensive suite of tools and enablers: - A security development paradigm based on the compliance to security best practices and the use of the security components and enablers. - A suite of distributed trust and security components and enablers, able to dynamically orchestrate and deploy user security policies and actions within complex and dynamic CPS and IoT architectures. - Online monitoring and testing techniques that will allow more automated adaptation of the system to mitigate new and unexpected security vulnerabilities. - A holistic Dynamic Security and Privacy Seal, combining security and privacy standards and real time monitoring and online testing. This will provide quantitative and qualitative run-time evaluation of privacy risks and security levels, which can be easily understood and controlled by the final users. ANASTACIA results will be driven and demonstrated in three high impact Use Cases: Mobile Edge Computing, Smart Building and IoT networks. Bringing together leading partners with wide-ranging expertise, the ANASTACIA Consortium will combine the philosophy and business models of communication technologies with inherently integrated security and privacy solutions, creating a security framework where the end users will be able to control their security and privacy policies enforcement, and application developers, in particular SMEs, will find an open and sustainable ecosystem for secure SLCD. |

| ANASTACIA | |
|---|---|
| Website | http://www.anastacia-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Softeco Sismat SRL (IT)<br>Consortium:<br>2. AALTO (FI)<br>3. Archimede Solutions SARL (CH)<br>4. Atos Spain SA (ES)<br>5. Consiglio Nazionale delle Ricerche (IT)<br>6. Device Gateway SA (CH)<br>7. Ubitech (EL)<br>8. Mandat International (CH)<br>9. Montimage EURL (FR)<br>10. Odin Solutions S.L. (ES)<br>11. Ericsson AB (FI)<br>12. Thales SAS (FR)<br>13. United Technologies Research Centre (IE)<br>14. Univ. de Murcia (ES) |

| ASTRID | |
|---|---|
| Title | AddreSing ThReats for virtualIseD services |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-07-2017. May 2018 / April 2021 - EUR: 2.932.297,50 GA 786922 |
| Abstract | The growing adoption of cloud technologies and the trend to virtualise applications are inexorably re-shaping the traditional security paradigms, due to the increasing usage of infrastructures outside of the enterprise perimeter and shared with other users. The need for more agility in software development and maintenance has also fostered the transition to micro-services architectures, and the wide adoption of this paradigm has led service developers to protect their applications by including virtualised instances of security appliances in their design. Unfortunately, this often results in security being managed by people without enough skills or specific expertise, it may not be able to cope with threats coming from the virtualization layer itself (e.g., hypervisor bugs), and also exposes security appliances to the same threats as the other application components. It also complicates legal interception and investigation when some applications or services are suspected of illegal activity. To overcome the above limitations, the ASTRID project aims at shifting the detection and analysis logic outside of the service graph, by leveraging descriptive context models and their usage in ever smarter orchestration logic, hence shifting the responsibility for security, privacy, and trustworthiness from developers or end users to service providers. This approach brings new opportunities for situational awareness in the growing domain of virtualised services: unified access and encryption management, correlation of events and information among different services/applications, support for legal interception and forensics investigation. ASTRID will develop a common approach easily portable to different virtualisation scenarios. In this respect, the technology developed by the Project will be validated in two relevant domains, i.e., plain cloud applications and Network Function Virtualisation, which typically exploits rather different chaining and orchestration models. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ericsson Telecomunicazioni (IT)<br>Consortium:<br>2. Gioumpitek Meleti Schediasmos Ylopoiisi kai Polisi Ergon Pliroforikis Etaireia Periorismenis Efthynis (EL)<br>3. Technische Universitaet Berlin (DE)<br>4. Infocom S.R.L. (IT)<br>5. Agentscape AG (DE)<br>6. Politecnico di Torino (IT)<br>7. Consorzio Nazionale Interuniversitario per le Telecomunicazioni (IT)<br>8. University of Surrey (UK) |

| certMILS | |
|---|---|
| Title | Compositional security certification for medium- to high-assurance COTS-based systems in environments with emerging threats |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2020 - EUR: 3.999.055,63 GA 731456 |
| Abstract | certMILS develops a security certification methodology for Cyber-physical systems (CPS). CPS are characterised by safety-critical nature, complexity, connectivity, and open technology. A common downside to CPS complexity and openness is a large attack surface and a high degree of dynamism that may lead to complex failures and irreparable physical damage. The legitimate fear of security or functional safety vulnerabilities in CPS results in arduous testing and certification processes. Once fielded, many CPS suffer from the motto: never change a running system. certMILS increases the economic efficiency and European competitiveness of CPS development, while demonstrating the effectiveness of safety & security certification of composable systems. The project employs a security-by-design concept originating from the avionics industry: Multiple Independent Levels of Security (MILS), which targets controlled information flow and resource usage amongst software applications. certMILS reduces certification complexity, promotes re-use, and enables secure updates to CPS throughout its life-cycle by providing certified separation of applications, i.e. if an application within a complex CPS fails or starts acting maliciously, other applications are unaffected. Security certification of complex systems to medium-high assurance levels is not solved today. The existing monolithic approaches cannot cope with the complexity of modern CPS. certMILS uses ISO/IEC 15408 and IEC 62443 to develop and applies a compositional security certification methodology to complex composable safety-critical systems operating in constantly evolving hostile environments. certMILS core results are standardised in a protection profile.certMILS develops three composable industrial CPS pilots (smart grid, railway, subway), certifies security of critical re-useable components, and ensures security certification for the pilots by certification labs in three EU countries with involvement of the authorities. |
| Website | https://certmils.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Technikon Forschungs- und Planungsgesellschaft Mbh (AT)<br>Consortium:<br>2. ATSEC Information Security Gmbh (DE)<br>3. Elektrotechnicky Zkusebni Ustav, SP (CZ)<br>4. Epoche and Espri SL (ES)<br>5. Schneider Electric Espana SA (ES)<br>6. Sysgo AG (DE)<br>7. Sysgo SRO (CZ<br>8. Thales Austria Gmbh (AT)<br>9. Unicontrols A.S. (CZ)<br>10. Universitaet Rostock (DE) |

| COMPACT | |
|---|---|
| Title | COmpetitive Methods to protect local Public Administration from Cyber security Threats |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-02-2016. May 2017 / October 2019 - EUR: 3.648.792,50 GA 740712 |
| Abstract | Cyber threats are the most significant and growing risk for public administrations (PA). However, technological, organisational and structural issues hamper the ability, especially for local PAs (LPAs) to improve their cyber security level. Budget constraints and evolving legal, ethical, societal and privacy regulations render the situation even more complex. COMPACT's goal is to empower local LPAs to become the main actors of their cyber-resilience improvement process. COMPACT's objectives are to 1) increase awareness, skills and protection; 2) foster information exchange between European LPAs; 3) link LPAs to major EU initiatives, including the newly created cyber-security private-public partnership. COMPACT innovates at technological level and at process level – an important dimension in engaging LPA employees in the improvement of cyber-resilience. At technological level, COMPACT innovates in real time security monitoring, security awareness training, information sharing, cyber-security gamification, risk assessment, and threat intelligence. At process level, COMPACT adapts the Plan-Do-Check-Act cycle for LPAs to do iterative removal of security bottlenecks and achieve compliance to EN ISO/IEC 27001 and BS ISO/IEC 27005. COMPACT delivers an integrated platform with 4 types of tools/services – 1) risk assessment, 2) education, 3) monitoring, and 4) knowledge sharing – characterized by a high degree of usability by non IT experts and automation. It protects LPAs' investments by interoperating with market solutions from major vendors. It eases deployment and adoption by being both cloud-enabled (i.e. it addresses cloud specific issues) and cloud-ready (i.e. it can be deployed – if users wish– on the cloud). COMPACT validates its results through 5 challenging use cases provided by 5 users in 4 European countries. 90% of COMPACT solutions will achieve TRL7 and the residual part TRL6. |
| Website | https://cyberconnector.eu/web/compact |

| COMPACT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering International Belgium SA (BE)<br>Consortium:<br>2. Ait Austrian Institute of Technology GMBH (AT)<br>3. Betrieb fur informationstechnologie bremerhaven bit wirtschaftsbetriek der stadt bremerhaven (DE)<br>4. Cenro Informatico Municipal Udal Informatika Zentroa (ES)<br>5. Comune di Afragola (IT)<br>6. Comune di Bologna (IT)<br>7. Consorzio Interuniversitario Nazionale per L'Informatica (IT)<br>8. Grupo S 21Sec Gestion SA (ES)<br>9. Inov Inesc Inovacao – Instituto de Novas Tecnologias (PT)<br>10. Istituto superior delle comunicazioni e delle tecnologie dellínformazione (IT)<br>11. Kaspersky Lab UK LTD (UK)<br>12. Katholieke Universiteit Leuven (BE)<br>13. Municipio Da Amadora (PT)<br>14. S21sec Information Security Labs S.L. (ES)<br>15. Silensec Limited (UK) |

| ConnectProtect | |
|---|---|
| Title | A total cyber protection service to Small Businesses operating critical infrastructure and Residential customers |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / December 2016 - EUR: 50.000,00 GA 728516 |
| Abstract | This project focuses on cyber-security and aims to address any form of internal or external malware and cyber-attacks. Estimates of global financial losses due to Cybercrime are at least €350 billion per year and are expected to reach €1.89 trillion by 2019. Cybercrime has led to the loss of up to 150,000 jobs in Europe, which is about 0.6% of the total unemployed population. In response to Cybercrime, we initiated 'ConnectProtect' in 2012, a total cyber protection service for SMEs and residential customers. We worked with about 20 SMEs in the UK to build this service and up to date, we developed a reporting engine capable of correlating events/logs from multiple security products across multiple organisations and constantly updating each event in real-time to generate the relevant classification of potential threat. The report engine is able to generate a case for our engineers to deal with an incident in real-time and allowing the customer to view their security state via a dashboard. We aim to further establish and understand our target market and conduct a detailed Europe wide cyber-security market study to establish the size and dynamics of the small business market; engage developmental, operational, and marketing partners for successful delivery of this project. We also seek to develop an Intellectual Property (IP) strategy to protect our solution from exploitation by other parties. Through this project we will reduce the cyber security burden in the EU from an average of €280 to between €10 and €70 per employee per month and we will create over 100 jobs through native sales language teams that would be set up in our various target countries. We will potentially save SMEs over 20% (i.e. over €1 billion) of revenue lost to Cybercrime in Europe. |
| Website | https://seconcyber.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Secon Solutions Limited (UK) |

| CS-AWARE | |
|---|---|
| Title | A cybersecurity situational awareness and information sharing solution for local public administrations based on advanced big data analysis |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-02-2016. September 2017 / August 2020 - EUR: 3.728.603,75 GA 740723 |
| Abstract | Cybersecurity is one of today's most challenging security problems for commercial companies, NGOs, governmental institutions as well as individuals. Reaching beyond the technology focused boundaries of classical information technology (IT) security, cybersecurity includes organizational and behavioural aspects of IT systems and also needs to comply to the currently actively developing legal and regulatory framework for cybersecurity. For example, the European Union recently passed the Network and Information Security (NIS) directive that obliges member states to get in line with the EU strategy. While large corporations might have the resources to follow those developments and bring their IT infrastructure and services in line with the requirements, the burden for smaller organizations like local public administration will be substantial and the required resources might not be available. New and innovative solutions that will help local public administration to ease the burden of being in line with cybersecurity requirements are needed. For example, cooperation and coordination is one of the major aspects of the NIS and EU cybersecurity strategy. An enabling technology for cooperation and coordination is cyber situational awareness and information sharing of cyber incidents. In this project we propose a cybersecurity situational awareness solution for local public administrations that, based on an analysis of the context provides automatic incident detection and visualization, and enables information exchange with relevant national and EU level NIS authorities like CERTs. Advanced features like system self-healing based on the situational awareness technologies, and multi-lingual semantics support to account for language barriers in the EU context, are part of the solution. |
| Website | https://cs-aware.eu/ |

| CS-AWARE | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Oulun Yliopisto (FI)<br>Consortium:<br>2. 3Rdplace SRL (IT)<br>3. Ancitel SPA (IT)<br>4. Andriessen Jeffrey Elbertus Bartholomeus (NL)<br>5. Caris Research Ltd (UK)<br>6. Dashsoft Aps (DK)<br>7. Dimos Lariseon (EL)<br>8. Innovative Secure Techonologies Ike (EL)<br>9. Open Technology Services S.A. (EL)<br>10. Peracton Limited (IE)<br>11. Roma Capitale (IT)<br>12. Universitat Passau (DE)<br>13. Universitat Wien (AT) |

| CYBECO | |
|---|---|
| Title | Supporting Cyberinsurance from a Behavioural Choice Perspective |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-04-2016. May 2017 / April 2019 - EUR: 1.983.510,00 GA 740920 |
| Abstract | CYBECO will research, develop, demonstrate, evaluate and exploit a new framework for managing cybersecurity risks, one that is focusing on cyberinsurance, as key risk management treatment. CYBECO integrates multidisciplinary research methods from Behavioural Economics, Statistics, Game and Decision Theory, Security Engineering and Behavioral Psychology in order to develop new concepts and models that are combined within a prototype software architecture (CYBECO Toolbox 2.0). CYBECO recognizes that the cyberinsurance domain is not adequately developed, partly due to the lack of sufficiently large statistical data sample and partly due to the difficulties customers face when deciding on their cyberinsurance investment options. CYBECO will address both these barriers, aiming at delivering advances clearly positioned beyond the State-of-the-Art. We plan to implement a prototype tool that will demonstrate and promote the CYBECO model and concepts. We then foresee to perform behavioural experiments to validate current institutional cybersecurity frameworks and to provide relevant policy insights, particularly in reference to behavioural nudges in cybersecurity. The CYBECO consortium is composed by complementary partners, coming from the addressed research, technological and market domains, that have a proven track record of high quality research capacity. Thus, the carefully structured workplan, embodies a holistic approach towards meeting the CYBECO objectives and delivering market-relevant outcomes of significant exploitation potential. |
| Website | https://www.cybeco.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Trek Consulting Anonymos Etairia Management Consultants (EL)<br>Consortium:<br>2. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (ES)<br>3. Axa Technology Services SAS (FR)<br>4. DevStat, Servicios de Consultoría Estadística, SL (ES)<br>5. Intrasoft International SA (LU)<br>6. Technische Universiteit Delft (NL)<br>7. Management Consultants (EL)<br>8. University of Northumbria at Newcastle (UK) |

| CYBER-TRUST | |
|---|---|
| Title | Advanced Cyber-Threat Intelligence, Detection, and Mitigation Platform for a Trusted Internet of Things |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-07-2017. May 2018 / April 2021 - EUR: 2.996.182,50 GA 786698 |
| Abstract | The CYBER-TRUST project aims to develop an innovative cyber-threat intelligence gathering, detection, and mitigation platform to tackle the grand challenges towards securing the ecosystem of IoT devices. The security problems arising from the flawed design of legacy hardware and embedded devices allows cyber-criminals to easily compromise them and launch large-scale attacks toward critical cyber-infrastructures. The proposed interdisciplinary approach will capture different phases of such emerging attacks, before and after known (even years old) or unknown (zero-day) vulnerabilities have been widely exploited by cyber-criminals to launch the attack. Emphasis is given on building a proactive cyber-threat intelligence gathering and sharing system to prevent the exploitation of zero-day vulnerabilities. This intelligence information will be used to maintain accurate vulnerability profiles of IoT devices, in accordance with data protection, privacy, or other regulations, and optimally alter their attack surface to minimise the damage from cyber-attacks. Novel technologies will be developed, based on distributed ledgers and blockchains, to monitor devices' integrity state and network behaviour that will considerably increase the detection and response capabilities against targeted and interdisciplinary cyber-attacks. In the case of alleged malicious activity, tools for collecting and storing forensic evidence on a tamper-proof blockchain structure will be delivered, taking into account the specific needs of law enforcement agencies. Privacy-preserving network monitoring and advanced virtual reality-based visualisation techniques will be employed for quickly detecting botnets, DDoS attacks and other incidents. Relying on interdisciplinary research, an intelligent autonomous cyber-defence framework will be built for providing intelligent ways of isolating the devices under an attacker's control (or infected) and effectively responding to and mitigating large-scale attacks. |
| Website | https://www.eu-circle.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Kentro Meleton Asfaleias (EL)<br>Consortium:<br>2. Scorechain SA (LU)<br>3. Mathema SRL (IT)<br>4. Vrije Universiteit Brussel (BE)<br>5. CGI Nederland BV (NL)<br>6. Aditess Advanced Integrated Technology Solutions & Services Ltd (CY)<br>7. University of Plymouth (UK)<br>8. MTN Cyprus Limited (CY)<br>9. University of Peloponnese (EL) |

| CYBERWISER.EU | |
|---|---|
| Title | Civil Cyber Range Platform for a novel approach to cybersecurity threats simulation and professional training |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-07-2017. September 2018 / February 2021 - EUR: 4.134.245,00 GA 786668 |
| Abstract | CYBERWISER.EU will be an educational, collaborative, real-time civil cyber range platform where cybersecurity competitions will take place, making it the EU's reference, authoritative, independent cybersecurity platform for professional training. Users can play the role of attackers and/or defenders in different scalable and configurable scenarios, composed of a set of virtual resources representing a company ICT infrastructure. The platform will be completely web-based, to facilitate adoption, collaborative support from end-users and continuous upgrade. CYBERWISER.EU expands and builds on the results and users community of the H2020 IA named WISER [2015-2017], thereby providing a jump-start situation from a consolidated raising awareness and past investment point of view. The 9 domain-skilled partners from 7 European Countries bring relevant assets to the project and are complementary and include 3 full-scale pilots (2 of which in critical infrastructures), viz.: 1. energy distribution; 2. railroad transport; 3. High Education, in the specific context of a University Master course on cybersecurity. An influential Stakeholder Expert Board (SEB) supports the consortium. Main Outputs: An Innovative, fully integrated cyber range platform; economic risk models attack patterns with mitigation measures; specialised training documentation with methodology; 3 Full-scale Pilots; one Open Pilot Stream targeting 500\ individuals from at least 5 different verticals; 750\ trained professionals; Sustainability model & business plan. High visibility through 4 workshops, 2 hackathons, 6 webinars, presence at 50\ specialised events. Profiled database of 2000\ records from 11 stakeholder groups.<br><br>***This project also corresponds to the category 'Training and Networking'.*** |
| Website | https://www.cyberwiser.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Atos Spain SA (ES)<br>Consortium:<br>2. Ferrovie dello Stato Italiane SPA (IT)<br>3. Xlab Razvoj Programske Opreme in Svetovanje DOO (SI)<br>4. EDP - Energias de Portugal SA (PT)<br>5. AON SPA Insurance & Reinsurance Brokers (IT)<br>6. Rhea System SA (BE)<br>7. Sintef AS (NO)<br>8. Universita di Pisa (IT)<br>9. Trust-IT Services Limited (UK) |

| EU-SEC | |
|---|---|
| Title | The European Security Certification Framework |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2019 - EUR: 2.997.812,50 GA 731845 |
| Abstract | In recent years the ICT market has evolved toward a cloud-based approach. This shift together with the rapidly changing legal and regulatory landscape has heavily impacted security assurance, governance and compliance. The information security market players have tried to provide suitable solutions to cope with issues such as i) lack of means to provide higher level of assurance (e.g continuous monitoring and auditing), ii) privacy not adequately taken into account, iii) limited transparency and iv) lack of means to streamline risk management and compliance. In the certification space this has resulted in the creation of several schemas creating an additional problem, i.e. the proliferation of certification scheme. The project EU-SEC will improve the effectiveness and efficiency of existing approaches for assurance and compliance. The EU-SEC aims to create a framework under which existing, certification and assurance approaches can co-exist. The three core ideas behind the EU-SEC project are that an effective and efficient approach to trust, assurance and compliance has to: (1) balance the need of nations and business sectors to develop their specific certification schemas with the need of CSPs to reduce compliance costs (2) avoid that humans (auditors) do activities that can be performed by machines (e.g. collecting data) (3) make sure that accurate and reliable evidences/information are provided to relevant people, in a timely fashion, leveraging as much as possible automatic means. The EU-SEC framework will equip stakeholders in the ICT security ecosystem with a validated governance structure, a reference architecture, and the corresponding set of tools to improve the efficiency and effectiveness of their current approach to security governance, risks management, assurance and compliance. The EU-SEC aims to enhancing trustworthiness and transparency in the ICT supply chain through business cases developed and piloted by industrial partners. |
| Website | http://www.sec-cert.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>Consortium:<br>2. Barclays Bank Plc (UK)<br>3. Cloud Security Allicance (Europe) lbg (UK)<br>4. Fabasoft Cloud GMBH (AT)<br>5. Ministerstvo Financii Slovenskej Republiky (SK)<br>6. Ministrstvo za Javno Upravo (SL)<br>7. Nixu Oy (FI)<br>8. Pricewaterhousecoopers Aktiengesellschaft Wirtschaftsprufungsgesellschaft (DE)<br>9. Sixsq Sarl (CH) |

| FACCESS | |
|---|---|
| Title | Enabling the large-scale deployment of Facial Recognition in banking security |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>December 2016 / November 2018 - EUR: 1.692.600,00 GA 733711 |
| Abstract | FacePhi is a company founded in 2006 specialized in the development and commercialization of advanced Face Recognition Software solutions. There is a strong demand in the banking industry for secure biometric applications. In fact, in May 2014 the European Central Bank (ECB) published a list of recommendations for increased banking security and biometrics was included as one of the most secure authentication methods. Concerns about banking security have always existed, but it has been after the breakthrough of online and mobile banking when bank fraud has become major issue to address with urgency. Currently, banking authentication is typically done by using 4-6 digits PIN codes. This form of authentication provides an extremely low security, especially in online banking where cybercriminals can hack this PIN code in a matter of seconds. As a result, the total value of fraudulent transactions is rapidly increasing year by year, being now estimated at €1.44 billion solely in Europe. In this scenario, biometrics holds great promise to become a reference banking authentication method in a near future. However, despite the clear opportunity there are still some barriers preventing the banking biometrics breakthrough, at least on a large scale. FacePhi has developed a face recognition technology, specifically designed to overcome the current barriers preventing the large scale deployment of banking biometrics. Now, in the FACCESS Phase 2 project we seek demonstrating our facial recognition technology can actually unleash the large scale deployment of banking biometrics by the implementation of our product in the mobile/online platforms of 6 international banking institutions. |
| Website | https://www.facephi.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Facephi Biometria SA (ES) |

| FORTIKA | |
|---|---|
| Title | FORTIKA - Cyber Security Accelerator for trusted SMEs IT Ecosystems |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-02-2016. June 2017 / May 2020 - EUR: 3.997.025,00 GA 740690 |
| Abstract | FORTIKA aims to (1) minimise the exposure of small and medium sized businesses to cyber security risks and threats, and (2) help them successfully respond to cyber security incidents, while relieving them from all unnecessary and costly efforts of identifying, acquiring and using the appropriate cyber security solutions. To fulfil its vision the project adopts a security by design hybrid approach that adequately integrates hardware and software with business needs and behavioural patterns at individual and organisational level to: introduce a hardware-enabled middleware security layer as add-on to existing network gateways; orientate small business users to trusted cyber security services (through FORTIKA's marketplace) packaged to tailored solutions for each enterprise and further extended to accommodate security intelligence and to encourage security-friendly behavioural and organisational changes. Ultimately, FORTIKA proposes a resilient overall cyber security solution that can be easily tailored and adjusted to the versatile and dynamically changing needs of small businesses. To this end, the project ambitiously aims to make systematic and extensive use of the existing service and product portfolio of security solution providers across Europe. Finally the introduction of a software-defined smart ecosystem in "FORTIKA Marketplace", will provide the feature of a light mode solution, which will offer virtualized security services (with minimum downloading requirements). From their perspective, users (i.e. SMEs) may utilize a variety of services and share profiling information with the service providers in return for tailored security services aligned with their actual needs. The FORTIKA marketplace will also function as a single point of access for the profiling information for each SME. FORTIKA Cyber-security framework will be evaluated through five major types of SMEs and will be supported from 2 local SME/ICT clusters and 1 EU alliance. |
| Website | http://fortika-project.eu/fortika/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>Consortium:<br>2. Alke SRL (IT)<br>3. Eneo Technologia Sociedad de Responsabilidad Limitada (ES)<br>4. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>5. Future Intelligenge Ltd (UK)<br>6. Hop Ubiquitous SL (ES)<br>7. Motivian EOOD (BG)<br>8. Nemetschek OOD (BG)<br>9. Nextel SA (ES)<br>10. Obrela Security Industries Limited (UK)<br>11. Tech Inspire Ltd (UK)<br>12. Technological Educational Institute of Crete (EL)<br>13. University of Macedonia (EL)<br>14. Vrije universiteit Brussel (BE)<br>15. Wattics Limited (IE)<br>16. Xlab Razvoj Programske Ppreme in Svetovanje Doo (SL) |

| FutureTPM | |
|---|---|
| Title | Future Proofing the Connected World: A Quantum-Resistant Trusted Platform Module |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2017. Topic code: DS-06-2017. January 2018 / December 2020 - EUR: 4.868.890,00 GA 779391 |
| Abstract | The goal of FutureTPM is to design a Quantum-Resistant (QR) Trusted Platform Module (TPM) by designing and developing QR algorithms suitable for inclusion in a TPM. The algorithm design will be accompanied with implementation and performance evaluation, as well as formal security analysis in the full range of TPM environments: i.e. hardware, software and virtualization environments. Use cases in online banking, activity tracking and device management will provide environments and applications to validate the FutureTPM framework. Security, privacy and trust in a computing system are usually achieved using tamper-resistant devices to provide core cryptographic and security functions. The TPM is one such device and provides the system with a root-of-trust and a cryptographic engine. However, to sustain this enhanced system security it is crucial that the crypto functions in the TPM are not merely secure for today but will also remain secure in the long-term against quantum attacks. FutureTPM will address this challenge by providing robust and provably-secure QR algorithms for a new generation of TPMs. Research on quantum computers has drawn enormous attention from governments and industry; if, as predicted, a large-scale quantum computer becomes a reality within the next 15 years, existing public-key algorithms will be open to attack. Any significant change to a TPM takes time and requires theoretical and practical research before adoption. Therefore, to ensure a smooth transition to QR cryptography we should start now. A key strategic objective of FutureTPM is to contribute to standardization efforts at EU level within TCG, ISO/IEC and ETSI. The consortium consists of high calibre industrial and academic partners from across Europe, combining QR crypto researchers with TPM developers. Because the TPM shares many functions in common with other widely-used devices, such as HSMs and TEEs, the FutureTPM solution is expected to benefit them as well. |
| Website | https://futuretpm.eu/ |

| FutureTPM | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Technikon Forschungs- und Planungsgesellschaft MBH (AT)<br>Partners:<br>2. Infineon Technologies Austria AG (AT);<br>3. IBM Research GMBH (CH);<br>4. Huawei Technologies Duesseldorf GMBH (DE);<br>5. The University of Birmingham (UK);<br>6. Infineon Technologies AG (DE);<br>7. Viva Payment Services SA (EL);<br>8. Universite du Luxembourg (LU);<br>9. Ubitech Limited (CY);<br>10. University Of Piraeus Research Center (EL);<br>11. 1Suite5 Data Intelligence Solutions Limited (iE);<br>12. Inesc ID - Instituto de Engenhariade Sistemas e Computadores, Investigacao e Desenvolvimento em Lisboa (PT);<br>13. University of Surrey (UK)<br>14. Royal Holloway and Bedford New College (UK) |

| GHOST | |
|---|---|
| Title | Safe-Guarding Home IoT Environments with Personalised Real-time Risk Control |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-02-2016. May 2017 / April 2020 - EUR: 3.603.831,75 GA 740923 |
| Abstract | To effectively respond to the multitude & complexity of cybersecurity challenges in smart-homes GHOST deploys a pioneering software-enabled 'usable security' solution. The project brings professional level security to the European citizens and to this end it: (a) increases the automation level & effectiveness of existing security services; (b) opens up the cybersecurity 'blackbox' to consumers, creates understanding and builds trust through effortless decision support & advanced 'usable transparency'; (c) enhances the system's self-defence by safeguarding critical security-related data using blockchain technology. GHOST software will be embedded in an adequately adapted smart-home network gateway though it will be designed to be vendor-independent. A dedicated middleware layer ensures interoperability with multiple gateways & IoT devices. GHOST considers the relationship between security and usability to be an integration challenge (positive sum game) and definitely not a trade-off (zero-sum game). In this context, the project envisions to lead a paradigm shift in consumer cybersecurity by successfully coupling usable security with transparency and behavioural engineering. The envisaged user experience will systematically trigger security-friendly behaviour aiming at establishing appropriate 'habitual behaviours'. The solution will perform network analysis & deep packet inspection for suspicious pattern recognition, will apply machine learning for malicious behaviour detection, will carry out context-aware real-time risk assessment, and widely apply analytics & visualization for effortless user comprehension & decision support. In short, GHOST will (i) increase cybersecurity resilience; (ii) boost usability & automation; and (iii) enhance the competitiveness of European ICT security industry. GHOST will be demonstrated in more than 140 real smart-homes in Spain, Norway & Romania via the Red Cross network and beta testers from the customer basis of Televes & Vitheia. |
| Website | https://www.ghost-iot.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Televes SA (ES)<br>Consortium:<br>2. Cruz Roja Espanola (ES)<br>3. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>4. Exus Software Ltd (UK)<br>5. Fundacion Technologias Sociales (ES)<br>6. Imperial College of Science Technology and Medicine (UK)<br>7. Norges Teknisk-Naturvitenskapelige Universitet NTNU (NO)<br>8. Obrela Security Industries Ypireseies Asfaleias Pliroforion Anonynmos Etaiera (EL)<br>9. Technische Universitat Darmstadt (DE)<br>10. Universite de Geneve (CH)<br>11. Vitheia Norge (AS) (NO) |

| HERMENEUT | |
|---|---|
| Title | Enterprises intangible Risks Management via Economic models based on simulatioN of modErn cyber-aTtacks |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-04-2016. May 2017 / April 2019 - EUR: 2.007.692,50 GA 740322 |
| Abstract | IT security and risk management often ignore or underestimate the human factor (psychological, behavioural, societal, organisational and economic aspects) in the identification of cyber-risks, their quantitative economic impact and the costs of countermeasures. Cyber-attacks can harm intangible assets like reputation, IPR, expertise, and know-how. And there is severe imbalance between the efficiency of attacks and inadequate defences, due in part to the lack of quantitative information for decision makers to prioritise security investments. To foster a culture of risk management by an individual organisation or a complete sector, HERMENEUT answers: What is the real fallout of a data compromise and the long-run consequences on associated assets? What are the losses for intangible assets? Do other type of attacks (beyond data breach) severely impact intangible and tangible assets? HERMENEUT assesses vulnerabilities of organisations and corresponding tangible and intangible assets at risk, taking into account the business plans of the attacker, the commoditisation level of the target organisations, the exposure of the target and including human factors as well as estimating the likelihood that a potential cyber-attack exploits identified vulnerabilities. HERMENEUT's cyber-security cost-benefit approach combines integrated assessment of vulnerabilities and their likelihoods with an innovative macro- and micro-economic model for intangible costs, delivering a quantitative estimation of the risks for an organisation or a business sector and investment guidelines for mitigation measures. 11 partners from 6 countries deliver an innovative methodology and advanced macro- and micro-economic models and make it available to the European research community. HERMENEUT implements its innovations in a decision support tool, tested with 2 users in healthcare and an IPR-intensive industry. |
| Website | https://www.hermeneut.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering International Belgium Sa (BE)<br>Consortium:<br>2. Brandenburgisches institute fur Gesellschaft und Sicherheit GMBH (DE)<br>3. Cefriel – Societa Consortile a Responsabilita Limitata (IT)<br>4. Deep Blue Srl (IT)<br>5. Elta Systems Ltd (IL)<br>6. Engineering – Ingegneria Informatica Spa (It)<br>7. European Organisation for Security SCRL (BE)<br>8. Noemalife Spa (IT)<br>9. Pagnanelli Risk Solutions Limited (UK)<br>10. Proprs Ltd. (UK)<br>11. The Connected Digital Economy Catapult Limited (UK)<br>12. Universite Paris-Sud (FR) |

| IDAaaS | |
|---|---|
| Title | Trusted online service for identity assurance |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / March 2017 - EUR: 50.000,00 GA 736454 |
| Abstract | The objective of the overall innovation project is to commercialize a trusted online service for identity assurance (IDAaaS - Identity Assurance as a Service). This service will be implemented according to European standards for electronic identity, including eIDAS and STORK. The new service will be based on several years of development of secure electronic identity and digital signatures in the Nordic market. The expected outcome will be a simplified and cost effective online service for identity assurance that can be used in regulated industries such as banks and financial institutions (hereafter referred to as banks). The purpose of the service will be to assure that a user is who she claims to be when signing up to a new online service. The lack of good solutions for trusted digital on-boarding of customers makes it difficult for new online-only players to enter the market, which could otherwise increase competition and improve the bank services in general. Large costs, trouble and hassle for both the bank client and the bank hamper innovation in the finance sector. Electronic identity is a prerequisite for digital on-boarding. The electronic identity in Europe is fragmented and the missing implementation of European standards in this field represents a major barrier to secure cross-country transactions. The problem of establishing the true identity of the onboarding customer must be solved using multiple tools and instruments. This tool box of multiple tools is the innovation of Signicat's solution. |
| Website | https://www.signicat.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Signicat AS (NO) |

| INSTET | |
|---|---|
| Title | Integral Security Trust Element for the Internet of Things |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / March 2017 - EUR: 50.000,00 GA 744484 |
| Abstract | Intrinsic-ID is a Dutch SME, spin-off from Philips Research, and a world leader in security solutions for chips, with 25+ patents. Intrinsic-ID has created a technology to uniquely identify and authenticate chips based on the inherent characteristics of their memory component (SRAM). This technology, a digital equivalent of a fingerprint, is called Physical Unclonable Function (PUF). Intrinsic-ID is working on INSTET – a fully-fledged security solution on top of PUF that will protect low-end chips that are omnipresent in IoT devices everywhere by making them physically and cryptographically secure and extremely resilient to advanced attacks. INSTET will work as a Root of Trust, i.e. a set of core software components that are always trusted by the chip, and provide a trust foundation for the IoT device and distributed IoT systems. INSTET addresses the core problem of semiconductor vendors and OEMs: lack of security. INSTET can be deployed on almost any chip, including the ones that are already in the field, without costly redesigns or additional hardware, generating savings of up to 35% per chip. In this 6-month feasibility study, Intrinsic-ID will investigate the product/market fit and business model fit in three most promising vertical segments of the semiconductor industry (wearables, medical electronics and automotive), develop a go-to-market strategy and calculate costs of scaling up. |
| Website | https://www.intrinsic-id.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Intrinsic ID B.V. (NL) |

| iSave | |
|---|---|
| Title | Ultrafast, scalable disaster-proof client-side backup solution |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2017 / March 2017 - EUR: 50.000,00 GA 762585 |
| Abstract | Everyday business of any company goes hand in hand with producing large amount of valuable data stored within the IT infrastructure of the company. Customer data, website content, mailing data, ERP files etc. are only a few examples of data which are crucial to be achievable, up-to-date and safe at any time. Their loss or damage causes significant financial losses to any company. Fortunately the use of backup and file recovery systems is obvious for more and more responsibly thinking companies. Cutting-edge technologies are available for them to secure their data. However current options do not provide a holistic solution. We, at iSave Ltd. created an innovative solution, which gives the security of a local backup, but with an ultrafast recovery speed and scalable system structure. Since we offer an efficient answer to their critical needs, prestigious companies like Deloitte, HBO and Kürt Inc. tested and appreciated our product, while expressing their willingness to buy. After a series of tests our partners have expressed that a key advantage for them is due to the client side backup technology. iSave is able to restore data for the user, not only by restoring the file structure and operation system, but also the user settings and preferences. Alternative solutions to restoring a personal computer would take one whole day (in average even more) and need personal involvement of the IT expert team. The same tasks for iSave data backup took only 15-20 minutes without the contribution of the IT team. The prototype and concept were already tested at prestigious clients but the iSave technology needs to be demonstrated in order to bring it to the world market. By carrying out the proposed Phase 1 project we aim to investigate willingness to buy and pay, designing the know-how protection, commercialization and production. |
| Website | http://www.isave.hu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Isave Informatika Korlatolt Felelossegu Tarsasag (HU) |

| LipVerify | |
|---|---|
| Title | Feasibility study on the development of LipVerify - a new viseme based user authentication service. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / December 2016 - EUR: 50.000,00 GA 728649 |
| Abstract | The LipVerify project will explore the feasibility of commercialising a new service which provides secure access to sensitive data, applications and physical areas via a unique biometric authentication technique - based on analysis of the users lip movements. Significant R&D carried out over the last ten years within the Centre for Secure IT (CSIT) in Belfast has resulted in the development of a number of unique algorithms in the area of VISEME ANALYSIS. Implementation of the Viseme Analysis algorithms has demonstrated, through testing with a number of large and independent data sets, that leveraging the technology for user authentication can be highly accurate and secure. When accessing a sensitive application on e.g. a mobile device, the user is asked to say or mouth a random challenge phrase which is displayed on screen. The system provides secure user authentication AND verifies "liveness" to ensure that the system is not being "spoofed" - a common weakness with most biometric techniques. In 2015 Liopa Limited was formed as the commercial vehicle to onward develop and productise this technology. This feasibility study aims to do a detailed study of the market for biometric authentication systems, determine market requirements and potential market verticals, demonstrate an early version of the technology to a prospective customers in their environment, and product a high level business plan for the development and market introduction of a commercial product. |
| Website | http://www.liopa.co.uk/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Liopa Ltd |

| NK-52-2016 | |
|---|---|
| Title | Next generation authentication for the digital age |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>April 2017 / September 2017 - EUR: 50.000,00 GA 745088 |
| Abstract | The cost of cybercrime is rocketing—to $500 billion in 2015 according to The Economist. This is why European Commission introduced the Revised Directive on Payment Services (PSD2) to implement strong two-factor authentication for payments before 2018. There are already several MFA solutions on the market, however they are suboptimal - expensive to implement, slow to use and do not meet requirements for PSD2, eIDAS and modern EC-funded approaches to crypto libraries. Notakey allows banks to implement a strong and scalable multi-factor authentication. The technology is made in a way that it can easily be implemented also in other industries, where there is need for protecting sensitive data. |
| Website | http://www.notakey.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. SIA Notakey (LV) |

| PerfectDashboard 2.0 | |
|---|---|
| Title | First single platform for efficient and security aware management of CMS based websites |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / December 2016 - EUR: 50.000,00 GA 744397 |
| Abstract | This proposal addresses the very up-to-date challenge in the domain of cyber security which affects today thousands of websites administrators worldwide – ability to efficiently introduce updates to popular website engines and extensions to popular CMS platforms such as WordPress and Joomla!. In our proposal we show how our solution can increase safety in the Internet by helping web page managers be far more effective in their daily routines. These are primarily focused on updating web pages commonly developed with popular CMS platforms in order to remove identified vulnerabilities and thus prevent or mitigate hackers' activities. With our application already proven by individual web admins an administrator may not only introduce necessary changes in the code mitigating the risk of a security breach much faster than ever before, but he or she can ensure the final effect does not impact on the web page layout and its contents. These are the features highly needed by corporate users what was verified through discussions with corporate users in media, technology and entertainment sectors. With our solution they can ensure their web services are provided in an undisturbed and secure way avoiding potential loss of reputation due to web page break and potential change of its contents. In our proposal we present the current stage of Perfect Dashboard 2.0 development, demonstrate results of the conducted trails and cornerstones of our business plan which we would like to enhance during the Phase 1 project targeting corporate users. Finally, we anticipate our plans for further evolution of our solution and its subsequent commercialization along with presentation of our potential. Perfect Dashboard 2.0 is strategically important for our company and Phase 1 project may accelerate this process beyond our current capabilities helping us resolve vital market related questions and boost our business in short time. |
| Website | http://www.perfect-web.pl/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Perfect Spolka z Ograniczona Ocpowiedzialnoscia (PL) |

| SCR | |
|---|---|
| Title | Disruptive Cybersecurity SaaS for SMEs and freelance developers |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / December 2016 - EUR: 50.000,00 GA 735630 |
| Abstract | After obtaining the Seal of Excellence from the EU (Attached), this is an improved version of the proposal. Given the accelerating growth and importance of cybersecurity across many sectors of the economy and society, we have detected and aim to solve the lack of effective security provision in software engineering. Our system automates the vulnerability scanning of software assets and reduces the effort required for development teams to adopt security best practices. Further, our solution reduces costs by 80% compared to hiring consultants for like-for-like tasks. By enabling developers to scan their code before going to production, we can save firms between 3 to 30 times the cost of development, help firms build trust with end-users, empower and educate developers. Confirming market need, the product has been tested and is currently being adopted by 25 companies. The objective of our proposal is to enhance research and development into specific use cases. In particular, we shall focus our efforts on the needs of developers active in the Internet of Things, where security is in its infancy. While our system currently automatically scans ports, web servers, applications and containers, the goal of continued R&D is to expand this disruptive platform to integrate with IoT technologies and platforms to offer scanning encompassing both broader and deeper use cases than the competition, who tend to focus on providing tools to cover compliance standards. Our market is worldwide and shall be targeted through a network of partners and direct online sales via a subscription model. With a balanced, experienced team and carefully architected system, as well as impressive early market traction, we are optimistic about the long term adoption of Secure Secure's services by developers who are growing ever more conscious about the importance of security. |
| Website | https://www.se.cr/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Secure Secure Ltd (UK) |

| Signa2.0 | |
|---|---|
| Title | Signaturit |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2018 / June 2019 - EUR: 1.217.431,25 GA 778550 |
| Abstract | We want to change the way we sign contracts and other documents, and in doing so, the whole process that accompanies them. Currently, when documents need signatures, we use the post/ courier to send them and then wait, sometimes days, to get the signed copies back. This is a manual process, slow, costly, prone to human error, with a negative impact on the environment and on the bottom line. Research shows that companies are not ready to switch to e-signature solutions for 3 reasons: (a) lack of security , (b) usability –and (c) add minimal value. Our e-signature solution is: (a) Very secure – we use a unique, proprietary, multi-authentication process, including biometric data, encrypting and sending material using a secure channel and logging every action; (b) Easy to use from any device – the user can sign with a finger, mouse or stylus and send the signed material via regular email, with no special hardware or software installation; and (c) Provides significant value added through Smart contracts that take out the inefficient administrative processes around contract implementation. Our solution will finally allow companies to stop using a manual process, reducing paper use, improving companies' competitiveness and boosting the economy. Signaturit is the first e-signature service that guarantees 100% legal validity in business digital transactions, minimises the risk of cybercrimes and drastically improves productivity. During this project we aim to add unique advanced biometric and blockchain encryption tools that ensure an unreachable level of cyber security in e-mail transactions, while Smart contracts will ensure that productivity is optimised. We are Signaturit Solutions S.L., an SME that recently obtained the SME Instr. Phase 1 funding. After completion of the SME Inst. Phase 2 project, we aim to aggressively market our innovation to 5 European countries, with projections to gain an annual net profit of €17M by 2024 while directly creating 30 new jobs. |
| Website | http://www.signaturit.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Signaturit Solutions SL (ES) |

| SMESEC | |
|---|---|
| Title | Protecting Small and Medium-sized Enterprises digital technology through an innovative cyber-SECurity framework |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-02-2016. June 2017 / May 2020 - EUR: 3.998.922,00 GA 740787 |
| Abstract | Small and Medium size Enterprises (SMEs) are an important driver for innovation and growth in the EU. SMEs also stand to gain the most from innovative technology, because it is complicated and costly for them to set-up and run ICT in the traditional way. Taking into account cyber-security, SMEs do not always understand all the risks and business consequences for the development of technologies without the adequate level of protection against cybercrime. The European Union Agency for Network and Information Security (ENISA) declares on the "Information security and privacy Standards for SMEs" study of 2016 that, despite rising concerns on information security risks, the level of SMEs information security and privacy Standard adoption is relatively low. SMESEC consortium is proposing to develop a cost-effective framework composed of specific cyber-security tool-kit to support SMEs in managing network information security risks and threats, as well as in identifying opportunities for implementing secure innovative technology in the digital market; for this consortium, it is important that SMEs do not only look at cyber-security as an obstacle, but also they understand the business opportunity beyond it. In this scenario, an international group of experts proposes SMESEC as a response to the cyber-security challenges for business companies with a limited background on cyber-security and a restricted budget. The SMESEC project will be developed in 36 months by a competitive consortium of 12 partners from 7 countries, which corresponds to a well-balanced structure, involving big companies, SMEs, research centres and universities. Despite the great diversity of entities within the proposal, SMESEC is an industry-oriented project, since the private companies will cover more than 73% of the total project costs, and will be led by a big company, ATOS, with many years of experience on project management and cyber-security. |
| Website | https://www.smesec.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Atos Spain Sa (ES)<br>Consortium:<br>2. Bitdefender Srl (RO)<br>3. Bytemobile European Development Center Mepe (EL)<br>4. Easy Global Market Sas (FR)<br>5. Fachhochschule Nordwestschweiz (CH)<br>6. Foundation For Research And Technology Hellas (EL)<br>7. Gridpocket Sas (FR)<br>8. Ibm Israel - Science And Technology Ltd (IL)<br>9. Panepistimio Patron (EL)<br>10. Scytl Secure Electronic Voting Sa (ES)<br>11. Universiteit Utrecht (NL)<br>12. Worldsensing S.L.N.E (ES) |

| STORM | |
|---|---|
| Title | The first cybersecurity management system providing evidence based metrics for cyber risk at the business asset level in real-time |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / October 2017 - EUR: 50.000,00 GA 773932 |
| Abstract | InnoSec's main product, STORM, is the only Cyber Risk Management application that provides evidence based metrics defining cyber risk at the business asset level in real-time, using a flexible risk modeling method, while improving the overall user experience. STORM allows companies to answer strategic questions such as "How much cyber risk do we have?", "How well are our assets protected against a cyber-attack?", "What work is in progress related to remediation of cyber risk?", "How much cyber insurance do I need?" and "What should my customer pay for cyber insurance?" STORM is designed to solve the pains of seeing the cyber risk picture across all aspects of the enterprise including the CEO/board, CISO, Compliance Manager, Risk Manager and Cyber Security Remediators. STORM, is a complete risk management framework that breaks the bounds of the traditional siloed risk management solutions and connects the dots between strategic and operational cyber. STORM allows the organization to collaborate on cyber risk management activities through information sharing, advanced analysis tools, flexible workflows, operational management, smart dashboards, a dynamic reporting engine and interaction with the existing user workspace. STORM is a comprehensive solution for cyber risk management and decision support, and provides business intelligence that enables organizations to plan, measure, manage and monitor their cyber-security posture. |
| Website | http://www.innosec.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Innosec Ltd (IL) |

| TFence | |
|---|---|
| Title | A patent pending solution/microchip for the IoT cybersecurity market requirements: no access toonline software updates, very small size, inexpensive hardware, low energy consumption. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>August 2017 / November 2017 - EUR: 50.000,00 GA 781623 |
| Abstract | Terafence is developing a state-of-the-art Firmware/microchip, "TFence™", patents pending, for cyber-secured connectivity, and mechanical waves to control medical implants. This advanced Firmware/chip ensures total protection from tampering by enabling data outflow while completely blocking data entry and with it malicious attacks. • The "TFence™" is designed to meet the IoT cyber security market requirements. Data outflow while completely blocking data entry and malicious attacks. • One-way communication by means of small & cheap hardware Converting multi protocols from the secured network to multi protocols for the unsecured network. • Supporting numerous sensors at the secured network and analyzing initial real time profiling/statistics. • IoT/sensors profiling to protect from botnet activities. |
| Website | http://www.terafence.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Terafence LTD (IL) |

| VESSEDIA | |
|---|---|
| Title | VERIFICATION ENGINEERING OF SAFETY AND SECURITY CRITICAL DYNAMIC INDUSTRIAL APPLICATIONS |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2019 - EUR: 4.192.058,75 GA 731453 |
| Abstract | The VESSEDIA project will bring safety and security to many new software applications and devices. In the fast evolving world we live in, the Internet has brought many benefits to individuals, organisations and industries. With the capabilities offered now (such as IPv6) to connect billions of devices and therefore humans together, the Internet brings new threats to the software developers and VESSEDIA will allow connected applications to be safe and secure. VESSEDIA proposes to enhance and scale up modern software analysis tools, namely the mostly open-source Frama-C Analysis platform, to allow developers to benefit rapidly from them when developing connected applications. At the forefront of connected applications is the IoT, whose growth is exponential and whose security risks are real (for instance in hacked smart phones). VESSEDIA will take this domain as a target for demonstrating the benefits of using our tools on connected applications. VESSEDIA will tackle this challenge by 1) developing a methodology that allows to adopt and use source code analysis tools efficiently and produce similar benefits than already achieved for highly-critical applications (i.e. an exhaustive analysis and extraction of faults), 2) enhancing the Frama-C toolbox to enable efficient and fast implementation, 3) demonstrating the new toolbox capabilities on typical IoT (Internet of Things) applications including an IoT Operating System (Contiki), 4) developing a standardisation plan for generalising the use of the toolbox, 5) contributing to the Common Criteria certification process, and 6) defining a label "Verified in Europe" for validating software products with European technologies such as Frama-C. |
| Website | https://vessedia.eu/ |

| VESSEDIA | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Technikon Forschungs- Und Planungsgesellschaft Mbh (AT)<br>Consortium:<br>2. Amossys Sas (FR)<br>3. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>4. Dassault Aviation (FR)<br>5. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>6. Fundacion Deusto (ES)<br>7. Institut National de Recherche Eninformatique et Automatique (FR)<br>8. Katholieke Universiteit Leuven (BE)<br>9. Search-Lab Biztonsagi Ertekelo Elemzo es Kutato Laboratorium Korlatolt Felelossegu Tarsasag (HU)<br>10. Turun Ammattikorkeakoulu Oy (FI) |

| AF-Cyber | |
|---|---|
| Title | Logic-based Attribution and Forensics in Cyber Security |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. February 2018 / January 2020 - EUR: 183.454,80 GA 746667 |
| Abstract | Recent studies states that 'Devices will continue to grow in volume and variety, and the forecast for connected devices by 2020 is 200 billion and climbing'. The increase of connectivity brings a drastic impact on the increase of cyber attacks. Protecting measurements are not enough, while finding who did the attack is a crucial for preventing the escalation of cyber attacks. AF-Cyber will relieve part of the cyberattacks problem, by supporting forensics investigation and attribution with logical-based frameworks representation, reasoning and supporting tools. AF-Cyber main core will be a logic-based framework for performing attribution of cyber attacks, based on forensics evidence and an intelligent methodology for dynamic evidence collection. It will analyse and valuate analytically Cyber Forensics applications. Different forensics reasoning rules and techniques will be extracted and a categorization of forensics evidence will be constructed. A new logical formalism will be introduced for representing the analytical and non-monotonic reasoning needed for solving the attribution problem. A tool, based on the logical framework for the attribution reasoning, will be developed. The tool will be tested with different real examples. The tool given the different evidence gives as result a quantitative/probabilistic answer of where the attack came from. A second version of the tool will be developed which will guide the forensics analyst during his work on collecting the evidence, and reasoning about them. A dynamic forensics evidence collection will be designed based on the different reasoning rules, and the involvement of data mining/machine learning algorithms. Cyber security concerns are part of ICT security and Digital Security call. AF-Cyber is in-line with the latest EU Commissions measures for addressing cyber threats, the Connected Digital Single Market: Digital Security call and ENISA's calls for threat landscapes & cyber security exercises. |
| This project also corresponds to the category 'Forensics'. | |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Imperial College Of Science Technology And Medicine (UK) |

| BITCRUMBS | |
|---|---|
| Title | Towards a Reliable and Automated Analysis of Compromised Systems |
| Contract details | European Research Council - Consolidator Grant. Call: ERC-2017-COG. Topic code: ERC-2017-COG. April 2018 / March 2023 - EUR: 1.991.504,00 GA 771844 |
| Abstract | 'The vast majority of research in computer security is dedicated to the design of detection, protection, and prevention solutions. While these techniques play a critical role to increase the security and privacy of our digital infrastructure, it is enough to look at the news to understand that it is not a matter of 'if' a computer system will be compromised, but only a matter of 'when'. It is a well known fact that there is no 100% secure system, and that there is no practical way to prevent attackers with enough resources from breaking into sensitive targets. Therefore, it is extremely important to develop automated techniques to timely and precisely analyze computer security incidents and compromised systems. Unfortunately, the area of incident response received very little research attention, and it is still largely considered an art more than a science because of its lack of a proper theoretical and scientific background. The objective of BITCRUMBS is to rethink the Incident Response (IR) field from its foundations by proposing a more scientific and comprehensive approach to the analysis of compromised systems. BITCRUMBS will achieve this goal in three steps: (1) by introducing a new systematic approach to precisely measure the effectiveness and accuracy of IR techniques and their resilience to evasion and forgery; (2) by designing and implementing new automated techniques to cope with advanced threats and the analysis of IoT devices; and (3) by proposing a novel forensics-by-design development methodology and a set of guidelines for the design of future systems and software. To provide the right context for these new techniques and show the impact of the project in different fields and scenarios, BITCRUMBS plans to address its objectives using real case studies borrowed from two different domains: traditional computer software, and embedded systems. ' |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. EURECOM (FR) |

| BOXMATE | |
|---|---|
| Title | Mining Sandboxes for Automatic App Protection |
| Contract details | European Research Council - Proof of Concept Grant. Call: ERC-2016-PoC. Topic code: ERC-PoC-2016. September 2017 / February 2019 - EUR: 150.000,00 GA 737566 |
| Abstract | Today's industry is more vulnerable to cyberattacks than ever. The biggest threat comes from advanced persistent threats that targets the sensitive data of a specific company. Such a threat may come along as an innocuous app that starts its malicious behavior only when the mobile logs into the corporate network. At the same time, such threats can be made undetectable through testing or code analysis. The ERC SPECMATE project has developed a technology named BOXMATE that protects against unexpected changes of app behavior and thus drastically reduces the attack surface of mobile applications. The key idea is to mine app behavior by executing generated tests, systematically exploring the program's accesses to sensitive data. During production, the app then is placed in a sandbox, which prohibits accesses not seen during testing. This combination of test generation and sandboxing effectively protects against advanced persistent threats. To access sensitive data during production, the app already must do so during testing—where tracing makes it easy to discover and assess. BOXMATE neither does not need to collect user data: All app behavior is assessed during testing already. Finally, BOXMATE requires no knowledge about source or binary code, and thus easily handles arbitrarily obfuscated or obscure third-party apps. BOXMATE is currently being patented worldwide. We want to turn the BOXMATE approach into a full mobile security solution for corporate and end users. This proposal aims at producing a full-fledged prototype that can be demonstrated to potential customers, most notably app vendors and mobile infrastructure providers; as well as developing an adequate marketing strategy exploring and responding to the needs of the market. This proposal is fueled by the principal investigator, Andreas Zeller, one of the world's leading experts in software test generation and specification mining. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat des Saarlandes (DE) |

| YAKSHA | |
|---|---|
| Title | Cybersecurity Awareness and Knowledge Systemic High-level Application |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Information and Communication Technologies. Call: H2020-ICT-2017-1. Topic code: ICT-39-2016-2017. January 2018 / June 2020 - EUR: 1.998.813,75 GA 780498 |
| Abstract | YAKSHA aims at reinforcing EU-ASEAN cooperation & building partnerships in the cybersecurity domain by developing a solution tailored to specific user and national needs, leveraging EU Know-How and local expertise. YAKSHA will develop and introduce the innovative concept of honeypots-as-a-service which will greatly enhance the process of gathering threat intelligence. It will enhance cybersecurity readiness levels for end users, help prevent cyber-attacks, mitigate cyber risks and better govern the whole cybersecurity process. YAKSHA is ideally positioned to secure global manufacturing supply chains, given its planned focus on IoT Security. YAKSHA will develop innovative methods for malware detection, collection and analysis, as well as design a specialised ontology to be used for long-term storage and analysis of the information, and deploy standard information formats and interfaces to facilitate interoperability. The YAKSHA software solution will be validated in real-world pilot projects in both regions, focusing on Vietnam & Greece, but with plans to expand the deployments to other countries. The test cases will be represented by complex end-users with articulated cybersecurity risks and will allow the consortium to gather feedback to be used later to bring the solution to the market. YAKSHA will develop a comprehensive business plan for the transition of the solution and complementary services to TRL9, leveraging the very strong ASEAN partners that are members of the consortium - including governmental organisations and leading end-users communities and associations with regional scope. As part of this effort, YAKSHA will build a whole ecosystem of partners around its solutions. This will contribute to enhancing cybersecurity skills in Europe and creating new positions for cybersecurity specialists in ASEAN. Moreover, the direct access to the all-important ASEAN market provided to partners will positively impact the competitiveness of European security industry. |
| Website | http://project-yaksha.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Sociedade Portuguesa ee Inovacao - Consultadoria Empresarial e Fomento da Inovacao S.A. (PT)<br>Consortium:<br>2. Guarino Alessandro (IT)<br>3. Teknologian tutkimuskeskus VTT Oy (FI)<br>4. Motivian EOOD (BG)<br>5. INNO TSD (FR)<br>6. National Science & Technology Development Agency (TH)<br>7. Atos Spain SA (ES)<br>8. Cong TY TNHH Digital Identity (VN)<br>9. Hellenic Telecommunications Organization S.A. - OTE AE (Organismos Tilepikoinonion Tis Ellados OTE AE) (EL)<br>10. University of Piraeus Research Center (EL)<br>11. Vien Khoa Hoc Cong Nghe Vinasa (VN)<br>12. Cybersecurity Malaysia (MY)<br>13. Acioa Associacion (TH) |

## 6.3.2 Privacy and Data Protection

The following projects have been funded within H2020:

| ARIES | |
|---|---|
| Title | reliAble euRopean Identity EcoSystem (ARIES) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-09-2015<br>September 2016 / February 2019 - EUR 2,247,002<br><br>HOME - 700085 |
| Abstract | Use of virtual and mobile IDs cryptographically derived from strong eID documents and linked to citizens' biometric features with the aim to prevent identity theft and related crimes in the physical (e.g. an airport) and virtual (e.g eCommerce) domains. The project aims to deliver a comprehensive framework for a reliable e-identity ecosystem in Europe. Outcomes and will be demonstrated in two use cases: secure eCommerce and identity virtualization for secure travel. |
| Website | http://aries-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Atos SA (ES)<br>Consortium:<br>2. Atos Consulting Canarias SA (ES)<br>3. Gemalto SRO (CZ)<br>4. Gobierno Vasco (ES)<br>5. Modelo.Com SA (PT)<br>6. Police and Crime Commissioner - West Yorkshire (UK)<br>7. Safran Identity & Security (FR)<br>8. Saher UK Ltd (UK)<br>9. Service Public Federal Interieur (BE)<br>10. Sonae Center Servicos II S.A. (PT)<br>11. Univ. De Murcia (ES) |

| CREDENTIAL | |
|---|---|
| Title | Secure Cloud Identity Wallet (CREDENTIAL) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-02-2014<br>October 2015 / October 2018 - EUR: 5,978,082.50<br><br>REA - 653454 |
| Abstract | The goal of CREDENTIAL is to develop, test and showcase innovative cloud based services for storing, managing, and sharing digital identity information and other critical personal data. The use of sophisticated proxy cryptography schemes will enable a secure and privacy preserving information sharing network for cloud-based identity information in which even the identity provider cannot access the data in plain-text and hence protect access to identity data. Credential focus not only on evaluating and applying novel crypto-approaches for IAMs but also on implementing them in an easy-to-use way to motivate secure handling of identity data. |
| Website | https://credential.eu/ |

| CREDENTIAL | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ait Austrian Institute of Technology GHMB (AT)<br>Consortium:<br>2. Atos Consulting Canarias SA Unipersonal (ES)<br>3. Atos IT solutions and services Iberia SL (ES)<br>4. Atos Spain SA (ES)<br>5. Etuitus SRL (IT)<br>6. Eurocloud Europe ASBL (LU)<br>7. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten forschung E.V. (DE)<br>8. Hellenic Tellecommunications Organization S.A. OTE AE (Organismos Tilepikoinonion Tis Ellados OTE AE (EL)<br>9. Infocert Spa (IT)<br>10. Johann Wolfgang Goethe Universitaet Frankfurt Am Main (DE)<br>11. Karlstads Universitet (SE)<br>12. Klughammer GMBH (DE)<br>13. Lombardia Informatica Spa (IT)<br>14. Stiftung Secure Information and Communication Technologies (AT)<br>15. Technische Universitaet Graz (AT) |

| FutureTrust | |
|---|---|
| Title | Future Trust Services for Trustworthy Global Transactions (FutureTrust) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2015-1 Topic code: DS-05-2015<br>June 2016 / June 2019 - EUR: 6,338,948.89<br><br>REA - 700542 |
| Abstract | The FutureTrust project will in particular develop a comprehensive Open Source validation service as well as a scalable preservation service for electronic signatures and will provide components for the eID-based application for qualified certificates across borders, and for the trustworthy creation of remote signatures and seals in a mobile environment. The FutureTrust project will address the need for globally interoperable solutions through (1) basic research with respect to the foundations of trust and trustworthiness, with the aim of developing new, widely compatible trust models or improving existing models, (2) actively driving the standardisation process, and (3) providing Open Source software components and trustworthy services as a functional base for fast adoption of standards and solutions. |
| Website | https://www.futuretrust.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ruhr Universität Bochum (DE)<br>Consortium:<br>2. Arhs Developments SA (LU)<br>3. A-Sit Plus GMBH (AT)<br>4. Bundesrechenzentrum GMBH (AT)<br>5. Bundesverwaltungsambt BVA (DE)<br>6. ECSEC GMBH (DE)<br>7. European Electronic Messaging Association AISBL (BE)<br>8. Giesecke & Devrient Gesellschaft mit Beschrankter Haftung (DE)<br>9. Informationstechnikzentrum Bund (DE)<br>10. Law Trusted Third Party Services PTY Ltd (ZA)<br>11. Ministarstvo Unutrasnjih Poslova Republike Srbije (RS)<br>12. Multicert – Servicos de Certificacao Electronica SA (PT)<br>13. Pricewaterhousecoopers Enterprise Advisory SCRL-PWC Enterprise Advisory (BE)<br>14. Public Service Development Agency (GE)<br>15. Trustable Limited (UK)<br>16. Turkiye Bilimsel ve Teknolojik Arastirma Kurumu (TR)<br>17. University of Southhampton (UK)<br>18. Zentrum fur Sichere Informationstechnologie – Austria (AT) |

| OPERANDO | |
|---|---|
| Title | Online Privacy Enforcement, Rights Assurance and Optimization (OPERANDO) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>May 2015 / May 2018 - EUR: 3,746,037.00<br><br>REA - 653704 |
| Abstract | The OPERANDO project will create a platform that will used by independent Privacy Service Providers (PSPs) to provide comprehensive user privacy enforcement in the form of a dedicated online service, called "Privacy Authority". A key aspect addressed by OPERANDO is the need to simplify privacy for end users, therefore, OPERANDO will support a simple Privacy Dashboard allowing users to specify their preferences. |
| Website | https://www.operando.eu |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Oxford Computer Consultants Limited (UK)<br>Consortium:<br>2. Arteevo Technologies Ltd (IL)<br>3. Fondazione Centro San Raffaele (IT)<br>4. Fondacion Tecnalia Research & Innovation (ES)<br>5. Ospedale San Rafaele Srl (IT)<br>6. Progretti D'Impresa Srl (IT)<br>7. Romsoft Srl (RO)<br>8. Stelar Security Technology Law Research UG (DE)<br>9. Univ. of Piraeus Research Center (EL)<br>10. Univ. of Southhampton (UK) |

| PANORAMIX | |
|---|---|
| Title | Privacy and Accountability in Networks via Optimized Randomized Mix-nets (PANORAMIX) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>September 2015 / September 2018 - EUR: 3,796,625.00<br><br>REA - 653497 |
| Abstract | The objective of the PANORAMIX project is the development of a multipurpose infrastructure for privacy-preserving communications. Mix-nets protect not only the content of communications from third parties, but also obscure the exact identity of the senders or receivers of messages, through the use of cryptographic relays. The objectives are (1) building a Mix-Net Infrastructure for Europe, by creating a European mix-network open-source codebase and infrastructure; (2) apply our infrastructure to private electronic voting protocols; (3) apply our infrastructure to privacy-aware cloud data-handling; (4) apply our infrastructure to privacy-preserving messaging. |
| Website | https://panoramix-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Of Edinburgh (UK)<br>Consortium:<br>2. Ethniko Diktyo Erevnas Technologias Ae (EL)<br>3. Ethniko kai Kapodistriako Panepistimio Athinon (EL)<br>4. Greenhost (NL)<br>5. Katholieke Universiteit Leuven (BE)<br>6. Sap SE (DE)<br>7. Tartu Ulikool (EE)<br>8. Univ. College London (UK)<br>9. Vikingco (BE) |

| PRIVACY FLAG | |
|---|---|
| Title | Enabling Crowd-sourcing based privacy protection for smartphone applications, websites and Internet of Things deployments (PRIVACY FLAG) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>May 2015 / May 2018 - EUR: 3,142,999.75<br><br>REA - 653426 |

| PRIVACY FLAG | |
|---|---|
| Abstract | Privacy Flag combines crowd sourcing, ICT technology and legal expertise to protect citizen privacy when visiting websites, using smart-phone applications, or living in a smart city. It will enable citizens to monitor and control their privacy with a user friendly solution provided as a smart phone application, a web browser add-on and a public website.It will: (1) develop a highly scalable privacy monitoring and protection solution; (2) develop a global knowledge database of identified privacy risks, together with online services to support companies and other stakeholders in becoming privacy-friendly; (3) collaborate with standardization bodies. |
| Website | http://privacyflag.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Hellenic Telecommunications Organization S.A. – OTE AE (Organismos Tilepikoinonion tis Ellados OTE AE) (EL)<br>Consortium:<br>2. Archimede Solutions Sarl (CH)<br>3. Drustvo za Konsalting, Razvoj I Implementaciju Informacionih I Komunikacionih Tehnologija Dunavnet Doo (RS)<br>4. Ethniko kai Kapodistraiko Panepistimio Athinon (EL)<br>5. H W Communications Limited (UK)<br>6. Institouto Technologias Ypologistonkai Ekdoseon Diofantos (EL)<br>7. International Association of IT Lawyers (IAITL) Forening (DK)<br>8. Istituto Italiano per la Privacy (IT)<br>9. Lulea Tekniska Universitet (SE)<br>10. Mandat International alias Fondation pour la Cooperation Internationale (CH)<br>11. Univ. du Luxembourg (LU)<br>12. Univ. of Bristol (UK)<br>13. Velti Anonymi Etaireia Proionton Logismikou & Synafon Prionton & Piresion (EL) |

| ReCRED | |
|---|---|
| Title | From Real-world Identities to Privacy-preserving and Attribute-based CREDentials for Device-centric Access Control (ReCRED) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-02-2014<br>May 2015 – May 2018 - EUR: 4,997,242.00<br><br>REA - 653417 |
| Abstract | ReCRED's goal is to promote the user's personal mobile device to the role of a unified authentication and authorization proxy towards the digital world. ReCRED addresses key security and privacy issues such as resilience to device loss, theft and impersonation, via a combination of: i) local user-to-device and remote device-to-service secure authentication mechanisms; ii) multi-factor authentication mechanisms based on behavioral and physiological user signatures not bound to the device; iii) usable identity management and privacy awareness tools; iv) usable tools that offer the ability for complex reasoning of authorization policies through advanced learning techniques. |
| Website | https://www.recred.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. of Piraeus Research Center (EL)<br>Consortium:<br>2. Certsign SRL (RO)<br>3. Consorzio Nazionale Interuniversitario per le Telecomunicazioni (IT)<br>4. De Productizers BV (NL)<br>5. Exus Software Ltd (UK)<br>6. Fundacion Imdea Networks (ES)<br>7. Studio Professionale Association a Baker &McKenzie (IT)<br>8. Technologiko Panepistimio Kyprou (CY)<br>9. Telefonica Investigacion y Desarrollo SA (ES)<br>10. Univ. Carlos III de Madrid (ES)<br>11. Upcom BVBA (BE)<br>12. Verizon Nederland BV (NL)<br>13. Wedia Limited (EL) |

| SafeCloud | |
|---|---|
| Title | Secure and Resilient Cloud Architecture (SafeCloud) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>September 2015 / September 2018 - EUR: 2,150,810.00<br><br>REA - 653884 |
| Abstract | SafeCloud will re-architect cloud infrastructures to ensure that data transmission, storage, and processing can be (1) partitioned in multiple administrative domains that are unlikely to collude; (2) entangled with inter-dependencies that make it impossible for any of the domains to tamper with its integrity. Users will have full control over what happens to their data. This will make users less reluctant to manage their personal data online due to privacy concerns and will generate positive business cases for privacy-sensitive online applications such as the distributed cloud infrastructure and medical record storage platform that we address. |
| Website | http://www.safecloud-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Inesc Tec - Instituto De Engenharia De Sistemas e Computadores, Tecnologia e Ciencia (PT)<br>Consortium:<br>2. Cloud&Heat Technologies Gmbh (DE)<br>3. Cybernetica As (EE)<br>4. Inesc Id - Instituto De Engenhariade Sistemas e Computadores, Investigacao e Desenvolvimento em Lisboa (PT)<br>5. Maxdata Software Sa (PT)<br>6. Technische Universitaet Muenchen (DE)<br>7. Universite De Neuchatel (CH) |

| SpeechXRays | |
|---|---|
| Title | Multi-channel biometrics combining acoustic and machine vision analysis of speech, lip movement and face (SpeechXRays) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-02-2014<br>May 2015 / May 2018 - EUR: 4,102,467.00<br><br>REA - 653586 |
| Abstract | The SpeechXRays project will develop a user recognition platform based on voice acoustics analysis and audio-visual identity verification. The vision of the SpeechXRays project is to provide a solution combining the convenience and cost-effectiveness of voice biometrics, achieving better accuracies by combining it with video, and bringing superior anti-spoofing capabilities. |
| Website | http://www.oberthur.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Oberthur Technologies Sa (FR)<br>Consortium:<br>2. Elliniki Etairia Tilepikoinonion Kai Tilematikon Efarmogon Ae (EL)<br>3. Foundation For Research And Technology Hellas (EL)<br>4. Horowitz Biometrics Limited (UK)<br>5. Institut Mines-Telecom (FR)<br>6. Institutul National De Cercetare -Dezvoltare Pentru Fizica Si Inginerie Nucleara "Horia Hulubei" (Ifin-Hh) (RO)<br>7. Realeyes Ou (EE)<br>8. Siveco Romania Sa (RO)<br>9. Tech Inspire Ltd (UK)<br>10. University College London (UK) |

| TYPES | |
|---|---|
| Title | Towards transparencY and Privacy in the onlinE advertising businesS (TYPES) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>May 2015 / November 2017 - EUR: 3,992,663.00<br><br>REA - 653449 |
| Abstract | TYPES aims to establish a holistic framework of technologies and tools that guarantees both transparency and privacy preservation, gives the end user control upon the amount of information he/she is willing to share, and defines privacy-by-design solutions. TYPES will make it easier to verify whether users' online rights are respected and if personal data is exchanged for a reasonable value-added to users. |
| Website | http://www.types-project.eu/ |

| TYPES | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacio Barcelona Media (ES)<br>2. Fundacio Eurecat (ES)<br>Consortium:<br>3. Asociacion de Usuarios de Internet (ES)<br>4. Fundacion Imdea Networks (ES)<br>5. Interactive Advertising Bureau Europe (BE)<br>6. Nec Europe Ltd (UK)<br>7. Telefonica Investigacion Y Desarrollo Sa (ES)<br>8. The Open University (IL)<br>9. Universidad Carlos Iii De Madrid (ES)<br>10. Upcom Bvba (BE)<br>11. Wedia Limited (EL) |

| VisiOn | |
|---|---|
| Title | Visual Privacy Management in User Centric Open Environments (VisiOn) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-01-2014<br>July 2015 / July 2017 - EUR: 2,748,912.50<br><br>REA - 653642 |
| Abstract | Public Administration (PA) authorities are working towards upgrading the level of their online services through new governance models such as the Open Government. This pushes for greater transparency, accountability and innovation aiming at increasing citizen levels of confidence and trust in PA online services. In this context, user data privacy is an important issue. The platform will provide clear visualisation of privacy preferences, relevant threats and trust issues along with an insight into the economic value of user data. |
| Website | http://www.visioneuproject.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Business-E Spa (IT)<br>Consortium:<br>2. Atos It Solutions and Services Iberia Sl (ES)<br>3. Atos Spain Sa (ES)<br>4. Be Innova Srl (IT)<br>5. Dimos Athinaion Epicheirisi Michanografisis (EL)<br>6. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>7. Fundacion para la Investigacion Biomedica del Hospital Universitario la Princesa (ES)<br>8. Military Medical Academy (BG)<br>9. Ministero Dello Sviluppo Economico (IT)<br>10. National Center For Scientific Research "Demokritos" (EL)<br>11. Ospedale Pediatrico Bambino Gesu (IT)<br>12. Servicio Madrileno de Salud (ES)<br>13. Technische Universitat Dortmund (DE)<br>14. Universita Degli Studi di Trento (IT)<br>15. Universitaet Koblenz-Landau (DE)<br>16. University of Brighton (UK)<br>17. Velti Anonymi Etaireia Proionton Logismikou & Synafon Prionton & Piresion (EL) |

## These projects were complemented by new projects funded in 2016-2017:

| AEGIS | |
|---|---|
| Title | Accelerating EU-US DialoGue for Research and Innovation in CyberSecurity and Privacy |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-05-2016. January 2017 / April 2019 - EUR: 500.000,00 GA 740647 |
| Abstract | AEGIS aims to strengthen dialogues between Europe and the US, in order to facilitate exchange of views, policies and best practices to stimulate cooperation around cybersecurity and privacy R&I, and contribute in shaping the future global cybersecurity and privacy landscape. AEGIS proposes a multi-stakeholder approach to engage relevant communities more actively and strategically in supporting dialogues and creating a common and orchestrated vision and strategy to accelerate EU-US cooperation in cybersecurity and privacy R&I. At the core of the AEGIS strategy is the Cybersecurity Reflection Group EU-US that will be established as a multi-stakeholder collaboration platform. The Cyber-RG EU-US, through its Working Groups, will address specific issues on international, technical trends, policy and legislation challenges in cybersecurity and privacy, and will facilitate the effective collaboration of a wide range of interested parties including policy makers, researchers, technology experts, business leaders, cyber policies experts and influencers and civil society. Under the leadership of the AEGIS consortium, these key groups will come together to decisively tackle cybersecurity and privacy related problems and to provide opinions and recommendations to policy dialogue. AEGIS will also provide a mapping of the cybersecurity and privacy landscapes in EU and US, benchmark relevant legislation and policies and promote innovation partnerships and opportunities for future EU-US cooperation in cybersecurity and privacy areas of mutual strategic interest. The AEGIS consortium is in a privileged position to generate significant impacts in both sides of the Atlantic, by leveraging the partnership's network multipliers with a wide-ranging access to cybersecurity and privacy stakeholders, including researchers, think tanks, business and political decision makers, and thus to contribute significantly to deepen cybersecurity and privacy R&I cooperation between Europe and the US |
| Website | http://aegis-project.org/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. INMARK EUROPA SA (ES)<br>Consortium:<br>2. Consiglio Nazionale delle Ricerche (IT)<br>3. European American Chamber of Commerce (USA)<br>4. Hewlett Packard Italiana SRL (IT)<br>5. Rutgers University (USA)<br>6. The Providence Group (USA)<br>7. Waterford Institute of Technology (IE) |

| BlockchainKYC | |
|---|---|
| Title | Blockchain-based, 100% automated KYC (Know Your Customer) service |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / November 2017 - EUR: 50.000,00 GA 774802 |
| Abstract | Authenteq has developed a smartphone-based 100% automated and tamper-proof online identity verification service (Authenteq ID) that uses multifactor biometric authentication, fitting the needs of online/mobile marketplaces, as well as other websites that require or benefit from ID verification such as betting, gaming or dating sites. This system aims to eliminate user anonymity in online transactions (and therefore drastically reduce identify fraud), while maintaining the highest level of privacy for consumers. Authenteq ID uniquely combines [1] a smartphone app, where the end-user creates its certified ID by scanning its passport and taking a selfie, [2] backend proprietary services that perform face match recognition, image analysis of ID security elements and third-party security checks, and [3] Blockchain data storage for validation purposes (impossible to reverse-engineer and hack). Personal details and images are hashed and files deleted from the server and app. The biometric enrolment and verification processes - with several tamper-evident analyses - proves that the person requesting an Authenteq ID is unequivocally who s/he says s/he is, meeting 'Know Your Customer' and 'Anti-Money Laundering' regulations. After registration, the app will only be accessible to the rightful owner, through multifactor authentication. In the app, the user will be able to seamlessly grant personal data verification access to the marketplaces where it plans to conduct business, by linking its marketplace user profile with the Authenteq ID stored on the blockchain (data is verified, not sent to marketplaces). Our system has the capacity to eliminate identity fraud in linked profiles, and these marketplaces no longer need to collect passport scans and manually verify user IDs. To fully develop the Authenteq ID system, we aim to conduct a feasibility study (BlockchainKYC, Phase 1) and a large-scale system demonstration in operational environment (Phase 2). |
| Website | http://authenteq.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Authenteq EHF (IS) |

| BPR4GDPR | |
|---|---|
| Title | Business Process Re-engineering and functional toolkit for GDPR compliance |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. May 2018 / April 2021 - EUR: 2.974.012,40 GA 787149 |
| Abstract | The goal of BPR4GDPR is to provide a holistic framework able to support end-to-end GDPR-compliant intra- and inter-organisational ICT-enabled processes at various scales, while also being generic enough, fulfilling operational requirements covering diverse application domains. To this end, proposed solutions will have a strong semantic foundation and cover the full process lifecycle addressing major challenges and priorities posed by the regulation, including requirements interpretation, broad territorial scope, accountability, security means enforcement, data subject's rights and consent, unified data view and processing actions inventory, privacy by design, etc. The starting point will be process models, either automatically discovered through organisation logs or manually specified, formally expressed through a Compliance Metamodel, a comprehensive process modelling technology able to capture advanced privacy provisions. Thereupon, a highly expressive policy framework will guide the automatic verification of these models regarding GDPR requirements, and their subsequent transformation, so that they are rendered inherently privacy-aware before being deployed for execution. Subsequently, the consistent execution of GDPR-compliant processes will be ensured by a comprehensive set of tools able to support all diverging requirements that may arise from GDPR, related to data handling, data subjects' involvement, various PETs, etc., so that even organisations with currently no such infrastructure in place can readily have such mechanisms. Finally, process mining will be extensively used for the ex post analysis of processes, in order to ensure that specified policies are indeed enforced. However, apart from verifying compliance, such techniques will offer the added value of automatically improving process models over time towards optimised fulfillment of both legal and business requirements. Deployed on the Cloud, BPR4GDPR will provide for Compliance-as-a-Service (CaaS). |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. CAS Software AG (DE)<br>Consortium:<br>2. Universita Degli Studi di Roma Torvergata (IT)<br>3. Ilektroniki Diakyvernisi Koinonikisasfalisis AE (EL)<br>4. Studio Professionale Associato a Baker & Mckenzie (IT)<br>5. ICT Abovo Technologies Pliroforikiskai Epikinonion Idiotiki Kefaleouchiki Eteria (EL)<br>6. Archi Prostasias Dedomenon Prosopikou Charaktira (EL)<br>7. Singularlogic Anonymi Etaireia Pliroforiakon Systimaton kai Efarmogon Pliroforikis (EL)<br>8. Steinbeis Beratungszentren Gmbh (DE)<br>9. Intempra SRL (IT)<br>10. Technische Universiteit Eindhoven (NL) |

| cyberwatching.eu | |
|---|---|
| Title | The European watch on cybersecurity privacy |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-05-2016. May 2017 / April 2021 - EUR: 1.999.896,25 GA 740129 |
| Abstract | cyberwatching,eu addresses the DS-05 call by defining and promoting a pragmatic approach to implement and maintain an EU Observatory to monitor R&I initiatives on cybersecurity & privacy, throughout EU & Associated Countries. These initiatives will be clustered, with a cluster tool, and themes identified, leading to an online catalogue of services for cybersecurity & privacy, showcasing market uptake and advancing EU sustainable competitiveness. A supply & demand marketplace of EU cybersecurity products & services, as well as the inclusion of an end-users' club, ensures that perspectives of SMEs as well as other relevant stakeholders are properly taken account of. Ultimately, a cybersecurity & privacy ecosystem will be created, offering prime and guided access to the cyberwatching.eu catalogue of services & marketplace & ensuring feedback in terms of effectiveness & usability of research results. The cyberwatching.eu consortium is domain-skilled & complementary. Trust-IT: Expert SME in communicating ICT innovation, developing cybersecurity tools & go-to-market strategies. The University of Oxford: Academic Centre of Excellence in CyberSecurity Research. ICT Legal: Legal expert in the field, Advisor Member & Scientific Director of the European Privacy Association (EPA). DigitalSMEAlliance: An association representing the interests of ICT SMEs in EU. CONCEPTIVITY: SME experts in fighting Cybercrime and cyber-terrorism. AEI Ciberseguridad: A CyberSecurity Innovation Cluster. AON: #1 rated risk services firm, insurance broker, experienced in cyber risk management. An influential External Advisory Group passionate about cybersecurity & privacy supports the consortia. Main Outputs: Continuously updated observatory & R&I online catalogue, cluster tool, 4 concertation meetings, 4 annual workshops, 10 regional SME workshops, 10 webinars, 4 cluster reports, 2 white papers, 2 roadmaps, sustainability through cybersecurity & privacy marketplace. |
| Website | https://www.cyberwatching.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Trust-IT Services Limited (UK)<br>Consortium:<br>2. AEI Ciberseguiridad y Technologias Avanzadas (ES)<br>3. AON spa Insurance & Reinusrance Brokers (IT)<br>4. Conceptivity Sarl (CH)<br>5. ICT Legal consulting – Studio Legale Associato Balboni Bolognini & Partners (IT)<br>6. Pan European ICT & Ebusiness Network for SME association Internationalsans but Luctratif (BE)<br>7. The Chancellor, Master and Scholars of the University of Oxford (UK) |

| DEFeND | |
|---|---|
| Title | Data Governance for Supporting GDPR |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. July 2018 / December 2020 - EUR: 2.737.300,00 GA 787068 |
| Abstract | The rapid advances in ICT have raised the need to adapt to this progress for organisations (pushing them towards e-services and increase their efficiency), public authorities (stimulating new services to citizens and reducing complexity) and individuals (enabling them to communicate personal information more efficiently). DEFeND will deliver a platform which empowers organisations in different sectors to assess the compliance status, plan the achievement of the GDPR compliance and increase their maturity in different aspects of GDPR. DEFeND platform enables building and analysing models following a Privacy-by-Design approach spanning over two levels, the Planning Level and the Operational Level, and across three management areas: Data Scope, Data Process and Data Breach. The consortium will leverage existing software, tools and methodologies towards the implementation of the platform software components. The DEFeND platform will be tested in living labs pilots, involving partners from four E.U. countries in four different areas: healthcare, banks, energy and local public administration. It will be tested in an operational environment (TRL 7) in three different scenarios across two different types, focusing on the GDPR compliance process for end-users and on the GDPR implications for external stakeholders. Driven by the lack of appropriate products in the market, the DEFeND exploitation strategy is based on commercialisation of project results at three levels: platform-as-a-whole, fragments of the platform and partners' individual exploitation. This strategy will enable partners to integrate the results into their existing commercial offerings, exploring and establishing new business opportunities. The exploitation strategy will focus on four areas: Sector Specific Exploitation, Networking, Exploitation Meetings and Community-building around the project. The exploitation strategy will be integrated and supported by dissemination activities throughout the project. |
| Website | https://www.defendproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. ATOS Spain SA (ES)<br>Consortium:<br>2. University of Brighton (UK)<br>3. Gridpocket SAS (FR)<br>4. Abi Lab-Centro di Ricerca e Innovazione per la Banca (IT)<br>5. Peshtera Municipality (BG)<br>6. PDM e FC Projecto Desenvolvimento Manutencao Formacao e Consultadorialda (PT)<br>7. Business-E SPA (IT)<br>8. Bird & Bird LLP (UK)<br>9. Ionian University (EL)<br>10. Fundacion para la Investigacion Biomedica Hospital Infantil Universitario Nino Jesus (ES) |

| EUNITY | |
|---|---|
| Title | Cybersecurity and privacy dialogue between Europe and Japan |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-05-2016. June 2017 / May 2019 - EUR: 499.812,50 GA 740507 |
| Abstract | The EUNITY project addresses scope 2 (international dialogue with Japan) of objective DS-05-2016 of the H2020 work programme. This two years project aims at developing and encouraging the dialogue between Europe and Japan on cybersecurity and privacy topics. The partners involved have a long-standing history of research on both topics at the European level, as well as cooperation with Japan. EUNITY has 3 main objectives: 1. Encourage, facilitate and support the ICT dialogue between relevant EU and Japanese stakeholders on matters relating to cybersecurity and privacy research and innovation issues; 2. Identify potential opportunities for future cooperation between European and Japanese research and innovation ecosystems; and 3. Foster and promote European cybersecurity innovation activities and increase the international visibility of EU activities in cybersecurity . To meet these objectives, EUNITY will first gather relevant stakeholders in at least two workshops, one in each geography (EU and JP), taking advantage of co-location with other events as much as possible. It will also thanks to the expertise of its members collect the appropriate existing research agendas, legislations and business practices in Europe and Japan. It will then analyze the information collected to formulate recommendations, including business opportunities and a research agenda. A particular attention will be brought to the similarities of the research and market strategies, as well as the differences that must be taken into account when addressing both markets. EUNITY will operate in close relationship with the European Cyber Security Organization association, the cybersecurity cPPP signatory with the Commission. EUNITY will cover all the constituencies of ECSO (large organizations, SMEs, public bodies, associations, clusters, RTOs) thanks to both the direct participation of its partners to ECSO and to their ties with industry associations, cluster and public bodies. |
| Website | http://eunity-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Institut Mines-Telecom<br>Consortium:<br>2. Atos Spain SA (ES)<br>3. Foundation for Research and Technology Hellas (EL)<br>4. Katholieke Universiteit Leuven (BE)<br>5. Naukowa I Akademicka Siec Komputerowa (PL) |

| Eye-O-T | |
|---|---|
| Title | Cyber security system with a high IoT network visibility and fast vulnerability detection for Smart Homes. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>August 2016 / December 2016 - EUR: 50.000,00 GA 736300 |
| Abstract | Today there are around 800 million connected devices in Smart Homes, which forecasted to reach 2 billion devices by 2020 - an uptick of about 250 million new devices per year. Smart Home networks become crowded, difficult to maintain and vulnerable. Today's Smart Home systems, such as smart TVs, Internet-connected camera systems, alarm sensors, smart light bulbs or thermostats, can be hacked only in few minutes and provide a wealth of data about the way people live, bank information, legal information and etc. Perytons proposes a centralized diagnostic solution for the Smart Home Operators, called Eye-O-T. The Eye-O-T enables the operators to monitor and analyze in real time a large number of IoT networks, distributed over many remote sites and running different local communication protocols. The system is composed by plug & play probes that capture Smart Home IoT edge and gateway traffics and send it to the cloud through the existing broadband infrastructure; and an intuitive real-time dashboard. The Eye-O-T security system not only enables Smart Home owners to minimise their house and privacy vulnerability to security breaches and malicious attacks, but also reduces the Smart Home maintenance cost for operators by 30% and increases the operator's deployment capacity of at least 10%. The Phase 1 project will allow Perytons to define a minimum viable product, plan a feasible cyber security and centralized monitoring system scale-up, elaborate the business scale up, and size the reachable market and a reliable market share. Within the overall project, Perytons aims to: scale up the solution to be able to support large scale IoT network deployment, ingrate the system with one large cloud service, interface the solution with common Network Management solutions and demonstrate Eye-O-T visibility and security trough a large scale pilot in houses with 300 probes deployed in Germany and the UK together with Smart Home Operators. |
| Website | http://www.perytons.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Perytons Ltd (IL) |

| FENTEC | |
|---|---|
| Title | Functional Encryption Technologies |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2017. Topic code: DS-06-2017. January 2018 / December 2020 - EUR: 4.223.141,25 GA 780108 |
| Abstract | Functional encryption (FE), has been recently been introduced as a new paradigm of encryption systems to overcome all-or-nothing limitations of classical encryption. In an FE system the decryptor deciphers a function over the message plaintext: such functional decryptability makes it feasible to process encrypted data (e.g. on the Internet) and obtain a partial view of the message plaintext. This extra flexibility over classical encryption is a powerful enabler for many emerging security technologies (i.e. controlled access, searching and computing on encrypted data, program obfuscation...). FENTEC's mission is to make the functional encryption paradigm ready for wide-range applications, integrating it in ICT technologies as naturally as classical encryption. The primary objective is the efficient and application-oriented development of functional encryption systems. FENTEC's team of cryptographers, software and hardware experts and information technology industry partners that will document functional encryption needs of specific applications and subsequently design, develop, implement and demonstrate applied use of functional cryptography. Ultimately, a functional encryption library for both SW and HW-oriented application will be documented and made public so that it may be used by European ICT entities. With it, the FENTEC team will build emerging security technologies that increase the trustworthiness of the European ICT services and products. Concretely, the FENTEC team will showcase the expressiveness and versatility of the functional encryption paradigm in 3 use cases: • Privacy-preserving digital currency, enforcing flexible auditing models • Anonymous data analytics enabling computation of statistics over encrypted data, protecting European Fundamental Rights of Data Protection and Privacy • Key and content distribution with improved performance & efficiency as foundational technology for establishing secure communication among a vast amount of IOT devices. |
| Website | http://fentec.eu/ |
| Consortium (prone to modification in case of GA amendment)<br>1. | Coordinator:<br>1. ATOS Spain SA (ES)<br>Partners:<br>2. Helsingin Yliopisto (FI);<br>3. Xlab Razvoj Programske Opreme in Svetovanje DOO (SI);<br>4. Nagravision SA (CH);<br>5. Ecole Normale Superieure (FR);<br>6. Wallix (FR);<br>7. Fachhochschule Flensburg (DE);<br>8. Katholieke Universiteit Leuven (BE);<br>9. The University of Edinburgh (UK) |

| GO 4G | |
|---|---|
| Title | InvizBox Go 4G - Security and Privacy, Everywhere |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / December 2017 - EUR: 50.000,00 GA 775593 |
| Abstract | The annual cost of cybercrime is estimated to reach nearly €3 trillion by 2019 and the value of the cyber security market will hit €100 billion. Across the EU, 68% of Internet users say they are concerned about identity theft. The highest levels of concern can be observed in France (where 80% are concerned) and Spain (79%). The problem for many people is that they are unsure how to protect themselves from these attacks on their security and privacy. This has several knock-on effects, including reduced consumer confidence, identity theft, lost revenue, lost intellectual property, and reputational damage to companies and individuals. InvizBox Go 4G provides an innovative approach to securing data on the internet and protecting user privacy with ease. InvizBox Go 4G addresses a major market opportunity by bringing to market a solution for cyber-security that currently is only available to companies and consumers by installing and configuring software on each and every device that they wish to protect. The Go 4G project will look to conduct a full technical and economic feasibility study of InvizBox Go 4G and develop a business strategy that ensures that the product's commercial potential is maximized. The accomplishment of the project objectives will boost company growth and internationalization with an expected accumulated turnover of €19.9 million over 5 years after commercialization and generating 20 new jobs. It will also contribute to strengthening the EU competitiveness in the Cyber Security industry. |
| Website | http://www.invizbox.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Invizbox LTD (IE) |

| IDENTITY | |
|---|---|
| Title | Usable Digital Signature |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / December 2016 - EUR: 50.000,00 GA 728532 |
| Abstract | IDENTITY solution raised to facilitate the take-up of eSignatures in EU, solving problems detected: 1) A lack of user-friendliness, 2) the implementation of existing recent regulations; 3) the low confidence in the security of the eSignature by citizens and enterprises. IDENTITY solution constitutes a complete safety e-Signature system aimed at the improvement of the e-Signature usability and simplification of the signature process to assure a widening of the e-Signature use between users. The main advantages of IDENTITY against existing solutions are: (i) CLOUD: the eSignature is kept in a centralized repository (no need to keep software by user). (ii) TECHNOLOGICAL NEUTRALITY and MOBILITY: No needed a platform or device for the signature, any device with web browser can be used. (iii) SECURITY: User should enter a pin code and a second security measure. (iv) SIMPLIFICATION: No need to use an applet for authentication and signature. (v) TRANSNATIONAL VALIDITY: developed according EU standards and thanks to all advantages mentioned, IDENTITY could be used in any EU country. The R&D phase of IDENTITY finalized in 2015, with the validation tests of the prototype developed in Viavansi servers (TRL5). There has been developed a demonstration of the system prototype (TRL6), covering the full functionality of IDENTITY in a simulated environment. The good results obtained confirm the international market need and the technical feasibility. Now it is necessary to validate the business plan to develop the IDENTITY final version and to progress through a large scale demonstration in operational environment, scaling up the product to a large market. The feasibility study output of this project wants to validate the assumptions and the first estimations presented, regarding the strategic innovation and business plan for the global market introduction as well as the operational and financial model for the next 5 years of the IDENTITY solution and its technological roadmap. |
| Website | https://www.viavansi.com/es/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Servicios Avanzados para las Instituciones S.L. (ES) |

| OLYMPUS | |
|---|---|
| Title | Oblivious identitY Management for Private and User-friendly Services |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. September 2018 / August 2021 - EUR: 2.564.480,01 GA 786725 |
| Abstract | At first sight, privacy and strong identity seem inherently at odds. Indeed, if users are strongly identified during a transaction, then privacy is non-existent. Nevertheless, there exist mechanisms that can reconcile privacy and strong identity, either by trusting an online identity provider (IDP), or by using cryptographic mechanisms such as anonymous credentials. The former approach, made popular by technologies such as SAML, OpenID Connect, and Facebook Connect, has the disadvantage that the IDP forms a single point of failure in terms of privacy and security, because it can impersonate and track its users online. The latter approach has the disadvantage that users have to rely on trusted hardware such as smartcards to protect credentials from compromise and from illegitimate sharing. OLYMPUS will take a radically new approach offering the seamless user experience of online IDPs, but without their drawbacks. Namely, OLYMPUS will pioneer the concept of distributed oblivious identity management, where the role of the IDP is split over multiple authorities, so that no single authority can track or impersonate their users. By exploiting advanced techniques based on threshold cryptography, the OLYMPUS framework will let users maintain unlinkable identities with different service providers while using standard devices and a single password or biometric. By leveraging existing eID solutions to create a strong link to physical identities, and by integrating into existing frameworks to ease adoption by service providers, OLYMPUS will establish a secure and interoperable European identity management framework. Its practical feasibility and relevance will be demonstrated in two pilots. The first combines the framework with soft identity proofs to build a mobile driver license application that can be used for offline purchases of restricted goods. The second use case will leverage pseudonymous identification in the financial world to simplify online credit application. |
| Website | |

| OLYMPUS | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universidad de Murcia (ES)<br>Consortium:<br>2. Scytales AB (SE)<br>3. Logalty Servicios De Tercero De Confianza SL SME (ES)<br>4. IBM Research Gmbh (CH)<br>5. Alexandra Instituttet A/S (DK)<br>6. Multicert - Servicos de Certificacao Electronica SA (PT) |

| PAPAYA | |
|---|---|
| Title | PlAtform for PrivAcY preserving data Analytics |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. May 2018 / April 2021 - EUR: 2.949.417,50 GA 786767 |
| Abstract | The valuable insights that can be inferred from analytics of data generated and collected from a variety of devices and applications are transforming businesses and are therefore one of the key motivations for organisations to adopt such technologies. Nevertheless, the data being analysed and processed are highly sensitive and put the individuals' rights to privacy at risk. With the imminent arrival of the European General Data Protection Regulation (GDPR), companies are coerced to adopt privacy enhancing technologies that, on the one hand, protect data to ensure their clients' privacy and on the other hand, allow their processing while keeping them meaningful, useful, and protected at the same time. The PAPAYA project aims at addressing the privacy concerns when data analytics tasks are performed by untrusted third-party data processors. Since these tasks may be performed obliviously on protected data (i.e. encrypted data), the PAPAYA will design and develop dedicated privacy preserving data analytics primitives that will enable data owners to extract valuable information from this protected data, while being cost-effective and accurate. The PAPAYA project will consider compliance with the GDPR as a key enabler to provide solutions that minimize the privacy risks while increasing trust in third-party data processors by means of auditing and visualization modules (a dashboard). The PAPAYA primitives as well as the dashboard will be combined in an integrated platform that will be designed, implemented and validated through a set of use cases reflecting relevant real world applications (namely, healthcare analytics and web & mobile data analytics). |
| Website | https://www.papaya-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Eurecom (FR)<br>Consortium:<br>2. Mediaclinics Italia SRL (IT)<br>3. Orange SA (FR)<br>4. Atos Spain SA (ES)<br>5. IBM Israel - Science And Technology Ltd (IL)<br>6. Karlstads Universitet (SE) |

| PDP4E | |
|---|---|
| Title | Methods and tools for GDPR compliance through Privacy and Data Protection Engineering |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. May 2018 / January 2021 - EUR: 2.941.113,13 GA 787034 |
| Abstract | PDP4E is an innovation action that will provide software and system engineers with methods and software tools to systematically apply data protection principles in the projects they carry out, so that the products they create comply with the General Data Protection Regulation (GDPR), thus bringing the principles of Privacy and Data Protection by Design to practice. PDP4E will integrate privacy and data protection engineering functionalities into existent, mainstream software tools that are already in use by engineers, focusing on open-source tools that will be integrated in the Eclipse ecosystem, The approach will integrate methods proposed by the privacy engineering community (e.g. LINDDUN, ISO/IEC 27550 Privacy engineering), and the industry of software and system engineering tools (e.g. MUSE, PAPYRUS or OpenCert) using a model driven engineering approach. PDP4E will introduce privacy and data protection into software and system engineering disciplines (Risk Management, Requirements Engineering, Model-Driven Design, and Assurance), which drive the everyday activities of engineers. Results of PDP4E will be assessed by two demonstration pilots on industries where privacy and data protection are especially relevant, one on novel financial applications and services (fintech application domain) and one on big data on smart grid (smart grid application domain). PDP4E will promote its results in engineering communities, as Eclipse (community of software developers) or IPEN (community of stakeholders with an interest on privacy engineering). An open Alliance for Privacy and Data Protection Engineering is planned as a follow-up of the project, building on that community and the synergies among partners. PDP4E includes 8 partners and has a 33-month duration. |
| Website | https://www.pdp4e-project.eu/ |

| PDP4E | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Trialog (FR)<br>Consortium:<br>2. Eclipse Foundation Europe Gmbh (DE)<br>3. Fundacion Tecnalia Research & Innovation (ES)<br>4. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>5. Universitaet Duisburg-Essen (DE)<br>6. Katholieke Universiteit Leuven (BE)<br>7. Universidad Politecnica De Madrid (ES)<br>8. CA Technologies Development Spain SA (ES) |

| PoSeID-on | |
|---|---|
| Title | Protection and control of Secured Information by means of a privacy enhanced Dashboard |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. May 2018 / October 2020 - EUR: 2.541.208,75 GA 786713 |
| Abstract | PoSeID-on is aimed at developing a novel Privacy Enhancing Dashboard for personal data protection supporting the pillars of the new EU's General Data Protection Regulation (GDPR) with regards to digital security, that will be implemented within a single, integrated tool, adopting blockchain and smart contracts technology. It will provide targeted benefits for final end users by enabling data protection by design and by default. In particular, the project will deliver an easily accessible and simple privacy enhancing dashboard useful for monitoring, keeping track record, and controlling all aspects related to data subjects personal data, privacy settings, eventually deciding to authorize/un-authorize personal data transfers. Thus, the primary aim of PoSeID-on is empowering data subjects in having a concise, transparent, intelligible and ease access, as well as tracking, control and management of their personal data processed by public and private organizations, acting as data controllers and/or data providers. They will be able to make conscious decisions on who can process their own data based on data controller trustworthiness, enabling or revoking permissions, asking for definitely remove their personal data or restricting the data to be shared following the data minimisation principle. A risk management framework will be integrated into the privacy enhancing dashboard. As secondary aim, PoSeID-on will support the compliance of technological services and products with the GDPR regarding personal data, by integrating advanced ICT-based tools within a replicable and scalable frame, which can be implemented within a broad spectrum of products and services. Moreover, personal data exchanges across data subjects and different organisations (public & private) or among organizations in case of involved third parties will take place in a secure and privacy-compliant way, generating benefits thanks to the adoption of more streamlined procedures. |
| Website | https://www.poseidon-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ministero dell'economia e delle Finanze (IT)<br>Consortium:<br>2. Fundacion Tecnalia Research & Innovation (ES)<br>3. Softeam (FR)<br>4. Accenture SpA (IT)<br>5. Ayuntamiento de Santander (ES)<br>6. Universidade de Coimbra (PT)<br>7. Bundesrechenzentrum Gmbh (AT)<br>8. PNO Innovation (BE)<br>9. Smartfeedz BV (NL)<br>10. E-Lex - Studio Legale (IT) |

| PRIViLEDGE | |
|---|---|
| Title | Privacy-Enhancing Cryptography in Distributed Ledgers |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2017. Topic code: DS-06-2017. January 2018 / December 2020 - EUR: 4.527.917,50 GA 780477 |
| Abstract | Blockchain and distributed ledger technologies (DLTs) have emerged as one of the most revolutionary developments in recent years, with the goal of eliminating centralised intermediaries and installing distributed trusted services. They facilitate trustworthy trades and exchanges over the Internet, power cryptocurrencies, ensure transparency for documents, and much more. Although based on cryptographic techniques at their core, the currently deployed DLTs do not address privacy. Indeed, the very idea of a public ledger that stores a verifiable record of transactions at first appears inherently incompatible with the privacy requirements of many potential applications, which use sensitive data such as trade secrets and personal information. New cryptographic techniques and protocols are therefore needed to protect the data, facilitate these applications, and make DLTs deliver on their promises. PRIViLEDGE realises cryptographic protocols supporting privacy, anonymity, and efficient decentralised consensus for DLTs. In PRIViLEDGE, several European key players in cryptographic research and from the fintech and blockchain domains unite to push the limits of cryptographic protocols for privacy and security. Results from PRIViLEDGE are demonstrated through four ledger-based solutions: (1) verifiable online voting; (2) contract validation and execution for insurance; (3) university diploma record ledger; and (4) update mechanism for stake-based ledgers. The selected use cases are diverse and represent the principal application domains of DLT; this ensures wide reach and impact of the techniques developed in PRIViLEDGE beyond the immediate scope of the project. |
| Website | https://priviledge-project.eu/ |

| PRIViLEDGE | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Guardtime AS (EE)<br>Partners:<br>2. Akadimaiko Diadiktyo (EL);<br>3. Universita degli Studi di Salerno (IT);<br>4. Tartu Ulikool (EE);<br>5. Ethniko Diktyo Erevnas Technologias AE (EL);<br>6. Zenith Analytics OU (EE);<br>7. IBM Research Gmbh (CH);<br>8. Smartmatic-Cybernetica Centre of Excellence for Internet Voting OU (EE);<br>9. Technische Universiteit Eindhoven (NL);<br>10. The University of Edinburgh (UK) |

| PROMETHEUS | |
|---|---|
| Title | PRivacy preserving pOst-quantuM systEms from advanced crypTograpHic mEchanisms Using latticeS |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2017. Topic code: DS-06-2017. January 2018 / December 2021 - EUR: 5.496.968,75 GA 780701 |
| Abstract | Privacy-preserving cryptographic protocols allow users to take common daily life actions online (e.g, purchases, reservations or voting) without leaking sensitive personal information. They typically combine various tools such as digital signatures, homomorphic encryption or zero-knowledge proofs. While practical solutions exist under RSA or discrete logarithm assumptions, they are all completely vulnerable to quantum attacks, so that working quantum computers would immediately make them obsolete. To address this threat, the PROMETHEUS project will enable users' privacy in the post-quantum world by providing a complete toolbox of innovative, efficient and quantum-secure cryptographic techniques adapted to modern services. It will provide new building blocks in relation with international competitions and standardisation processes, as well as advanced properties dedicated to the design of sophisticated protocols. To this end, PROMETHEUS will focus on lattice-based cryptography and first conduct an in-depth study of the hardness of lattice problems in the quantum world, which will drive the development of better basic tools for lattice-based cryptography. Then, it will give a new set of practical primitives (signatures, public-key encryption, pseudorandom functions, etc) and suitable methods to combine them with efficient zero-knowledge proofs. These new tools will lead to the design of practical advanced protocols, like anonymous credentials, digital cash or electronic voting, that maintain users' privacy against quantum adversaries. The security of these protocols will be considered in its entirety, from theoretical definitions allowing quantum accesses to certain functionalities to practical implementations accounting for side-channel leakages. As a concrete outcome, PROMETHEUS will highlight the feasibility of post-quantum privacy via demonstrators for several real-life use cases, including electronic payments, e-voting and cyberthreat intelligence. |
| Website | http://prometheuscrypt.gforge.inria.fr/index.html |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ecole Normale Superieure de Lyon (FR)<br>Partners:<br>2. Orange SA (FR);<br>3. Stichting Centrum voor Wiskunde en Informatica (NL);<br>4. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL);<br>5. Weizmann Institute of Science (IL);<br>6. SCYTL Secure Electronic Voting SA (ES);<br>7. Thales Communications & Security SAS (FR);<br>8. IBM Research GMBH (CH);<br>9. Universitat Politecnica de Catalunya (ES);<br>10. Ruhr-Universitaet Bochum (DE);<br>11. Universite De Rennes I (FR);<br>12. Royal Holloway and Bedford New College (UK) |

| ProtonSuite | |
|---|---|
| Title | The world's largest secure collaboration suite |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>December 2017 / March 2018 - EUR: 50.000,00 GA 791727 |
| Abstract | Nowadays, individuals and businesses are more concerned about privacy and security than in the past and demand more secure and reliable products and services. Moreover, on May 25 2018, a new European privacy regulation, the General Data Protection Regulation (GDPR), will come into effect. This regulation will be implemented in all local privacy laws across the entire EU region and it will apply to all companies selling to and storing personal information about citizens in Europe. To achieve GDPR compliance, organisations will have to secure all communication channels (email, chat, data sharing) with customers, for which end-to-end encryption will play a key role. In such a scenario, companies have no choice than quickly adapt their data protection procedures and acquire technology that complies with the new regulation. ProtonSuite will is the first cloud-based cybersecure collaboration platform that provides users with end-to-end secure communication channels and collaboration tools. The platform is built following the essence of privacy by design, which means that privacy is taken into account from the inception of the product concept. Furthermore, the solution goes even further and tackles the biggest problem that is preventing the encryption to reach the mass audience: key distribution and key authentication. Our aim is to bring to the market ProtonSuite in 2020 with a clear vision in mind: democratize data privacy and security. Our commercial success will be based on our ability to up-sale the product to our existing customer base, attract new customers and foster our collaboration with open source community (GitHub, OpenPGP) and universities (EPFL, MIT), which are acting as our prominent evangelists. After the completion of the project, with the product commercialization we will achieve a forecasted cumulative revenue of € 98 Million. Considering the funding for phase 2 (1.8M €), we forecast a R.O.I of 6.9 (2020-2024) while payback will be reached in 2021. |
| Website | http://protonmail.com |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. Proton Technologies AG (CH) |

| REASSURE | |
|---|---|
| Title | Robust and Efficient Approaches to Evaluating Side Channel and Fault Attack Resilience |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2019 - EUR: 3.478.747,50 GA 731591 |
| Abstract | Implementing cryptography on embedded devices is an ongoing challenge: every year new implementation flaws are discovered and new attack paths are being used by real life adversaries. Whilst cryptography can guarantee many security properties, it crucially depends on the ability to keep the used keys secret even in face of determined adversaries. Over the last two decades a new type of adversary has emerged, able to obtain, from the cryptographic implementation, side channel leakage such as recording of response times, power or EM signals, etc. To account for such adversaries, sophisticated security certification and evaluation methods (Common Criteria, EMVCo, FIPS...) have been established to give users assurance that security claims have withstood independent evaluation and testing. Recently the reliability of these evaluations has come into the spotlight: the Taiwanese citizen card proved to be insecure, and Snowden's revelations about NSA's tampering with FIPS standards eroded public confidence. REASSURE will (1) improve the efficiency and quality of all aspects of certification using a novel, structured detect-map-exploit approach that will also improve the comparability of independently conducted evaluations, (2) cater for emerging areas such as the IoT by automating leakage assessment practices in order to allow resistance assessment without immediate access to a testing lab, (3) deliver tools to stakeholders, such as reference data sets and an open-source leakage simulator based on instruction-level profiles for a processor relevant for the IoT, (4) improve existing standards by actively pushing the novel results to standardization bodies. REASSURE's consortium is ideal to tackle such ambitious tasks. It features two major circuits manufacturers (NXP, MORPHO), a highly respected side channel testing lab (Riscure), an engaged governmental representative (ANSSI), and two of the most prominent research institutions in this field (UCL, University of Bristol). |
| Website | http://reassure.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Catholique de Louvain (BE)<br>Consortium:<br>2. NXP Semiconductors Germany Gmbh (DE)<br>3. Riscure BV (NL)<br>4. Safran Identity & Security (FR)<br>5. Secretariat General de la Defense et de la Securite Nationale (FR)<br>6. Univ. of Bristol (UK) |

| SMOOTH | |
|---|---|
| Title | GDPR Compliance Cloud Platform for Micro Enterprises |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2017. Topic code: DS-08-2017. May 2018 / October 2020 - EUR: 2.986.061,25 GA 786741 |
| Abstract | According to the last official available 2015 data, almost 93% of all enterprises in Europe in the non-financial business sector have less than 10 employees. These micro enterprises (MEnts) are responsible for 30% and 21% of the overall employment and value added in the EU, respectively. However, when it refers to the imminent General Data Protection Regulation (GDPR)'s application, MEnts are the most vulnerable due to their lack of expertise and resources to invest in their adoption. It is urgent to develop solutions that assist MEnts in smoothly adopting the GDPR, safeguarding the interests of the EU citizens on data privacy and security, avoiding the negative socioeconomic consequences entailed to breaches for MEnts, and, by extension, benefitting the European society. SMOOTH project addresses this challenge from two complementary focuses: 1) Creating awareness on the importance of being compliant with the GDPR, as many MEnts ignore their obligations in this respect, involving as partners Data Protection Authorities and associations representing EU MEnts. For the same purpose, SMOOTH will deliver a practical GDPR interactive handbook (website and mobile app) tailored specifically to MEnts. 2) Assisting MEnts to effectively adopt and comply with the GDPR. The SMOOTH cloud platform will use machine learning, text and data mining, and advance online auditing methods to automatically create a bespoke GDPR compliance report for the most critical aspects to MEnts. Likewise, SMOOTH will provide useful materials for solving those identified aspects of the GDPR that are not properly covered. All this will positively contribute to citizens rights, while avoiding potential fines for the MEnts that may account for as much as 4% of the annual income, according to the GDPR. SMOOTH is born from technology partners and data protection authorities and will be designed and validated by actual MEnts with the aim of becoming the reference tool platform for them to adopt the GDPR. |
| Website | https://smoothplatform.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator :<br>1. Fundacio Eurecat (ES)<br>Consortium :<br>2. Asociacion Espanola de Normalizacion (ES)<br>3. Fundacion Imdea Networks (ES)<br>4. Naver France (FR)<br>5. Fundingbox Accelerator SP Zoo (PL)<br>6. Datu Valsts Inspekcija (LV)<br>7. Nec Laboratories Europe Gmbh (DE)<br>8. Katholieke Universiteit Leuven (BE)<br>9. Agencia de Proteccion de Datos (ES)<br>10. Universidad Carlos III De Madrid (ES)<br>11. European Small Business Alliance of Small and Medium Independent Enterprises (BE)<br>12. LSTECH Espana SL (ES) |

| TRUESSEC.EU | |
|---|---|
| Title | TRUst-Enhancing certified Solutions for SEcurity and protection of Citizens' rights in digital Europe |
| Contract details | Secure Societies. Call: H2020-DS-LEIT-2016. Topic code: DS-01-2016. January 2017 / December 2018 - EUR: 999.992,50 GA 731711 |
| Abstract | TRUESSEC.EU is a CSA on certification and labelling of trustworthiness properties from a multidisciplinary SSH-ICT perspective and with emphasis on human rights. The current complexity of ICT products and services makes it difficult to appraise their trustworthiness. Thus, certification becomes a must to restore transparency and trust. TRUESSEC.EU aims at exploring the situation, the barriers, and the benefits of security and privacy labels; engaging stakeholders in the discussions, and issuing recommendations that may foster the adoption and acceptance of labels. With that aim, TRUESSEC.EU works and results are sustained by three pillars: 1) A StakeHolders' Online Platform (SHOP), where associated cluster projects and stakeholders from industry, academia, governments and civil society will gather, participate in debates, get informed, and provide their opinions and feedback on the topics of the project. 2) A series of Support Analysis and Studies (SUPPA) from multidisciplinary perspectives on issues of trustworthiness certification and assurance, to study the situation of trust-enhancing labels, barriers/incentives to industry adoption and consumer acceptance. Information will be gathered from both public sources and the interactions with stakeholders through SHOP. Four different approaches will be applied: -Socio-cultural -Legal & ethical -Technological -Business 3) A set of Recommendations on European Trust-Enhancing Labels (ETEL) dealing with: methodological aspects of certification and assurance, a catalogue of criteria for labels and certifications, and regulatory aspects to foster their adoption, plus a strategic agenda. These recommendations reflect the conclusions obtained from the support analysis and from the stakeholders. The community of stakeholders will nourish, among others, from: (a) members of the consortium partners that are stakeholder networks themselves (DIGICAT, APWG, KTN, AUI), and (b) H2020 RIAs & IAs from the associated cluster. |
| Website | https://truessec.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The Connected Digital Economy Catapult Limited (UK)<br>Consortium:<br>2. Asociacion de Usuarios de Internet (ES)<br>3. Fundacion Apwg, European Union Foundation (ES)<br>4. Knowledge Transfer Network Limited (UK)<br>5. Universidad Politecnica de Madrid (ES)<br>6. Universitaet Graz (AT)<br>7. Universite De Lille Ii - Droit et Sante (FR) |

| U2PIA | |
|---|---|
| Title | Universal application 2 conduct Privacy Impact Assessment analysis and reports |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>November 2016 / March 2017 - EUR: 50.000,00 GA 743996 |
| Abstract | We are Nier Soluzioni Informatiche (NSI), an innovative software company that operates since 2002 in the fields of security compliance, privacy compliance, and counselling on the protection of personal information in collaboration with law firms. We have a strong history and capacity to develop new products/services (10% revenue growth), a €4.2M turnover in 2015 and 80 employees currently, established commercialization channels, and an international customer base of both private companies (e.g. Philips, Nike, Magneti-Marelli, Scuderia Toro-Rosso) and public entities (e.g. Università di Bologna, Rizzoli Institute, San Raffaele Hospital of Milan, or AUSL –healthcare system of Emilia Romagna Region). With the support of renowned legal experts focused on privacy and data protection (Orlandi-Leone Studio Legale), we are launching U2PIA, a disruptive cloud platform designed to enable the creation of in-depth analysis of the risks which Personal Data are subject to through a Privacy Impact Assessment (PIA). Our platform will address the requirements of the upcoming mandatory European regulation (EU) 2016/679 on Privacy Assessment that all private and public EU companies must meet, to avoid the large penalties and severe sanctions that they could suffer if proper action is not taken (failure to comply put the business at a risk of a sanction up to 20 million euros or, if higher, up to 4% of annual worldwide turnover). Thanks to U2PIA, not only do we expect about €3.1M revenue and ROI of 2.78 by the third year of business, but it will also help us become a cloud SaaS service leader provider. |
| Website | https://nsi.it/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. NSI Nier Soluzioni Informatiche SRL (IT) |

| UltraFiBi | |
|---|---|
| Title | Next-generation Strong Ultrasonic Fingerprint Biometrics |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2017 / March 2018 - EUR: 50.000,00 GA 781271 |
| Abstract | Biometrics is becoming increasingly popular to allow secure and passwordless authentication. The conventional fingerprint sensors currently in use are basically low-cost products mainly targeting mobile applications, such as smartphones and tablets. Due to security problems (easy to spoof), they do not meet the end-user requirements when true security and strong authentication is needed. Because ultrasound waves easily travel inside matter, a fingerprint sensor based on ultrasound provides significantly more secure authentication as it is able to capture 3D features. Ultrasound sensor is as convenient to use as other competing fingerprint sensors. Thus far, full benefits of ultrasound technology have not yet been used to meet the all end-user needs. MODULEUS will exploit technological advantages of ultrasound to address end-user needs related to high security confidence, usage convenience and privacy safeguard. The SME Phase 1 project will focus on security sector with the main objective to conceive comprehensive business plan with a strong go-to market strategy to facilitate the market expansion to high-volume markets. |
| Website | http://www.moduleus.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Moduleus SAS (FR) |

| SPECIAL | |
|---|---|
| Title | Scalable Policy-awarE linked data arChitecture for prIvacy, trAnsparency and compLiance |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Information and Communication Technologies.<br>Call: H2020-ICT-2016-1. Topic code: ICT-18-2016. January 2017 / December 2019 - EUR: 3.991.388,75 GA 731601 |
| Abstract | The SPECIAL project will address the contradiction between Big Data innovation and privacy-aware data protection by proposing a technical solution that makes both of these goals realistic. We will develop technology that: (i) supports the acquisition of user consent at collection time and the recording of both data and metadata (consent, policies, event data, context) according to legislative and user-specified policies; (ii) caters for privacy-aware, secure workflows that include usage/access control, transparency and compliance verification; (iii) demonstrates robustness in terms of performance, scalability and security all of which are necessary to support privacy preserving innovation in Big Data environments; and (iv) provides a dashboard with feedback and control features that make privacy in Big Data comprehensible and manageable for data subjects, controllers, and processors. SPECIAL shall allow citizens and organisations to share more data, while guaranteeing data protection compliance, thus enabling both trust and the creation of valuable new insights from shared data. Our vision will be realised and validated via real world use cases that - in order to be viable - need to overcome current challenges concerning the processing and sharing of data in a privacy preserving manner. In order to realise this vision, we will combine and significantly extend big data architectures to handle Linked Data, harness them with sticky policies as well as scalable queryable encryption, and develop advanced user interaction and control features: SPECIAL will build on top of the Big Data Europe and PrimeLife Projects, exploit their results, and further advance the state of the art of privacy enhancing technologies. |
| Website | https://www.specialprivacy.eu/ |

| SPECIAL | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. GEIE ERCIM (FR)<br>Consortium:<br>2. Thomson Reuters Group Limited (UK)<br>3. Tenforce BVBA (BE)<br>4. Centro Regionale Information Communication Technology SCRL (IT)<br>5. Unabhaengiges Landeszentrum Fuer Datenschutz (DE)<br>6. Proximus (BE)<br>7. Technische Universitaet Berlin (DE)<br>8. Wirtschaftsuniversitat Wien (AT)<br>9. Deutsche Telekom AG (DE) |

### *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Pilot programme for data exchange of the Passenger Information Units | |
|---|---|
| Title | Pilot programme for data exchange of the Passenger Information Units |
| Project number | HOME/2014/ISFP/AG/LAWX/7150 |
| Contract details | € 1,153,318.68 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Ministry Of Interior<br>Consortium:<br>State Agency for National Security (BG); Mykolas Romeris University (LT); General Inspectorate of the Romanian Border Police (RO); General Directorate of Police (ES); Polícia Judiciária (PT) |

## 6.3.3 Cybercrime

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Cybercrime | CAMINO<br>CAPER<br>COCKPITCI<br>COURAGE<br>CWIT<br>CYBERROAD<br>E-CRIME<br>EKSISTENZ<br>ESCORTS<br>HYRIM<br>PREEMPTIVE<br>SCOUT<br>SERSCIS<br>SPARKS |

| 3ants | |
|---|---|
| Title | Enhancing security of digital property rights and citizens' awareness through an innovative anti-piracyframework of digital content based on Machine Learning and Artificial Intelligence |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2017 / December 2017 - EUR: 50.000,00 GA 772665 |
| Abstract | Digital piracy and counterfeit activity causes incredible economic damages in creative & e-commerce sectors. It jeopardizes the rights of all creative individuals, puts jobs at risks, and undermines new legal business models and distribution platforms. Piracy and counterfeiting the statistic losses sum $125 billion and 2.5 million of jobs. Part of those loss are transformed into benefits to those who break the law and rights. Consumer is not property aware of such impact. 3antS aims to become the main reference cyber-security service framework to fight against contents piracy & digital distribution of counterfeited goods. , 3ANTS mission is to deliver a set of breakthrough cybersecurity SaaS services built over a disruptive self-developed algorithm based on machine learning techniques, that follows as a crawler pirated content & goods through the internet (web, torrents, mobile applications, social networks, e-commerce etc) automatically geo-locating (100% accuracy) the items and forcing their withdrawal (98%) 3antS - over this unique technology –provides a framework of an innovative set of added value SaaS services as a response to the business challenges and opportunities: (1)SaaS to remove specific pirated content & goods (2)Smart Analysis & Reports Scorecard to Support Decision Taken (3)Gamification mobile applications to raise awareness, and engage content public targets against the pirate fighting (4)APIs to allow third parties data entrance or developing of new services over it. 3ants has gone through processes of "design thinking" and "customer discovery & validation" - with more than 31 million of contents removed, having demonstrated the value proposal with reference entities in the media sector as WarnerBros or SonyPictures (TRL7) 3ants aims to scale-up the product internationally, covering all digital content (video, books, music) and main e-commerce segments (fashion, pharma, electronics) achieving an accumulated EBITDA of 44,8M€ by 2023 with 80% margin |
| Website | http://www.threeants.tumblr.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 3ants Development & Strategies Sociedad Limitada (ES) |

| ANITA | |
|---|---|
| Title | Advanced tools for fighting oNline Illegal TrAfficking |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-12-FCT-2016-2017.<br>May 2018 / April 2021 - EUR: 4.999.580,00 GA 787061 |
| Abstract | ANITA will design and develop a novel knowledge-based user-centred investigation system for analysing heterogeneous (text, audio, video, image) online (Surface Web, Deep Web, DarkNet) and offline content for fighting illegal trafficking of drugs, counterfeit medicines, NPS and firearms. ANITA will combine a) innovative data source analysis of crypto-currency network and transactions and blockchain technologies; b) advanced Big Data analytics tools for automatic analysis of the vast amounts of multimodal content of the identified sources; c) sophisticated methodologies for capturing, modelling and inferring knowledge in human understandable forms (e.g. expressive ontologies), extracting also relevant and new knowledge from neural networks and formally storing it in the form of ontologies; d) development of an adaptive, cognitive user modelling framework that will capture, analyse, interpret, mimic and integrate key human cognitive and information processing functions for: i) incarnating the incorporation of human perception/cognition principles in the system processing pipelines (i.e. integrating the investigators 'in-the-loop' of the overall analysis process) and ii) facilitate the transfer of domain knowledge from the expert users to the novice ones; e) domain-related and user-oriented intelligence applications, which will enable users to identify patterns for spatial, temporal and causal correlations among illegal trafficking events, entities and activities and to support decision-making processes for countermeasures to undertake. All the above functionalities will be coupled and reinforced by an in-depth interdisciplinary analysis of the online illegal trafficking phenomenon (including the study of reaction strategies and countermeasures) and a thorough analysis of the online resources with respect to social, ethical, legal and privacy issues of concern. The proposed system capabilities will be demonstrated in multiple relevant operational environments. |
| Website | http://www.anita-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering - Ingegneria Informatica SPA (IT)<br>Consortium:<br>2. AIT Austrian Institute of Technology GmBH (AT)<br>3. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>4. RISSC - Centro Ricerche e Studi Susicurezza e Criminalita Associazione (IT)<br>5. Kriminalisticko-Policijska Akademija (RS)<br>6. Fundacio Institut de Bioenginyeria de Catalunya (ES)<br>7. Provincial Police Headquarters in Gdansk (PL)<br>8. Istituto Italiano per la Privacy (IT)<br>9. Belgisch Instituut voor de Verkeersveiligheid VZW (BE)<br>10. Systran SA (FR)<br>11. Expert System SPA (IT)<br>12. Stichting Dutch Institute for Technology, Safety & Security (NL)<br>13. Stichting Katholieke Universiteit Brabant (NL)<br>14. Politiezone Brecht-Malle-Schilde-Zoersel (BE)<br>15. Home Office (UK)<br>16. Glavna Direktsia Borba s Organiziranata Prestupnost (BG)<br>17. The National Police of the Netherlands (NL) |

| COUNTERCRAFT | |
|---|---|
| Title | Intelligence campaigns in the digital realms |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>September 2017 / August 2019 - EUR: 1.133.562,50 GA 767383 |
| Abstract | Many large companies are subject to advanced directed attacks performed by the competence, governments, organized crime bands, a malicious employee, etc. interested in damaging the company subject of the attack for different reasons. Cyber criminals grow more sophisticated by the day, and network security architectures are quickly evolving in an attempt to keep up. Despite recent advances, sophisticated malware authors and cyber criminals are innovating at a faster pace than security professionals can react to. Attackers are increasingly able to slip past network security applications such as IDSs, IPSs, next-gen firewalls, and web application firewalls – regardless of how new and comprehensive they are. Thus, companies can no longer afford to concentrate all of their resources on firewalls and first line of defense systems. They also need to incorporate "internally focused" solutions such as deception technologies to help identify a criminal while in attack mode; a criminal that has already bypassed the current state-of-the-art perimeter defenses. The project aims to accelerate the introduction of the first EU deception tool capable of detecting advanced targeted cyber-attacks, obstructing the actions of attackers and obtaining the maximum amount of information from them by successfully designing, deploying, monitoring and managing Counter Intelligence Campaigns. COUNTERCRAFT will allow: To reduce the overall cost of cyberattacks by 50%; to shorten the average computer infection period by 70% from 300 days to 90 days; to reduce the time needed to effectively design, deploy, monitor and manage counter intelligence campaigns by 80% from 4 hours/day to 48 minutes/day; to reduce the tendency of COUNTERCRAFT users to be attacked by 60%; to identify the intentions of the attacker; to leverage "intelligence" information about the attacks to create and distribute indicators of compromise (IOCs); to orchestrate the cyber-security strategy . |
| Website | https://www.countercraft.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Countercraft SL (ES) |

| KEEPERS | |
|---|---|
| Title | Keepers: The Key to your Child's Safety |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>April 2017 / August 2017 - EUR: 50.000,00 GA 762074 |
| Abstract | Today Children communicate mainly through social media or mobile phones. Violence is prevalent in cyberspace and follows children everywhere. According to the 2015 UN survey 35% of children have been victims of social networks shaming. It's a well known fact that parents today lack tools to cope with the advancing technology. -Every 7 minutes a child is harassed on the internet -80% Of cyberbullying cases are not reported -70% Admit they are affected by cyberbullying Keepers enables parents to monitor their child's mobile phone usage and become aware of any shaming/bullying phenomena their child might experience by spotting and filtering problematic and abusive content. Supervision and Monitoring - Keepers inspects the content the child is exposed to, analyzes it, and reports offensive language Concealed - Keepers app is hidden on the child's device Analysis of Malicious Content - Keepers tracks and filters problematic content and sends appropriate alerts Privacy - only pre-defined problem content is reported to preserve the child's independence Dynamic Dictionary - Keepers adds specific words to the default local user dictionary based on parent settings. Cross Platform Solution – Keepers detects incoming/outgoing messages on all social platform using the OCR algorithm Consulting – Keepers connects parents with social services to help taekle any ongoing problems Social Machine Learning - Keepers algorithm collect suggestions from various users and automatically learn to detect abusive content based on AI (artificial intelligence) and NLP (Natural Language Processing) technologies. |
| Website | http://www.keeperschildsafety.net/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Lipskin-Yaakobi-Budov Innovation Ltd (IL) |

| ProBOS | |
|---|---|
| Title | Protection Beyond Operating System - Development of the next generation cyber security solution |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / September 2018 - EUR: 1.970.336,40 GA 726818 |

| ProBOS | |
|---|---|
| Abstract | Cybercrime is on the rise in terms of scope and impact, which is facilitated by current environment: increasing use of mobile devices, social networking, mobile communications and cloud computing. Cyber attacks are made mostly against governments and corporates to gather guarded information, or to disrupt their operation in general. Advanced attackers targeted 5 out of 6 large companies each month in 2014, whereas 60% of all targeted attacks struck small- and medium-sized organisations. The same year companies across all industries worldwide have reported a total of 42.8 million detected attacks. And the consequences are varied and serious: crime involving computers and networks has cost the world economy more than $445 billion annually and the cost is expected to reach 1 trillion in 2016. Restroring damages caused by successful cyber attacks is extremely difficult and costly, if not impossible. Moreover, when a security breach occurs, the company or organisation concerned not only loses valuable and/or sensitive data, but it also suffers damage to its brand and reputation that can take a lot of time and money to repair. The increasing cybercrime urges for innovative cyber security solutions that are able to detect and immediately respond to attacks that are highly sophisticated and damaging, which is more important than ever. And this phenomena generates market opportunity for cybersecurity specialty companies. At ReaQta we develop the next generation cyber security protection solution –ReaQta-core - that can revolutionise the IT security market by offering a higher level of protection to governments and private organisations. ReaQta-core is the first to apply a novel approach that incorporates a unique NanoOS and an Artificial Intelligence Engine to protect endpoints from the most advanced and sophisticated cyberthreats. |
| Website | https://reaqta.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Reaqta Ltd (MT) |

| SAINT | |
|---|---|
| Title | SYSTEMIC ANALYZER IN NETWORK THREATS |
| Contract details | Secure Societies. Call: H2020-DS-SC7-2016. Topic code: DS-04-2016. March 2017 / February 2021 - EUR: 1.998.700,00 GA 740829 |
| Abstract | SAINT proposes to analyse and identify incentives to improve levels of collaboration between cooperative and regulatory approaches to information sharing. Analysis of the ecosystems of cybercriminal activity, associated markets and revenues will drive the development of a framework of business models appropriate for the fighting of cybercrime. The role of regulatory approaches as a cost benefit in cybercrime reduction will be explored within a concept of greater collaboration in order to gain optimal attrition of cybercriminal activities. Experimental economics will aid SAINT in designing new methodologies for the development of an ongoing and searchable public database of cybersecurity indicators and open source intelligence. Comparative analysis of cybercrime victims and stakeholders within a framework of qualitative social science methodologies will deliver valuable evidences and advance knowledge on privacy issues and Deep Web practices. Equally, comparative analysis of the failures of current cybersecurity solutions, products and models will underpin a model for greater effectiveness of applications and improved cost-benefits within the information security industry. SAINT proposes to advance measurement approaches and methodologies of the metrics of cybercrime through the construct of a framework of a new empirical science that challenges traditional approaches and fuses evidence-based practices with more established disciplines for a lasting legacy. SAINT's innovative models, algorithms and automated framework for objective metrics will benefit decision-makers, regulators, law enforcement in the EU, at national and organisational levels providing improved cost-benefit analysis and supported by tangible and intangible costs for optimal risk and investment incentives. The resulting ongoing business spin off and the potential for novel research and further studies will be attractive to academia and researchers beyond the lifetime of the project. |
| Website | http://www.saint-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. National Center For Scientific Research "Demokritos" (EL)<br>Consortium:<br>2. Archimede Solutions Sarl (CH)<br>3. Incites Consulting Sarl (LU)<br>4. Institouto Technologias Ypologistonkai Ekdoseon Diofantos (EL)<br>5. Kentro Meleton Asfaleias (EL)<br>6. Mandat International Alias Fondation Pour La Cooperation Internationale (CH)<br>7. Montimage Eurl (FR)<br>8. Stichting Cyberdefcon Netherlands Foundation (NL)<br>9. Universite du Luxembourg (LU) |

| ThreatMark | |
|---|---|
| Title | Advanced Fraud Detection System - Protecting digital transactions against cyber attacks |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>August 2016 / November 2016 - EUR: 50.000,00 GA 735734 |
| Abstract | ThreatMark vision is to secure the assets of people/companies by better protection of digital transaction systems against cyber-attacks. It dramatically improves the detection & protection capabilities of cyber-operators against threats, fraud & incidents. It allows them to increase their security by complex preparedness, rapid detection and faster response. Advanced machine learning and unique algorithms of ThreatMark make the detection of advanced threats and behavioral anomalies more sensitive and reliable while lowering the cost of operation. We challenge the conventional methods of transaction protection by bringing usually fragmented features under one roof: (online) fraud detection systems, web fraud detection, web application firewall, malware detection, criminal and account takeover detection. This is unique and appreciated by users, as proven by recent competitor analysis. The solution has been designed to answer the business opportunity that lays in plausible cyber-security market trends: (1) Steady growth of online transactions & cyber attacks/ online fraud at the same time; (2) Rise of as-a-service model providers & market (9.8%/ p.a.); (3) Pressure to decrease high expenses for complex security. The ultimate goal of this project is to bring to market system ThreatMark capable of improving the security of transactions and decreasing the resources needed. Four target groups were identified: on-line banks, high value transactions providers, secure apps, emerging digital services. Some strategic alliances with business partners exist. The sub-objectives of FS include requirements analysis, detailed business plan, technology roadmap update and company development strategy based on innovation management training. The company has already invested into its technology more than 200 000 EUR (equipment, travel, 1 500 own man-days, 2 000 man-days of academic partners from 2013). To fully enter the market in 2017 a strategic investment or funding is requested. |
| Website | https://www.threatmark.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Threatmark SRO (CZ) |

| UNFRAUD | |
|---|---|
| Title | An advanced online anti-fraud software equipped with deep learning Artificial Intelligence thatcan face and detect, current fraudulent techniques and their continued evolution in a cost effective man |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>June 2017 / September 2017 - EUR: 50.000,00 GA 775707 |
| Abstract | The impact of cybercrime is a growing concern in a society that increasingly interacts online. In the EU the cost of cybercrime has reached €871 billion a year and fraudulent card transactions amounted to €1.27 billion. The high number of online frauds coupled with the low level of cybersecurity deters businesses, and in particular SMEs who may not be able to afford comprehensive anti-fraud services, from fully exploiting the potential of e-commerce. UNFRAUD is a software product that prevents potential online fraud scenarios by analysing previous and current fraudulent invents through deep learning artificial intelligence to tackle the new challenges that fraudsters devise. UNFRAUD's algorithms are similar to one's used by Google for self driving cars and facial recognition (i.e. deep AI that recognizes human errors, behaviours and surroundings) and through this deep learning it is able to detect 'fraudulent' behaviour. This makes UNFRAUD much more reliable as well as greatly reducing the cost of anti-fraud services, allowing companies to operate and grow safely. During the Phase 1 feasibility study the project will focus on identifying and securing the key partners required for commercialisation, establishing a sound business model and commercialization strategy, and planning a pilot test with a bank, big e-commerce, enterprise, telecommunication company and public administration in order to fully demonstrate and assess the products capabilities. |
| Website | http://www.unfraud.com/en |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. TXN SRL (IT) |

| FREETOOL v2.0 | |
|---|---|
| Title | Maturing and Extending the FREETOOL Tool Development Initiative |
| Contract details | HOME/2014/ISFP/AG/CYBR/7160, January 2016 December 2017 - EUR: 918.209,40 |
| Abstract | FREETOOL v2.0 builds on the success of the original FREETOOL project, streaming the development work for both Forensic and OSINT tools, establishing a validation process, and providing training on the tools. The primary goal of this two year project is to develop and scientifically validate a suite of free and reliable tools for law enforcement, in order to assist them in the "fight against cybercrime and child exploitation". |
| A secondary, but none-the-less important, goal of the project is to develop training for law enforcement officers, which utilises the outputs of the project. | |

| FREETOOL v2.0 | |
|---|---|
| This is the second iteration of the FREETOOL project. The first was also a two year project that brought together law enforcement coders from across Europe in a proof-of-concept development environment. This project was highly successful and six tools were developed in the field of digital forensics. These tools are now freely and exclusively available to the law enforcement community, and can be accessed via the SPACE platform at EC3 EUROPOL. | |
| Website | https://www.ucd.ie/cci/projects/current_projects/freetool2.html |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>University College Dublin, Centre for Cybersecurity & Cybercrime Investigation (IE)<br>Partners:<br>1. Hessen State Police Academy (DE)<br>2. Consiglio Nazionale delle Ricerche (IT) |

| EU OF2CEN | |
|---|---|
| Title | European Online Fraud Cyber Centre and Expert Network |
| Contract details | HOME/2014/ISFP/AG/CYBR/7172, December 2015- November 2017 - EUR: 482.820,00 |
| Abstract | EU OF2CEN builds on a previous project OF2CEN with the objective to fight e-crime through a strong cooperative network of actors involved in the detection and management of specific electronic crimes, including on-line frauds.<br><br>Most of the time, when a bank or an organization reports officially the offence to the Police, the data provided is old and few can be done to identify the offenders. EUOF2CEN aims to tackle this issue by taking advantages of collaboration among banks, credit card issuers, European law enforcement agencies and recognized risk management firms to implement an Information Sharing model and standard in order to analyse and mitigate electronic crimes risks. The platform will enable real-time collection of reports relating to suspicious financial transactions submitted by the participating banks and police forces though secure communication channels therefore allowing to receive and share alerts relating to criminal activities in progress through an “early warning” system.<br><br>Conceived as a public/private partnership EU-OF2CEN will increase financial institutions ability to assess bank transactions while facilitating law-enforcement access to aggregated and structured information thus enabling a faster response to recover the proceeds of crime and to identify perpetrators. |
| Website | https://www.gcsec.org/activities/online-fraud-cyber-centre-experts-network-of2cen |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Interior Ministry - Public Safety Department (IT)<br>Partners:<br>1. Interior Ministry (FR)<br>2. National Police (HU)<br>3. Civil Guard, Ministry of Interior (ES)<br>4. Banking Research & Innovation Centre, ABI Lab (IT)<br>5. Intellium Italia S.r.l. (IT)<br>6. Poste Italiane S.p.A. (IT)<br>7. SIA S.p.A. (IT)<br>8. University of Modena and Reggio Emilia (IT)<br>9. University of Trento (IT) |

| I-CARE | |
|---|---|
| Title | International Child Sexual Exploitation Database Connectivity and Awareness Raising Enhancements |
| Contract details | HOME/2014/ISFP/AG/CYBR/7184, February 2016 – January 2018 - EUR: 1.927.891,71 |

| I-CARE | |
|---|---|
| Abstract | The primary objectives of the I-CARE (International Child Sexual Exploitation database (ICSE DB) Connectivity and Awareness Raising Enhancements) project are to enhance and launch the fourth version of INTERPOLS ICSE image and video database, increase avenues for connectivity and uploading of data to the database, enhance the monitoring of the database's performance, and conduct and publish a study on unidentified victims. ICSE database allows specialized police investigators in INTERPOL member countries to share information with, and provide case assistance to, colleagues across the world to identify child sexual offenders and rescue victims through the visual analysis of sexual exploitation images and videos. Available through INTERPOL'S secure global police communications system, ICSE DB uses sophisticated image comparison software to make connections between victims and places. The ICSE database enables certified users in member countries to access the database directly and in real time, thereby providing immediate responses to queries related to child sexual exploitation investigations. Police forces in 54 countries and Europol are connected to the ICSE database and cooperate to identify victims and their abusers.<br><br>The beneficiary countries will guide the functional specifications of the new tools throughout the project's implementation and will test the ability to interconnect national databases to the ICSE database through a newly created Open Interface. |
| Website | https://www.interpol.int/Crime-areas/Crimes-against-children/Victim-identification |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Interpol<br>Partners:<br>1. Stichting ECPAT International - established in Netherlands<br>2. General Inspectorate of Police - established in Moldova<br>3. Belgian Federal Police - established in Belgium<br>4. Videntifíer Technologies ehf (Ltd) - established in Iceland<br>5. National Police of the Netherlands - established in the Netherlands<br>6. The Swedish Police - established in Sweden |

| ECTEG 2.0 | |
|---|---|
| Title | IT crime and IT forensics course package creation for LEA<br><br>***This project also corresponds to the category 'Forensics'.*** |
| Contract details | ISFP-2016-AG-IBA-ECTEG, November 2017 – October 2018 - EUR: € 1.515.407,00 |
| Abstract | ECTEG commits to create, update and distribute IT crime and IT forensics training and education materials. The areas and specific topics where ECTEG will deliver are identified through a process defining the profiles (Training Competencies Framework), the training needs and the existing gaps that need to be addressed. This process involves relevant EU Agencies (Europol-EC3, CEPOL, Eurojust) and Member States (EUCTF, i.e. the task force gathering the heads of cybercrime units in national law enforcement agencies). ECTEG will create and update the training materials through cooperation among its members (representatives of law enforcement, academia and private entities).<br><br>ECTEG will contribute to sharing knowledge and expertise, promoting standardisation of methods and procedures for training programmes, fostering collaboration with academic partners to establish academic qualification in the field of fighting cybercrime:<br><br>The creation of training materials will be complemented by setting out training and education standards and profile-based processes and materials. This will lead to the possibility to establish certification schemes for practitioners. Standards for the development of training material and the exchange of expertise within the ECTEG network will improve LEA cybercrime capacity building efforts. |
| Website | https://www.ecteg.eu/running/ |
| Consortium (prone to modification in case of GA amendment) | European Cybercrime Training And Education Group (ECTEG) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Strenghening European Network of Excellence in cybercrime - SENTER | |
|---|---|
| Title | Strenghening European Network of Excellence in cybercrime - SENTER |
| Project number | HOME/2014/ISFP/AG/CYBR/7170 |
| Contract details | € 1,779,164.01 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>Mykolas Romeris University<br>Consortium:<br>Lithuanian Cybercrime Center of Excellence, Ekonomines konsulateijos ir tyrimai, Masaryk University, KU Leuven, french cybercrime centre of Excellence, Tallinn University of Technology, University of Applied Science Albstad Sigmaringen, International Cyber Investigation Training Academy, Foundation for Research and Technology Hellas, Jozef Stefan Institute |

## 6.4 Crime

### 6.4.1 Organised crime

The following projects have been funded within H2020:

| PROTON | |
|---|---|
| Title | Modelling the PRocesses leading to Organised crime and TerrOrist Networks (PROTON)<br><br>***This project also corresponds to the category 'Terrorist threats'*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-16-2015<br>October 2016 / October 2019 - EUR: 4,094,811.50<br><br>REA - 699824 |
| Abstract | PROTON aims at improving existing knowledge on the processes of recruitment to organised crime and terrorist networks (OCTN) through an innovative integration between social and computational sciences. PROTON has three objectives: (1) investigate the social, psychological and economic factors leading to OCTN; (2) develop PROTON-S, agent-based modelling (ABM) simulations of the effects of different societal and environmental changes on OCTN; (3) develop PROTON Wizard, a software tool embedding the results of the ABM simulations. PROTON's impact will improve the quality of prevention policies on OCTN, providing at the same time significant innovations in the social, technological and computational sciences. |
| Website | https://www.projectproton.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Cattolica del Sacro Cuore (IT)<br>Consortium:<br>2. Brottsforebyggande radet (SE)<br>3. Comune di Palermo (IT)<br>4. Consiglio Nazionale Delle Ricerche (IT)<br>5. European Crime Prevention Network (BE)<br>6. European Police Office Europol (NL)<br>7. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>8. Friedrich-Alexander-Universitaet Erlangen Nuernberg (DE)<br>9. IBM Research GMBH (CH)<br>10. Itti SP Zoo (PL)<br>11. Ministerie van Veiligheid en Justitie (NL)<br>12. Ministero dell'Interno (IT)<br>13. Stichting VU (NL)<br>14. The Chancellor, Masters and Scholars of the University of Cambridge (UK)<br>15. The Hebrew University of Jerusalem (IL)<br>16. The University System of Maryland Foundation, inc. (US)<br>17. Univ. Degli Studi di Palermo (IT)<br>18. Univ. Degli Studi di Pavia (IT)<br>19. Univ. de Barcelona (ES)<br>20. Univ. de Naumur ASBL (BE)<br>21. Youris.com (BE) |

| TAKEDOWN | |
|---|---|
| Title | Understand the Dimensions of Organised Crime and Terrorist Networks for Developing Effective and Efficient Security Solutions for First-line-practitioners and Professionals (TAKEDOWN)<br><br>***This project also corresponds to the category 'Terrorist threats'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-16-2015<br>September 2016 / September 2019 - EUR: 3,146,375.00<br><br>REA - 700688 |
| Abstract | TAKEDOWN aims at generating insights on OC/TN. TAKEDOWN Model describes social, psychological, economic aspects as well as further dimensions, activities and response approaches. The TAKEDOWN Open Information Hub targets first-line-practitioners and provides modular solutions and inductive materials. The public web platform helps individuals to navigate to the right third party reporting and help lines including an innovative crowd reporting application to report digital OC/TN cases. With this multi-level approach, TAKEDOWN will force a better understanding of OC/TN, develop modern approaches and solutions, and will finally lead to a more efficient and effective response on OC/TN and strengthen social cohesion at pan-European level. |
| Website | https://www.takedownproject.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Synyo Gmbh (AT)<br>Consortium:<br>2. Agenfor Italia (IT)<br>3. Agentur Fur Europaische Integration Und Wirtschaftliche Entwicklung Verein (AT)<br>4. Ayuntamiento De Valencia (ES)<br>5. Center For The Study Of Democracy (BG)<br>6. Ceske Vysoke Uceni Technicke V Praze (CZ)<br>7. Cloud Security Alliance (Europe) Lbg (UK)<br>8. Eidgenoessische Technische Hochschule Zuerich (CH)<br>9. Fundacion Euroarabe De Altos Estudios (ES)<br>10. Institutul Roman Pentru Actiune, Instruire Si Cercetare In Domeniul Pacii - Peace Action, Training & Research Inst Of Romania (RO)<br>11. Leuven Security Excellence Consortium L-Sec Vzw (BE)<br>12. Middlesex University Higher Education Corporation (UK)<br>13. Technion - Israel Institute Of Technology (IL)<br>14. Technische Universitat Darmstadt (DE)<br>15. Universitat Autonoma De Barcelona (ES)<br>16. University Of Leeds (UK)<br>17. Vysoka Skola Bezpecnostneho Manazerstva V Kosiciach Neziskova Organizacia (SK)<br>18. Wyzsza Szkola Policji W Szczytnie (PL) |

## These projects were complemented by new projects funded in 2016-2017:

| ANDRUPOS | |
|---|---|
| Title | Automatic non-destructive recognition of used printing techniques on substrates |
| Contract details | Fast Track to Innovation Pilot. Call: H2020-FTIPilot-2016-1. Topic code: FTIPilot-01-2016.<br>July 2017 / December 2019 - EUR: 1.297.987,50 GA 760218 |
| Abstract | ANDRUPOS is a leading edge web based document examination system capable of authenticating printing techniques, printer and paper sources. It is built on research projects and studies, in which the feasibility and the relevant technologies in ICT, software and analysis technologies have been validated and tested with pilot users. ANDRUPOS is a game changer in document fraud detection such as ID documents, passports or banknotes, as it enables for the first time an automatic reliable detection method, giving quick and confident reports on possible fraud and – another very new not yet available feature – links counterfeits with printers, so that also different counterfeits and cases can be traced back to the people responsible for it like organized crime. Fraudulent identity and security documents are integral prerequisites for the smuggling of migrants, trafficking in persons, terrorist mobility, to facilitate the smuggling of drugs, weapons and other goods and they simplify cross-border crime of all types. Counterfeit documents enable opening of bank accounts or receiving illegal social insurance benefits. Making and using fraudulent documents by organised crime produce huge civil, social and personal losses. The target market comprises banking (national banks), border security (airports, border crossing points), public and private forensic institutes as well as law enforcement agencies. ANDRUPOS pro-actively targets the needs and requirements of national and European users like Law Enforcements Agencies, Criminal Offices, National Police Services, Customs Investigation Bureaus, National Banks, Financial/Customs. The main objective of the FTI project now is to do the final optimization and upgrading as well as customization and then going into a final validation phase with test at first customer stations. |
| Website | https://www.andrupos-forensics.com/fti-project |

| ANDRUPOS | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Eins - Entwicklung Interaktiver Software Gmbh (DE)<br>Consortium<br>2. Epyxs GMBH (DE)<br>3. Leenaars Erna Helene Petronelle (NL) |

| CRIMTANG | |
|---|---|
| Title | Criminal Entanglements.A new ethnographic approach to transnational organised crime. |
| Contract details | European Research Council - Consolidator Grant. Call: ERC-2016-COG. Topic code: ERC-2016-COG. February 2018 / January 2023 - EUR: 1.999.909,00 GA 725194 |
| Abstract | Linked to terrorism, moral breakdown, and societal decay, Transnational Organised Crime (TOC) has come to embody current global anxieties as a figure of fear and cause of disquiet. Yet despite its central position on the social and political radar, our knowledge of it remains limited and fragmentary. Quantitative analyses may have identified the scale of the problem, but its underlying socio-cultural logic and practices remain under-researched and largely obscure. TOC is on the rise, and we need better insights into how it develops and expands, who engages in it and why, and how it is linked to and embedded in social networks that straddle countries and contexts. CRIMTANG proposes a unique approach to the study of the social infrastructure of contemporary TOC. It develops a research strategy that is ethnographic and transnational in design and so attuned to the human flows and formations of TOC. The project comprises a trans-disciplinary research team of anthropologists, criminologists and political scientists, and builds on their prior experience of the people, regions and languages under study. It explores the illegal and overlapping flows of migrants and drugs from North-West Africa into Europe, following a key trafficking trajectory stretching from Tangiers to Barcelona, Paris and beyond. In so doing, CRIMTANG sheds new light on the actual empirical processes in operation at different points along this trafficking route, whilst simultaneously developing new theoretical and methodological apparatuses for apprehending TOC that can be exported and applied in other regions and contexts. It reimagines the idea of social entanglement and proposes new transnational and collective fieldwork strategies. Finally, it will advance and consolidate the European research environment on TOC by creating a research hub for transnational ethnographic criminology at the University of Copenhagen. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Kobenhavns Universitet (DK) |

| HumanTrafficking | |
|---|---|
| Title | Human Trafficking: A Labor Perspective |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG. April 2018 / March 2023 - EUR: 1.492.249,99 GA 756672 |
| Abstract | This project conducts a theoretical, methodological, and normative paradigm shift in the research and analysis of human trafficking, one of the most pressing moral and political challenges of our times. It moves away from the currently predominant approach to trafficking, which focuses on criminal law, border control, and human rights, towards a labor-based approach that targets the structure of labor markets that are prone to severely exploitative labor practices. This shift represents an essential development both in the research of migratory labor practices and in the process of designing more effective, and more just, anti-trafficking measures, that are context-sensitive as well as cognizant to global legal and economic trends. The project will include four main parts: 1) Theoretical: articulating and justifying the proposed shift on trafficking from individual rights and culpabilities to structural labor market realities. 2) Case-studies: conducting a multidisciplinary study of a series of innovative case studies, in which the labor context emerges as a significant factor in the trafficking nexus – bilateral agreements on migration, national regulations of labor standards and recruiters, unionization, and voluntary corporate codes of conduct. The case studies analysis employs the labor paradigm in elucidating the structural conditions that underlie trafficking, reveal a thus-far mostly unrecognized and under-theorized set of anti-trafficking tools. 3) Clinical Laboratory: collaborating with TAUs Workers' Rights clinic to create a legal laboratory in which the potential and limits of the tools examined in the case studies will be tested. 4) Normative: assessing the success of existing strategies and expanding on them to devise innovative tools for a just, practicable, and effective anti-trafficking policy, that can reach significantly more individuals vulnerable to trafficking, by providing them with legal mechanisms for avoiding and resisting exploitation. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Tel Aviv University (IL) |

| UCOC | |
|---|---|
| Title | Understanding the Commitment in Organized Crime |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. March 2018 / February 2021 - EUR: 264.668,40 GA 752743 |
| Abstract | This project is structured around a central question: how do individuals get involved in organized crime? To answer it, the analysis will focus on the social conditions of the criminal commitment and promotion towards superior spheres of drug trafficking. I will use the notion of "criminal career," increasing and updating the existing knowledge on the steps that allow an upward social mobility. This problematic implies first to describe and analyze the universe of organized crime, its subdivisions, its hierarchies, its divides, and the structure of its opportunities. Then, it also necessary to put the framework of the biographical trajectories into a historical, social and political perspective. Behind this theme of criminal promotion, we raise more theoretical questions on the interpretative regimes of crime commitment: we postulate that the different positions that the same individual occupies in the criminal world imply different theoretical backings. Only the in-depth study of the biography, the criminal experience, and the judiciary career of the subjects will allow me to isolate and articulate the stages, the states, the different moments, and to understand their motivations and the changes throughout time and space. The corollary of this questioning on the stages of criminal careers is the joint study of the social spaces of criminality, understood as places, norms, and actors that structure and animate distinct and hierarchized domains that are linked to criminality. This is the second innovative aspect of this project: I want to contribute to a cartography of the worlds of crime, of their borders, and their porosities with the more conventional spaces of the social life. This is the reason why I chose the specific question of drug trafficking: by its triple dimension, local, national and international, and with regards to the multiplicity of the tasks and the operators that this trade implies, several social spaces of crime are mobilized. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Centre National De La Recherche Scientifique CNRS (FR) |

## The projects were complemented by the following projects funded by INTERREG program:

| BIO-CRIME | |
|---|---|
| Title | Animal diseases (zoonoses) and illegal trade of young animal in the Alps-Adriatic region (welfare of animals) |
| Contract details | 2014 - 2020 INTERREG V-A Italy - Austria 01/02/2017 - 01/02/2020 |
| Abstract | Diseases that are transmitted from animals to humans are defined as zoonoses. The spread of these diseases in the human population is often linked to human activity, and the illegal trade of pet animals is an important route of transmission of zoonoses. In fact, animals bought on the black market may come from infected areas, and not be checked from the health point of view. Friuli Venezia Giulia and Carinthia are both transit as destination routes of the illegal trade of pet animals coming from Eastern European countries. The impact of this criminal activity generates negative effects on at least 4 areas: 1. Human health, 2. Animal health & welfare, 3. Market protection, 4. Consumer fraud. The Bio-Crime Project wants to reduce the zoonotic risk through the development of a joint strategy of action, against the illegal trade of pets, as an integrated part of prevention programs relating to human health and to the health and welfare of animals. The Bio-Crime Project would like to implement certain activities in order to reduce illegal pet trade, including: 1. Training courses for public officers, 2. The development of joint operative protocols, 3. The implementation of a digital web platform for sharing data, 4. Epidemiological surveillance of the confiscated animals, 5. Education projects of the citizens of the two Regions. |
| Website | http://www.interreg.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Regione autonoma Friuli Venezia Giulia-Direzione centrale salute, integrazione sociosanitaria, politiche sociali e famiglia (IT)<br>Consortium members:<br>2. Consorzio per l'AREA di ricerca scientifica e tecnologica di Trieste (IT);<br>3. Amt der Kärntner Landesregierung - Abt.5 - Unterabteilung Veterinärwesen (AT);<br>4. ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELLE VENEZIE (IT); |

### 6.4.2 Corruption

The following projects have been funded within H2020:

| ANTICORPOL | |
|---|---|
| Title | New dimensions and approaches to anti-corruption policy |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2017. Topic code: MSCA-IF-2017. September 2018 / August 2020 - EUR: 173.076,00 GA 793347 |
| Abstract | Corruption continues to be a central issue in the governance of institutions (public, private or mixed). The scholars and practitioners working on the topic are facing with two challenges: (1) measurement of corruption, which is a thorny issue on empirical studies of corruption, and (2) the increasing awareness of the failure of most anti-corruption policies. The overarching objective of ANTICORPOL is to introduce a new dimension in the discussion of corruption: the degree of corruption (i.e., the depth as opposed to the spread). The benchmark of ANTICORPOL is this: it is unclear whether a system (organization, public administration) with few individuals who terribly deviate from their duty is less/more corrupt, than one with many corrupt individuals who only slightly deviate from their duty. Therefore, the degree of corruption of its members must be an integral part of the debate about corruption in a system and the development of effective policies against it. This proposal raises the following research questions: (R1) How can the degree of corruption of an individual be defined? (R2) Which policies are effective in reducing the distortion of duties of corrupt individuals? (R3) How can the degree of corruption be incorporated into measurements of corruption, at organization/country level? The proposed research is based on both theoretical and empirical methods and the combination of qualitative, comparative and quantitative analysis. This project is inherently of interdisciplinary interest because corruption is a multifaceted issue with economic, political and sociological dimensions. The research findings will contribute to a deeper understanding of corruption and further to the evaluation of the quality of democracy. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fondation Nationale des Sciences Politiques (FR) |

### 6.4.3 Drug detection

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Drug detection | CUSTOM<br>DIRAC<br>DOGGIES<br>LINKSCH<br>LOTUS<br>ROSFEN<br>SALIANT<br>SNIFFER<br>SNIFFLES<br>SNOOPY |

These projects have been complemented by the following H2020 projects:

| DrugStop | |
|---|---|
| Title | Drug detection for personal protection (DrugStop) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2015 Topic code: DRS-17-2015-1<br>November 2015 / March 2016 - EUR: 50.000,00<br><br>EASME - 698568 |
| Abstract | DrugStop is capable of detecting if drugs have been added to a drink. The detection occurs as a result of combining advanced spectroscopic techniques with advanced data processing. This device is marketed towards two classes of end-users, establishment owners and the individual user. |
| Website | |

| DrugStop | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. D Management APS (DK) |

| microMole | |
|---|---|
| Title | Sewage monitoring system for tracking synthetic drug laboratories (microMole) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-05-2014<br>September 2015 / September 2018 - EUR: 4,992,866.33<br><br>REA - 653626 |
| Abstract | The aim of this project is to design, develop and test a prototype of a system for legal recording, retrieving and monitoring operations of ATS and ATS precursor laboratories in urban areas. The sensor system will be installed within the sewage system and will track waste associated to ATS production. Criminal investigators and forensic specialists will use the system in case of: (1) initial general suspicion of ATS production in a certain area; (2) strong suspicions that in a well confined area ATS is being produced. |
| Website | http://micromole.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Politechnika Warszawska (PL)<br>Consortium:<br>2. Blue Technologies Sp Zoo (PL)<br>3. Bundeskriminalamt (DE)<br>4. Capsenze Handelsbolag (SE)<br>5. Centralne Laboratorium Kryminalistyczne Policji (PL)<br>6. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>7. JGK Tech Ehf (IS)<br>8. Stichting Katholieke Universiteit Brabant (NL)<br>9. Universitaet der Bundeswehr Muenchen (DE)<br>10. Univ. Gent (BE)<br>11. Univ. Lyon 1 Claude Bernard (FR) |

## These projects were complemented by new projects funded in 2016-2017:

| NarcoScan | |
|---|---|
| Title | NarcoScan pocket-sized and affordable narcotics screener: making drug detection on the streets as common as catching drunk drivers |
| Contract details | Industrial Leadership – Innovation in SMEs. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-01-2016-2017. September 2017 / February 2019 - EUR: 2.355.937,50 GA 783790 |
| Abstract | Every year, EU citizens spend over €24 billion on illicit narcotics. Over 29 million people globally suffer from drug abuse – which is more people than all the Nordic countries combined. The key to limiting drug proliferation lies in the first-responder law enforcement to effectively detect narcotics in the field. However, the current tools and ways of working are not efficient in making quick and correct arrests of drug criminals, nor for discovering criminal organisations. We are introducing NarcoScan – the first pocket-sized scanner for first responders, such as police patrols, to quickly and accurately detect any type of illicit narcotics on the street. Being 20\ times less expensive than alternatives, NarcoScan uniquely enables mass-deployment of narcotics screeners. By combining our innovative spectral sensing technology with cloud and device-to-device connectivity, we have arrived at a disruptive solution that will make screening narcotics on the streets as ubiquitous as breathalysers for detecting drunk drivers. Our drug database is updated as soon as new narcotics appear on the streets, and the updates are deployed immediately across all the scanners on the field – just like antivirus databases are updated in computers. NarcoScan will bring at least €125 million in direct cost savings per year to the European criminal justice system. The impact of our solution extends further to the European society by reducing the size of illegal economy, improving the efficiency of police work (faster arrests, faster confessions, avoiding false arrests), and contributing to building healthier and more secure environments. Having proven the technical and economic viability of our solution through extensive feasibility studies, the main goal of our Phase 2 project is to prepare for global growth by building our technical backbone into a globally scalable and rich technical solution. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Spectral Engines OY (FI) |

The projects were complemented by the following projects funded by INTERREG program:

| No for drugs | |
|---|---|
| Title | Enhancing the effectiveness of the Police in the prevention of drug crimes within the Polish and German borderland |
| Contract details | 2014 - 2020 INTERREG V-A Poland - Germany / Saxony 01/10/2016 - 30/09/2018 |
| Abstract | Problems existing within the Polish and Saxon borderland in terms of the widely understood crimes determined the main objective of the project: Enhancing the intensity of the cooperation between the Polish and Saxon Police in the combating and prevention of crimes related to drugs and legal highs, and enhancing the social awareness of legal highs and drugs within the Polish and Saxon borderland. The objective will be implemented by performing the following tasks: - organizing trainings in ITCCCL and preventive trainings which will contribute to improving professional qualifications of persons dealing with the prevention and combating of drug-related crimes, - carrying out a far-reaching social campaign titled "Drugs?! "What next..." with the participation of various entities dealing with drugs and legal highs; the campaign is to enhance the knowledge and social awareness of residents of the Polish and Saxon borderland of problems related to consuming narcotic drugs, to hinder the increasing demand for drugs and to promote the social negation of unlawful acts; it will be possible to notice results of the campaign not only during the performance of the project, but also upon its completion, to exchange knowledge and experiences during meetings, school inspections, to organize seminars concerning the legal status and the Police procedures, and to purchase compatible equipment. The tasks will facilitate to learn the specifics of the problem within the borderland, to strengthen and extend the cooperation of Police units in the prevention and punishing, while the purchase of compatible equipment will facilitate the coordination of Polish and German Police units under common activities thanks to detecting new drugs and legal highs in an efficient and timely way. The above mentioned tasks cover topics related to drugs and legal highs in a thorough way and contribute to implementing specific objectives of the project, its products and the assumed results. |
| Website | https://de.plsn.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. KOMENDA WOJEWÓDZKA POLICJI WE WROCŁAWIU (PL)<br>Consortium members:<br>2. OMENDA WOJEWÓDZKA POLICJI W GORZOWIE WIELKOPOLSKIM (PL); 3. POLIZEIDIREKTION GÖRLITZ (DE) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| CSW: Cross Border Surveillance on Drugs and Firearms | |
|---|---|
| Title | CSW: Cross Border Surveillance on Drugs and Firearms<br>***This project also corresponds to the category 'Firearms'.*** |
| Project number | HOME/2015/ISFP/AG/TDFX/8733 |
| Contract details | € 615,084.47 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>THE NATIONAL POLICE OF THE NETHERLANDS<br>Consortium:<br>An Garda Siochana (IRL) - BKA (DE) - Federal Police (BE) - NBI (FI) - EKO Cobra (AT) - Gendarmerie Nationale (FR) - Carabinieri (IT) |

| Joint investigation to fight trafficking in drugs and firearms with the main focus on international airports within and also into the EU | |
|---|---|
| Title | Joint investigation to fight trafficking in drugs and firearms with the main focus on international airports within and also into the EU<br>*This project also corresponds to the category 'Firearms'.* |
| Project number | HOME/2015/ISFP/AG/TDFX/8739 |
| Contract details | € 633,578.78 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Bundeskriminalamt<br>Consortium:<br>Police (CZ) - Police (KO) |

| Turning (Detection of drugs trafficking & drugs production: Train the trainers course, course curriculum, toolkit & exchange of best practices) | |
|---|---|
| Title | Turning (Detection of drugs trafficking & drugs production: Train the trainers course, course curriculum, toolkit & exchange of best practices) |
| Project number | HOME/2015/ISFP/AG/TDFX/8746 |
| Contract details | € 429,094.50 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Federal Police Germany<br>Consortium:<br>BKA (DE) - NICC (BE) |

### 6.4.4 Firearms

No dedicated research projects or studies have been carried out in the area of firearms.

### *ISF projects*

A number of projects were funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Turning (Detection of drugs trafficking & drugs production: Train the trainers course, course curriculum, toolkit & exchange of best practices) | |
|---|---|
| Title | Turning (Detection of drugs trafficking & drugs production: Train the trainers course, course curriculum, toolkit & exchange of best practices) |
| Project number | HOME/2015/ISFP/AG/TDFX/8746 |
| Contract details | € 429,094.50 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Federal Police Germany<br>Consortium:<br>BKA (DE) - NICC (BE) |

### 6.4.5 Support to law enforcement

The following projects have been funded within H2020:

| LAW-TRAIN | |
|---|---|
| Title | Mixed-reality environment for training teams in joint investigative interrogation-Intelligent interrogation training simulator (LAW-TRAIN)<br><br>***This project also corresponds to the category 'Training and Networking'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-07-2014<br>May 2015 – May 2018 - EUR: 5,095,687.00<br><br>REA - 653587 |
| Abstract | LAW-TRAIN applies an interdisciplinary approach for international criminal interrogations. It unifies the methodology for such interrogations and will develop a distributed mixed-reality gaming platform that will provide training opportunities to teams of international interrogators. LAW-TRAIN builds on advanced technologies of virtual and augmented reality to allow law enforcement personnel from different countries located in different sites to conduct a collaborative investigative interrogation of one or more suspects. The LAW-TRAIN engine is designed as a generic engine that will enable development of scenarios for other types of illegal activities as well as other cross-border teamwork training. |
| Website | http://www.law-train.eu/ |

| LAW-TRAIN | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Bar Ilan University (IL)<br>Consortium:<br>2. Compedia Software & Hardware Development Ltd (IL)<br>3. De Federale Overheidsdienst Justitie – Le Service Public Federal Justice (BE)<br>4. Inesc ID – Instituto de Engenhariade Sistemas e ComputadoresInvestigacao e Desenvolvimento em Lisboa (PT)<br>5. Inspectoratul General al Politei Romane (RO)<br>6. Katholieke Univesiteit Leuven (BE)<br>7. Ministério da Justiça (PT)<br>8. Ministerio del Interior (ES)<br>9. Ministry of Public Security (IL)<br>10. Optimazacion Orientada a la Sostenibilidad SL (ES)<br>11. Usecon The Usability Consultants GMBH (AT) |

| NOSY | |
|---|---|
| Title | New Operational Sensing sYstem (NOSY)<br><br>***This project also corresponds to the category 'Organised crime'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-05-2014<br>September 2015 / September 2018 - EUR: 4,198,684.63<br><br>HOME - 653839 |
| Abstract | The NOSY project is focused on the development of a miniaturized yet sensitive platform, for the detection of illicit or suspicious substances. The platform includes the development of a miniature sensing device, a monitoring station and communication infrastructure for LEA network integration. In addition there will be the development of complete devices for both stand alone and embeddable monitoring and recording. Accurate and unambiguous identification of substances is fundamental to allow LEA to intervene with the most suitable action or counter measure. |
| Website | https://nosy-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Aero Sekur S.p.A.(IT)<br>Consortium:<br>2. Bundesministerium des Innern (DE)<br>3. Centre National de La Recherche Scientifiques CNRS (FR)<br>4. Cranfield University (UK)<br>5. GMVIS Skysoft SA (PT)<br>6. Instituto Affari Internazionali (IT)<br>7. Ministerie de l'Interieur (FR)<br>8. Ministerio da Aministracao Interna (PT)<br>9. Ministero Della Difesa (IT)<br>10. Resi Informatica Spa (IT)<br>11. Sensichips Srl (IT)<br>12. Synectika Research and Consulting Ltd (UK)<br>13. Universite de Technologie de Copiegne (FR)<br>14. Univ. Of Leicester (UK)<br>15. Xavitech AB (SE) |

## These projects were complemented by new projects funded in 2016-2017:

| CCI | |
|---|---|
| Title | Cutting Crime Impact – Practice-based innovation in preventing, investigating and mitigating high-impact petty crime |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-07-FCT-2016-2017.<br>October 2018 / September 2021 - EUR: 3.095.068,75 GA 787100 |
| Abstract | Petty crime has a significant negative impact on European citizens' quality of life, community cohesion and the safety and security of the urban environment. The aim of the Cutting Crime Impact (CCI) project is to enable Law Enforcement Agencies (LEAs) and security policymakers to adopt a preventative, evidence-based and sustainable approach to tackling high-impact petty crime. Tailored to the needs of end-users, CCI will design, develop and demonstrate four Toolkits covering: (i) predictive policing; (ii) community policing; (iii) crime prevention through urban design and planning; and (iv) measuring and mitigating citizens' feelings of insecurity. Using social science methods and innovation tools from the design industry, CCI will support LEAs in researching and innovating practical, evidence-based tools that meet end-users needs and operational contexts. In delivering CCI, LEAs will gain valuable experience in requirements capture, problem framing, ideation, concept generation, solution design and prototyping that is transferable to other areas. Practical consideration of ethical, legal and social issues throughout the project's research and innovation activities will ensure developed Toolkits help promote safe and secure towns and cities, without compromising fundamental human rights. All toolkits will be demonstrated in an operational setting to assess performance, and materials developed to support integration into LEA operations and foster wider implementation. CCI aims to encourage wider EU adoption of effective approaches to safety and security, and will develop an extended European Security Model that includes high-impact petty crime and citizens' feelings of insecurity. CCI will result in greater openness to innovation and design approaches amongst LEAs and security policymakers across Europe, as well as demonstrate the value of practitioner-led approaches to EU-funded research and innovation projects. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The University of Salford (UK)<br>Consortium:<br>2. Departament d'Interior - Generalitat de Catalunya (ES)<br>3. Globaz, S.A. (PT)<br>4. Greater Manchester Police (UK)<br>5. Forum Europeen pour la Securite Urbaine (FR)<br>6. DSP-Groep BV (NL)<br>7. DPT - Deutscher Praventionstag (DE)<br>8. Landeskriminalamt Niedersachsen (DE)<br>9. Politsei- ja Piirivalveamet (EE)<br>10. Rijksuniversiteit Groningen (NL)<br>11. Camara Municipal de Lisboa (PT)<br>12. The National Police of the Netherlands (NL) |

| CONNEXIONs | |
|---|---|
| Title | InterCONnected NEXt-Generation Immersive IoT Platform of Crime and Terrorism<br>DetectiON, PredictiON, InvestigatiON, and PreventiON Services |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-12-FCT-2016-2017.<br>September 2018 / August 2021 - EUR: 4.999.390,00 GA 786731 |
| Abstract | CONNEXIONs aims to develop and demonstrate next-generation detection, prediction, prevention, and investigation services. These services will be based on multidimensional integration and correlation of heterogeneous multimodal data, and delivery of pertinent information to various stakeholders in an interactive manner tailored to their needs, through augmented and virtual reality environments. The CONNEXIONs solution encompasses the entire lifecycle of law enforcement operations including: a) pre-occurrence crime prediction and prevention b) during-occurrence LEA operations c) post-occurrence investigation, and crime-scene simulation and 3D reconstruction. CONNEXIONs will meaningfully enhance operational and (near) real-time situational awareness, through automated identification, interpretation, fusion and correlation of multiple heterogeneous big data sources, as well as their delivery via immersive solutions. Such multimodal data include Surface/Deep/Darkweb and social media content in 7 languages (EN, FR, DE, PT, RO, ES, AR), data acquired by Internet of Things (IoT) devices, and digital evidence. CONNEXIONs will also provide chain-of-custody and path-to-court for digital evidence. The Project will adopt ethics and privacy by-design principles and will be customisable to the legislation of each member state. CONNEXIONs will be validated in field tests and demonstrations in 3 operational use cases: a) counter-terrorism security in large scale public events b) human trafficking investigations and mitigation c) crime investigation and training through 3D scene reconstruction. Extensive training of LEAs' personnel, hands-on experience, joint exercises, and training material will boost the uptake of CONNEXIONs tools and technologies. |
| This project also corresponds to the category 'Terrorist threats'. | |
| Website | |

| CONNEXIONs | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Motorola Solutions Israel Ltd (IL)<br>Consortium:<br>2. Serviciul de Protectie si Paza (RO)<br>3. Universidad Pompeu Fabra (ES)<br>4. Hochschule fur den Offentlichen Dienst in Bayern (DE)<br>5. Bayerisches Staatsministerium des Innern (DE)<br>6. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>7. Serviciul de Protectie si Paza de Stat (MD)<br>8. Nuromedia Gmbh (DE)<br>9. Ministério da Justiça (PT)<br>10. Siveco Romania SA (RO)<br>11. Sheffield Hallam University (UK)<br>12. Ministerio del Interior (ES)<br>13. Police Service of Northern Ireland (UK)<br>14. Engineering - Ingegneria Informatica SPA (IT)<br>15. Katholieke Universiteit Leuven (BE)<br>16. Ministere de L'interieur (FR)<br>17. Gottfried Wilhelm Leibniz Universitaet Hannover (DE) |

| COPKIT | |
|---|---|
| Title | Technology, training and knowledge for Early-Warning / Early-Action led policing in fighting Organised Crime and Terrorism |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-12-FCT-2016-2017.<br>June 2018 / May 2021 - EUR: 4.986.973,75 GA 786687 |
| Abstract | The COPKIT project addresses the problem of analysing, preventing, investigating and mitigating the use of new information and communication technologies by organised crime and terrorist groups. This question is a key challenge for policy-makers and LEAs due to the complexity of the phenomenon, the quantity of factors and actors involved, and the great set of criminal and terrorist technological activities in support of OC and terrorist actions. It is a clear VUCA world effect (volatility, uncertainty, complexity and ambiguity). EUROPOL who is involved in COPKIT as head of its Advisory Board, in this year's SOCTA 2017 report 'Crime in the Age of Technology' states that 'This is now, perhaps, the greatest challenge facing LEAs around the world'. COPKIT proposes an intelligence-led Early Warning (EW) / Early Action (EA) system, directly related to the methodological approach used by EUROPOL in SOCTA. "Intelligence-led policing" offers a framework to guide operations, prioritizing needs and optimizing resources. EW explain how crimes are evolving, identifying 'weak signals', warnings, new trends, and being a basis for assisting decision makers, both strategic and operational levels, in order to develop EA (preparedness, mitigation, prevention and other security policies). Our project, with 17 European organizations from 13 countries participating (9 of them LEAs from 8 countries, one of them leader of EMPACT firearms) and with EUROPOL leading support, aims to create such a technological intelligence and knowledge ecosystem for LEAs, to fight OCT. COPKIT will comprise several phases: (1) developing and applying a EW/EA system and applying it to use-cases, (2) developing a toolkit for knowledge production and exploitation, tested by LEAs in their premises, (3) ensuring respects to EU legal and ethical principles, (4) developing innovative curricula for all aspects of the EW/EA methodology and eco-system to facilitate the uptake by LEAs. |
| This project also corresponds to the categories 'Orgaised crime' and 'Terrorist threats'. | |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ingenieria de Sistemas para la Defensa De Espana SA-SME MP (ES)<br>Consortium:<br>2. Hochschule fur den Offentlichen Dienst in Bayern (DE)<br>3. AIT Austrian Institute of Technology GMBH (AT)<br>4. Inspectoratul General al Politiei Romane (RO)<br>5. Police Federale Belge (BE)<br>6. Universidad de Granada (ES)<br>7. IBM Ireland Limited (IE)<br>8. Legind Technologies AS (DK)<br>9. Thales Nederland BV (NL)<br>10. Kentro Meleton Asfaleias (EL)<br>11. Trilateral Research Ltd (UK)<br>12. Ministerio del Interior (ES)<br>13. Iekslietu Ministrijas Valsts Policija State Police of the Ministry of Interior (LV)<br>14. Law and Internet Foundation (BG)<br>15. Ministere de L'interieur (FR)<br>16. Glavna Direktsia Borba s Organiziranata Prestupnost (BG) |

| I-LEAD | |
|---|---|
| Title | Innovation - Law Enforcement Agencies Dialogue |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-21-GM-2016-2017.<br>September 2017 / August 2022 - EUR: 3.483.716,00 GA 740685 |
| Abstract | I-LEAD's focus is on the incapability of groups of operational Law Enforcement Agencies (LEA) practitioners defining their needs for innovation. This will be done in a methodological way, also with the help of the research & industrial partners supplemented by a broad range of committed stakeholders. I-LEAD will build the capacity to monitor the security research and technology market in order to ensure a better matching and uptake of innovations by law enforcement agencies with the overarching aim to make it a sustainable Pan-Europan LEA network. Earlier funded European research with a high technology readiness level as well as pipeline technologies will be closely monitored and assessed on its usefulness. Where possible a direct uptake from this research will be facilitated and implemented in the ENLETS and ENFSI networks supporting the action. I-LEAD will indicate priorities in five practitioner groups as well as aspects that needs (more) standardization and formulate recommendations how to incorporate these in procedures. As a final step, I-LEAD will advise the Member States through the existing EDBP-ESTP procurement group about how the outcomes of this project could be used in Pre-Commercial Procurement and Public Procurement of Innovation activities. |
| Website | http://i-lead.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The National Police of the Netherlands (NL)<br>Consortium:<br>2. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>3. De Federale Overheidsdienst Justitie – Le Service Public Federal Justice (BE)<br>4. European organisation for Security SCRL (BE)<br>5. Home office (UK)<br>6. Inspectoratul General al Politei Romane (RO)<br>7. Kentro Meleton Asfaleias (EL)<br>8. Komenda Wojewodzka Policji w Poznaniu (PL)<br>9. Ministério da Justiça (PT)<br>10. Ministerio del Interior (ES)<br>11. Ministerio Della Difesa (IT)<br>12. Ministerio Dell'Interno (IT)<br>13. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>14. NGO Lithuanian Cybercrime Center of Excellence for Training, Research & Education (LT)<br>15. Policijos departamentas prie Lietuvos Respublikos vidaus reikalu ministerijos (LT)<br>16. Poliisihallitus (FI)<br>17. Service Public Federal Interieur (BE)<br>18. Stichting Nederlands Normalisatie – Insitutuut (NL)<br>19. Stowarzyszenie Polska Platforma Bezpieczenstwa Wewnetrznego (PL) |

| ILEAnet | |
|---|---|
| Title | Innovation by Law Enforcement Agencies networking |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-21-GM-2016-2017.<br>June 2017 / May 2022 - EUR: 3.482.146,25 GA 740714 |
| Abstract | The ILEAnet project will set up and develop a sustainable network of Law Enforcement Agency (LEA) practitioner organisations from all over Europe. The mission of this network will be to stimulate LEA capabilities to influence, develop and take up research, development and innovation (RDI) that is useful and usable for LEAs, and thereby help them to tackle the major challenges they face. The network will be organised around ILEAnet National Contacts (INCs) who will be in charge of federating the respective networks of practitioners, policy makers, academics, industrial players and other RDI stakeholders in their respective countries. ILEAnet will also operate as a community of people with a common interest in exchanging and collaborating with respect to LEA challenges and needs and LEA-centred RDI. Whilst the organisational ILEAnet Network will be focused – "top-down" - on specific challenges, the ILEAnet Community of people will contribute "bottom-up" ideas to produce innovative approaches to face newly arising challenges. An online community platform will enable professional social networking and mutual online assistance related to new solutions and best practice to address LEA challenges. The platform will support online and physical meetings and discussions, and will provide the infrastructure for efficient knowledge management. Synthesising top-down approaches and bottom-up ideas in iterative survey-organise-brainstorm-analyse-propose-discuss-poll processes, ILEAnet will build up a broad portfolio of RDI results and new RDI project concepts, and will deliver recommendations for future RDI policies. ILEAnet will hence catalyse innovation between LEAs and between LEAs, academics and industry. This will enable LEAs not only to take up mature results but also to prepare and influence future RDI efforts which could be taken up by individual or groupings of organisations and countries as well as by European research funding programmes. |
| Website | https://www.ileanet.eu/ |

| ILEAnet | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ministerie de l'Interieur (FR)<br>Consortium:<br>2. Arttic (FR)<br>3. Bundesministerium fuer Inneres (AT)<br>4. Civi Pol Conseil (FR)<br>5. Cyprus Police (CY)<br>6. Deutsche Hocschule der Polizei (DE)<br>7. Ecole Nationale Superieure de la Police (FR)<br>8. Fundacja Europejskie Centrum Inicjatyw w Naukach Sadowych (PL)<br>9. Iekslietu Ministrijas Valsts Policija State Police of the Ministry of Interior (LV)<br>10. ISEM-Institut pre Medzinarodnu Bezpecnost a Krizove Riadenie, no (SK)<br>11. Keszenleti Rendorseg (HU)<br>12. Ministerio del Interior (ES)<br>13. Ministero Dell'Interno (IT)<br>14. Ministerul Afacerilor Interne (RO)<br>15. Ministry of Interior (BG)<br>16. Ministry of Inteior of te Slovak Republic (SK)<br>17. Ministry of Public Security (IL)<br>18. Police & Crime Commissioner, West Yorkshire (UK)<br>19. Policeini Ceske Republiky (CZ)<br>20. Police Service of Northern Ireland (UK)<br>21. Politsei-ja Piirivalveamet (EE)<br>22. Univ. College Dublin National University of Ireland (IE) |

| IMPRODOVA | |
|---|---|
| Title | Improving Frontline Responses to High Impact Domestic Violence |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-07-FCT-2016-2017.<br>May 2018 / April 2021 - EUR: 2.929.073,75 GA 787054 |
| Abstract | In Europe and other Western societies, research findings and policy documents have unearthed an overabundance of recommendations on domestic violence. In theory, we know very well how we should prevent, detect and mitigate domestic violence. However in daily practice this is often not taken into account. Also, there is less research on the factors that escalate family and partner conflict into high impact domestic violence. IMPRODOVA will focus on the police side of the gap between what we know and what we do, but will also include the aspect of police co-operation with other first responders. Why, in practical police work, is domestic violence often regarded as a low priority problem? Why is the reporting rate by victims low? What are the human factors that define effective response and best practice police work in networks of other first line responders, e.g. health practitioners, schools, and youth services? Police frontline responder interviews expanded by fieldwork observation data will be weighed against intermediate and top police leadership expertise collected in the partner LEA's. The influence of human factor variables in frontline operations will be investigated, and the parameters of risk assessment, also of medical practitioners, will be established and compared. Training and study materials with a special focus on scenario-based learning modules will be designed to address the barriers to better domestic violence policing. IMPRODOVA will reach out across the boundaries of first and other relevant responders by disseminating the field research findings to other professionals and representatives of domestic violence prevention and mitigation. A special focus will be laid on the media presentation of domestic violence, since media play an important role how HIDV and its victims are perceived in public. IMPROVODA will produce a set of sustainable products for training and inter-professional communication to reduce DV prevalence and re-victimization. |
| Website | https://www.improdova.eu/ |

| IMPRODOVA | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Deutsche Hochschule der Polizei (DE)<br>Consortium:<br>2. Ministrstvo Za Notranje Zadeve (SI)<br>3. Bundesministerium fuer Inneres (AT)<br>4. Vienna Centre for Societal Security - Vicesse, Wiener Zentrum fur Sozialwissenschaftliche Sicherheitsforschung (AT)<br>5. European Research Services Gmbh (DE)<br>6. Scottish Police Authority (UK)<br>7. Der Polizeiprasident in Berlin (DE)<br>8. Terveyden ja Hyvinvoinnin Laitos (FI)<br>9. Ministerio da Administracao Interna (PT)<br>10. Univerza v Mariboru (SI)<br>11. Foresee Kutatocsoport Nonprofit Kozhasznu KFT (HU)<br>12. Poliisiammattikorkeakoulu (FI)<br>13. Westfaelische Wilhelms-Universitaet Muenster (DE)<br>14. Centre National de la Recherche Scientifique CNRS (FR)<br>15. Ministere de L'interieur (FR)<br>16. The University of Edinburgh (UK) |

| MAGNETO | |
|---|---|
| Title | Multimedia Analysis and Correlation Engine for Organised Crime Prevention and Investigation |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-12-FCT-2016-2017.<br>May 2018 / April 2021 - EUR: 5.320.475,00 GA 786629 |
| Abstract | MAGNETO addresses significant needs of law enforcement agencies (LEAs) in their fight against terrorism and organised crime, related to the massive volumes, heterogeneity and fragmentation of the data that officers have to analyse for the prevention, investigation and prosecution of criminal offences. These needs have been identified after consulting with eleven different European LEAs –members of the MAGNETO consortium. In response, MAGNETO empowers LEAs with superior crime analysis, prevention and investigation capabilities, by researching and providing tailored solutions and tools based on sophisticated knowledge representation, advanced semantic reasoning and augmented intelligence, well integrated in a common, modular platform with open interfaces. By using the MAGNETO platform, LEAs will have unparalleled abilities to fuse and analyse multiple massive heterogeneous data sources, uncover hidden relationships among data items, compute trends for the evolution of security incidents, ultimately (and at a faster pace) reaching solid evidence that can be used in Court, gaining also better awareness and understanding of current or past security-related situations. In parallel, MAGNETO will spark an ecosystem of third-party solution providers benefiting from its open, modular and reusable architectural framework and standard interfaces. To achieve these objectives, MAGNETO will test and demonstrate its developments on five representative and complementary use cases (types of crime), under real-life operational conditions in the facilities of eleven different LEAs, keeping them continuously in the production loop, adopting an agile implementation methodology and a multi-disciplinary scientific approach, combining researchers with exceptional track records, officers with top-level operational know-how in law enforcement, recognised experts for legal and ethical compliance to EU and national standards, and qualified training experts for innovative curricula development.<br><br>***This project also corresponds to the categories 'Forensics'.*** |
| Website | http://www.magneto-h2020.eu/ |

| MAGNETO | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Institute of Communication and Computer Systems (EL)<br>Consortium:<br>2. Hochschule Fur Den Offentlichen Dienst in Bayern (DE)<br>3. Bayerisches Staatsministerium des Innern (DE)<br>4. Inspectoratul General al Politiei Romane (RO)<br>5. Komenda Wojewodzka Policji w Bydgoszczy (PL)<br>6. Ministero dell'interno (IT)<br>7. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>8. Venaka Media Limited (UK)<br>9. Ajuntament de Sabadell (ES)<br>10. Siveco Romania SA (RO)<br>11. Ministerio da Administracao Interna (PT)<br>12. CBRNE Ltd (UK)<br>13. Wyzsza Szkola Policji w Szczytnie (PL)<br>14. ITTI SP ZOO (PL)<br>15. Universitat Politecnica de Valencia (ES)<br>16. Police Service of Northern Ireland (UK)<br>17. Walentynowicz Pawel (PL)<br>18. Queen Mary University of London (UK)<br>19. Thales SA (FR)<br>20. Katholieke Universiteit Leuven (BE)<br>21. Home Office (UK)<br>22. EUROB Creative SLNE (ES) |

## 6.5 Radicalisation

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Radicalisation | IMPACT EUROPE |

These projects were complemented by new projects funded in 2016-2017:

| INSIKT | |
|---|---|
| Title | Novel Social Data Mining Platform to Detect and Defeat Violent Online Radicalization |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2017 / September 2019 - EUR: 1.533.153,13 GA 767542 |
| Abstract | In 2015-2016, 20\ terrorist attacks occurred in EU28, all of them carried out by individuals radicalized by terrorist propaganda. Recruitment of this new breed of terrorists was done via social media and the Internet. To prevent such events from happening in the future and fight radicalization, it is crucial to detect cyberpropaganda early. However, social media providers (e.g. Twitter) admit that at the moment there is no adequate tool to identify terrorist-related content on the Internet. As the result, they are forced to rely on proprietary spam-fighting tools, user reports and human analysis to track down radicalized accounts that promote terrorism. Insikt Intelligence is a Spanish SME led by the EYIF 2016 Female Web Entrepreneur finalist that developed INSIKT, a novel social data mining platform to detect & defeat violent online radicalization. An early version of INSIKT was validated by several EU law enforcement agencies (LEAs), approved and attracted commercial interest. This Phase 2 project will trial INSIKT at 4 European LEAs that are looking for effective tools to prevent radical messages from spreading and reaching people vulnerable to radicalization. INSIKT provides a novel solution for LEA analysts to detect terrorist propaganda on all social media: it identifies radical content, suspicious messages and covert radicalization process with the help of sophisticated text mining algorithms. INSIKT relies on deep learning to develop automatically new models which can be used to detect other criminal activity as well. INSIKT is fit to become an important new tool in LEAs' investigation and evidence gathering arsenal, giving them highly accurate, multilingual and real-time detection capabilities. This project will allow us to improve INSIKT, integrate it with existing LEA tools and commercialize it, addressing the needs of the €60\B security market, with the effect of creating 50\ jobs and €11.7M annual revenue within 5 years from market launch. |

| INSIKT | |
|---|---|
| Website | http://www.insiktintelligence.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Usatges BCN 21 SL (ES) |

| MINDb4ACT | |
|---|---|
| Title | Mapping, IdentifyiNg and Developing skills and opportunities in operating environments to co-create innovative, ethical and effective ACTions to tackle radicalization leading to violent extremism |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-06-FCT-2016.<br>September 2017 / August 2020 - EUR: 2.999.309,50 GA 740543 |
| Abstract | MINDb4ACT is a collaborative project participated by 7 LEAs, think-tanks, reserach centres, universities, industry associations and NGO based in 10 Member States (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Poland, Spain and United Kingdom). The project will align its research priorities with some of the most relevant issues already identified by the European Commission: Priority 1. Systematizing the available knowledge and expertise to support strategic decision-making Priority 2. Enhancing interdisciplinary fieldwork on terrorists' recruiting grounds, socialisation and techniques Priority 3. Using big data in order to analyse the information related to the communication practices of violent radicalisation Priority 4.Improving existing links between academia including non-EU researchers, policy-makers and other stakeholders MINDb4ACT will contribute to such priorities for the improvement of current counter-violent extremism policies (CVEs) in the countries represented in the consortium (Austria, Belgium Denmark, Finland, France, Germany, Italy Poland, Spain and United Kingdom) and the generation of new ones connecting through collaboration ecosystems (innovative, open, participatory, user-centred environments) to co-design interventions such as research actions, exchanges, strategic-policy exercises, training courses and pilot projects based on social innovation and civic engagement schemes (a community of practice of 1,500 people). All actions will be developed in 5 specific domains: prisons and judiciary system; migration hotspots and asylum centres, schools, cities (peri-urban contexts) and the Internet and media. A special contribution of the project will be the integration of technology based practical solutions with the contribution of the industry. As mentioned in the call, MINDb4ACT will NOT be "focused on studying the phenomenon of radicalization" but focused on "developing policy recommendations and practical solutions for end-users" |
| Website | http://www.mindb4act.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Fundacion Real Instituto Elcano de Estudios Internacionales y Estrategicos (ES)<br>Consortium:<br>2. Agenfor International (IT)<br>3. Ayuntamiento de Madrid (ES)<br>4. Dansk Institut for Internationale Studier (DK)<br>5. European Organisation for Security SCRL (BE)<br>6. Fachhochschule for offentliche verwaltung und rechtsfplege in Bayern (DE)<br>7. Fondation pour la Recherce Strategique (FR)<br>8. Fraun ohne Grenzen – Women Withoutborders/Save-Sisters Against Vilent Extremism Gemeinnutziger Verein (AT)<br>9. Freie Universitaet Berlin (DE)<br>10. Komenda Wojewodzka Policji w Poznaniu (PL)<br>11. Ministerio del Interior (ES)<br>12. Ministerio della Giustizia (IT)<br>13. Police Service of Northern Ireland (UK)<br>14. Poliisiammattikorkeakoulu (FI)<br>15. Sheffield Hallam University (UK)<br>16. Stowarzyszenie Polska Platforma Bezpieczenstwa Wewnetrznego (PL)<br>17. Synyo GMBH (AT)<br>18. Vrije Universiteit Brussel (BE) |

| Pericles | |
|---|---|
| Title | Policy recommendation and improved communication tools for law enforcement and security agencies preventing violent radicalisation |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-06-FCT-2016.<br>May 2017 / April 2020 - EUR: 2.999.647,50 GA 740773 |
| Abstract | The overall aim of the proposed project is to develop a comprehensive approach to prevent and counter violent radicalisation and extremism. The PERICLES (Policy recommendation and im-proved communication tools for law enforcement and security agencies preventing violent radicali-sation) project is especially dedicated to transitional processes of radicalisation. To meet its aims, PERICLES will consider violent left-wing and right-wing as well as religious ideologies. A special focus will be set on the risks connected with digital violent propaganda. The PERICLES project will deliver advanced and validated counter-propaganda techniques that are target-group-specific. Furthermore, the cooperation between relevant authorities who have due regard against violent rad-icalisation or support the process of de-radicalisation will be enhanced through the use of the project outputs. The comprehensive PERICLES prevention strategy will therefore largely address law enforcement agencies (LEAs) and security agencies; but will also find use by prisons and social workers, teachers and even relatives of affected people. |
| Website | http://project-pericles.eu/ |

| Pericles | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Kriminologisches Forschungsinsititut Nedersachsen (DE)<br>Consortium:<br>2. An Garda Siochana (IE)<br>3. Ayuntamiento de Madrid (ES)<br>4. Deutsche Hochschule der Polizei (DE)<br>5. Federal Ministry of Education and Science – Federation of Bosnia and Herzegovina (BA)<br>6. Future Analytics Consulting Limited (IE)<br>7. Kentor Meleton Asfaleias (EL)<br>8. Ministere de la Justice (FR)<br>9. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>10. Stichting Arq (NL)<br>11. Thales SA (FR)<br>12. The National Police of the Netherlands (NL)<br>13. The Provost, Fellows, Foundation Scholars & Other members of board of the College of the Holy & Undivided Trinity of Queen Elizabeth near Dublin (IE)<br>14. Univ. Warwick (UK)<br>15. Univ. Miguel Hernandez de Elche (ES) |

| PRACTICIES | |
|---|---|
| Title | Partnership against violent radicalization in the cities |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-06-FCT-2016.<br>May 2017 / April 2020 - EUR: 3.389.720,00 GA 740072 |
| Abstract | The project "Partnership against violent radicalization in the cities" (PRACTICIES) mobilizes networks of European cities, experts from the fields of humanities, political sciences, information sciences to better understand the human roots of violent radicalization and to characterize these processes starting by their origins and to build concrete tools and prevention practices. To achieve these objectives the project PRACTICIES relies on the cooperation of experience in the field of urban security in cities and expertise of national structures to fight terrorism. Our project aims to evaluate the existing procedures of registration, identification youth in the process of radicalization in an urban space. Describe and explain social course of transition to radical action, to provide concrete tools for action. For this our project will be structured in 6 work packages : Synthesis and European consensus on radicalization processes encouraging the construction of a etiology of radicalization processes and radicalization levels tipping point. Early prevention and an inclusive and civil education that will build on the implementation of concrete actions to structure against speech and human alliances against violent radicalization. Evaluation of reporting procedures, identification, treatment of people radicalized by the comparative analysis of the procedures implemented in the enforcement agencies. Fight against breaking speech and against speech. For building a breaking speech glossary in Europe (multilingual). Technological tools to design for " practitionners " and " ends users" promote the protection of youth and attempts of indoctrination encouraging characterization of sources and resources of Hate speech and radicalization. Evaluation and innovation in urban policy radicalization prevention by proposing new experiments, dissemination of good practice and promoting the mapping of skills of local players prevention and treatment of radicalization. |
| Website | http://www.prisonsystems.eu/practicies-against-radicalization-in-cities/ |

| PRACTICIES | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. De Toulouse II – Le Mirail (FR)<br>Consortium:<br>2. Assocation Forum des Sciences Sociales Appliquees (TN)<br>3. Ayuntamiento de Madrid (ES)<br>4. Commission nationale de la lutte contre le terrorisme (TN)<br>5. CPDSI (FR)<br>6. Fachhochschule Salzburg GmbH (AT)<br>7. Forum Europeen pour la Securite Urbaine (FR)<br>8. Kentro Meleton Asfaleias (EL)<br>9. Mairie de Toulouse (FR)<br>10. Media Actie Kuregem Stad (BE)<br>11. Metropole Nice Cote D'Azur (FR)<br>12. Ministério da Justiça (PT)<br>13. Ministerio del Interior (ES)<br>14. Municipio da Amadora (PT)<br>15. Office National D'Etudes et de Recherces Aerospatiales (FR)<br>16. Profil Technology (FR)<br>17. Qualify Just – It Solution and Consulting LDA (PT)<br>18. Stadtgemeinde Salzburg (AT)<br>19. TNS Opinion Sa (BE)<br>20. Univ. Rey Juan Carlos (ES)<br>21. Univ. Della Calbria (IT)<br>22. Univ. Charles de Gaulle Lille 3 (FR)<br>23. Univ. Grenoble Alpes (FR)<br>24. Univ. of Piraeus Research Center (EL)<br>25. Vertical (FR) |

| PROPHETS | |
|---|---|
| Title | Preventing Radicalisation Online through the Proliferation of Harmonised ToolkitS |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-07-FCT-2016-2017.<br>May 2018 / April 2021 - EUR: 2.998.331,25 GA 786894 |
| Abstract | PROPHETS will look at redefining new methods to prevent, investigate and mitigate cybercriminal behaviours through the development of a coherent, EU-wide, adaptive SECURITY MODEL, built upon the interplay of the human factors within the new cyber ecosystem and capable of addressing the four fundamental dimensions at the core of the phenomenon: 1. early identification of security threats; 2. investigations within a new public-private governance; 3. Increased complexity of the response due to the expansion of the security perimeter towards new societal fields and the emergence of challenging jurisdictional problems; and, last but not least, 4. perception of security and freedoms among citizens, which requires a new communication strategy for LEAs and security policy makers.<br><br>***This project also corresponds to the category 'Cybercrime'.*** |
| Website | https://www.prophets-h2020.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator :<br>1. Hochschule fur den Offentlichen Dienst in Bayern (DE)<br>Consortium:<br>2. European Institute Foundation (BG)<br>3. Bayerisches Staatsministerium des Innern (DE)<br>4. Ethniko Kentro Erevnas kai Technologikis Anaptyxis (EL)<br>5. Ministero della Giustizia (IT)<br>6. Universidad de Granada (ES)<br>7. Sheffield Hallam University (UK)<br>8. Policijska Akademija (HR)<br>9. Kentro Meleton Asfaleias (EL)<br>10. Politsei- ja Piirivalveamet (EE)<br>11. Erasmus Universiteit Rotterdam (NL)<br>12. Police Service of Northern Ireland (UK)<br>13. Politiezone Brecht-Malle-Schilde-Zoersel (BE)<br>14. Agenfor International (IT)<br>15. Freie Universitaet Berlin (DE) |

| RED-Alert | |
|---|---|
| Title | Real-time Early Detection and Alert System for Online Terrorist Content based on Natural Language Processing, Social Network Analysis, Artificial Intelligence and Complex Event Processing |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-12-FCT-2016-2017.<br>June 2017 / May 2020 - EUR: 5.064.437,50 GA 740688 |
| Abstract | The RED-Alert project will bring data mining and predictive analytics tools to the next level, developing novel natural language processing (NLP), semantic media analysis (SMA), social network analysis (SNA), Complex Event Processing (CEP) and artificial intelligence (AI) technologies. These technologies will be combined for the first time and validated by 6 law enforcement agencies (LEAs) to collect, process, visualize and store online data related to terrorist groups, allowing them to take coordinated action in real-time while preserving the privacy of citizens. The RED-Alert solution will outperform state-of-the-art solutions in terms of number of languages supported, privacy-preserving capabilities, usability, detection performance, real-time capabilities and integration capabilities. The RED-Alert approach combines for the first time the CEP methodology with NLP/SMA and SNA applications in the context of social media data analytics, transforming (unstructured) social media data into (structured) events enhanced by semantic attributes. For example, a tweet will be an event consisting of content (expressed as NLP features e.g. concepts, sentiment, entities, etc.) and context (time and the author including SNA features e.g. number of followers, number of links, etc.). Turning unstructured social media data into structured events is key, as it allows the system to use (event) rules (event temporal logic, event logic patterns, even counting, absence of events) to infer insights or create alerts in real-time. The project impact is supported by the participation of Europol and specific dissemination activities around the World Counter-Terrorism Summit, organized by one of the partners. The total requested EC funding is 5M Euros and the project duration 36 months. |
| Website | https://redalertproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Siveco Romania SA (RO)<br>Consortium:<br>2. Birmingham City University (UK)<br>3. Eotvos Lorand Tudomanyegyetem (HU)<br>4. IBM Israel – Science and Technology LTD (IL)<br>5. Interdisciplinary Center (IDC) Herzliya (IL)<br>6. Inutview Ltd (IL)<br>7. Malta Information Technology Law Association (MT)<br>8. Maven Seven Solutions Inc.(HU)<br>9. Mayor's office for Policigna nd Crime (UK)<br>10. Ministere de l'Interieur (FR)<br>11. Ministerio del Interior (ES)<br>12. Ministroy of Public Security (IL)<br>13. Serviciul de Portectie si Paza (RO)<br>14. Serviciul de Protectie si Paza de Stat (MD)<br>15. The City University (UK)<br>16. Usatges BCN (ES) |

| TRIVALENT | |
|---|---|
| Title | Terrorism pReventIon Via rAdicaLisation countEr-NarraTive |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-06-FCT-2016.<br>May 2017 / April 2020 - EUR: 2.720.420,00 GA 740934 |
| Abstract | The underlyingassumption of the project proposal, in line with the UN Security Council recommendations (Resolution n. 2178, September 2014) and the Commission "European Agenda on Security"2015-2020(28.4.2015, COM(2015) 185 final), is that in order to contrast successfully violent extremism,what is neededis a more balanced response to terrorism,combining repressive (protective) measures with preventive measures, in a comprehensive approach in collaboration withactors of civil society and the communitiesof reference, based on a firm commitment to respecting fundamental rights, promoting integration, cultural dialogue and fighting discrimination. To this end, a better understanding of factors constituting violent radicalisation in Europe is needed, which aims,through a multidisciplinary analysis,to a comprehensive view of the phenomenon, investigatingits root causes, in order to develop appropriate countermeasures, ranging from early detection methodologies to strategies, ways and techniques of counter-narrative, involving LEAs together with experts and civil society actors at local, national and European level. In addition, it is necessary to acknowledge that violent radicalization,especially in the case of jihadist extremism,goesmainly through narratives that: have specific characteristics and contents; use specific communication codes;are addressed to specific audiences; and spread in a multitude of ways, over the Internet, as well as by means of in-person communication exchanges that take place in families, schools, places of worship, prisons, local communities, etc. These narratives havebeen proven effective towards vulnerable groups such as young people, detainees, and people craving for revenge after having experienced what they perceive as injustices, either at personal or group level. Furthermore, due to this multifarious background, such extremism is characterised by single or group terrorist acts also reflecting a variety of influences and motivational dr |
| Website | http://trivalent-project.eu/ |

| TRIVALENT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universita Degli Studi Roma Tre (IT)<br>Consortium:<br>2. Albanian State Police (AL)<br>3. Ayuntamiento de Madrid (ES)<br>4. Citta di Torino (IT)<br>5. Direcao-Geral de Reinsercao e Servicos Prisionais (PT)<br>6. Dp Latvia (LV)<br>7. Ecole Royale Militaire - Koninklijke Militaire School (BE)<br>8. Expert System Iberia Sl (ES)<br>9. Iekslietu Ministrijas Valsts Policija State Police of The Ministry Of Interior (LV)<br>10. Interdisciplinary Center (Idc) Herzliya (IL)<br>11. Komenda Wojewodzka Policji Z Siedziba W Radomiu (PL)<br>12. Lokale Politie Voorkempen (BE)<br>13. Ministero Della Giustizia (IT)<br>14. Ministero Dell'interno (IT)<br>15. Polish National Police Headquarters (Komenda Główna Policji) (PL)<br>16. Provincial Police Headquarters In Gdansk (PL)<br>17. Tecoms Srl (IT)<br>18. The Open University (UK)<br>19. Universidad Politecnica de Madrid (ES)<br>20. Universita Cattolica del Sacro Cuore (IT)<br>21. Viseo Technologies (FR)<br>22. Zanasi Alessandro Srl (IT) |

| CPR | |
|---|---|
| Title | A cross-country comparison of Communications designed to Prevent Radicalisation |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. November 2017 / October 2019 - EUR: 200.194,80 GA 750348 |
| Abstract | The CPR project (A cross-country comparison of Communications designed to Prevent Radicalisation) analyses communications in the UK and Denmark that are designed to contribute to the prevention of vulnerable individuals being radicalised by terrorist groups such as ISIL. CPR will make a significant contribution to a problem facing many European states – namely how to effectively utilise strategic communications to counter terrorist propaganda. It is widely recognised in the literature that, to date, Western states have not been sufficiently effective in their counter-radicalisation communication strategies. It is unclear what a more prioritised communicative approach will mean in practice and communication efforts lack coordination between and, often, within countries to date. By employing an interdisciplinary theoretical approach and utilising unique access to new primary data in both states, CPR will, across four specific research strands, make three major contributions: i) generate a deeper and more nuanced empirical and conceptual understanding of the effectiveness of current counter-terrorism communications targeted at a range of audiences, ii) provide an empirically unique analysis of the challenges to effective prevention communications and, iii) provide empirically substantiated and theoretically informed communications-focused policy requirements that will improve the ability of practitioners and policy-makers to design and deliver communications that contribute to the prevention of radicalisation. CPR will employ a mixed methods methodology, incorporating semi-structured interviews for qualitative analysis alongside online surveys experiments to identify key quantative insights derived from new primary data. The project multi-actor and multi-level analysis in CPR moves beyond the state of the art in terms of methods and theory, access to data, and addressing new and broader questions in an under explored, and empirically lacking, area of research. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aarhus Universitet (DK) |

| DARE | |
|---|---|
| Title | Dialogue About Radicalisation and Equality |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies. Call: H2020-SC6-REV-INEQUAL-2016.<br>Topic code: REV-INEQUAL-02-2016. May 2017 / April 2021 - EUR: 4.999.053,75 GA 725349 |
| Abstract | DARE aims to significantly increase understanding of why and how young people become radicalised and our capacity to effectively counter radicalisation. It does this through integrating research, policy and practice objectives in a three stage process of: 1) critical review of existing knowledge, policy and interventions in radicalisation and counter-radicalisation; 2) generation of new empirical research on young people's encounters with, and responses to, messages and agents of radicalisation; and 3) integration of research findings to develop, pilot and evaluate two educational toolkits and a de-radicalisation programme evaluation tool to enhance the effectiveness of counter-radicalisation interventions. Through its focus on Islamist and anti-Islam(ist) radicalisation DARE addresses both 'religious fundamentalism' and 'violence and hate crime' dimensions of the topic call and explores how radicalisation processes interact to produce cumulative effects. It takes as its focus young people as a group that is targeted by recruiters and conventionally understood to be receptive to radicalism. It also places emphasis on gender dimensions of radicalisation. DARE recognises that improving knowledge on radicalisation has urgent implications for societal security but contributes to the wider objectives of the 'Reversing inequalities and promoting fairness' call through recognising that social inequality and discrimination give rise to perceived injustice which may motivate engagement with radical ideologies and actions. DARE's primary concern is to address the long term social roots and effects of radicalisation and to engage young people themselves in countering radicalisation through its, innovative, attention to non-radicalisation alongside radicalisation trajectories. The DARE Consortium brings together academic and civil society organisations to ensure integration of its academic, policy and practice elements and includes members from 9 EU and 4 non-EU countries. |
| Website | http://www.dare-h2020.org/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. The University Of Manchester (UK)<br>Consortium:<br>2. Anadolu University (TR)<br>3. Centre National De La Recherche Scientifique Cnrs (FR)<br>4. Collegium Civitas (PL)<br>5. Ecole Des Hautes Etudes En Sciences Sociales (FR)<br>6. European Network Against Racism (BE)<br>7. Federal State Autonomous Educational Institution For Higher Education National Research University Higher School Of Economics (RU)<br>8. Hochschule Dusseldorf (DE)<br>9. Hogskolen I Oslo Og Akershus (NO)<br>10. Institut Drustvenih Znanosti Ivo Pilar (HR)<br>11. Koehler Daniel (DE)<br>12. Panteio Panepistimio Koinonikon Kaipolitikon Epistimon (EL)<br>13. Sfax University (EL)<br>14. Teesside University (TN)<br>15. The People For Change Foundation (MT)<br>16. Universiteit Leiden (NL) |

| | GRIEVANCE |
|---|---|
| Title | Gauging the Risk of Incidents of Extremist Violence Against Non-Combatant Entities |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG. January 2018 / December 2022 - EUR: 1.458.345,00 GA 758834 |
| Abstract | GRIEVANCE seeks to make significant advances in increasing our understanding, and thereby reducing the risk, of extremist violence against non-combatants. An inter-disciplinary project underpinned by crime prevention principles is needed to help quantify the risk of such offences. The barbarity of such violent acts, coupled with the fact that participation in them is characterised by an extremely low base rate, has led researchers to seek out individual qualities of the offender with a particular focus upon what radicalisation is and how its drivers can be countered. This search has proven unproductive and impractical. In fact, it has most likely limited and unduly narrowed a wider consideration of the ways in which social scientists can bring what conceptual tools we have to bear on the problem of controlling and managing such behaviour. By doing so, this project shifts the focus from individual qualities (what we think terrorists and other similar offenders "are") to a consideration of the situational qualities of their behaviour – in other words, what violent offenders do and how they do it (Horgan, 2009: 143). This is consistent with developments in the area of crime control (Cornish and Clarke, 1986; Brantingham & Brantingham, 1981) and crime science more generally. More specifically, GRIEVANCE will utilise a number of unique datasets to understand the risk of extremist violence across a number of phases of analysis. GRIEVANCE characterises risk in terms of a process and dedicates a work package (WP) to each stage of the process from the risk of radicalisation (WP1), to the risk of recruitment (WP2), to the risk of violent action (WP3), to the temporal (WP4) and spatial (WP5) risk of offending behaviour followed by an assessment of the risk of adverse consequences from intervention (WP6). GRIEVANCE will both synthesise the existing knowledge within the literature and produce innovative new findings by utilising cutting edge inter-disciplinary research methods. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University College London (UK) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| "Bounce Resilience Training, Network and Evaluation – STRESAVIORA II (strengthening resilience against violent radicalisation)" | |
|---|---|
| Title | "Bounce Resilience Training, Network and Evaluation – STRESAVIORA II (strengthening resilience against violent radicalisation)" |
| Project number | HOME/2014/ISFP/AG/RADX/7541 |
| Contract details | € 706,785.80 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Service Public Federal Interieur<br>Consortium:<br>2. Radar Europe B.V. - NL<br>3. European Forum for Urban Security - FR |

| "Countering Propaganda by Narration Towards Anti-Radical Awareness (CONTRA)" | |
|---|---|
| Title | "Countering Propaganda by Narration Towards Anti-Radical Awareness (CONTRA)" |
| Project number | HOME/2014/ISFP/AG/RADX/7532 |
| Contract details | € 731,098.04 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Federal Criminal police office Germany<br>Consortium:<br>2. Federal Ministry Of The Interior – Federal Agency For State Protection And Counter Terrorism – AT<br>3. National Coordinator for Security and Counterterrorism – Ministry of Security and Justice – NL<br>4. Universität zu Köln – DE<br>5. Universität Mannheim – DE<br>6. Universidad Pablo de Olavide – ES<br>7. Ufuq e.V. – DE |

| "FIRST LINE – Practitioners Dealing with Radicalization Issues - Awareness Raising and Encouraging Capacity Building in the Western Balkan Region" | |
|---|---|
| Title | "FIRST LINE – Practitioners Dealing with Radicalization Issues - Awareness Raising and Encouraging Capacity Building in the Western Balkan Region" |
| Project number | HOME/2014/ISFP/AG/RADX/7533 |
| Contract details | € 853,805.62 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ministry of the interior of the Republic of Slovenia, Police<br>Consortium:<br>2. Federal Ministry of the Interior, Federal Agency for State Protection and Counter Terrorism (BMI- BV) -AT<br>3. Belgian Federal Police (BE-FP) – BE<br>4. Ministry of the Interior of the Republic of Croatia (MUP RH) - HR<br>5. Police of the Czech Republic, Organized Crime Division, Criminal Police and Investigation Service (CZ P) - CZ<br>6. Directorate for Coordination of Police Bodies of Bosnia and Herzegovina (DKPT - BiH)<br>7. State Investigation and Protection Agency of Bosnia and Herzegovina (SIPA BiH)<br>8. Ministry of Security of Bosnia and Herzegovina (MS BiH) - Ministry of Security of Bosnia and Herzegovina (MS BiH)<br>9. Ministry of the Interior of Montenegro, Police Directorate, (MoI MNE) MONTENEGRO<br>10. Ministry of the Interior of the Republic of Kosovo, Kosovo Police (MPB RK) - KOSOVO<br>11. General Directorate of Albanian Police, (GDSP) – ALBANIA<br>12. Ministry of the Interior of Macedonia, Security and Counterintelligence Service (MOI UBK) -MACEDONIA<br>13. Ministry of the Interior of the Republic of Serbia (MoI RS) – SERBIA |

| "Local institutions against extremism LIAISE II" | |
|---|---|
| Title | "Local institutions against extremism LIAISE II" |
| Project number | HOME/2014/ISFP/AG/RADX/7193 |
| Contract details | € 618,611.85 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. European Forum For Urban Security<br>Consortium:<br>2. Ufuq e.V. DE<br>3. City of Augsburg - DE<br>4. Department de Justicia – Generalitat de Catalunya - ES<br>5. City of Alexandroupolis - GREECE<br>6. City of Bagneux - FR<br>7. City of Bordeaux - FR<br>8. BRAVVO asbl; City of Brussels - BE<br>9. City of Dusseldorf - DE<br>10. City of L'Hospitalet -ES<br>11. City of Liège - BE<br>12. City of Malmo - SE<br>13. City of Paris - FR<br>14. City of Reggio Emilia - IT<br>15. City of Sarcelles- FR<br>16. City of Setubal - PT<br>17. City of Toulouse - FR<br>18. Forum Belge pour la Sécurité Urbain - BE<br>19. Forum Français pour la Sécurité Urbain - FR<br>20. Forum Italiano per la Sicurezza Urbana - IT<br>21. Confederation of European Probation – NL<br>22. City of Bologna - IT<br>23. City of Essen - DE<br>24. German European Forum for Urban security DUFUS - DE |

| "Semantic analysis against foreign fighters recruitment online networks (SAFFRON)" | |
|---|---|
| Title | "Semantic analysis against foreign fighters recruitment online networks (SAFFRON)" |
| Project number | HOME/2014/ISFP/AG/RADX/7540 |
| Contract details | € 588,805.06 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>Viseo technologies SAS<br>Consortium:<br>Holmes Semantic Solutions SAS(FR); Politecnico di Torino (IT); Academia Nationala de Infurmatii "Mihai Viteazul" (RO); DEMETRA( IT) |

| Syria Strategic Communication Advisory Team (SSCAT) | |
|---|---|
| Title | Syria Strategic Communication Advisory Team (SSCAT) |
| Project number | 7013 |
| Contract details | € 1,000,000.00 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>HOME AFFAIRS |

## 6.6 Supply Chain

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Supply chain | CASSANDRA<br>CORE<br>IPATCH<br>ISTIMES<br>LOGSEC<br>OSMOSIS<br>SAFEPOST<br>SECURECHAINS |

These projects have been complemented by the following H2020 projects:

| MITIGATE | |
|---|---|
| Title | Multidimensional, IntegraTed, rIsk assessment framework and dynamic, collaborative Risk ManaGement tools for critical information infrAstrucTurEs (MITIGATE) |
| Contract details | H2020 Secure Societies Call: H2020-DS-2014-1 Topic code: DS-06-2014<br>September 2015 / March 2018 - EUR: 3,109,794.50<br><br>CNECT - 653212 |
| Abstract | MITIGATE will introduce, integrate, validate and commercialize a RM system, which will empower stakeholders' collaboration for the identification, assessment and mitigation of risks associated with cyber-security assets and SC processes. This collaborative system will boost transparency in risk handling, while enabling the generation of unique evidence about risk assessment and mitigation. At the heart of the RM system will be an open simulation environment enabling stakeholders to simulate risks and evaluate risk mitigation actions. This environment will allow users to model, design, execute and analyze attack-oriented simulations. Emphasis will be on the estimation of cascading effects in SCs, as well as on the prediction of future risks. |
| Website | https://www.mitigateproject.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fraunhofer Gesellschaft zur foerderung der Angewandten Forschung EV (DE)<br>Consortium:<br>2. Ait Austrian Institute of Technology GMBH (AT)<br>3. Autorita Portuale di Ravenna (IT)<br>4. DBH Logisitcs IT AG (DE)<br>5. Fondazione Instituto Tecnico Superiore Mobilita Sostenibile nei Settoritrasporti Marittimi e della Pesca-Accademia Italiana della Marina Merc (IT)<br>6. Fundacion de la Comunidad Valenciana para la investigacion, Promocion y Estudios Comerciales de Valenciaport (ES)<br>7. Funacion Instituto Portuario de Estudios y Cooperacion de la Comunidad Valenciana (ES)<br>8. Maggioli Spa (IT)<br>9. Piraeus Port Authority SA (EL)<br>10. Singularlogic Anonymi Etaireia Pliroforiakon Systimaton kai Efarmogon Pliroforikis (EL)<br>11. Singularlogic Romani Computer Applications SRL (RO)<br>12. Univ. of Brighton (UK)<br>13. Univ. of Piraeus Research Center (EL) |

## These projects were complemented by new projects funded in 2016-2017:

| Babbler | |
|---|---|
| Title | Babbler feasibility study in adjacent market segments. |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>May 2017 / October 2017 - EUR: 50.000,00 GA 781707 |
| Abstract | Babbler is a next-generation seal for supply-chains. Supply-chain security is flawed and unchanged in 30 years. If you transport or store goods, it is difficult to know that your goods were treated correctly. For decades the supply chain industry has depended on bolt/cable seals, documentation and locks, knowing that these provide extremely limited safeguards and evidence trails. As a result theft, people trafficking and narcotics smuggling are rampant. An estimated 8% of medicine sold worldwide is counterfeit (Source: WHO 2015). Improper storage is detected too late to prevent waste. In addition, inspection delays are a major cost in the total supply chain. Babbler uses IoT and an inverted evidence principle to provide much better assurance of cargo security problems. In 2015 we were selected for an accelerator in the EU FIWARE program and in that accelerator won a cash prize for best startup in 2016. The accelerator provided funding so we could create and test a solution for shipping containers with business partners (Royal FloraHolland, Dutch Customs Organisation, Seatrade and others). Although Babbler proved its value in those trials and is attracting international interest, the shipping industry is conservative and slow-moving. To use Babbler a number of links in the supply chain have to decide to work together, which makes the buying process slow. We concluded that we can grow faster by focussing on niches in the supply chain, rather than an entire chain itself. We have identified several candidate market segments but need funds to test our assumptions and determine if Babbler needs to be tweaked accordingly. We are considering: 1. Transport and storage of medical supplies; 2. TAPA level 2 certified road carriers; 3. Road carriers that EU cross borders with people trafficking issues. Given the size of the markets we can create a €20-25 million business, with a high-tech labour force of 40-50 people. |
| Website | http://www.itude.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Itude Mobile BV (NL) |

| DNA TRUSTAG | |
|---|---|
| Title | DNA TRUSTAG - A paradigm shift in authentication technologies |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2017 / June 2017 - EUR: 50.000,00 GA 743831 |
| Abstract | The main goal of this proposal is to study the technical and commercial feasibility of an innovative DNA-based authentication technology (DNA TRUSTAG - https://vimeo.com/156417735) for brand and product protection. The DNA TRUSTAG platform enables cost-effective and scalable production of composite nanoparticles containing unique DNA codes (impossible to forge), which generate reading signals similar to a barcoded label. The composite nanoparticles are used to mark and authenticate raw materials and a range of products directly in the production line. The introduction of counterfeit goods in distribution chains is reaching epidemic proportions. Counterfeit goods now encompass all industrial sectors, including pharmaceuticals, electronic goods, cosmetics, automotive spare parts, pesticides, food and beverages. Counterfeit products are becoming more refined and there is an increasing number of cases, where not even manufacturers are able to distinguish fake from original. Traditional, anti-counterfeit technologies based on physical methods, such as holograms, security inks and labels, barcodes and radio-frequency identification are vulnerable, thus being frequently counterfeited. Clearly, there is a market opportunity for new and innovative anti-counterfeit technologies. We aim to explore and assess the feasibility of our technology under industrial conditions (e.g., during the production of authentication labels and tests) and to study the feasibility of the introduction of DNA TRUSTAG technology (product and services) in the international market. To this end, both the technical and economic viability of the project will be accessed in collaboration with important players in the sector. At the end of the project a feasibility report and a project plan detailing the phase 2 proposal will be delivered. |
| Website | http://dnatrustag.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. 1. DNA Trustag LDA (PT) |

| LowCostTracking | |
|---|---|
| Title | Low cost tracking and data management solution for biopharma cold chain logistics |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-SMEINST-1-2016-2017. Topic code:<br>SMEInst-10-2016-2017. September 2016 / November 2016 - EUR: 50.000,00 GA 736726 |

| LowCostTracking | |
|---|---|
| Abstract | The Danish company Globe Tracker International (GT) is revolutionizing supply chain visibility and profitability as a leading provider of data sharing, data analytics and global asset tracking. GT has developed a fully functional hardware/data management system that is ready to be deployed globally and is currently being tested in commercial trials in the reefer market. GT has partnered with global OEMs, container manufacturers and data transmission companies to help commercial expansion. For this project, GT has identified the the pharma product delivery market as a high value segment in which demand exists but where its solution needs adaptation to meet customer and regulatory requirements. The demand stems from the need for safe, secure and efficient distribution of pharma products in a strictly controlled and refrigerated environment in order to protect the integrity of the drugs. Today temperature deviations endanger patient safety and increase costs. In addition, sabotage and counterfeiting damages safety and brand values. This need is especially apparent in the fast growing biologics market that already represents a third of blockbuster pharma shipments and over half of clinic trials. The feasibility study will (1) identify the most promising pharma market niche for entry that will ultimately open up growth into all other temperature/security/ counterfeit relevant segments and (2) define the technical design for its final products to deliver the largest possible economic benefits to the supply chain. The feasibility study will help to understand how the multi-layered stakeholders need to be involved. GT will evaluate the competitive landscape, analyse pricing and ROI models and monitor its FTO position, while it is building a patent portfolio throughout Phase1 and Phase 2. The succesful outcome of the Phase II project will reduce product loss by 25%, reduce the influx of counterfeit by 50% and ensure compliance with recent EU and US logistics regulations. |
| Website | http://www.globetracker.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Globe Tracker International APS (DK) |

## 6.7 Financial crime

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Financial crime | COMFIN<br>EUSECON<br>HEMOLIA<br>PARSIFAL<br>VALUESEC |

These projects have been complemented by the following H2020 projects:

| DANTE | |
|---|---|
| Title | Detecting and ANalysing TErrorist-related online contents and financing activities (DANTE) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 Topic code: FCT-06-2015<br>September 2016 / March 2019 - EUR: 4,998,527.88<br><br>HOME - 700367 |
| Abstract | DANTE will deliver effective, efficient and automated data mining, analytics solutions and an integrated system to detect, retrieve, and analyse huge amounts of heterogeneous and complex multimedia and multi-language terrorist-related contents from both the Surface and the Deep Web, including the Dark Nets. The ultimate goal is to discover (by "connecting the dots"), analyse and monitor potential terrorist-related activities and people, with focus on online fund raising activities, but also considering propaganda, training and disinformation. DANTE's goals are achievable by exploiting, improving and integrating several existing data mining and analysis tools. |
| Website | http://www.h2020-dante.eu/ |

| DANTE | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering O Ingegneria Informatica Spa (IT)<br>Consortium:<br>2. Agnito SL (ES)<br>3. AIT Austrian Institute of Technology GMBH (AT)<br>4. Ciaotech SRL (IT)<br>5. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>6. Expert System Iberia SL (ES)<br>7. Expert System S.P.A. (IT)<br>8. Fundacion Deusto (ES)<br>9. Home Office (UK)<br>10. Katholieke Universiteit Leuven (BE)<br>11. Ministério da Justica (PT)<br>12. Ministerio Del Interior (ES)<br>13. Ministerio Della Difesa (IT)<br>14. Pragsis Technologies SL (ES)<br>15. Promt GMBH (DE)<br>16. RISSC – Centro Ricerche e Studi Susicurezza e Criminalita (IT)<br>17. Trilateral Research Ltd (UK)<br>18. United Techologies Research CentreIreland, Limited (IE)<br>19. Vocapia Research (FR) |

## These projects were complemented by new projects funded in 2016-2017:

| LocationWise | |
|---|---|
| Title | LocationWise Payment Card Validation: A cloud based location verification system that will significantly lower cost of payment card cyber security |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>March 2017 / August 2017 - EUR: 50.000,00 GA 761947 |
| Abstract | The vision of LocationWise project is to lower fraud costs incurred by banks from €1.03 to €0.55 per transaction and thus saving Europe ca. €456 million annually. Card fraud directly costs the Single Euro Payments Area ca. €1.44 billion annually and €14.55 billion globally with banks bearing 62% of costs and merchants 38%. These are not the only costs associated with payment card fraud. The other cost (amounting to €13.13 billion globally) is associated with measures to handle legitimate transactions that would have been incorrectly flagged as fraudulent and hence blocked, for example call centre costs and lost transaction fees. Reducing or minimising these costs is no easy solution as tightening fraud risk rules directly increases false positives while loosening them has the converse effect of increasing fraudulent transactions. Given that ca. 86% of adults carry their mobile phones with them there is a high probability that the location of the mobile device is close or the same location where a transaction is occurring. LocationWise automatically queries the user's mobile device to determine his/her location without human intervention so that fraud detection systems can, with greater accuracy, apply location data to reduce the number of fraudulent transactions and false positives. Because of its access to the widest global mobile coverage and use of multiple verification methods, LocationWise gives the most accurate location data. This reduces the number of genuine card transactions that are incorrectly flagged (based on location) as fraudulent by 51% and the number of actual fraudulent transactions by 62%. Among other things, the purpose of Feasibility Study is to better understand the target market, determine optimum platform resources required to handle a given volume of transactions and to further refine IP strategy. |
| Website | http://www.creativitysoftware.net/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Creativity Software Ltd (UK) |

| PROTAX | |
|---|---|
| Title | New Methods to PRevent, Investigate and Mitigate COrruption and TAX Crimes in the EU |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-07-FCT-2016-2017.<br>May 2018 / April 2021 - EUR: 2.992.633,75 GA 787098 |
| Abstract | PROTAX will contribute to a European Security Model providing solutions for prevention and prosecution of tax crimes. Based on analysis of current approaches of law enforcement, legal frameworks at Member State level and in-depth empirical investigation of human factors, shaping institutional and professional practices of stakeholders PROTAX will develop in close co-operation with practitioners tool kits for security policy makers, law enforcement agencies and tax authorities. They will combine high use-value with a strong European perspective, paving the way towards an integrated European approach. Since serious and organised tax crimes often involve cross-border activities, requiring cooperation across national jurisdictions a shared understanding of risks, threats and security measures will improve European law enforcement practices. PROTAX will produce innovative solutions boosting evolutionary development towards a genuine and sustainable European approach, significantly reducing the damages for European societies caused by criminals in the financial sector. PROTAX adopts a five-pronged approach. 1. We use case studies of tax crimes to investigate the roles of various actors. 2. We conduct focus groups with stakeholders in Member States. 3. We focus on the role of professional enablers as facilitators allowing illicit financial flows through legitimate institutions. 4.We map out various legal and enforcement approaches across the EU. 5. We make recommendations and provide a toolkit improving prevention of tax crimes and enforcement of the law. PROTAX will involve experts from LEAs and tax authorities in structured exchanges to share experience and ideas. A focus will be on cross-border aspects, assuming that tax crimes spread from "source countries" across the EU (e.g., to tax havens). PROTAX guidelines and toolkits will consider standards of data protection, privacy and social acceptability. |
| Website | https://protax-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Coventry University (UK)<br>Consortium:<br>2. Financial Intelligence Analysis Unit (MT)<br>3. Bundesministerium für Finanzen (AT)<br>4. Vienna Centre for Societal Security - Vicesse, Wiener Zentrum fur Sozialwissenschaftliche Sicherheitsforschung (AT)<br>5. An Garda Siochana (IE)<br>6. Ministério da Justiça (PT)<br>7. Maksu- Ja Tolliameti (EE)<br>8. Bundesministerium fuer Justiz (AT)<br>9. Trilateral Research Ltd (UK) |

| QuardCard | |
|---|---|
| Title | Powered smart card with a biometric one time password system |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>April 2016 / August 2016 - EUR: 1.620.242,57 GA 757096 |
| Abstract | CardLab and QuardLock's joint vision is to bring a disruptive, highly secure smart card (QuardCard) to the financial payments market, which is currently facing major increases in fraud levels. QuardCard combines, for the first time: (i) a smart card (all data is kept inside the card and only encrypted keys are released); (ii) a biometric fingerprint – highly accurate and impossible to copy; and (iii) dynamic one-time-password (OTP), generated by the user's fingerprint. As such, the card only works with the rightful owner's fingerprint and will improve drastically the security of online and physical transactions. The card will be marketable in two generations/versions: • 1st generation QuardCard for the generation of OTPs through user's fingerprint for e-banking authentication and e-commerce transactions; • 2nd generation QuardCard combining generation of OTPs with capacity for physical transactions (card payments or cash withdrawal), replacing the need for a conventional credit card. Due to the certification compliance of the current prototype, both generations will be ready for mass production upon completion of the QuardCard project. However, financial institutions do not easily replace existing solutions by novel technologies. Ensuring and demonstrating a maximum level of user security is a key differentiating factor to gain access to the market. Given QuardCard´s value proposition, combined with the demonstration and certification activities planned for Phase 2, we will be able to enable subsequent market entry. The consortium gathers two Danish SMEs: CardLab (QuardCard manufacturer) has an established network of clients and QuardLock holds the patent and know-how to use biometrics to generate an OTP. Both companies will benefit from the project through a cross-license agreement where each receive a share of QuardCard revenues and royalties. Later the technologies can be spread out to other user areas where a biometric safe card can be of utmost importance. |
| Website | http://www.cardlab.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Cardlab Innovation Aps (DK)<br>Consortium:<br>2. Quardlock APS (DK) |

| TITANIUM | |
|---|---|
| Title | Tools for the Investigation of Transactions in Underground Markets |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-12-FCT-2016-2017.<br>May 2017 / April 2020 - EUR: 4.991.600,00 GA 740558 |
| Abstract | "TITANIUM will develop methods and technical solutions for investigating and mitigating illegitimate activities (relating to either crime or terrorism) involving virtual currencies and/or underground market transactions. Specifically, the project will: (1) establish close and continuous collaboration between key stakeholders; (2) analyse legal and ethical requirements for tools and services; (3) implement tools for the automated aggregation of data from diverse sources; (4) provide services for the simulation of criminal activities and the generation of synthetic data; (5) investigate customizable heuristic; (6) apply techniques based on machine-learning and deep neural networks for revealing patterns, detecting anomalies, and identifying tumblers and mixers used for money laundering; (7) deploy forensics tools and services to partner LEAs and conduct Field Labs to assess the effectiveness, ethical and legal compliance, and overall impact; (8) prepare curricula and carry out training and joint exercises that will facilitate the take-up of TITANIUM technologies by LEAs across Europe, and (9) allow European SMEs and RTOs to develop cutting edge tools, to access LEA markets, and to strengthen European competitiveness. https://www.titanium-project.eu/" |
| Website | https://www.titanium-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ait Austrian Institute of Technology Gmbh (AT)<br>Consortium:<br>2. Bundeskriminalamt (DE)<br>3. Bundesministerium Fuer Inneres (AT)<br>4. Coblue Cybersecurity (NL)<br>5. Countercraft Sl (ES)<br>6. Dence Gmbh (DE)<br>7. Fundacion Centro de Tecnologias de Interaccion Visual y Comunicaciones Vicomtech (ES)<br>8. Karlsruher Institut Fuer Technologie (DE)<br>9. Ministerio Del Interior (ES)<br>10. National Bureau of Investigation (FI)<br>11. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>12. The International Criminal Police Organization (FR)<br>13. Trilateral Research Ltd (UK)<br>14. Universitaet Innsbruck (AT)<br>15. University College London (UK) |

| COFFERS | |
|---|---|
| Title | Combating Fiscal Fraud and Empowering Regulators |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies. Call: H2020-SC6-REV-INEQUAL-2016.<br>Topic code: REV-INEQUAL-08-2016. November 2016 / October 2019 - EUR: 4.986.989,75 GA 727145 |
| Abstract | Since 2008 'fiscal leaks' have become an immediate policy challenge for EU governments, partly as a result of tax abuse. The COFFERS project unfolds as EU tax authorities transition to a new era in tackling tax abuse based upon policy innovation at the OECD, EU and national levels. COFFERS recognizes this creates a state of flux where much tax authority expertise regarding past regulations, systems and practices is now irrelevant and understanding has, instead, to focus upon the on-going change process. Deploying principles of evolutionary political economy COFFERS both studies and is an integral part of this change process. COFFERS recognizes that identifying and tackling the tax gap to relieve inequality is the ultimate aim. Noting the tax gap exists both domestically and internationally and ranges from criminal money laundering to sophisticated tax avoidance, COFFERS benchmarks current understanding of these issues, undertakes comparative analysis of approaches taken to tackle them across EU Member States, and assesses resources being allocated to the task of closing the tax gap. In parallel expert networks in business, the tax profession, secrecy jurisdictions and the criminal economy that develop the mechanisms undermining the expected effectiveness of tax systems will be appraised, especially with regard to responses to regulatory changes taking place. This results in COFFERS outputs that transmit analysis, risk assessment and policy advice. Deliverables of use to EU tax authorities include new tax gap analyses by state, tax risk maps identifying risk by jurisdiction, a new anatomy of money laundering risk, and tools to help tax authorities understand the risks that they face domestically and internationally. COFFERS delivers value for money in enhancing tax yield, effectiveness in creating the tools to achieve that goal, and behavioural change in taxpayers and their advisers as a result of recommendations made, all with the aim of reducing inequality. |
| Website | https://coffers.eu/ |

| COFFERS | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universiteit Utrecht (NL)<br>Consortium:<br>2. Istanbul Kemerburgaz Universitesi (TR)<br>3. Tax Justice Network Limited (UK)<br>4. University of Limerick (IE)<br>5. City University of London (UK)<br>6. Copenhagen Business School (DK)<br>7. The University of Warwick (UK)<br>8. Univerzita Karlova (CZ)<br>9. University of Leicester (UK)<br>10. Otto-Friedrich-Universitaet Bamberg (DE) |

| DEVTAXNET | |
|---|---|
| Title | Tax Evasion in Developing Countries. The Role of Firm Networks |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG. January 2018 / December 2022 - EUR: 1.288.125,00 GA 758984 |
| Abstract | Tax evasion leads to billions of Euros of losses in government revenue around the world. This does not only affect public budgets, but can also create large distortions between activities that are fully taxed and others that escape taxation through evasion. These issues are particularly severe in developing countries, where evasion is especially high and governments struggle to raise funds for basic services and infrastructure, while at the same time trying to grow independent of international aid. It is widely suspected that some of the most common and difficult to detect forms of evasion involve interactions across firm networks. However, due to severe data limitations, the existing literature has mostly considered taxpayers as isolated units. Empirical evidence on tax compliance in firm networks is extremely sparse. This proposal describes 3 Sub-Projects to fill this gap. They are made possible thanks to access I have obtained -through five years of prior research and policy engagement– to unique datasets from Chile and Ecuador on both the networks of supply chains and of joint ownership structures. The first Sub-Project focuses on international firm networks. It aims to analyze profit shifting of multinational firms to low tax jurisdictions, exploiting a natural experiment in Chile that strongly increased monitoring of international tax norms. The second Sub-Project investigates the analogous issue at the intranational level: profit shifting and tax collusion in networks of firms within the same country. Despite much anecdotal evidence, this behavior has received little rigorous empirical scrutiny. The final Sub-Project is situated at the nexus between international and national firms. It seeks to estimate a novel form of spillovers of FDI: the impact on tax compliance of local trading partners of foreign-owned firms. DEVTAXNET will provide new insights about the role of firm networks for tax evasion that are valuable to academics and policy makers alike. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitat Zurich (CH) |

| FORENSICS | |
|---|---|
| Title | Illicit Markets, Unobserved Competitors, and Illegal Behavior |
| Contract details | European Research Council - Consolidator Grant. Call: ERC-2016-COG. Topic code: ERC-2016-COG. September 2017 / August 2022 - EUR: 1.212.934,00 GA 725081 |
| Abstract | Many markets are characterized by illicit or illegal behavior by agents. To the extent that the empirical economic framework does not incorporate these unobserved actions or control for them in estimation, the resulting models are likely to be mis-specified. Naturally, if the models do not contain all elements relevant for decision making, then predictions based on the estimates will be misleading, which could result in incorrect policy recommendations. This project directly addresses three situations in which unobserved behavior plays a crucial role. The first concerns markets where consumers engage in illicit behavior. These markets are prevalent in society as they constitute the market for illicit drugs, which is estimated at more than $300 billion per year (UN, 2012). The second concerns markets where firms make strategic decisions in the presence of an unidentified competitor - a counterfeiter, where the global value of counterfeit products rivals that of illegal drugs (OECD, 2007). The third concerns situations where firms use legal tools for illegal purposes, for which the impact is challenging to quantify and one goal of this project. In each area, the project (i) develops state-of-the-art empirical models that incorporate illicit behaviors, (ii) proposes novel estimation methods that can be used to detect illegal behavior, and (iii) provides evidence that the proposed methodology is feasible and the data are sufficient to estimate the models. Incorporating and estimating unobserved behavior in a variety of settings is an ambitious undertaking. However, it is vital as a key objective of the proposal is to provide policy makers with tangible tools that accurately reflect the unobserved nature of these markets. Given the global significance of illicit markets, the novel concepts proposed, and the focus on policy, this project has the potential to make a sizable impact, both in and beyond academia, representing an ambitious but worthwhile pursuit. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Mannheim (DE) |

### *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| INVENTORY, OUTLOOK, AND ASSESSMENT OF EMERGING ENVIRONMENTAL CRIMES AGAINST WATER IN EUROPE | |
|---|---|
| Title | INVENTORY, OUTLOOK, AND ASSESSMENT OF EMERGING ENVIRONMENTAL CRIMES AGAINST WATER IN EUROPE |
| Project number | HOME/2014/ISFP/AG/EFCE/7241 |
| Contract details | € 314,868.33 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Higher Institute On Territorial Systems For Innovation<br>Consortium:<br>RiSSC- Centro Ricerche e Studi su Sicurezza e Criminalità (IT); The Regional Environmental Centre for Central and Eastern Europe (REC) (IntOrg based in HU); Faculty of Criminal Justice and Security - University of Maribor (SI); Universidade da Coruña (ES) |

## 6.8 Civil-military cooperation

The projects were funded under H2020:

| CIVILnEXt | |
|---|---|
| Title | Next generation of information systems to support EU external policies |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-13-BES-2017.<br>May 2018 / April 2021 - EUR: 9.998.679,38 GA 786886 |
| Abstract | The 2016 European Union Global Strategy for Foreign and Security Policy (EUGS) highlights the need to enhance external policies by pursuing better communication, information-sharing, joint reporting, analysis and response planning between member state embassies, EU delegations, Commission services, EU Special Representatives and Common Security and Defence Policy (CSDP) missions. The CIVILnEXt project supports the development of a solution addressing existing "fragmentation" and closing "gaps". To provide civilian CSDP missions with the next generation of secure and cost-effective information systems: a situational awareness, information exchange and operation control platform (OCP). Fully informed of contributing initiatives in civilian CSDP and EU external action, the project will aim to develop solutions leveraging on the results extracted from projects funded by the EU. The common challenge in CIVILnEXt is to develop, test and validate a cost-effective and interoperable operation control platform (OCP) that will support the conduct of civilian CSDP missions. The OCP will improve coordination in EU external action through better information exchange, situational awareness and operation control in diverse theaters of operation. It will support the EU's comprehensive approach in complex missions, including the civil-military cooperation within CSDP, facilitate the engagement CSDP actors, creating links EU Delegations, FRONTEX, ECHO and other EU activities, member states, as appropriate, and other partners such as the UN and regional organisations. CIVILnEXt engages the participation of four national competent authorities, active in EU external policies and the UN organisations IOM. They share the need to become beneficiaries of procurement results that enhance the effectiveness of civilian CSDP. They are co-financing the action under one single joint procurement, supported by technical and policy advisors, with extensive CSDP experience. |
| Website | https://www.civilnext.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. National Center for Scientific Research "Demokritos" (EL)<br>Consortium:<br>2. Istituto Affari Internazionali (IT)<br>3. European Centre for Development Policy Management (NL)<br>4. Atos Spain SA (ES)<br>5. European Union Satellite Centre (ES)<br>6. Ebos Technologies Limited (CY)<br>7. Sheffield Hallam University (UK)<br>8. Kentro Meleton Asfaleias (EL)<br>9. Ministerio del Interior (ES)<br>10. Rheinische Fachhochschule Koln Gmbh (DE)<br>11. Ministry Of National Defence, Greece (EL)<br>12. Ustanova-Center ZA Evropsko Prihodnost (SI)<br>13. International Organization for Migration (CH)<br>14. Ministry of Foreign Affairs (CY) |

## 6.9 External security threat

The projects were funded under H2020:

| EU-LISTCO | |
|---|---|
| Title | Europe's External Action and the Dual Challenges of Limited Statehood and Contested Orders |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies. Call: H2020-SC6-ENG-GLOBALLY-2017.<br>Topic code: ENG-GLOBALLY-02-2017. March 2018 / February 2021 - EUR: 4.989.936,75 GA 769886 |
| Abstract | Two risks characterize the European Union's (EU) regional and global security environments, 1) areas of limited statehood (ALS) in the EU's East and South, in which central government authorities are too weak to enforce rules and/or do not control the monopoly over the means of violence; 2) contested orders (CO), in which various actors challenge the rules according to which societies and political systems are and should be organized. EU-LISTCO will investigate, first, under which conditions ALS/CO deteriorate into governance breakdown and violent conflict, turning risks into security threats for Europe. By combining risk scanning and foresight methodologies with comparative case studies, we will identify the tipping points at which risks turn into threats, and how they might be better anticipated. We will also investigate how global and diffuse threats affect tipping points as well as the sources of resilience in ALS/CO that can be leveraged from the outside. Second, EU-LISTCO will investigate how the preparedness of the EU and its member states can be strengthened to anticipate, prevent, and respond to threats of governance breakdown and violent conflict and to foster resilience in ALS/CO. In particular, we will examine the strategies, capacities, and policy instruments of EU institutions and selected member states, with a focus on the provisions of the Lisbon Treaty and the implementation of the EU Global Strategy. A new methodology for knowledge exchange between academia and foreign policy will assist EU-LISTCO to achieve its policy objectives. EU-LISTCO encompasses a unique consortium of universities and think tanks in close cooperation with the European External Action Service as well as the Ministries of Foreign Affairs of France, Germany, and Italy. This knowledge exchange will take place continuously allowing scholars to incorporate concrete policy challenges in their research and enabling policy practitioners to pursue research-based policies. |
| Website | https://www.eu-listco.net/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Freie Universitaet Berlin (DE)<br>Consortium:<br>2. Ukrainian Institute for Public Policy Civic Organization (UA)<br>3. Istituto Affari Internazionali (IT)<br>4. Polski Instytut Spraw Miedzynarodowych (PL)<br>5. Georgian Institute of Politics (GE)<br>6. Fondation Nationale des Sciences Politiques (FR)<br>7. European University Institute (IT)<br>8. Institutt for Fredsforskning Stiftelse (NO)<br>9. Bilkent Universitesi Vakif (TR)<br>10. Centre for International Information and Documentation in Barcelona (ES)<br>11. Interdisciplinary Center (IDC) Herzliya (IL)<br>12. Palestinian Center for Policy & Survey Research (PS)<br>13. Global Public Policy Institute EV (DE) |

# 7. Border security and customs

## 7.1 Aviation security

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Aviation security | COPRA<br>EUROSKY<br>GAMMA<br>SUBITO<br>TASS<br>XP-DITE |

These projects have been complemented by the following H2020 projects:

| FLYSEC | |
|---|---|
| Title | Optimising time-to-FLY and enhancing airport SECurity (FLYSEC) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-16-2014<br>May 2015 / May 2018 - EUR: 4,089,500.00<br><br>HOME - 653879 |
| Abstract | The FLYSEC project aims to develop and demonstrate an innovative integrated and end-to-end airport security process for passengers, enabling a guided and streamlined procedure from the landside to airside and into the boarding gates, and offering an operationally validated concept for end-to-end aviation security. FLYSEC integrates new technologies on video surveillance, intelligent remote image processing and biometrics combined with big data analysis, open-source intelligence and crowdsourcing.. Besides more efficient background checks and passenger profiling, FLYSEC aims to implement a seamless risk-based security process within FLYSEC aforementioned technologies with behavioural analysis and innovative cognitive algorithms. |
| Website | http://www.fly-sec.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. National Center for Scientific Research 'Demokritos' (EL)<br>Consortium:<br>2. CG Smartech Ltd (IL)<br>3. EASC ev (DE)<br>4. Elbit Systems Ltd (IL)<br>5. Embry-Riddle Aeronautical Deutschland GMBH (DE)<br>6. Emza Visual sense Ltd (IL)<br>7. Epsilon Internasional Anonymi Etaireia Meleton Kai Symvoulon (Epsiolon International SA) (EL)<br>8. Exodus Anonymos Etaireia Pliroforikis (EL)<br>9. ICTS (UK) Ltd (UK)<br>10. Societe de l'Aeroport de Luxembourg SA (LU)<br>11. Universite du Luxembourg (LU) |

| SAPIENT | |
|---|---|
| Title | Satcom and terrestrial architectures improving performance, security and safety in ATM (SAPIENT) |
| Contract details | Exploratory Research Call: H2020-SESAR-2015-1 Topic code: Sesar-08-2015<br>April 2016 / October 2017 - EUR: 859.500,00<br><br>RIA - 699328 |
| Abstract | The present SAPIENT proposal addresses a new innovative application focusing exploitation of the synergies of Communications and Navigation technologies and the 4D trajectory management concept. The SAPIENT project aims at supporting the Technology Communication and Navigation roadmaps and the stakeholders roadmaps for the Air-Ground datalinks SAPIENT project is strictly linked to the current phase of SESAR, taking into account the analysis and the definition activities carried out in the WP15 CNS and, in particular, the results of P15.2.4 and P15.2.6. In addition, taking into account the SESAR work on Remote Piloted Aircraft System (see P15.2.4 task 105 and Medale project), the SAPIENT system aims at improving the performance of the RPAS Command, Control and Communication satellite datalink, that is recognized as one of the major technical gaps for the RPAS integration in the civilian airspace. |
| Website | http://sapient-project.eu/h2020/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Thales Alenia Space Italia Spa (IT)<br>Consortium:<br>2. Business Integration Partners Spa (IT)<br>3. Frequentis Ag (AT)<br>4. Sita Information Networking Computing Bv (NL)<br>5. Universita Di Pisa (IT)<br>6. Viasat Antenna Systems Sa (CH) |

## These projects were complemented by new projects funded in 2016-2017:

| Smart-Trust | |
|---|---|
| Title | Smart Trust: Secure Mobile ID for Trusted Smart Borders |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>January 2018 / December 2019 - EUR: 2.093.700,00 GA 778571 |
| Abstract | Smart-Trust introduces a new technological enabler for Mobile ID which drastically increases the reliability and trust levels of identity verification at European borders, thus increasing the security of member states. The platform is compatible with a seamless self-service experience based on biometrics on the move which provides freedom of movements to citizens while ensuring their privacy safeguarded according to Privacy by Design principles. Smart-Trust will simultaneously address the business needs of governments, airports, airlines and border police in major pilots in the international airports of Lisbon and Schiphol. After establishing requirements sought by the various stakeholders, and integrating the Smart-Trust platform into the airport and border control infrastructure, we will define KPIs for assessing the business cases and design experiments to measure them. Smart-Trust will be implemented by delivering an agile, highly configurable, modular and open architecture platform with the following robust, versatile and scalable core components: • Mobile ID services and app, mobile identity enrolment and verification services. • TrustChain, a blockchain-based infra-structure to assert citizen transactions in a distributed and self-regulatory fashion. • Workflow Orchestration, a workflow management component which caters for stakeholder-driven business rules. • Analytics and Risk-Assessment, an industrial-strength real time analytics platform able to deliver professional customized monitoring dashboards as well as detecting passenger trends and anomalies. These components will be developed as part of Vision-Box's overarching Services Platform and hence compatible with standard Vision-Box services such as Automated Border Control, including Advance Passenger Information Systems (APIS) and Entry-Exit System (EES), and Happy Flow, the first 100% self-service passenger processing system allowing passengers to go from curb to boarding by simple presenting their face. |
| Website | http://www.vision-box.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vision Box - Solucoes de Visao por Computador SA (PT) |

| Aerobits | |
|---|---|
| Title | Aerobits - world smallest ADS-B receivers to safely integrate drones into European airspace |
| Contract details | Industrial Leadership – Innovation in SMEs. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-04-2016-2017. December 2017 / May 2018 - EUR: 50.000,00 GA 791438 |
| Abstract | The number of collision situations and close calls between manned aircrafts and UAVs (drones) doubles each year. This is due to extensive increase of drones sales. Experts show that plane deadly damage or crush caused by collision with drone is just a matter of time. As this is a global problem, every national aviation authority publishes more and more restrictive law for drone operators, hoping to control this dangerous situation. However, it is known already today that law itself shall not be enough to ensure safe sharing of air space between manned and unmanned aircraft. It is more and more often mentioned that electronic systems should be introduced, so called „DETECT AND AVOID" or „SENSE AND AVOID" technologies, abbreviated as DAA/SAA, which once installed on the UAS side, shall guarantee safe distance to manned aircraft. Aerobits solves this problem with its GNSS/ ADS-B Core technology, which enables designing the world smallest and fastest ADS-B implementations to guarantee separations between drones and maned aircraft. ADS-B surveillance technology, which is becoming a standard in air traffic management will be also used in our products in minimized modules to ensure separation between drones and aircrafts. Our technology fits perfectly to US NextGen and EU Sesar programmes. We are applying for the SME Instrument Phase 1, aiming to complete the feasibility study and a business including technological feasibility, partner search, market sizing and critical risks assessment. |
| Website | http://aerobits.pl/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aerobits Spolka Z Ograniczona Odpowiedzialnoscia (PL) |

| EUNADICS-AV | |
|---|---|
| Title | European Natural Airborne Disaster Information and Coordination System for Aviation |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-MG-2016-SingleStage-INEA. Topic code: MG-3.1-2016. October 2016 / September 2019 - EUR: 7.441.813,75 GA 723986 |
| Abstract | Aviation is one of the most critical infrastructures of the 21st century. Even comparably short interruptions can cause economic damage summing up to the Billion-Euro range. As evident from the past, aviation shows certain vulnerability with regard to natural hazards. The proposal EUNADICS-AV addresses airborne hazards (environmental emergency scenarios), including volcano eruptions, nuclear accidents and emergencies and other scenarios where aerosols and certain trace gases are injected into the atmosphere. Such events are considered rare, but may have an extremely high impact, as demonstrated during the European Volcanic Ash Crisis in 2010. Before the 1990s, insufficient monitoring as well as limited data analysis capabilities made it difficult to react to and to prepare for certain rare, high-impact events. Meanwhile, there are many data available during crisis situations, and the data analysis technology has improved significantly. However, there is still a significant gap in the Europe-wide availability of real time hazard measurement and monitoring information for airborne hazards describing "what, where, how much" in 3 dimensions, combined with a near-real-time European data analysis and assimilation system. The main objective of EUNADICS-AV is to close this gap in data and information availability, enabling all stakeholders in the aviation system to obtain fast, coherent and consistent information. This would allow a seamless response on a European scale, including ATM, ATC, airline flight dispatching and individual flight planning. In the SESAR 2020 Programme Execution Framework, EUNADICS-AV is a SESAR Enabling project (project delivering SESAR Technological Solutions). The project aims at passing a SESAR maturity level V2, which includes respective service validation activities, including validation exercises. Work will be also done to prepare a full V3 validation.<br><br>***This project also corresponds to the category 'Critical transport/transportation infrastructure'.*** |
| Website | http://www.eunadics.eu/ |

| EUNADICS-AV | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Zentralanstalt Fur Meteorologie Undgeodynamik (AT)<br>Consortium:<br>2. Austro Control Osterreichische Gesellschaft Fur Zivilluftfahrt Mbh (AT)<br>3. Brimatech Services Gmbh (AT)<br>4. Bundesministerium Fuer Landesverteidigung Und Sport (AT)<br>5. Consiglio Nazionale Delle Ricerche (IT)<br>6. Deutsches Zentrum Fuer Luft - Und Raumfahrt Ev (DE)<br>7. Eidgenoessisches Departement Des Innern (CH)<br>8. Eumetnet Groupement D Interet Economique (BE)<br>9. European Centre For Medium-Range Weather Forecasts (UK)<br>10. Flightkeys Gmbh (AT)<br>11. Ilmatieteen Laitos (FI)<br>12. Institut Royal D'aeronomie Spatiale De Belgique (BE)<br>13. Institut Royal Meteorologique De Belgique (BE)<br>14. Istituto Nazionale Di Geofisica E Vulcanologia (IT)<br>15. Koninklijk Nederlands Meteorologisch Instituut-KNMI (NL)<br>16. Meteo-France (FR)<br>17. Paris-Lodron-Universitat Salzburg (AT)<br>18. Sateilyturvakeskus (FI)<br>19. Sveriges Meteorologiska Och Hydrologiska Institut (SE)<br>20. Universitat Politecnica De Catalunya (ES)<br>21. Universite Libre De Bruxelles (BE)<br>22. Vedurstofa Islands (IS) |

| OPTICS2 | |
|---|---|
| Title | Observation Platform for Technological and Institutional Consolidation of research in Safety and Security |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-MG-2017-SingleStage-RTD-MOVE. Topic code: MG-1.5-2016-2017. October 2017 / September 2021 - EUR: 1.493.597,50 GA 770138 |
| Abstract | OPTICS2 aims at providing a comprehensive evaluation of relevant Safety and Security R&I in aviation and air transport. The main objective of the project is assessing if Europe is performing the right safety and security research and if the research is delivering the expected benefits to society. OPTICS2 will be the continuation of the work started in OPTICS. The successful methodology for assessing EU Research developed in OPTICS will be further refined in OPTICS2 – based on the lessons learnt over the past four years – and extended to the security research. The purpose is to offer to ACARE and to other key aviation stakeholders a wider perspective on the recent and on-going research in Europe and to show where are the main gaps and bottlenecks towards the achievement of FlightPath 2050 Safety and Security goals. The overall OPTICS2 concept is to work like a magnifying lens, seeing all the way from the Safety and Security Goals of FlightPath 2050 through the clusters of R&I activities necessary to realise these goals, down to the research projects. The bottom-up approach, based on the identification, selection and assessment of R&I projects, focuses on how these projects and programmes cover the ACARE Strategic Research and Innovation Agenda (SRIA) Capabilities – and hence the Enablers, clusters and FlightPath 2050 goals. This approach allows the identification of research strengths and gaps, as well as bottlenecks or constraints affecting research progress. But there is always the chance that the SRIA is missing a relevant research avenue. The bottom-up assessment is therefore complemented by workshops with aviation experts and stakeholders intended to identify the research priorities and the impact on stakeholders' activities. The results from bottom-up and top-down processes are reviewed and compiled to provide strategic recommendations to the EC and/or ACARE via an annual 'State-of-the-Art' report, including suggested corrective actions and priorities. |
| Website | http://www.optics-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Deep Blue SRL (IT)<br>Consortium:<br>2. Stichting Nationaal Lucht- en Ruimtevaartlaboratorium (NL)<br>3. EUROCONTROL - European Organisation for the Safety of Air Navigation (BE)<br>4. Office National d'etudes et de Recherches Aerospatiales (FR)<br>5. BAE Systems (Operations) Limited (UK)<br>6. Deutsches Zentrum fuer Luft - und Raumfahrt EV (DE)<br>7. Fundacion Instituto de Investigacion Innaxis (ES)<br>8. European Aviation Safety Agency (DE)<br>9. Centro Italiano Ricerche Aerospaziali SCPA (IT)<br>10. Consorzio Interuniversitario Nazionale per l'informatica (IT) |

| SARAH | |
|---|---|
| Title | Increased Safety and robust certification for ditching of aircrafts and helicopters |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-MG-2016-SingleStage-INEA. Topic code: MG-3.1-2016. October 2016 / September 2019 - EUR: 6.636.393,75 GA 724139 |
| Abstract | SARAH is concerned with establishing novel holistic, simulation-based approaches to the analysis of aircraft ditching. It is build up from a consortium of experts from OEM industries, experienced suppliers of simulation technologies, established research institutions and representatives of the certification authorities. Results of SARAH are expected to support a performance-based regulation and certification for next generation aircraft and helicopter and to enhance the safe air transport as well as to foster the trustworthiness of aviation services. Aircrafts and helicopters often travel above water and thus have to prove a safe landing under emergency conditions. The specific challenge is to minimize the risk of injury to passengers and to enable safe evacuation. Accordingly, the motion of the aircraft/helicopter along with the forces acting on the structure are studied for controlled water impact during the design phase of an aircraft. Ditching has close links with crash simulation, but also distinctive features. Examples refer to hydrodynamic slamming loads on airborne vehicles and complex hydromechanics (partially at very large forward speeds) as well as the interaction of multi-phase fluid dynamics (involving air, water, and vapor phases) and structure mechanics. Design for ditching involves more than the analysis of loads and subsequent strengthening of the structure. It often requires adjustment campaigns for the handling of the vehicle during approach and the identification of favorable approach/flight-path conditions in line with the pilots flying capabilities to minimize the remaining kinetic energy of the vehicle to be transferred into the water. In conclusion, a pressing need for more advanced studies to support the development of next-generation, generalized simulation-based ditching-analysis practices is acknowledged by all stakeholders. The public interest in safety makes this proposal an ideal candidate for a European research proposal. |
| Website | http://sarah-project.eu/ |
| Consortium (prone to modification in case of GA amendment). | Coordinator:<br>1. Ibk-Innovation Gmbh & Co. Kg (DE)<br>Consortium:<br>2. Airbus Defence And Space Sa (ES)<br>3. Airbus Helicopters (FR)<br>4. Airbus Operations Gmbh (DE)<br>5. Consiglio Nazionale Delle Ricerche (IT)<br>6. Dassault Aviation (FR)<br>7. Easn Technology Innovation Services Bvba (BE)<br>8. Ecole Centrale De Nantes (IT)<br>9. Hydrocean (IT)<br>10. Nextflow Software (FR)<br>11. Technische Universitaet Hamburg-Harburg (DE)<br>12. Technische Universitat Braunschweig (DE) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| INVENTORY, OUTLOOK, AND ASSESSMENT OF EMERGING ENVIRONMENTAL CRIMES AGAINST WATER IN EUROPE | |
|---|---|
| Title | INVENTORY, OUTLOOK, AND ASSESSMENT OF EMERGING ENVIRONMENTAL CRIMES AGAINST WATER IN EUROPE |
| Project number | HOME/2014/ISFP/AG/EFCE/7241 |
| Contract details | € 314,868.33 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Higher Institute On Territorial Systems For Innovation<br>Consortium:<br>RiSSC- Centro Ricerche e Studi su Sicurezza e Criminalità (IT); The Regional Environmental Centre for Central and Eastern Europe (REC) (IntOrg based in HU); Faculty of Criminal Justice and Security - University of Maribor (SI); Universidade da Coruña (ES) |

| AIRPOL III | |
|---|---|
| Title | AIRPOL III |
| Project number | HOME/2015/ISFP/AG/AIRP/0001 |
| Contract details | € 474,610.20 |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>Swedish Police Authority - Police Region Stockholm |

## 7.2 Maritime security

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Maritime security | AEROCEPTOR<br>AMASS<br>CLOSEYE<br>CONTAIN<br>EU-CISE 2020<br>I2C<br>OPERAMAR<br>PERSEUS<br>PROMERC<br>SEABILLA<br>SECRONIC<br>SUPPORT<br>TRITON<br>WIMAAS |

These projects have been complemented by the following H2020 projects:

| ALFA | |
|---|---|
| Title | Advanced Low Flying Aircrafts Detection and Tracking (ALFA) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-04-2015<br>January 2017 / December 2019 - EUR 4,613,831<br><br>REA - 700002 |
| Abstract | Bridging the drone detection-capability gap by improving situational awareness through the detection of LSS (Low, Small and Slow) manned and unmanned aircraft. Use of heterogeneous, easy-to-deploy mobile sensors based on several novel technologies; sensor data in combination with existing sources of information using evolved data fusion to provide accurate positional data for targets, air vehicle type and reliable prediction of its landing site. Information is communicated to the regional law enforcement units using secure communication links and a mobile device application, enabling improved reaction time. |
| Website | https://alfa-h2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Echnikon Forschungs- und Planungsgesellschaft MBH (AT)<br>Consortium<br>2. Atos Spain SA (ES)<br>3. Engineering - Ingegneria Informatica SPA (IT)<br>4. INOV INESC Inovacao - Instituto de Novas Tecnologias (PT)<br>5. Ministerio da Administracao Interna (PT)<br>6. Ministerio del Interior (ES)<br>7. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) (NL)<br>8. Technische Universitat Braunschweig (AT)<br>9. Thales Nederland BV (NL) |

| RANGER | |
|---|---|
| Title | RAdars for loNG distance maritime surveillancE and SaR opeRations (RANGER) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-01-2015<br>May 2016 / November 2019 - EUR: 7,992,312.50<br><br>HOME - 700478 |
| Abstract | RANGER combines innovative radar technologies with technological solutions for early warning, in view of delivering a surveillance platform offering detection, recognition, identification and tracking of suspicious vessels, capabilities exceeding current radar systems. |
| Website | https://ranger-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Exus Software Ltd (UK)<br>Consortium:<br>2. Diginext Sarl (FR)<br>3. Institute of Communication and computer Systems (EL)<br>4. Laurea-Ammattikorkeakoulou OY (FI)<br>5. Leonardo – Societa per Azioni (IT)<br>6. Ministere de l'Environnement, de l'Energie et de la Mer (FR)<br>7. Ministro of National Defence, Greece (EL)<br>8. NATO Science and Technology Organisation (BE)<br>9. Tecnische Universitaet Dresden (DE)<br>10. Telesto Technologies Pliroforikis kai Epikoinonion epe (EL) |

| SafeShore | |
|---|---|
| Title | System for detection of Threat Agents in Maritime Border Environment (SafeShore) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-02-2015<br>May 2016 / November 2018 - EUR: 5,133,582.50<br><br>HOME - 700643 |
| Abstract | The objective of the SafeShore project is to cover existing gaps in coastal border surveillance, increasing internal security by preventing cross-border crime such trafficking in human beings and the smuggling of drugs. It is designed to be integrated with existing systems and create a continuous detection line along the border. In particular, the small Remotely Piloted Aircraft Systems that are endangering coasts can be detected. |
| Website | http://safeshore.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Ecole Royale Militaire - Koninklijke Militaire School (BE)<br>Consortium:<br>2. Dr Frucht Systems Ltd (IL)<br>3. Institutul De Optoelectronica Sa (RO)<br>4. Ministry Of Public Security (IL)<br>5. Optix Ad (BG)<br>6. Politiezone: De Panne - Koksijde – Nieuwpoort (BE)<br>7. Queen Mary University Of London (UK)<br>8. Serviciul De Protectie Si Paza (RO)<br>9. Tg Drives Sro (CZ)<br>10. Universita Del Salento (IT)<br>11. Uti Grup Sa (RO) |

## These projects were complemented by new projects funded in 2016-2017:

| MARISA | |
|---|---|
| Title | Maritime Integrated Surveillance Awareness |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-19-BES-2016.<br>May 2017 / October 2019 - EUR: 7.997.492,50 GA 740698 |
| Abstract | Combating irregular migration, human smuggling, terrorism at sea, piracy, as well as arms and drug trafficking has become a high priority on Europe's security agenda. Securing the sea requires a day-to-day collaboration activities among European actors of maritime surveillance, Member States' administrations and European agencies principally, and a significant number of initiatives are being taken at EU level to address this challenge. The large amount of 'raw data' available today are not usable by systems supporting maritime security since they are not accessible at the same time and, often, they are not interoperable. Therefore, the overarching goal of MARISA project is to provide the security communities operating at sea with a data fusion toolkit, which makes available a suite of methods, techniques and modules to correlate and fuse various heterogeneous and homogeneous data and information from different sources, including Internet and social networks, with the aim to improve information exchange, situational awareness, decision-making and reaction capabilities. The proposed solution will provide mechanisms to get insights from any big data source, perform analysis of a variety of data based on geographical and spatial representation, use techniques to search for typical and new patterns that identify possible connections between events, explore predictive analysis models to represent the effect of relationships of observed object at sea. Enterprise and ad-hoc reporting and services, within the CISE context, will be provided to support users and operational systems in their daily activities, as well as presentation tools for navigating and visualizing results of data fusion processing. The involvement of 5 practitioners as full partners will allow on the one hand to align innovation to user needs, on the other hand to validate the toolkit through a number of trials addressing cross country/cross domain applications. |
| Website | https://www.marisaproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Leonardo – Finmeccanica Spa (IT)<br>Consortium:<br>2. Airbus DS SAS (FR)<br>3. Alma Mater Studiorum – Universita di Bologna (IT)<br>4. Aster Spa (IT)<br>5. Cinav (PT)<br>6. E-Geos Spa (IT)<br>7. Engineering – Ingegneria Informatica Spa (I)T<br>8. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>9. GMV Aerospace and Defence SA Unipersonal (ES)<br>10. Inovaworks II Command and Control, Lda (PT)<br>11. Inov Inesc Inovacao – Instituto de Noval Tecnologias (PT)<br>12. Laurea-Ammattikorkeakoulu OY (FI)<br>13. Luciad NV (BE)<br>14. Marina Militare (IT)<br>15. Ministerio del Interior (ES)<br>16. Ministry of National Defence Greece (EL)<br>17. NATO Science and Technology Organisation (BE)<br>18. Nederlandse Kustwacht (NL)<br>19. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderwijs (TNO)<br>20. Plath GMBH (DE)<br>21. Satways – Proionta kai Ypiresies Tilematikis Diktyakon kai Tilepikinoniakon Efarmogo Etairia Periorismenis Efthinis epe (EL)<br>22. Toulon var Technologiesn (FR) |

| LINCOLN | |
|---|---|
| Title | Lean innovative connected vessels |
| Contract details | Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy. Call: H2020-BG-2016-1. Topic code: BG-02-2016-2017. October 2016 / September 2019 - EUR: 6.343.600,00 GA 727982 |

| LINCOLN | |
|---|---|
| Abstract | LINCOLN presents three new concepts of added-value specialized vessels able to run requested services for several maritime sectors in the most effective, efficient, economic valuable and eco-friendly way. LINCOLN will develop three types of completely new vessels concepts at TRL5, through dynamic simulation model testing. The first is a Multi-platform Catamaran to serve as: Service crew vessel and Multipurpose survey vessel, optimized for Ocean energy and Aquaculture. It will develop a new people transfer system, able to improve safety during people transfer, it will have reduced operations costs and will be eco-friendly. The second is a Module Based High Speed Patrol Boat Platform, that is reconfigurable to adapt to the different operational requirements of Patrol and Security operators. Here LINCOLN will develop one platform, where different vessels can be designed for several markets, built as series production at low cost and it will enable the new "Vessel as a Service" business model. The third one is an Emergency Response and Recovery Vessels series for Coastal Rescue activities, with integrated electronics, IoT connectivity and an enhanced and low cost Integrated Dynamic Position System, which will help rescue operators during their activities and enhancing safety and security. All the three vessels will share the same design methodology. In fact, LINCOLN will be also a success story for the use of innovative design methodologies and tools in the marine sector. It will use: a lean fact based design model approach, which combines real operative data at sea with lean methodology, to support the development and implementation of the vessel concepts; IT customized tools to enable the acquisition and usage of field data, coming from an IoT platform; High Performance Computing Simulation. This new design approach will be demonstrated with the three vessels designed and delivered in the project and disseminated to bring back EU yards to the edge of innovation. |
| Website | http://www.lincolnproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Politecnico Di Milano (IT)<br>Consortium:<br>2. Aresa Marine Sl (ES)<br>3. Asociacion Centro Tecnologico Naval Y Del Mar (ES)<br>4. Balance Technology Consulting Gmbh (DE)<br>5. Biba - Bremer Institut Fuer Produktion Und Logistik Gmbh (DE)<br>6. Center For Technology Research And Innovation Ltd (CY)<br>7. Cineca Consorzio Interuniversitario (IT)<br>8. Holonix Srl-Spin Off Del Politecnico Di Milano (IT)<br>9. Hubstract Srl (IT)<br>10. Hydrolift As (NO)<br>11. Institouto Technologias Ypologistonkai Ekdoseon Diofantos (EL)<br>12. Inventas Kristiansand As (NO)<br>13. Souper Toys Skafi Epe (EL)<br>14. Stiftelsen Sintef (NO)<br>15. Techno Pro Hispania Srl (ES)<br>16. TOI Srl (IT) |

| MARINE-EO | |
|---|---|
| Title | Bridging Innovative Downstream Earth Observation and Copernicus enabled Services for Integrated maritime environment, surveillance and security |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-EO-2016.<br>Topic code: EO-2-2016. January 2017 / November 2020 - EUR: 4.378.584,38 GA 730098 |
| Abstract | Maritime "Awareness" is currently a top priority for Europe. "Awareness" sought either in regards of maritime security, border control against irregular immigration and safety of navigation while at the same time "awareness" sought in regards of the marine environment and climate change. "Awareness" is sought both for sea-basins of traditional interest like the Mediterranean and the Atlantic as well as for basins currently trending like the Arctic. MARINE-EO teams up a group of 5 maritime authorities (the buyers' group) and a group of 4 prestigious scientific and technical organizations with significant experience in EO and maritime matters (the technical advisors) to achieve the following objectives: (1) Develop, test and validate two set of demand-driven EO-based services which cover Marine Monitoring and Security Copernicus thematic areas, adopted on open standards, bringing incremental or radical innovations in the field of maritime awareness and leveraging on the existing Copernicus Services and other products from the Copernicus portfolio, (2) Propose a set of "support" / "envelop" services which will better integrate the above mentioned EO and Copernicus-enabled services to the operational logic and code of conduct. Such services shall also bring "closer" the demand side (Public Authorities - PAs) with the EO data providers (Copernicus - contributing missions) and EO data experts and analysts (Service providers/ industry and SMEs) creating a dynamic environment for a single digital market to grow, (3) Strengthen transnational collaboration in maritime awareness sector by facilitating knowledge transfer and optimization of resources for the public authorities which, participate in the buyers group. Pre-Commercial Procurement (PCP) is a powerful tool to tackle these three points under one single joint initiative, and this is why MARINE-EO is in an excellent position to reinforce future capabilities. |
| Website | https://marine-eo.eu/ |

| MARINE-EO | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. National Center for Scientific Research "Demokritos" (EL)<br>Consortium:<br>2. Sintef Ocean AS (NO)<br>3. Hellenic Centre for Marine Research (EL)<br>4. European Union Satellite Centre (ES)<br>5. Ministerio del Interior (ES)<br>6. Kystverket Vest (NO)<br>7. National Observatory of Athens (EL)<br>8. Direcao-Geral de Politica do Mar (PT)<br>9. Fundo Regional para a Ciencia e Tecnologia (PT) |

| MASS | |
|---|---|
| Title | Micro AIS Shore Station - MASS |
| Contract details | Smart, Green and Integrated Transport. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-10-2016-2017. June 2017 / November 2017 - EUR: 50.000,00 GA 775636 |
| Abstract | Automatic Identification System (AIS) is a VHF based system which is designated to enhance the safety of life and goods at sea by also assuring navigational and environmental improvements. The coverage of national AIS networks are limited because of many reasons (geography, weather conditions, insufficient number of stations etc.) and due to these limitations relevant authorities have difficulties to track and manage the marine traffic properly; causing safety and security weaknesses at sea which also means increased threats of accidents, illegal fishing, immigration & smuggling and water pollution. MASS is a cost-effective, compact-solar powered Micro AIS Shore Station; which is easy to set-up & maintain with lower power consumption rates thanks to its innovative AIS engine. MASS increases safety and security of coasts by enabling advanced monitoring of sea shores, inland waters & lakes and thus eliminating blind spots which are mainly out of the coverage of conventional AIS networks. In order to address this challenge, i-Marine offers a compact-solar powered Micro AIS Shore Station (MASS) which allows better monitoring of sea shores, inland waters and lakes which are mainly out of AIS coverage. MASS is nearly 4 times cost effective over conventional AIS base stations; operates at lower power consumption rates and can operate without a fixed power supply. The objective of this proposal is to prepare a proper feasibility study, which will pave the way to successful introduction and diffusion of MASS into global market and maximize its impact in order to better contribute to European transport and mobility goals defined in 2011 Transport White Paper of European Commission. |
| Website | http://www.i-marinesystems.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Imarine Deniz Teknolojileri ve Arastirmalari Sanayi ve Ticaret Anonimsirketi (TR) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Emergency assistance covering staff related costs in order to ensure a high level domain awareness of the severely affected Eastern Aegean EU external borders and to minimize the losses of human lives at sea | |
|---|---|
| Title | Emergency assistance covering staff related costs in order to ensure a high level domain awareness of the severely affected Eastern Aegean EU external borders and to minimize the losses of human lives at sea |
| Project number | HOME/2014/ISFB/AG/EMAS/0002 |
| Contract details | € 2,220,000.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Hellenic Coast Guard |

| Emergency assistance for the procurement of Search & Rescue Equipment to avert losses of migrants' life at sea | |
|---|---|
| Title | Emergency assistance for the procurement of Search & Rescue Equipment to avert losses of migrants' life at sea |
| Project number | HOME/2014/ISFB/AG/EMAS/0003 |
| Contract details | € 486,000.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Hellenic Coast Guard |

| Service of first aid during search and rescue at sea - SAR operations of Naval Forces stationed in Lampedusa as to ensure healthcare assistance to migrants crossing the Strait of Sicily - III (SAR Operations III) | |
|---|---|
| Title | Service of first aid during search and rescue at sea - SAR operations of Naval Forces stationed in Lampedusa as to ensure healthcare assistance to migrants crossing the Strait of Sicily - III (SAR Operations III) |
| Project number | HOME/2014/ISFB/AG/EMAS/0005 |
| Contract details | € 492,408.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Italian Ministry of Interior<br>Consortium:<br>Fondazione Corpo Italiano di Soccorso dell'Ordine di Malta C.I.S.O.M. (IT) |

| Service of first aid during search and rescue at sea - SAR operations of Naval Forces stationed in Lampedusa as to ensure healthcare assistance to migrants crossing the Strait of Sicily - IV (SAR Operations IV) | |
|---|---|
| Title | Service of first aid during search and rescue at sea - SAR operations of Naval Forces stationed in Lampedusa as to ensure healthcare assistance to migrants crossing the Strait of Sicily - IV (SAR Operations IV) |
| Project number | HOME/2015/ISFB/AG/EMAS/0002 |
| Contract details | € 529,965.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Italian Ministry of Interior<br>Consortium:<br>Fondazione Corpo Italiano di Soccorso dell'Ordine di Malta C.I.S.O.M. (IT) |

| Strengthening of the first reception response to new arrivals on the Aegean islands and in the region of Evros in Greece. New Arrivals Intervention – phase II | |
|---|---|
| Title | Strengthening of the first reception response to new arrivals on the Aegean islands and in the region of Evros in Greece. New Arrivals Intervention – phase II |
| Project number | HOME/2014/ISFB/AG/EMAS/0008 |
| Contract details | € 1,429,700.15 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>UNHCR<br>Consortium:<br>ICMC (EL), METAction (EL) |

| Emergency assistance covering staff related costs in order to ensure a high level domain awareness of the severely affected Eastern Aegean EU external borders and to minimize the losses of human lives at sea | |
|---|---|
| Title | Emergency assistance covering staff related costs in order to ensure a high level domain awareness of the severely affected Eastern Aegean EU external borders and to minimize the losses of human lives at sea |
| Project number | HOME/2014/ISFB/AG/EMAS/0002 |
| Contract details | € 2,220,000.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Hellenic Coast Guard |

## 7.3 Land border security

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Land border security | EWISA<br>MOBILEPASS<br>OPARUS<br>SUNNY<br>TALOS |

These projects have been complemented by the following H2020 projects:

| iBorderCtrl | |
|---|---|
| Title | Intelligent Portable ContROl SyStem (iBorderCtrl) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-05-2015<br>September 2016 / September 2019 EUR: 4,501,877.50<br><br>REA - 700626 |
| Abstract | iBorderCtrl envisages to enable faster thorough border control for third country nationals crossing the borders of EU, with technologies that adopt the future development of the Schengen Border Management. The project will present a mixture of an enhanced, voluntary form of a Registered Traveller Programme and an auxiliary solution for the Entry/Exit System based on involving bona fide travellers. iBorderCtrl designs and implements a system that adopts mobility concepts and consists of a two-stage procedure, designed to reduce cost/time spent per traveller at the crossing station. It leverages software and hardware technologies ranging from portable readers/scanners, various emerging and novel subsystems for automatic controls, wireless networking for mobile controls, and secure backend storage and processing. The data collected are encrypted, securely transferred and analysed in real time, providing an automated decision support system for the border control officers. |
| Website | http://www.iborderctrl.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. European Dynamics Luxembroug Sa (LU)<br>Consortium:<br>2. Biosec Group Korlatolt Felelossegu Tarsasag (HU)<br>3. Everis Aeroespacial y Defensa SL (ES)<br>4. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>5. Institute of Communication and Computer Systems (EL)<br>6. Itti Sp Zoo (PL)<br>7. Jas Technologie SP Zoo (PL)<br>8. Komenda Glowna Strazy Granicznej (PL)<br>9. Latvian State Border Guard (LV)<br>10. Orszagos Rendor – Fokapitanysag (HU)<br>11. Stremble Ventures Ltd (CY)<br>12. The Manchester Metropolitan University (UK)<br>13. Trainose Metafores-Metaforikes Ypiresies Epivaton kai Fortiou AE (EL) |

These projects were complemented by new projects funded in 2016-2017:

| SMILE | |
|---|---|
| Title | SMart mobILity at the European land borders |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-14-BES-2016.<br>July 2017 / June 2020 - EUR: 4.999.276,25 GA 740931 |
| Abstract | SMILE proposes a novel mobility concept that addresses the aforementioned challenges by designing, implementing and evaluating in relevant environments (TRL6) prototype management architecture, for the accurate verification, automated control, monitoring and optimization of people' flows at Land Border Infrastructures. It leverages the capabilities of the smart mobile devices in biometric control for secure and trusted authentication, and elaborates on their exploitation as part of a multimodal biometric verification process that supplements / complements existing approaches. Furthermore, SMILE's mobility concept builds upon Private Cloud Infrastructure technologies which communicate with remote SMILE handhelds through a secure gateway. SMILE ecosystem will target EU land borders which will be the beneficiaries of the proposed solutions. In fact, the proposed technology and business framework developed in SMILE will be validated through pan-European demonstrations in 3 BCPs. The operational properties of the technologies and overall solution will be validated and evaluated against cost, performance, effectiveness and usability indicators. Use cases will be supported by different architectural designs, which will be classified according to the operation mode. BCPs participating in the project's pilots will deploy and evaluate the solution at business as usual and emergency situations across various status operations. SMILE aims to (1) minimise the exposure of BCPs to security risks and threats, and (2) help them successfully respond to security incidents, while relieving them from all unnecessary and costly efforts of identifying, acquiring and using the appropriate technology. To this CNBP, HBP & RBP BCP partners will deploy and validate the proposed secure & reliable ecosystem in two use cases (Romania Bulgaria), in which the adaptation of SMILE framework to focused applications will be performed. |
| Website | http://www.h2020smile.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>Consortium:<br>2. Cloud Security Alliance (Europe) Lbg (UK)<br>3. Egov Consulting And Development Gmbh (DE)<br>4. Eulambia Advanced Technologies Monoprosopi Etairia Periorismenis Efthinis (EL)<br>5. Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. (DE)<br>6. Future Intelligence Ltd (UK)<br>7. Glavna Direktsia Granichna Politsia (BG)<br>8. Inspectoratul General Al Politiei De Frontiera (RO)<br>9. Norges Teknisk-Naturvitenskapelige Universitet Ntnu (NO)<br>10. Oberthur Technologies Sa (FR)<br>11. Orszagos Rendor – Fokapitanysag (HU)<br>12. Serviciul De Protectie Si Paza (RO)<br>13. Siveco Romania Sa (RO)<br>14. Tech Inspire Ltd (UK)<br>15. Technological Educational Institute Of Crete (EL) |

## 7.4 Multi-modal security, risk management, including migration

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Multi-modal security, risk management, including migration | ABC4EU<br>ACXIS<br>CUSTOM<br>DIRAC<br>DOGGIES<br>EFFISEC<br>FASTPASS<br>FIDELITY<br>GLOBE<br>INGRESS<br>ORIGINS<br>SNIFFER<br>SNIFFLES<br>SNOOPY<br>TERASCREEN<br>VIRTUOSO<br>ZONESEC |

## These projects have been complemented by the following H2020 projects:

| BODEGA | |
|---|---|
| Title | BOrdDErGuArd - Proactive Enhancement of Human Performance in Border Control (BODEGA) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2014 Topic code: BES-14-2014<br>June 2015 / September 2018 - EUR 4,999,238<br><br>REA - 653676 |
| Abstract | Investigation and modelling of Human Factors in border control to provide innovative socio-technical solutions for enhancing border guards' performance of critical tasks, support border management decision-making, and optimize travellers' border crossing experience. The project focuses on human and organizational factors of border control technologies and processes and examines the effects of introducing innovative technologies into key border guard tasks, traveller's performance and behaviour and to the total system at different levels and at different border control types: rail, sea and air borders. Outputs include a PROPER toolbox, which integrates ethical and societal dimensions aimed at enhancing the performance and professionalism of border guard stakeholders. |
| Website | http://bodega-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Teknologian Tutkimuskeskus VTT OY (FI)<br>Consortium:<br>2. Agenzia delle Dogane (IT)<br>3. AIT Austrian Institute of Technology Gmbh (AT)<br>4. Atos Spain SA (ES)<br>5. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>6. Compagnie Europeenne d'intelligence Strategique (BE)<br>7. Happywise Oy (FI)<br>8. Kentro Meleton Asfaleias (EL)<br>9. Ministere de l'Interieur (FR)<br>10. Ministry of Citizens Protection (EL)<br>11. Rajavartiolaitos (FI)<br>12. Thales SAS (FR)<br>13. Ubium Oy (FI)<br>14. Union Internationale des Chemins de Fer (FR)<br>15. Universite de Namur ASBL (BE)<br>16. Zanasi Alessandro SRL (IT) |

| C-BORD | |
|---|---|
| Title | effective Container inspection at BORDer control points (C-BORD) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2014 Topic code: BES-09-2014<br>June 2015 / November 2018 - EUR 11,826,452.50<br><br>HOME –653323 |
| Abstract | The C-BORD Toolbox and Framework will enable customs to deploy comprehensive cost-effective container NII solutions to potentially protect all EU sea- and land-borders, satisfying a large range of container NII needs. The C-BORD Framework will help customs analyse their needs, design integrated solutions, and optimise the container inspection chain; it will address detection levels, false alarm levels, throughput, health and safety, logistics and cost and benefits. C-BORD will increase the probability of finding illicit or dangerous content with at least equal throughput of containers per time unit, reduce the need for costly, time-consuming and dangerous manual container inspections by customs officials, and in case a container is opened, increase the probability of finding illicit materials. |
| Website | http://www.cbord-h2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Commissariat a l Energie Atomique et aux Energies Alternatives (FR)<br>Consortium:<br>2. Agenzia delle Dogane (IT)<br>3. ARTTIC (FR)<br>4. Chambre de Commerce et d'Industrie de Region Paris Ile-de-France (FR)<br>5. Costruzioni Apparecchiature Elettroniche Nucleari C.A.E.N. SPA (IT)<br>6. Ecole Normale Superieure (FR)<br>7. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>8. Hochschule Bonn-Rhein-Sieg (DE)<br>9. Izba Celna w Gdyni (PL)<br>10. JRC (BE)<br>11. Magyar Tudomanyos Akademia Energiatudomanyi Kutatokozpont (HU)<br>12. Ministerie van Financien Directoraat Generaal Belastingdienst (NL)<br>13. Narodowe Centrum Badan Jadrowych (PL)<br>14. Nemzeti ado-es Vamhivatal (HU)<br>15. Oslo Center for Science in Society (NO)<br>16. Smiths Heimann SAS (FR)<br>17. Symetrica Security Ltd (UK)<br>18. Univ. of Manchester (UK)<br>19. Univ. degli Studi di Padova (IT) |

| MESMERISE | |
|---|---|
| Title | Multi-Energy High Resolution Modular Scan System for Internal and External Concealed Commodities (MESMERISE) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-08-2015<br>May 2016 / May 2019 - EUR: 4,999,792.50<br><br>HOME - 700399 |
| Abstract | MESMERISE will develop and test a High-resolution non-intrusive scanner to automatically detect and identify both internal and external concealed. This resolution has the potential to enhance the detection of narcotics and explosives concealed in the body. A second subsystem for detecting externally concealed items is based on infrasound near-field acoustic holography. Acceptance by society will be promoted by communication activities highlighting its non-contact nature, non divest condition and the absence of the requirement for operators to view explicit images through automated detection making MESMERISE intrinsically respectful of dignity and privacy. |
| Website | http://sanjorgetecnologicas.com/mesmeriseh2020/index.html |

| MESMERISE | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Universida de Alcala (ES)<br>Consortium:<br>2. Bpe E.K. (DE)<br>3. Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas-Ciemat (ES)<br>4. Comissariat a l'Engergie Atomique et aux Energies Alternatives (FR)<br>5. Home office (UK)<br>6. Linev Vladimir (BY)<br>7. Ministerio del Interior (ES)<br>8. Multix SA (FR)<br>9. Saint George Tech Lt (UK)<br>10. San Jorge Tecnológicas S.L. (ES<br>11. Tollregion Oslo og Akershus (NO)<br>12. Universitatea Dunarea de jos din Galati (RO) |

| PROTECT | |
|---|---|
| Title | Pervasive and UseR Focused BiomeTrics BordEr ProjeCT (PROTECT) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-06-2015<br>September 2016 / September 2019 - EUR: 4,981,752.50<br><br>REA - 700259 |
| Abstract | The goal of the PROTECT project is an enhanced biometric-based person identification system that works across a range of border crossing types and that has strong user-centric features. The system will be deployed in Automated Border Control (ABC) areas supporting border guards to facilitate smooth and non-intrusive rapid crossing by travellers based on deployment of the next generation of biometric identification detection methods. To achieve these goals, a multi-biometric enrollment and verification system is envisaged, taking into account current and next-generation e-Passport chips, mobile equipment and person identification 'on the move'. An integral part of the project is collection and dissemination of new border-realistic biometric datasets, and systematic evaluation of the developed biometric methods including vulnerability and privacy assessment. |
| Website | http://projectprotect.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. Of Reading (UK)<br>Consortium:<br>2. Eurecom (FR)<br>3. Giesecke & Devrient Gesellschaft mit Beschrankter Haftung (DE)<br>4. Home Office (UK)<br>5. Intrepid Minds Ltd (UK)<br>6. Itti Sp Zoo (PL)<br>7. Komenda Glowna Strazy Granicznej (PL)<br>8. Paris-Lodron-Universitat Salzurg (AT)<br>9. Univ. De Namur Asbl (BE)<br>10. Verdios Gmbh (DE)<br>11. Wosjkowa Akademia Techniczna im Jaroslawa Dabrowskiego (PL) |

## These projects were complemented by new projects funded in 2016-2017:

| CAMELOT | |
|---|---|
| Title | C2 Advanced Multi-domain Environment and Live Observation Technologies |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-20-BES-2016.<br>May 2017 / April 2020 - EUR: 8.020.921,26 GA 740736 |

| CAMELOT | |
|---|---|
| Abstract | The creation of the Schengen area has been one of the major achievements of the EU. However, this agreement requires countries to cooperate tightly in order to keep a high level of security at their internal borders, as well as to share the responsibility of managing external borders. Such a variety of borders (land, sea and air) and current challenges requires a consistent approach to border surveillance, based on a plethora of heterogeneous assets. These can be manned or unmanned, ranging from sensors (optical, radar, IR) to unmanned platforms (UAV, UGV, USV or UUV), and need to be combined to offer an integrated situational picture of the area under surveillance and of their location. In order to effectively control their operation and manage the large amounts of data collected by them, new approaches for command and control need to be considered, allowing efficient interaction between the operator and the different assets in the field. CAMELOT proposes to develop and demonstrate different advanced command and control service modules for multiple platform domains, based on a SOA architecture that specifies internal and external interfaces, allowing the development of a modular and scalable command and control station, customisable to the user needs. This architecture can be based on results of previous studies and work or open architectures that may prove more suitable and the interfaces can take advantage of the standardisation work that has been done already. After the definition, CAMELOT partners will prototype service modules according to their expertise, background individual technologies and practitioner needs. These will be integrated progressively in specific testing along the project. This prototype development approach will culminate in 2 final demonstrations involving end users and relevant stakeholders, to achieve a maturity of TRL6 (for most individual technologies supporting the functionalities for border surveillance) and an IRL of 7 for CAMELOT. |
| Website | https://camelot.tekever.com/CAMELOT |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Tekever ASDS (PT)<br>Consortium:<br>2. Akademia Marynarki Wojennej (PL)<br>3. BAE Systems Ltd (UK)<br>4. Cork Institute of Technology (IE)<br>5. DCNS SA (FR)<br>6. Department of Defence (IE)<br>7. Exodus Anonymos Etaireia Pliroforikis (EL)<br>8. French Customs (FR)<br>9. Fundacao da Faculdade de Ciencias da Lisboa Universisade de Lisboa FP (PT)<br>10. Inspectoratul General al Politiei de Frontiera (RO)<br>11. Institut po Otbrana (BG)<br>12. Kentro Meleton Asfaleias (EL)<br>13. Maritime Analysis and Operations Centre – Narcotics (PT)<br>14. Ministerio da Administracao Interna (PT)<br>15. Ministério da Defesa Nacional (PT)<br>16. Ministry of National Defence (EL)<br>17. NATO Science and Technology Organisation (BE)<br>18. Przemyslowy Instytut Automatyki I Pomiarow PIAP (PL)<br>19. Societe D'ingenierie de Rechercheset d'Etudes en Hydrodynamique Navale (FR)<br>20. Thales SA (FR)<br>21. Thales Systemes Aeroportes SAS (FR)<br>22. Universitat Politecnica de Valencia (ES)<br>23. ViaSat Antenna Systems SA (CH) |

| FOLDOUT | |
|---|---|
| Title | Through-foliage detection, including in the outermost regions of the EU |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-16-BES-2017.<br>September 2018 / February 2022 - EUR: 8.199.387,75 GA 787021 |
| Abstract | In the last years irregular migration has dramatically increased, and is no longer manageable with existing systems. Improved methods for border surveillance are necessary to ensure an effective and efficient EU border management. FOLDOUT focus is on through foliage detection in the inner and outermost regions of the EU. Foliage penetration is an unsolved important part of border surveillance. By solving the problem of unreliable detections in such harsh environments border guards' workloads are reduced, costs are reduced and, last but not least, lives can be saved. Detecting people through dense foliage in extreme climates with only a penetration technology is prone to high fault rates. FOLDOUT will build a system that combines various sensors and technologies and intelligently fuses these into an effective and robust intelligent detection platform. Fusing several sensor signals increases the effectiveness of detection. Further, sensors will be influenced (i.e. detection parameters adapted) by events detected by other sensors in the vicinity. By integrating data, such as vehicle traffic, from outside the immediate border area pre-events can be detected and learned. The events will be analysed with machine learning tools to continuously increase the systems detection and tracking capability. FOLDOUT will make the tasks of Border Guards simpler and faster by combining events from various sensors to give a complete situation threat assessment combined with suggested reaction scenarios. A two year pilot in Bulgaria and demonstrators in Greece, Finland and French Guiana FOLDOUT will provide fundamental enhancements in the domain of border surveillance and improved search & rescue scenarios. |
| Website | |

| FOLDOUT | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. AIT Austrian Institute of Technology Gmbh (AT)<br>Consortium:<br>2. Eticas Research and Consulting SL (ES)<br>3. Co.Ri.S.T.A. (Consorzio di Ricercasu Sistemi di Telesensori Ava Nzati) (IT)<br>4. Rajavartiolaitos (FI)<br>5. The University of Reading (UK)<br>6. Teknologian tutkimuskeskus VTT OY (FI)<br>7. Institut po Otbrana (BG)<br>8. Valstybes Sienos Apsaugos Tarnyba Prie Vidaus Reikalu Ministerijos (LT)<br>9. European Dynamics Belgium (BE)<br>10. Thales Alenia Space Italia SpA (IT)<br>11. Office National D'etudes et de Recherches Aerospatiales (FR)<br>12. Glavna Direktsia Granichna Politsia (BG)<br>13. Eutema Gmbh (AT)<br>14. Kentro Meleton Asfaleias (EL)<br>15. Komenda Glowna Strazy Granicznej (PL)<br>16. Bhe Bonn Hungary Elektronikai Kft (HU)<br>17. ITTI SP ZOO (PL)<br>18. Thales Alenia Space France (FR)<br>19. ONF International (FR) |

| PERSONA | |
|---|---|
| Title | Privacy, ethical, regulatory and social no-gate crossing point solutions acceptance |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-18-BES-2017.<br>September 2018 / February 2021 - EUR: 2.984.700,00 GA 787123 |
| Abstract | The increasing number of travellers crossing European borders is putting a mounting pressure on the everyday handling of border checks. On one side, border control authorities have to process a higher number of checks in an increasingly reduced amount of time to avoid congestion or cope with limited resources. As a consequence, the experience of both European and third country travellers is deteriorating due to the extra time they have to spend at the border checkpoints. Such a continuous need calls for flexible, automated and scalable "no-gate" border security solutions. On the other side, the intensive use of technologies bears the risk to invading people's privacy, and the societal and political acceptance of technologies for contactless border security solutions is required prior to their implementation. A pivotal element of PERSONA project is to design and establish unified and tailored impact assessment method to appropriately assess the effects of new border-controlling technologies and ensure that these solutions meet the requirements and expectations of both governments, LEAs and border crossing individuals. PERSONA will carry out comprehensive assessment of the acceptability of wide range of contactless crossing point technologies, taking into account human behaviour, gender, legal frameworks, privacy concerns, societal issues and potential risk of discrimination. The established method for assessment will provide important information for decision makers in form of potential risks, mitigation measures and guidelines, in order to drive the innovation and deployment of future solutions by industry and border authorities. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vrije Universiteit Brussel (BE)<br>Consortium:<br>2. Ministry of Public Security (IL)<br>3. Atos Spain SA (ES)<br>4. Institutt for Fredsforskning Stiftelse (NO)<br>5. Cyberethics Lab SRLS (IT)<br>6. Ministarstvo Unutrasnjih Poslova Republike Srbije (RS)<br>7. Queen Mary University of London (UK)<br>8. Bundesrechenzentrum Gmbh (AT)<br>9. Polismyndigheten Swedish Police Authority (SE)<br>10. INOV Inesc Inovacao - Instituto de Novas Tecnologias (PT) |

| PROFILE | |
|---|---|
| Title | Data Analytics, Data Sources, and Architecture for Upgraded European Customs Risk Management |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-17-BES-2017.<br>August 2018 / July 2021 - EUR: 4.999.991,25 GA 786748 |
| Abstract | Security and fraud in cross-border trade and supply chains are key priorities for the EU customs administrations due to the increasing risk of transnational crime and terrorism and the e-commerce-driven growth of customs declarations. Hence, EU customs administrations have to rapidly increase their capability to search for more accurate data sources to better assess these risks and increase their inspection hit rate. To address this challenge, PROFILE seeks to accelerate the uptake of state-of-the-art data analytics and incorporation of new data sources for more effective and efficient European customs risk management. The project provides tailored solutions, that build on modern methods in machine learning, graph-based analytics, and natural language processing, to help targeting officers and strategic analysts to collect and organise unstructured data, data-mine large datasets, apply semi-supervised machine learning that utilises feedback of control results, and to visualize complex data sets. PROFILE enables customs-to-customs systematic sharing of Entry Summary Declarations and other risk-relevant information through the EU-wide PROFILE Risk Data Sharing Architecture (RDSA). The project also connects national customs risk management systems to logistics Big Data of INTTRA and the Universal Postal Union (UPU) and provides customs an improved access to online data, especially valuation-relevant data of e-commerce sites. PROFILE also strengthens cooperation and data exchange among customs and other competent authorities. Better access to data, customised state-of-the-art data analytics, and stronger cooperation will provide the customs an enhanced 360º view on cross-border cargo flows. With PROFILE solutions, customs administration can increase substantially the hit rate of inspections and their capacity to cope with transnational crime, terrorism, and the dramatic e-commerce-driven growth of customs declarations. |
| This project also corresponds to the category 'Crime and terrorism: Supply Chain Security'. | |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Cross-border Research Association (CH)<br>Consortium:<br>2. Totalforsvarets Forskningsinstitut (SE)<br>3. Inlecom Systems Ltd (UK)<br>4. Universite de Lausanne (CH)<br>5. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>6. IBM Ireland Limited (IE)<br>7. Swedish Customs (SE)<br>8. Ministerie van Financien (NL)<br>9. Directorate of Norwegian Customs (NO)<br>10. Maksu- Ja Tolliameti (EE)<br>11. Forsvarets Forskninginstitutt (NO)<br>12. Service Public Federal Finances (BE)<br>13. BMT Group Ltd (UK)<br>14. Technische Universiteit Delft (NL)<br>15. JRC -Joint Research Centre- European Commission (BE) |

| ROBORDER | |
|---|---|
| Title | autonomous swarm of heterogeneous RObots for BORDER surveillance |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-20-BES-2016.<br>May 2017 / April 2020 - EUR: 7.999.315,89 GA 740593 |
| Abstract | Border authorities and Law Enforcement Agencies (LEAs) across Europe face important challenges in how they patrol and protect the borders. Their work becomes more problematic considering the heterogeneity of threats, the wideness of the surveyed area, the adverse weather conditions and the wide range of terrains. Although there are several research tools and works targeting these areas independently for border surveillance, nowadays border authorities do not have access to an intelligent holistic solution providing all aforementioned functionalities. Towards delivering such a solution, ROBORDER aims at developing and demonstrating a fully-functional autonomous border surveillance system with unmanned mobile robots including aerial, water surface, underwater and ground vehicles, capable of functioning both as standalone and in swarms, which will incorporate multimodal sensors as part of an interoperable network. The system will be equipped with adaptable sensing and robotic technologies that can operate in a wide range of operational and environmental settings. To provide a complete and detailed situational awareness picture that supports highly efficient operations, the network of sensors will include static networked sensors such as border surveillance radars, as well as mobile sensors customised and installed on board unmanned vehicles. To succeed implementing an operational solution, a number of supplementary technologies will also be applied that will enable the establishment of robust communication links between the command and control unit and the heterogeneous robots. On top of this, detection capabilities for early identification of criminal activities and hazardous incidents will be developed. This information will be forwarded to the command and control unit that will enable the integration of large volumes of heterogeneous sensor data and the provision of a quick overview of the situation at a glance to the operators, supporting them in their decisions. |
| Website | http://roborder.eu/ |

| ROBORDER | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Tekever Ii Autonomous Systems Lda (PT)<br>Consortium:<br>2. Autorita Portuale Livorno (IT)<br>3. Capritech Limited (UK)<br>4. Consorzio Nazionale Interuniversitario per le Telecomunicazioni (IT)<br>5. Copting Gmbh (DE)<br>6. Csem Centre Suisse D'electronique et de Microtechnique Sa - Recherche Et Developpement (CH)<br>7. Elettronica Gmbh (DE)<br>8. Ethniko Kai Kapodistriako Panepistimio Athinon (EL)<br>9. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>10. Everis Spain Slu, Succursale En Belgique (ES)<br>11. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>12. Inspectoratul General Al Politiei De Frontiera (RO)<br>13. Institut Po Otbrana (BG)<br>14. Ministerio Da Administracao Interna (PT)<br>15. Ministério Da Justiça (PT)<br>16. Ministry Of National Defence, Greece (EL)<br>17. Nato Science And Technology Organisation (BE)<br>18. Oceanscan - Marine Systems & Technology Lda (PT)<br>19. Orszagos Rendor – Fokapitanysag (HU)<br>20. Police Service Of Northern Ireland (UK)<br>21. Robotnik Automation Sll (ES)<br>22. Serviciul De Protectie Si Paza (DE)<br>23. Sheffield Hallam University (UK)<br>24. Sisekaitseakadeemia (EE)<br>25. Teknologian Tutkimuskeskus Vtt Oy (FI) |

| BAPS | |
|---|---|
| Title | Bayesian Agent-based Population Studies: Transforming Simulation Models of Human Migration |
| Contract details | European Research Council - Consolidator Grant. Call: ERC-2016-COG. Topic code: ERC-2016-COG. June 2017 / May 2021 - EUR: 1.455.590,00 GA 725232 |
| Abstract | The aim of BAPS is to develop a ground-breaking simulation model of international migration, based on a population of intelligent, cognitive agents, their social networks and institutions, all interacting with one another. The project will transform the study of migration – one of the most uncertain population processes and a top-priority EU policy area – by offering a step change in the way it can be understood, predicted and managed. In this way, BAPS will effectively integrate behavioural and social theory with modelling. To develop micro-foundations for migration studies, model design will follow cutting-edge developments in demography, statistics, cognitive psychology and computer science. BAPS will also offer a pioneering environment for applying the findings in practice through a bespoke modelling language. Bayesian statistical principles will be used to design innovative computer experiments, and learn about modelling the simulated individuals and the way they make decisions. In BAPS, we will collate available information for migration models; build and test the simulations by applying experimental design principles to enhance our knowledge of migration processes; collect information on the underpinning decision-making mechanisms through psychological experiments; and design software for implementing Bayesian agent-based models in practice. The project will use various information sources to build models bottom-up, filling an important epistemological gap in demography. BAPS will be carried out by the Allianz European Demographer 2015, recognised as a leader in the field for methodological innovation, directing an interdisciplinary team with expertise in demography, agent-based models, statistical analysis of uncertainty, meta-cognition, and computer simulations. The project will open up exciting research possibilities beyond demography, and will generate both academic and practical impact, offering methodological advice for policy-relevant simulations. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Southampton (UK)<br>Consortium:<br>2. Universitaet Rostock (DE) |

| RefBORDER | |
|---|---|
| Title | Reflexivity as capacity in EU's border security: a contribution to theory and practice through the case of Polish Border Guard training |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. September 2017 / August 2019 - EUR: 183.454,80 GA 749314 |
| Abstract | Lived experience of border guards receives surprisingly little attention given the current challenges of European border security and its humanitarian aspects. The proposal sets out a plan to redress this hiatus through conducting an important policy-relevant research project that encourages reflexivity as capacity in border guard training. As a follow-up from my previous research in European security and preliminary results from studying assistance to border reform, it aims to both aid the EU's efforts to establish a more efficient European Border and Coast Guard and foster greater humanitarian and democratic sensibilities in European border policy. In contrast to existing approaches which neglect reflective practice of actors on the ground, the project explores new empirical evidence, hones new theoretical avenues and develops participative dissemination techniques to nurture reflexivity in cooperation between scholars and practitioners. In order to do so, it studies the lived experience of Polish Border Guard (PBG) officers involved in the transformation of their service in the aftermath of EU enlargement which occurred at the intersection of receiving training from Western European border guards and providing training assistance to the Ukrainian Border Guard service. This unique situation of dual interaction triggers reflection and creates conditions for knowledge production that the project taps into. The core of the project consists in fieldwork with participants to study, make use of for participative design and inspire interpretations of shifting training methods towards installing greater reflexivity. The latter is planned as an innovative dissemination technique developed through the researcher's training in action research and reflective teaching practice at Aberystwyth University and tested in secondment with a local border guard facility to contribute to a more context-informed EU border security policy. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Aberystwyth University (UK) |

| RESPOND | |
|---|---|
| Title | RESPOND: Multilevel Governance of Mass Migration in Europe and Beyond |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies. Call: H2020-SC6-ENG-GLOBALLY-2017. Topic code: ENG-GLOBALLY-03-2017. December 2017 / November 2020 - EUR: 3.310.405,00 GA 770564 |
| Abstract | With the goal of enhancing the governance capacity and policy coherence of the EU, its member states and neighbors, RESPOND is a comprehensive study of migration governance in the wake of the 2015 Refugee Crisis. Bringing together 14 partners from 7 disciplines, the project probes policy-making processes and policy (in)coherence through comparative research in source, transit and destination countries. RESPOND analyzes migration governance across macro (transnational, national), meso (sub-national/local) and micro-levels (refugees/migrants) by applying an innovative research methodology utilizing legal and policy analysis, comparative historical analysis, political claims analysis, socio-economic and cultural analysis, longitudinal survey analysis, interview based analysis, and photovoice techniques. It focuses in-depth on: (1) Border management and security, (2) International refugee protection, (3) Reception policies, (4) Integration policies, and (5) Conflicting Europeanization and externalization. We use these themes to examine multi-level governance while tackling the troubling question of the role of forced migration in precipitating increasing disorder in Europe. In contrast to much research undertaken on governance processes at a single level of analysis, RESPOND's multilevel, multi-method approach shows the co-constitutive relationship between policy and practice among actors at all three levels; it highlights the understudied role of meso-level officials; and it shines a light on the activities of non-governmental actors in the face of policy vacuums. Ultimately, RESPOND will show which migration governance policies really work and how migrants and officials are making-do in the too-frequent absence of coherent policies. Adhering to a refugee-centered approach throughout, RESPOND will bring insights to citizenship, gender and integration studies, ensure direct benefit to refugee communities and provide a basis for more effective policy development. |
| Website | http://www.crs.uu.se/respond/ |

| RESPOND | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Uppsala Universitet (SE)<br>Consortium:<br>2. Uniwersytet Warszawski (PL)<br>3. The Chancellor, Masters and Scholars of the University of Cambridge (UK)<br>4. Istanbul Bilgi Universitesi (TR)<br>5. Ozyegin Universitesi (TR)<br>6. Universita degli Studi di Firenze (IT)<br>7. Svenska Forskningsinstitutet i Istanbul (TR)<br>8. Georg-August-Universitat Gottingenstiftung Offentlichen Rechts (DE)<br>9. Kobenhavns Universitet (DK)<br>10. Hammurabi Human Rights Organization (IQ)<br>11. The Glasgow Caledonian University (UK)<br>12. Lebanon Support (LB)<br>13. Oesterreichische Akademie der Wissenschaften (AT)<br>14. University of the Aegean-Research Unit (EL) |

## *ISF projects*

The above projects are complemented by capacity-building projects funded by the Internal Security Fund Programme. Please note that ISF projects classification might differ from the taxonomy presented in this document. Visit ec.europa.eu/home-affairs/financing/fundings/security-and-safeguarding-liberties/internal-security-fund-police_en for more information on ISF projects.

| Cooperation on Border Management among Turkey, Bulgaria and Greece | |
|---|---|
| Title | Cooperation on Border Management among Turkey, Bulgaria and Greece |
| Project number | 0002 |
| Contract details | € 57,000.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Hellenic Police Heaquarters |

| Development of the next generation uniform format EU visa sticker | |
|---|---|
| Title | Development of the next generation uniform format EU visa sticker |
| Project number | HOME/2015/ISFB/AG/VISA/0001 |
| Contract details | € 1,000,000.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Federal Criminal Police Office Germany (BKA) |

| Emergency assistance in support of the organisation, provision of legal information and interpretation for the effective management of immigration flows in the Eastern External Borders | |
|---|---|
| Title | Emergency assistance in support of the organisation, provision of legal information and interpretation for the effective management of immigration flows in the Eastern External Borders |
| Project number | HOME/2014/ISFB/AG/EMAS/0007 |
| Contract details | € 693,997.00 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>First Reception Service<br>Consortium:<br>IOM |

| Humane and EU conform handling of extreme migratory pressure on Hungary | |
|---|---|
| Title | Humane and EU conform handling of extreme migratory pressure on Hungary |
| Project number | HOME/2014/ISFB/AG/EMAS/0006 |
| Contract details | € 1,489,098.60 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Hungarian National Police |

| Linguistic and Intercultural Mediation for Emergency action | |
|---|---|
| Title | Linguistic and Intercultural Mediation for Emergency action |
| Project number | HOME/2015/ISFB/AG/EMAS/0001 |
| Contract details | € 4,413,237.46 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Ministry Of Interior<br>Consortium:<br>CIES Onlus |

| Strengthening external border protection in relation to the irregular mass arrival of third country nationals | |
|---|---|
| Title | Strengthening external border protection in relation to the irregular mass arrival of third country nationals |
| Project number | HOME/2015/ISFB/AG/EMAS/0012 |
| Contract details | € 3,995,001.67 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>Ministry of Interior |

| Strengthening of the first reception response to new arrivals in mixed migratory movements on the Aegean islands | |
|---|---|
| Title | Strengthening of the first reception response to new arrivals in mixed migratory movements on the Aegean islands |
| Project number | HOME/2015/ISFB/AG/EMAS/0003 |
| Contract details | € 2,700,000.01 |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>UNHCR<br>Consortium:<br>METaction (EL) and PRAKSIS (EL) |

# 8. Societal resilience and civil protection

## 8.1 Socio-economic and ethical implications

### 8.1.1 Ethics, Societal implications

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Ethics, Societal implications | ADDPRIV<br>ALTERNATIVE<br>EVIDENCE<br>INEX<br>PACT<br>PARIS<br>PRISMS<br>PS<br>RESPECT<br>SAPIENT<br>SECONOMICS<br>SECILE<br>SLANDAIL<br>SOURCE<br>SURPRISE<br>SURVEILLE<br>VIDEOSENSE |

These projects have been complemented by the following H2020 projects:

| COMRADES | |
|---|---|
| Title | Collective Platform for Community Resilience and Social Innovation during Crises (COMRADES) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-ICT-2015 Topic code: ICT-10-2015<br>January 2016 / January 2018 - EUR: 1.999.021,25<br><br>CNECT - 687847 |
| Abstract | This project will build an intelligent collective resilience platform to help communities to reconnect, respond, and recover from crisis situations. COMRADES will achieve this through an interdisciplinary, socio-technical approach, which will draw on the latest advances in computational social science, social computing, real-time analytics, text and social media analysis, and Linked Open Data. The platform specifications and design requirements will be derived through participatory design workshops with existing activist, responder, and reporter communities. The open source COMRADES platform will include new intelligent algorithms aimed at helping communities, citizens, and humanitarian services with analysing, verifying, monitoring, and responding to emergency events. |
| Website | https://www.comrades-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. The Open University (UK)<br>Consortium:<br>2. Government To You (BE)<br>3. I-Hub Limited (KE)<br>4. The University Of Sheffield (UK)<br>5. Universitetet I Agder (NO) |

| CUIDAR | |
|---|---|
| Title | Cultures of Disaster Resilience among children and young people (CUIDAR) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-21-2014<br>July 2015 / July 2018 - EUR: 2,009,653.50<br><br>REA - 653753 |
| Abstract | CUiDAR will address the exclusion of children and young people from the disaster planning and management process; it will provide innovative and creative communication channels for children's voices to be heard and it will develop a child centred disasters management framework for use by policy/decision makers in participating countries, the EU and beyond.. Each workpackage is designed to create stronger awareness of needs and capacities of children and will enable enhanced local, national and EU institutional and policy response for what is a growing and urgent societal problem: how to develop meaningful and effective disaster management. |
| Website | http://www.lancaster.ac.uk/cuidar/en/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Lancaster University (UK)<br>Consortium:<br>2. Fundacio per a la Universitat Oberta de Catalunya (ES)<br>3. Instituto de Ciencias Sociais da Universidade de Lisboa (PT)<br>4. Panepistimio Thessalias (EL)<br>5. Save the children Italia Onlus Associazione (IT)<br>6. The Save the Children Fund (UK) |

| EDUCEN | |
|---|---|
| Title | European Disasters in Urban centres: a Culture Expert Network (3C – Cities, Cultures, Catastrophes) (EDUCEN) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-21-2014<br>May 2015 / May 2017 - EUR: 1,644,671.25<br><br>REA - 653874 |
| Abstract | EDUCEN is a coordination and support action that will work on the complex interplay between culture(s) and disaster risk reduction. It allows formal and informal emergency responders, risk managers, the military, urban planners and planners at regional and national level to be better equipped to deal with elements of culture. EDUCEN encourages and enables multi-stakeholder dialogue through which academics, practitioners and communities can actively engage and share knowledge, expertise and experiences. The final product will be a multi-level, multi-media handbook, including visuals, maps, written narratives, and videos to support disaster risk reduction professionals to better appraise relevant cultural aspects in their own 'community of practice' as well as in the environment where they intervene. |
| Website | http://www.educenproject.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Wageningen University (NL)<br>Consortium:<br>2. Anaptyksiakh Boloy Anaptyksiakh Anonymh Etairia (AE) (EL)<br>3. Arama Kurtarma Dernegi (Akut) (TR)<br>4. Confederacion Hidrografica Del Segura (ES)<br>5. Consiglio Nazionale Delle Richerche (IT)<br>6. I-Catalist SL (ES)<br>7. Ministry of Defense (NL)<br>8. Politecnico di Milano (IT)<br>9. Stifltelsen the Stockholm Environment Institute (SE)<br>10. Stowarzyszenie Centrum Rozwiazan Systemowych (PL) |

| ICT4COP | |
|---|---|
| Title | Community-Based Policing and Post-Conflict Police Reform (ICT4COP) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-14-2014<br>June 2015 / June 2020 - EUR: 4,999,998.00<br><br>REA - 653909 |

| ICT4COP | |
|---|---|
| Abstract | This project will conduct integrated social and technical research on COP in post-conflict countries in S.E. Europe, Asia, Africa and Central America. The project will lead to a better understanding of police-community relations, and innovation in information and communication technology (ICT) for enhancing these relations in post-conflict countries undergoing serious security reform. Linking social and technological research, the project will study social, cultural, human security, legal and ethical dimensions of COP to understand how citizens and police can develop sustainable relations with the use of ICTs. The project will explore ICT solutions to facilitate, strengthen and accelerate positive COP efforts and police-citizen interactions where trust levels are weak. The project includes a Policing Experts Network whose role is to support research planning, and dissemination and exploitation of findings, grounding the research in police practice. |
| Website | https://communitypolicing.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Norges Miljo-og Biovitenskaplige Universitet (NO)<br>Consortium:<br>2. Applied Intelligence Analytics Limited (IE)<br>3. Hogskolen I Oslo og Akershus (NO)<br>4. Norsk Institutt for By- og Regionforskning (NO)<br>5. Norsk Utenrikspolitisk Institutt (NO)<br>6. Norwegian Ministry of Justice and Public Safety (NO)<br>7. Overseas Development Institute (UK)<br>8. Ruhr-Universitaet Bochum (DE)<br>9. Social Impact Lab CIC (UK)<br>10. Univ. Bremen (DE)<br>11. Univ. Durham (UK)<br>12. Univ. Jagiellonski (PL) |

| IMPACT | |
|---|---|
| Title | Impact of Cultural aspects in the management of emergencies in public Transport (IMPACT) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-21-2014<br>May 2015 / November 2017 - EUR: 1,398,912.50<br><br>REA - 653383 |
| Abstract | The IMPACT Coordination and Supporting Action is aimed at analysing the different cultural behaviours for the prevention of emergencies with particular emphasis on risk and situational awareness perception of the different cultural groups; information to passengers with different socio-cultural backgrounds; cooperation towards prevention of security threats; security checks. IMPACT will produce a cultural risk assessment methodology and the associated mitigation actions for the public transport sector also developing simulators and models (i.e. identify innovative solutions that can support public transport operators in improving the communication with passengers through messages to the different cultural communities, develop best practices, dedicated training material and procedures for both public transport operators and first responders). |
| Website | http://www.impact-csa.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Deep Blue SRL (IT)<br>Consortium:<br>2. Anadolu University (TR)<br>3. Nuovo Trasporto Viaggiatori Spa (IT)<br>4. Proprs Ltd (UK)<br>5. Stichting VU (NL)<br>6. Univ. of Leeds (UK)<br>7. Urzad Morski w Gdyni (PL)<br>8. Vissche Uchilishte po Menidzhmant (BG) |

| MARGIN | |
|---|---|
| Title | Tackle Insecurity in Marginalized Areas (MARGIN) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-13-2014<br>May 2015 – May 2017 - EUR: 1,881,399.50<br><br>REA - 653004 |

| MARGIN | |
|---|---|
| Abstract | The MARGIN project coordination activities are intended to contribute to the creation of sustainable modes of cooperation between stakeholders dealing with security issues. The project's aims are: (1) to create a framework enabling end-users to contrast objective and subjective measures of insecurity (2) to develop and validate a thematic survey that allows for the assessment of the impact of demographic, socio-economic and socio-geographic variables on the perception of insecurity (3) to investigate the socio-cultural determinants of insecurity perception through the implementation of anthropological fieldwork in five EU countries (4) to share best practices and outcomes in a final event. By deepening the understanding of the root causes of insecurity, MARGIN is expected to foster the creation of community resilience practices empowering citizens to better face risks and increase the public and personal perception of security. |
| Website | http://marginproject.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universistat de Barcelona (ES)<br>Consortium:<br>2. Departament d'Interior - Generalitat de Catalunya (ES)<br>3. Eurocrime – research, training and consulting SRL (IT)<br>4. Institut National des Hautes Etudes de la Securite et de la Justice (FR)<br>5. Orszagos Kriminologiaj Intezet (HU)<br>6. Universita Degli Studi di Milano-Bicocca (IT)<br>7. University College London (UK) |

| EUNPACK | |
|---|---|
| Title | Good intentions, mixed results – A conflict sensitive unpacking of the EU comprehensive approach to conflict and crisis mechanisms (EUNPACK) |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies Call: H2020-INT-SOCIETY-2015 Topic code: INT-05-2015 April 2016 / April 2019 - EUR: 2.495.674,00<br><br>REA - 693337 |
| Abstract | The EUNPACK project unpacks EU crisis response mechanisms, with the aim to increase their conflict sensitivity and efficiency. By combining bottom–up perspectives with an institutional approach, EUNPACK will increase our understanding of how EU crisis responses function and are received on the ground in crisis areas. EUNPACK analyses two gaps in EU crisis response. First, the intentions–implementation gap, which relates to 1) the capacity to make decisions and respond with one voice and to deploy the necessary resources, 2) how these responses are implemented on the ground by various EU institutions and member states, and 3) how other actors – local and international – enhance or undermine the EU's activities. Second, the project addresses the gap between the implementation of EU policies and approaches, and how these policies and approaches are received and perceived in target countries, what we refer to as the implementation¬–local reception/perceptions gap. |
| Website | http://www.eunpack.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Norsk Utenrikspolitisk Institutt (NO)<br>Consortium:<br>2. Alliance Pour Refonder La Gouvernance En Afrique Arga (SN)<br>3. Beogradski Centar Za Bezbednosnu Politiku Udruzenje (RS)<br>4. Centre For European Policy Studies (BE)<br>5. Centre National De La Recherche Scientifique Cnrs (FR)<br>6. Freie Universitaet Berlin (BE)<br>7. Kosovar Centre For Security Studies (XK)<br>8. Middle East Research Institute (IQ)<br>9. National University Of Kyiv-Mohyla Academy (UA)<br>10. Scuola Superiore Di Studi Universitari E Di Perfezionamento Sant'anna (IT)<br>11. The University Of Manchester (UK)<br>12. Univerzita Komenskeho V Bratislave (SK) |

| TransSOL | |
|---|---|
| Title | European paths to transnational solidarity at times of crisis: Conditions, forms, role-models and policy responses (TransSOL) |
| Contract details | Europe in a changing world - Inclusive, innovative and reflective societies Call: H2020-EURO-SOCIETY-2014 Topic code: EURO-3-2014 June 2015 / June 2018 - EUR: 2.483.805,00<br><br>REA - 649435 |
| Abstract | TransSOL is committed to the systematic, interdisciplinary and praxis-oriented analysis of European solidarity in times of crisis. It has three overarching objectives: (1) it will map and analyse solidarity in Europe by means of a cross-national database and (2) it will gather systematic data on the contextual factors and engage into political and legal analyses to ascertain the influence of the socio-economic, political, and legal context on solidarity, in particular the impact of the crisis, the EU's political responses and target-groups specific public policies; and (3) it will identify and develop best practices of transnational solidarity, draft evidence-based policy recommendations, and engage proactive dissemination. |
| Website | http://transsol.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universitaet Siegen (DE)<br>Consortium:<br>2. European Alternatives Berlin E V (DE)<br>3. European Alternatives Limited Lbg (UK)<br>4. Fondation Nationale Des Sciences Politiques (FR)<br>5. Kobenhavns Universitet (DK)<br>6. Panepistimio Kritis (EL)<br>7. The Glasgow Caledonian University (UK)<br>8. The University Of Sheffield (UK)<br>9. Universita Degli Studi Di Firenze (IT)<br>10. Universite De Geneve (CH)<br>11. Uniwersytet Warszawski (PL) |

## These projects were complemented by new projects funded in 2016-2017:

| e-Sides | |
|---|---|
| Title | Ethical and Societal Implications of Data Sciences |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Information and Communication Technologies. Call: H2020-ICT-2016-1. Topic code: ICT-18-2016. January 2017 / December 2019 - EUR: 999.940,00 GA 731873 |
| Abstract | Data-driven innovation is deeply transforming society and the economy. Although there are potentially enormous economic and social benefits this innovation also brings new challenges for individual and collective privacy, security, as well as democracy and participation. The main objective of the CSA e-SIDES is to complement the research on privacy-preserving big data technologies, by analysing, mapping and clearly identifying the main societal and ethical challenges emerging from the adoption of big data technologies, conforming to the principles of responsible research and innovation; setting up and organizing a sustainable dialogue between industry, research and social actors, as well as networking with the main Research and Innovation Actions and Large Scale Pilots and other framework programme projects interested in these issues. It will investigate stakeholders' concerns, and collect their input, framing these results in a clear conceptual framework showing the potential trade-offs between conflicting needs and providing a basis to validate privacy-preserving technologies. It will prepare and widely disseminate community shared conclusions and recommendations highlighting the best way to ultimately build confidence of citizens and businesses towards big data and the data economy. |
| Website | http://www.e-sides.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. IDC Italia SRL (IT)<br>Consortium:<br>2. Universiteit Leiden (NL)<br>3. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE) |

### 8.1.2 Post-crisis societal and psychological support

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Post-crisis societal and psychological support | BESECU<br>NDTERROR<br>OPSIC<br>PSYCRIS<br>SUPER |

In Horizon2020, no dedicated research projects or studies have been carried out in relation to post-crisis societal and psychological support.

The projects were complemented by the following projects funded by DG ECHO:

| PFA-CE | |
|---|---|
| Title | Psychological First Aid and Psychsocial Support in Complex Emergencies (PFA-CE) |
| Contract details | 2016/PREP/13 01/04/2017 - 31/03/2019; EUR: 364303 |
| Abstract | In times of more frequent and long-term disasters and crises, the project aims at improving disaster response capacities of European emergency and volunteer organisations by strengthening Psychological First Aid (PFA) and Psychosocial Support (PSS) competencies of staff and volunteers. In order to improve involvement and active participation of affected communities in emergency response, new tools for community activation will be developed. Further coordination and support for new volunteer types such as convergent volunteers and spontaneous volunteers will be improved. Finally, experience exchange and networking regarding long lasting repeated and ongoing disasters will be carried out. (Internal classification of DG Echo is MEDICAL) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7482&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: AUSTRIAN RED CROSS (AT)<br>Consortium:<br>1. Universitaet Innsbruck (AT)<br>2. Croatian Red Cross ( HR)<br>3. Associazione della Croce Rossa Italiana (IT)<br>4. Macedonian Red Cross (MK)<br>5. Red Cross of Serbia (RS)<br>6. Slovenian Red Cross – Federation of Associations (SI) |

### 8.1.3 Societal resilience to disasters

The following projects have been funded within H2020:

| SMR | |
|---|---|
| Title | Smart Mature Resilience (SMR)<br><br>***This project also corresponds to the category 'Multi-climate hazard risk prevention, awareness, preparedness, resilience'.*** |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-07-2014<br>June 2016 / June 2018 - EUR: 4,641,233.25<br><br>REA - 653569 |
| Abstract | Smart Mature Resilience (SMR) will develop and validate Resilience Management Guidelines that will provide a robust shield against man-made and natural hazards, enabling society to resist, absorb, accommodate and to restore. The Resilience Management Guidelines comprise of the following tools: (1) a Resilience Maturity Model defining the trajectory of an entity through measurable resilience levels; (2) a Systemic Risk Assessment Questionnaire that, beyond assessing the entity's risk, determines its resilience maturity level; (3) a portfolio of Resilience Building Policies that enable the entity's progression towards higher maturity levels; (4) a System Dynamics Model allowing to diagnose, monitor and explore the entity's resilience trajectory as determined by resilience building policies, and, (5) a Resilience Engagement and Communication Tool to integrate the wider public in community resilience, including public-private cooperation. |

| SMR | |
|---|---|
| Website | http://smr-project.eu/home/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universidad De Navarra (ES)<br>Consortium:<br>2. Ayuntamiento De Donostia San Sebastian (ES)<br>3. Bristol City Council (UK)<br>4. Din Deutsches Institut Fuer Normung E.V. (DE)<br>5. Fomento De San Sebastian Sa (ES)<br>6. Glasgow City Council (UK)<br>7. Iclei European Secretariat Gmbh (Iclei Europasekretariat Gmbh)* (DE)<br>8. Kristiansand Kommune (NO)<br>9. Linkopings Universitet (ES)<br>10. Rigas Dome (LV)<br>11. Risorse Per Roma S.P.A. (IT)<br>12. Roma Capitale (IT)<br>13. Universitetet I Agder (NO)<br>14. University Of Strathclyde (UK)<br>15. Vejle Kommune (DE) |

## These projects were complemented by new projects funded in 2016-2017:

| BRTE | |
|---|---|
| Title | Building Resilience through Education |
| Contract details | Marie Skłodowska-Curie actions - Research and Innovation Staff Exchange. Call: H2020-MSCA-RISE-2017.<br>Topic code: MSCA-RISE-2017. November 2017 / October 2021 - EUR: 2.097.000,00 GA 778196 |
| Abstract | The Building Resilience Through Education (BRTE) Consortium brings together partners from academia, the private sector and the NGO sector to find innovative ways to strengthen the resilience of communities affected by recurring disasters. This project has its origins in an ex-post impact evaluation of Concern Worldwide's twenty-five year engagement in Wolaita, Ethiopia. Conducted by University College Dublin's Centre for Humanitarian Action in collaboration with Wolaita Sodo University, the evaluation found that, despite significant improvements in communities' capacities to both absorb the effects of recurring disasters and to adapt their livelihoods based on experience of recent disasters, they remain extremely vulnerable to their natural and environmental context. As a result there is an urgent need for a novel approach that moves beyond supporting the mere absorption of or adaptation to recurring shocks and that transforms the capacity of exposed communities. The BRTE partnership has identified the importance of education in bringing about this transformative change. It aim is to build the capacity of Wolaita's educational institution in pursuit of the following objectives: • To build the requisite critical infrastructure to enable resilience education and research; • To establish an educational platform that will build human capital and transform livelihoods; • To develop research and innovation capacity that will radically promote social and economic well-being. The BRTE programme will serve as a model of how education can drive transformative resilience in areas subject to recurring and protracted crises. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University College Dublin, National University of Ireland, Dublin (IE)<br>Consortium:<br>2. Concern Worldwide LBG (IE)<br>3. Future Analytics Consulting Limited (IE)<br>4. Wolaita Sodo University (ET)<br>5. Reseau pour L'action Humanitaire (Network on Humanitarian Action) (BE) |

| SCALAR | |
|---|---|
| Title | Scaling up behavior and autonomous adaptation for macro models of climate change damage assessment |
| Contract details | European Research Council - Starting Grant. Call: ERC-2017-STG. Topic code: ERC-2017-STG. September 2018 / August 2023 - EUR: 1.499.691,00 GA 758014 |

| SCALAR | |
|---|---|
| Abstract | Damage associated with climate change is a core benchmark in science and policy. Macro Integrated Assessment Models estimating damages are criticized for neglecting risk distribution, adaptation dynamics and the possible collapse of regional economies. Micro-level social science studies contain substantial knowledge on individual behavior, decisions under risk and autonomous climate adaptation, and go beyond monetary losses by focusing on resilience. This knowledge can ameliorate theoretical and empirical flaws in current macro assessments, if adequate scaling up methods were to exist. SCALAR aims to bridge the gap between micro and macro research traditions by modeling the behavioral aspects of autonomous adaptation processes of heterogeneous agents, and integrating them into macro level climate policy models. The project focuses on floods. Its innovative nature allows to revisit the classic micro-macro aggregation problem through a unique combination of: 1) New behavioral data on climate adaptation decisions collected in multiple survey waves using mobile applications, going beyond a snapshot to uncover evolving decision processes; 2) Advances in agent-based modeling to scale up adaptation decisions of heterogeneous households and firms to a regional economy while including land use and hazard data; 3) Cutting-edge ways of integrating micro-simulation models with traditional macro models to synergize the two approaches for developing new theory- and data-grounded macro damage assessments. SCALAR will drive a major breakthrough in integrating behavioral aspects of human decision-making into macro climate policy models. It will enable the quantitative exploration of cross-scale damage cascades, the identification of thresholds over which autonomous adaptation impacts the macro level, and the tracing of the emergence of socio-economic resilience as climate change unfolds. The methodological advancements will have impact far beyond the domain of climate adaptation. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Universiteit Twente (NL) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| ALTER | |
|---|---|
| Title | Alliance for Disaster Risk Reduction (ALTER) |
| Contract details | 2017/PREP/783214 01/01/2018 - 31/12/2019; EUR: 338671.99 |
| Abstract | ALTER project aims to create public private sectors' partnerships to increase resilience in Armenia. Focus is on areas facing flood risks originating in earthquakes that can cause dams' failure. The alliances will be founded on transfer of methods, tools, knowhow and experience from Union Civil Protection Mechanism countries to Armenian partners, as well as to the Armenian government and key stakeholders. Synergies with past and existing initiatives in Armenia will be established for long term sustainable results. Increased resilience of selected local communities will be served through raising awareness campaigns, pilot interventions, training activities and small scale exercises. (Internal classification of DG Echo is FLOODS EMERGENCY MNGT) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/alliance-disaster-risk_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: National Observatory of Athens (GR) Lofos Nymfon 11810 ATHENS GREECE<br>Consortium:<br>1. European University CYPRUS<br>2. Center for National Security and Defense Research, Bulgarian Academy of Sciences (BG)<br>3. American University of ARMENIA<br>4. Disaster Risk Reduction National Platform Foundation (ARMENIA) |

## 8.2 Public involvement / engagement in research and use of social media

### 8.2.1 Enhanced communication in crisis management

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Enhanced communication in crisis management | COSMIC<br>EMERGENT<br>HELP<br>ISAR+<br>PEP<br>SOTERIA |

## These projects have been complemented by the following H2020 projects:

| MEDIA4SEC | |
|---|---|
| Title | The emerging role of new social media in enhancing public security (MEDIA4SEC) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2015 - Topic code: FCT-15-2015<br>July 2016 / January 2019 - EUR: 1,902,006.25<br><br>REA - 700281 |
| Abstract | MEDIA4SEC focuses upon enhancing understanding of the opportunities, challenges and ethical consideration of social media use for public security. MEDI@4SEC will seek a better understanding of how social media can, and how social media cannot be used for public security purposes and highlight ethical, legal and data-protection-related issues and implications. Activities centre around six relevant themes: DIY Policing; Everyday security; Riots and mass gatherings: The Darkweb; Trolling; and Innovative market solutions. MEDI@4SEC will provide an evidence-base and roadmap for better policymaking including: best practice reports; a catalogue of social media technologies; recommendations for EU standards; future training options; and, ethical awareness raising. |
| Website | http://media4sec.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Univ. of Warwick (UK)<br>Consortium:<br>2. Ayuntamiento de Valencia (ES)<br>3. European Organisation for Security SCRL (BE)<br>4. Forum Europeen pour la Securite Urbaine (FR)<br>5. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung EV (DE)<br>6. Kentro Meleton Asfaleias (EL)<br>7. Nederlandse Organisatie voor Toegepast Natuurwetenschapelijk Onderzoek TNO (NL)<br>8. Police Service of Northern Ireland (UK)<br>9. Univ. Utrecht (NL)<br>10. Xlab Razvoj Programske Opreme in Svetovanje Doo (SI) |

| TRILLION | |
|---|---|
| Title | TRusted, CItizen - LEA colLaboratIon over sOcial Networks (TRILLION) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-14-2014<br>September 2015 / September 2018 - EUR: 4,263,407.50<br><br>REA - 653256 |
| Abstract | TRILLION delivers a platform to support the extensive collaboration between citizens and LEAs.<br>The operational environment of the platform is not limited to an on-going crisis, but also extends to the period before it through early identification and prevention of emerging risks. |
| Website | https://trillion-project.eng.it/home |

| TRILLION | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Engineering - Ingegneria Informatica Spa (IT)<br>Consortium:<br>2. Atos Spain Sa (ES)<br>3. Brainport Development Nv (NL)<br>4. Citta di Lecce*Comune di Lecce (IT)<br>5. Comune di Ancona (IT)<br>6. Dit Is Beveiligen Bv (NL)<br>7. Ethniko Kentro Erevnas Kai Technologikis Anaptyxis (EL)<br>8. Gemeente Eindhoven (NL)<br>9. Inov Inesc Inovacao - Instituto de Novas Tecnologias (PT)<br>10. Ministério Da Justiça (PT)<br>11. Mittuniversitetet (SE)<br>12. Polyground Bv (NL)<br>13. Royal United Services Institute for Defence And Security Studies (UK)<br>14. Sorama Bv (NL)<br>15. Stichting Dutch Institute for Technology, Safety & Security (NL)<br>16. Stichting Regionale Toezicht Ruimte Gelderland-Zuid (NL)<br>17. Technological Educational Institute of Piraeus (EL)<br>18. University of Greenwich (UK)<br>19. Vinotion Bv (NL)<br>20. Xlab Razvoj Programske Opreme In Svetovanje Doo (SI) |

## These projects were complemented by new projects funded in 2016-2017:

| EVACUATION | |
|---|---|
| Title | Testing communication strategies to save lives in emergency evacuation |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. March 2018 / February 2020 - EUR: 195.454,80 GA 748647 |
| Abstract | The EU urgently seeks to improve emergency evacuation preparedness. EU public spaces are getting more crowded. Fires and terrorist attacks require emergency evacuation. Faster evacuation from public buildings during emergencies saves more lives. Observations of actual emergencies show that people tend to be slow to respond to evacuation alarms (taking up to 10 minutes) and take the familiar route out instead of the nearest exit. The EU calls for evidence-based recommendations for evacuations, which are mostly non-existent. The state of the art uses computer models of evacuation speed, but more realism is needed. We take the novel approach of combining state of the art computer modeling with insights from risk communication to improve speed and survival in emergency evacuations. This project aims to: 1. Identify which risky behaviors occur in emergency evacuations and underlying causes (WP1). 2. Use models to identify communication strategies that improve evacuation time and survival (WP2). 3. Test communication strategies for improving evacuation time and survival in experiments (WP3). To ultimately save lives, Aim 1 involves (a) observing behavior in existing videos of actual evacuations, and (b) interviewing emergency service members about their experiences in actual evacuations. Aim 2 will use 'agent-based' computer modeling, with which the Fellow has experience, to assess the effect of reducing the riskiest behaviors on evacuation time and survival rates. Based on the Supervisor's expertise in risk communication and input from emergency service members, this will result in recommendations that will be tested in Aim 3 in actual evacuation drills. Our unique team has the interdisciplinary and practical expertise needed to improve evacuations. Our proposed work will promote transfer between the Fellow and the team through hands-on collaborative work. The UK is an ideal testbed for our project aims, but we will inform evacuations worldwide. |
| Website | http://www.leeds.ac.uk/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. University of Leeds (UK) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| UCPM SOPs | |
|---|---|
| Title | Common Standard Operational Procedures for the Union Civil Protection Mechanism Module and Teams (UCPM SOPs) |
| Contract details | 2017/PREP/783255 01/01/2018 - 31/12/2019; EUR: 205127.01 |
| Abstract | The goal of the project is to give recommendations to and improve the standard operating procedures (SOPs) of modules and teams in the UCPM Communication and Information System (CECIS). The project aims at harmonizing the existing SOPs by improving the already existing SOP guidance document, promoting it, and creating a common SOP template that enables the introduction of consistent, relevant and appropriate SOPs for all UCPM modules and teams. The template that facilitates the writing of SOPs will lead to coordinated and higher quality SOPs. Consistent SOPs improve cooperation in exercises and missions. The project thus contributes to the improved functioning of the Mechanism and the Union's ability to efficiently respond to future disasters. (Internal classification of DG Echo is METHODOLOGY – SOPs - MODULES) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/common-standard-operational_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: PELASTUSOPISTO (FI) Crisis Management Centre Hulkontie 83 FI- 70821 KUOPIO FINLAND<br>Consortium:<br>1. Bundesanstalt Technisches Hilfswerk (THW) (DE)<br>2. Associação Humanitária dos Bombeiros Voluntários de Peniche (PT) |

### 8.2.2 Civil society engagement

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Civil society engagement | ARCHIMEDES<br>ASSERT<br>ATHENA<br>NITIMSER<br>PANDORA<br>SECUREPART |

These projects have been complemented by the following H2020 projects:

| City.Risks | |
|---|---|
| Title | Avoiding and mitigating safety risks in urban environments (City.Risks) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-14-2014<br>May 2015 / April 2018 - EUR 3,934,811.00<br><br>REA – 653747 |
| Abstract | The main objective of the City.Risks project is to increase the perception of security of citizens in cities by activating in a more transparent and sustainable way their participation in communities, through which information and interventions can be provided. City.Risks project will leverage a set of innovative technologies, city infrastructures, and available data sources, but more importantly will aim at making the citizens' smart phones the modern tool for increasing their personal and collective sense of security. The project will design and develop an innovative ecosystem of mobile services that will transform the smart phone or the tablet of the citizen into a tool that will collect, visualise and share safety-critical information with the appropriate authorities and communities. |
| Website | http://project.cityrisks.eu/ |

| City.Risks | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Space Hellas Anonymi Etaireia Systimata Kai Ypiresies Tilepikoinonionpliroforik-is Asfaleias - Idiotiki Epicheirisi Parochis Yperision ASFA (EL)<br>Consortium:<br>2. Athena Research and Innovation Center in Information Communication & Knowledge Technologies (EL)<br>3. Birkbeck College – Univ. of London (UK)<br>4. Comune di Prato (IT)<br>5. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>6. Freie Univ. Berlin (DE)<br>7. G4s Security Solutions Eood (BG)<br>8. Infili Technologies Private Company (EL)<br>9. Infili Uk Ltd (UK)<br>10. Institute of Communication and Computer Systems (EL)<br>11. London Borough of Waltham Forest (UK)<br>12. Malmoe Hoegskola (Malmoe University) (SE)<br>13. Roma Capitale (IT)<br>14. Synyo Gmbh (AT) |

| CITYCoP | |
|---|---|
| Title | Citizen Interaction Technologies Yield Community Policing (CITYCoP) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-14-2014<br>June 2015 / May 2018 - EUR 5,576,716.00<br><br>REA - 653811 |
| Abstract | CITYCoP sets out to find out why the EU appears to be lagging behind although Community Policing is nominally a policy which has been put into action in a number of EU countries. It then goes on to develop a solution including a new smartphone app and on-line portal which are capable of being deployed in any European city while still retaining "local flavour" and diversity. A training scheme, including use of serious games, will be developed to assist training of officers and citizens in use of the app and portal. |
| Website | https://www.citycop.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rijksuniversiteit Groningen (NL)<br>Consortium:<br>2. Academia Nationala de Informatii Mihai Viteazul (RO)<br>3. Comune di Firenze (IT)<br>4. Consiglio Nazionale delle Ricerche (IT)<br>5. Federation Autonome de la Fonction Publique Territoriale et des Etablissements Publics (FR)<br>6. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>7. Gottfried Wilhelm Leibniz Universitaet Hannover (DE)<br>8. Hogskolen i Gjovik (NO)<br>9. Hoplite Software SL (ES)<br>10. Innenministerium Niedersachsen (DE)<br>11. Inspectoratul General al Politiei Romane (RO)<br>12. Institutul Pentru Tehnologii Avansate (RO)<br>13. Laboratorio di Scienze della Cittadinanza (IT)<br>14. Law and Internet Foundation (BG)<br>15. Ludwig Boltzmann Gesellschaft Osterreichische Vereinigung zur Forderung der Wissenschaftlichen Forschung (AT)<br>16. Ministerio da Administracao Interna (PT)<br>17. Norges Teknisk-Naturvitenskapelige Universitet NTNU (NO)<br>18. Nutcracker Research Limited (UK)<br>19. Serviciul de Telecomunicatii Speciale (RO)<br>20. Police and Crime Commissioner for South Yorkshire (UK)<br>21. Universita ta Malta (MT)<br>22. Univerzitet u Novom SADU (RS)<br>23. Youris.Com (BE) |

| INSPEC2T | |
|---|---|
| Title | Inspiring CitizeNS Participation for Enhanced Community PoliCing AcTions (INSPEC2T) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-14-2014<br>May 2015 / May 2018 - EUR: 4,941,003.75<br><br>REA - 653749 |
| Abstract | INSPEC2T projects' scope is to develop a sustainable framework for Community Policing that effectively addresses and promotes seamless collaboration between the police and the community. INSPEC2T is focusing on a user-centric design and development approach, and has already mobilized and engaged a critical user group mass, in EU and abroad. With special emphasis on social media, it consolidates and modernizes bidirectional communication of stakeholders, using multi-level anonymity flags and having a clear understanding of acceptability issues. It adheres to an approach where social, cultural, legal and ethical dimensions are embedded into core user centric design specifications and implementation procedures. Special focus will be given to Community Policing awareness raising activities for both police and citizens. |
| Website | http://inspec2t-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Kentro Meleton Asfaleias (EL)<br>Consortium:<br>2. Aditess Advanced Integrated Technology Solutions & Services Ltd. (CY)<br>3. Ayuntamiento de Valencia (ES)<br>4. CGI Nederland BV (NL)<br>5. Deutsche Hochschulde der Polizei (DE)<br>6. Eticas Research and Consulting SL (ES)<br>7. Exus Software Ltd (UK)<br>8. Fundacion Centro de Tecnologias de Interacion Visual y Comunicaciones Vicomtech (ES)<br>9. IMC Diachirisi Pliroforion Kai Epikinonion Anonymos Etairia (EL)<br>10. Intrasoft International SA (LU)<br>11. Ministerio Del Interior (ES)<br>12. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>13. PlayGen Ltd (UK)<br>14. Satways – Proionta Kai Ypiresies Tilematikis Diktyakon Kai Tilepikinoniakon Efarmogon Etairia Periorismenis Efthinis Epe (EL)<br>15. The Chief Constable of Lancashire Constabulary (UK)<br>16. Trilateral Research & Consulting LLP (UK)<br>17. Trilateral Research LTD (UK)<br>18. University of Ulster (UK)<br>19. Vienna Centre for Societal Security – Vicesse, Wiender Zentrum fur Sozialwissenschaftliche Sicherheitsforschung (AT) |

| Unity | |
|---|---|
| Title | Unity (Unity) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 - Topic code: FCT-14-2014<br>May 2015 / May 2018 - EUR: 4,330,900.00<br><br>REA - 653729 |
| Abstract | The Unity aims to strengthen the connection between the police and the diverse communities they serve to maximise the safety and security of all citizens. Unity shall identify best practices in Community Policing (CP) through primary and secondary research to enhance cooperation between LEAs and citizens through the development and live pilot demonstrations of technological tools in six EU member states that facilitate, strengthen and accelerate community and LEAs communications. Unity will provide LEAs with a new CP model and shared framework of governance and enabling tools and technology to support closer cooperation for greater, more effective and efficient and more inclusive CP. Unity seeks new ways of working in which the police will serve as a catalyst for change within communities, helping the latter to become an integral part of the solution, and thereby sharing the ownership and delivery of a sustainable CP model which simultaneously embraces the benefits of technology while meeting diverse community needs. |
| Website | https://www.unity-project.eu/ |

| Unity | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Police And Crime Commissioner For West Yorkshire (UK)<br>Consortium:<br>2. Edinburgh Napier University (UK)<br>3. Erasmus Universiteit Rotterdam (NL)<br>4. European Institute Foundation (BG)<br>5. Fachhochschule fur Offentliche Verwaltung Und Rechtspflege In Bayern (DE)<br>6. Policijska Akademija (HR)<br>7. Poliisiammattikorkeakoulu (FI)<br>8. Politsei- Ja Piirivalveamet (EE)<br>9. Rinicom Limited (UK)<br>10. Serco Belgium Sa (BE)<br>11. Service Public Federal Interieur (BE)<br>12. Sheffield Hallam University (UK)<br>13. Treelogic Telematica y Logica Racional para la Empresa Europea Sl (ES)<br>14. University of Dundee (UK)<br>15. University St Kliment Ohridski Bitola (MK) |

## The projects were complemented by the following projects funded by LIFE+ program:

| | LIFE Legal Actions |
|---|---|
| Title | LIFE Legal Actions - Legal Actions on Clean Air |
| Contract details | LIFE15 GIE/DE/000795<br><br>01-AUG-2016 to 30-NOV -2019<br><br>Total budget: EUR 869,936.00; EU contribution: EUR 521,834.00 |
| Abstract | The LIFE Legal Actions project aims to empower NGOs and citizens to take part in public participation processes on the development or revision of air quality plans, to improve their access to justice by supporting their demand for air quality measures or as a last resort to initiate legal action. The project also aims to improve the relationship between citizens and government as well as government accountability, transparency and responsiveness. The specific aims of the project are: - To empower and motivate EU citizens and NGOs to campaign for effective air quality measures by providing information about the sources and effects of air pollution and potential solutions, and by providing advice on their right to participate in decision-making processes and to take legal action if necessary; and - To motivate political decision-makers to improve air quality legislation and implementation by advising them on existing national and European funding schemes, promoting green public procurement (GPP) as part of a resource-efficient economy, and transferring examples of best practice. The project activities will be carried out in seven EU Member States with a particular focus on Germany and the Czech Republic. The activities and the results will be relevant, transferable and replicable in all Member States. Improving the implementation of air quality measures will also directly improve the implementation of the EU climate change policy since several air pollutants contribute significantly to global warming. Expected results: The project expects to reach an estimated 13 million citizens in at least seven EU countries through the following awareness-raising activities: - 200 press articles read by a combined audience of 10 million; - TV and radio spots reaching 6 million people; and - 100 000 visitors to the project website and social media channels. NGOs and/or citizens will participate in at least 15 decision-making processes leading to a revision of air quality plans, and - if their requests are ignored by authorities - to legal action. Those "model cases" will have an effect on other regions since responsible authorities will provide information and allow public participation to avoid the risk of being sued. These actions will be complemented by a strategy for engaging with experts and decision-makers with the following expected results: - Publication of specialist newsletters and workshops targeting 200 NGOs and legal experts; - Background briefing notes reaching 1 000 political decision-makers, authorities and experts, of which 200 will enter into an intense dialogue with the project; - Networking with 500 administrations, NGOs and coordinators of related projects to facilitate uptake of activities in other EU countries; - 100 municipalities informed about GPP and 20 will be motivated to file an application to implement air quality measures; and - 100 representatives of the European Commission, the European Parliament and Brussels based NGOs and business associations contacted. In the long run, the project expects that better information on the funds available to carry out mitigation action will lead to more investments in air pollution reduction measures such as accelerated change to public bus fleets, improved infrastructure for cyclists and pedestrians and better ' best available technology' to reduce industry emissions. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5820 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Environmental Action Germany (Deutsche Umwelthilfe e.V.) (DE)<br>Partners: Frank Bold Society (CZ) |

## 8.3 Population alert, civil protection (in case of emergencies) and practitioners' involvement

### 8.3.1 Civil Protection Operations, including volunteer involvement

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Civil Protection Operations | HELI4RESCUE |

These projects have been complemented by the following H2020 projects:

| LYNCEUS2MARKET | |
|---|---|
| Title | An innovative people localisation system for safe evacuation of large passenger ships (LYNCEUS2MARKET) |
| Contract details | Smart, Green and Integrated Transport Call: H2020-MG-2014_TwoStages Topic code: MG-4.2-2014<br>June 2015 / June 2018 - EUR: 7.260.975,00<br><br>INEA - 636286 |
| Abstract | Addresses challenges related to evacutation of large passenger ships during emergency situations through delivering an operational system for safe evacuation based on innovative people localisation technologies.The system consists of: 1) Localisable life jackets for real-time localisation 2) Smart smoke detectors that also act as base stations of an on-board localisation system 3) Localisable bracelets able to send activity data to the emergency management team 4) Low cost fire and flooding escalation monitoring sensor notes 5) novel mustering handheld devices for automatic identification and counting of passengers 6) Smart localisable cabin key cards 7) Intelligent decision support software that provides integrated real-time visualisation, passenger counting and evacuation decision support 8) Innovative shore or ship-launched UAVs for localising people in the sea and assisting SAR operations when accident occurs in extreme weather, during the night or in a remote location 9) Low-cost rescue-boat mounted radars locating individuals in the vicinity of the boat. |
| Website | http://lynceus-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rtd Talos Limited (CY)<br>Consortium:<br>2. Asociacion De Empresarios Textiles De La Region Valenciana (ES)<br>3. Autronica Fire And Security As (NO)<br>4. Canepa & Campi Srl (IT)<br>5. Celestyal Ship Management Limited (CY)<br>6. Csem Centre Suisse D'electronique Et De Microtechnique Sa - Recherche Et Developpement (CH)<br>7. Foro Maritimo Vasco (ES)<br>8. G.G. Dedalos Technology Services Ltd (CY)<br>9. I. Panaretou - Char. Kostopoulos Oe (EL)<br>10. Lloyd's Register Emea Ips (UK)<br>11. Maritime Institute Of Eastern Mediterranean - Mar.In.E.M. (CY)<br>12. Ministry Of Transport, Communications And Works (CY)<br>13. Rcl Cruises Ltd (UK)<br>14. Safe Marine Srl (IT)<br>15. Signalgenerix Ltd (CY)<br>16. Technische Universitaet Dresden (DE) |

| MOBNET | |
|---|---|
| Title | MOBile NETwork for people's location in natural and man-made disasters (MOBNET) |
| Contract details | Leadership in enabling and industrial technologies Call: H2020-Galileo-2015-1 Topic code: GALILEO-2-2015<br>January 2016 / March 2018 - EUR: 986.272,25<br><br>GSA - 687338 |
| Abstract | Design of a Search and Rescue (SAR) system for the location of isolated victims in the case of natural or man-made disasters such as earthquakes, hurricanes or large snow storms. The system will also help first responder services to find fugitives or smugglers hidden within buildings. Novel EGNSS and DCT methods will be applied and a reliable communication link between UAVs and the ground station will be designed to ensure uninterrupted command and control communication among devices and the integrity of communication signals. |
| Website | http://mobnet-h2020.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Orbital Sistemas Aeroespaciales Sl (ES)<br>Consortium:<br>2. Asociacion Centro Tecnologico Ceit-Ik4 (ES)<br>3. Delft Dynamics B.V. (NL)<br>4. Navpos Systems Gmbh (DE)<br>5. The Main School Of Fire Service (PL) |

## These projects were complemented by new projects funded in 2016-2017:

| JET ANTI-FIRE | |
|---|---|
| Title | INDUSTRIALISATION OF A DISRUPTIVE ACTIVE FIRE-FIGHTING SYSTEM |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>March 2017 / June 2017 - EUR: 50.000,00 GA 763120 |
| Abstract | JET ANTI-FIRE has the objective to bring to market the most secure active fire-fighting system in the market, which is able to extinguish a fire in 50% less time while saving 75% of O&M costs and 55% of water compared to existing systems, thus guaranteeing more security for the operator and patrimony while fulfilling the local regulation far better than current systems. The innovation is based on two new devices: a hydrant tap that maintains the pressure balanced in a building including skyscrapers, and a jet system that breaks water producing an efficient water fog and so temperature decrease 50% faster than with traditional methods, allowing fire-fighters get closer to the fire focus in secure conditions. FIRING is an Italian based company, they are experts in active fire-fighting systems and solutions with more than 12 years of experience. FIRING experience in active fire-fighting systems shows us, that existing methods have problems to comply with regulation especially in high buildings. This makes expensive O&M methods as hydraulic compensation engineering and dynamic tests every six months necessary. Because of that fire-fighting experts are demanding more efficient and cost effective fire-fighting systems. Our system implies to invest a 20% more in active fire-fighting systems but the gain in higher security, lower maintenance and lower water usage outperforms this slightly higher initial investment within the first year of usage. FIRING wants to participate with JET ANTI-FIRE in the extension and homogenization of secure and effective fire-fighting systems in Europe. |
| Website | https://www.firing.it/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Firing SRL (IT) |

| GRIMASSE | |
|---|---|
| Title | General aviation Rescue capacity IMprovement for the worldwide Adoption of a Safe Solution based on European GNSS |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-GALILEO-GSA-2017-1. Topic code: GALILEO-1-2017. November 2017 / July 2019 - EUR: 1.925.713,75 GA 776379 |

| GRIMASSE | |
|---|---|
| Abstract | Based on the observations that: - Most of the aeronautical accidents involve General Aviation (GA) aircrafts, particularly the ones with a significant survival rate. - Most of the GA aircraft are not equipped with costly ELT but only not adapted PLB. - GA accidents generate the majority of the workload of RCC and the operations where the response delay is the most critical to save lives. Considering also that: - ICAO and C/S are doing significant standardization efforts to improve the in-flight transmission capability and performance for commercial aviation. - There is now a new requirement for each flight to carry on-board an installed ELT or a PLB. - The ICAO projects to evaluate the feasibility of an ADT adapted to other aircrafts than commercial ones (see GADSS ADT007 – Assess extending applicability to other aircraft operations). GA SAR issue appears to be critical. GRIMASSE proposes to develop operational concepts based on anchoring the Galileo SAR service in the SWIM information sharing concept implemented all around the world and in Europe in particular as SESAR. The main objectives of the projects are: - To improve the SAR detection and response to GA aircrafts and helicopters distress. - To optimize the responsiveness of RCCs. - To adapt the MCCs and MEOLUT to the data distribution of ELT-DT SAR alerts. The project intends to develop 3 products: - SWIM applications to optimize the exchange of SAR information by RCCs and MCCs. - MCC ELT-DT implementing functions to distribute ELT-DT messages. - A cost-effective ELT-DT for GA including the ADT functionalities, easy to plug into the aircraft and with minor or no alterations to the aircraft. The project is structured in 4 phases: • Collection of the needs (RCC, pilot, aero-club, MCC). • Definition and development of the system. • Experimentations and demonstrations phase. • Dissemination. GRIMASSE will promote Galileo as the main actor of worldwide aviation safety. |
| Website | https://www.gsa.europa.eu/general-aviation-rescue-capacity-improvement-worldwide-adoption-safe-solution-based-european-gnss |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Thales Alenia Space France (FR)<br>Consortium:<br>2. The British Light Aviation Centre Limited (UK)<br>3. ELTA (FR)<br>4. Agence pour la Securite de la Navigation Aerienne en Afrique et a Madagascar (SN)<br>5. Pildo Consulting SL (ES)<br>6. Aero Club Barcelona Sabadell (ES)<br>7. Stmicroelectronics SRL (IT) |

| POLG | |
|---|---|
| Title | Testing and scaling of an electro-magnetic power on line generator for remote areas |
| Contract details | Industrial Leadership – Innovation in SMEs / Secure, Clean and Efficient Energy. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-09-2016-2017. November 2016 / February 2017 - EUR: 50.000,00 GA 744854 |
| Abstract | Operators of electric transmission and distribution systems frequently need to install monitoring equipment on power lines to monitor various phase wire and line structure condition like heat, sag or icing and wind load. Furthermore, the access to telecommunications in remote areas is important to ensure the operation of the power systems and also for security reasons in the event of a disaster. Often energy and telecommunication industries encounter difficulties in operating these monitoring, control and communication equipment in remote areas. Alternative solutions such as wind turbines and solar cells are not practical in many locations due to harsh environment or the extreme weather conditions they encounter. The use of diesel generators raise environmental issues due to pollution and transportation of fuel across wilderness. All the above mentioned power solutions can cause operational problems. Competitors have developed devices that can measure parameters such as the voltage level, temperature, sag or predict fault location, but neither do they obtain sufficient and stable electricity to power additional devices nor do they comprise a space for hosting and protecting auxiliary devices. Laki has focused on solving these above mentioned problems and designed a solution, the Power On-Line Generator (POLG). The POLG is a power harvester and power supply that can power and host surveillance, monitoring and telecom devices that require up to 100 Watts of power. The solution is very environmentally friendly and almost maintenance-free. External devices such as tension cells, heat sensors, flashlights, audio alarms and so forth can be connected to the POLG unit. Laki will exploit a market that plans to add over 27 million km of new electricity lines worldwide (976,000km in EU) and to refurbish 34.7 million km worldwide (5.6 million km in EU) from 2014-2035. Investments are huge: $2,170 billion are planned for improving the energy efficiency in the EU alone. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. LAKI EHF (IS) |

| SARA | |
|---|---|
| Title | Search And Rescue Aid and Surveillance using High EGNSS Accuracy |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-GALILEO-GSA-2017-1. Topic code: GALILEO-3-2017. February 2018 / January 2020 - EUR: 1.455.583,13 GA 776099 |

| SARA | |
|---|---|
| Abstract | SARA: Search and Rescue Aid using High Accuracy EGNSS The purpose of the SARA project is to engineer and to start to commercialise a dedicated solution, based on an already existing prototype, to be used for Search and Rescue (SAR) and Surveillance purposes (primary market). The need for such a solution comes in particular from the institutional market (but it is not limited to) requesting a technological support to manage migration flux aspects, with particular attention to crisis in the Mediterranean Sea: Europe needs to balances efforts to assist people in need with efforts to secure its borders. On the basis of the above scenario, the industrial composition of the SARA consortium has been contacted by Italian Coast Guard two years ago in order to provide a technological contribution supporting vessels to detect people lost in the sea, especially during the hours of darkness. According to the above request, SARA solution is conceived to build up a semi-automatic system using Earth Observation data to preliminary detect suspect pontoons' trajectories (Surveillance) and supporting SAR operations based upon a deployable RPAS (Remotely Piloted Aircraft System) which is tightly coupled with a ship architecture through a cable (tethered flight): as soon as its function is needed, the aircraft flies from its home (a dedicated hangar on the top of the ship), and becomes a "virtual pylon" which elevates a VIS-TIR sensor (Visual Spectrum and Thermal Infrared); captured images are processed in real time by a local computer. Both RPAS and hangar are equipped with 2 high accuracy EGNSS receivers (i.e. Galileo ready) in order to provide the relative positioning between the hangar and the RPAS hovering on the target. On this context, EGNSS represents an essential technology ensuring autonomous operations in a reliable manner guaranteeing provision of distance and bearing from ship to survivors and the protection of the extensible cable against mechanical stress. |
| Website | https://www.gsa.europa.eu/search-and-rescue-aid-and-surveillance-using-high-egnss-accuracy |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Sistematica SPA (IT)<br>Consortium:<br>2. Aarhus Universitet (DK)<br>3. Topview SRL Start Up Innovativa (IT)<br>4. Business Integration Partners Belgium (BE)<br>5. Universita degli Studi di Firenze (IT)<br>6. Eurodev BV (NL)<br>7. Akademia Morska w Szczecinie AM (PL) |

| SINSIN | |
|---|---|
| Title | Enhanced PLB, EGNSS receiver, and MEOLUT, according but beyond the standard, significantly improving the localization in difficult conditions, paving the way to a mass market SAR/Galileo service |
| Contract details | Industrial Leadership – Leadership in Enabling and Industrial Technologies – Space. Call: H2020-GALILEO-GSA-2017-1. Topic code: GALILEO-2-2017. November 2017 / October 2020 - EUR: 1.312.850,00 GA 776253 |
| Abstract | The project's overall objective is to develop a Personal Locator Beacon (PLB) embedded with an enhanced EGNSS receiver, and respectively enhance a MEOLUT, enabling localization with only 1-2 satellites in view and improving the standard 'slow moving beacon' localization accuracy by a factor of x10, paving the way to an effective mass market terrestrial Search and Rescue service based on SAR/Galileo. In particular, SINSIN project will target to: 1. Implement a method for localization of beacons using 2 satellites (single burst) or 1 satellite (multi-burst). 2. Implement a method to improve the standard localization accuracy of a 'slow moving beacon' by x10. 3. Develop a Personal Locator Beacon and enhance a MEOLUT providing improved localization as indicated above, the beacon implementing the Galileo RLS protocol and featuring substantially isotropic antennas for the uplink (SAR) and downlink (GNSS + RLS), practically enabling connectivity with any SAR/GNSS satellite above the horizon. 4. Disseminate the SINSIN products/ technology in at least one of the following scopes: • Independent SAR systems, each comprising beyond the standard MEOLUT and beacons • A European standard for SAR systems/service. • A Cospas-Sarsat standard applicable to all beacons and MEOLUTs worldwide. |
| Website | https://www.gsa.europa.eu/enhanced-plb-egnss-receiver-and-meolut-according-beyond-standard-significantly-improving |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Mobit Telecom LTD (IL)<br>Consortium:<br>2. Saphyrion SAGL (CH)<br>3. Thales Alenia Space France (FR)<br>4. Stmicroelectronics SRL (IT) |

The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| SWIFTERS | |
|---|---|
| Title | Safe and Rapid Evacuation Facilitated by UAV Swarms (SWIFTERS) |
| Contract details | 2017/PREP/783299 ; EUR: 511735.06 |
| Abstract | Unmanned Aerial Vehicles (UAVs) are increasingly used by Civil Protection authorities across Europe to address operational needs including: mapping, tracking, delivering help-aid kits or providing a temporary infrastructure. SWIFTERS capitalizes on UAV swarms to study, design, develop, and test, UAV cooperation strategies to better coordinate the aforementioned complementary tasks in order to assist first responders improve their response efficiency and reduce evacuation times. SWIFTERS will enhance existing capabilities by developing algorithms and software to assist operators effectively deploy UAV swarms in emergencies, train personnel in using swarms (each with a specific role in the mission), and transfer new knowledge to the community. (Internal classification of DG Echo is EMERGENCY MANAGEMENT) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/swifters-safe-and-rapid_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: University of Cyprus (CY) Kallipoleos Street 75 CY-1678 NICOSIA CYPRUS<br>Consortium:<br>1. Kentro Meleton Asfaleias (GR)<br>2. Zentrum für Luft – und Raumfahrt EV (DE)<br>3. Regione Autonoma della Sardegna (RAS) (IT)<br>4. Civil Defense (CY) |

| MERCI | |
|---|---|
| Title | Multi-site Event's Response and Coordinated Intervention (MERCI) |
| Contract details | 2016/PREP/28 01/01/2017 - 31/12/2018; EUR: 398276 |
| Abstract | In recent years, European cities have been facing new kind of risks requiring stakeholders to rethink their strategy on how they respond to multi-site disasters and their added level of complexity in coordination. The main goal of MERCI project is to support EU large urban areas' resilience in multi-site or multi-risk incidents. This project aims to contribute towards the strengthening of civil society and volunteering civil protection organisations' capacities and to enable them to act in coordination with public authorities before, during and after such events. The specific objectives of the project are: (1) Development of a replicable transnational response planning tool based on policies, guidelines and shared operating protocols and (2) Strengthening responders' capability and increase their effectiveness in the field of multi-site or multi-risk simultaneous events management (Internal classification of DG Echo is VOLUNTEERS) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/multi-site-events-response_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: FRENCH RED CROSS<br>Consortium:<br>1. Associazione della Croce Rossa Italiana (IT)<br>2. Bulgarian Red Cross Association (BG)<br>3. Cruz Roja Española (ES)<br>4. International Federation of Red Cross and Red Crescent Societies (Switzerland)<br>5. Cruz Vermelha Portuguesa (PT) |

| PROVOICE | |
|---|---|
| Title | Promoting the role of volunteers and the population in Civil Protection (PROVOICE) |
| Contract details | 2017/PREP/783191 01/04/2018 - 31/03/2020; EUR: 393932.92 |
| Abstract | In times of more frequent and long-term disasters and crises, the project aims at strengthening the cooperation between neighborhood countries and UCPM countries in the field of volunteer management, spontaneous volunteers and population awareness in disaster preparedness. Enhancing volunteer management procedures and strengthening the capacities of volunteer leaders and Emergency Response Teams will be a focus. Further organizational and policy level guidelines for organizing spontaneous and non-affiliated volunteers will be developed. Finally, existing tools developed in UCPM countries to raise awareness among the population will be used. (Internal classification of DG Echo is VOLUNTEERS) |
| Website | http://ec.europa.eu/echo/funding-evaluations/financing-civil-protection-europe/selected-projects/promoting-role-volunteers_en |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Austrian Red Cross (AT) Wiedner Hauptstrasse 32 AT-1041 WIEN AUSTRIA<br>Consortium:<br>1. Belarus Red Cross society (Belarus)<br>2. Ukrainian Red Cross Society (Ukraine)<br>3. ECOCONTACT (Moldova)<br>4. Bulgarian Red Cross (BG)<br>5. Universitaet Innsbruck (AT)<br>6. Danish Red Cross (DK) |

The projects were complemented by the following projects funded by INTERREG program:

| Best practices in rescuing and threats elimination | |
|---|---|
| Title | Best practices in rescuing and threats elimination |
| Contract details | 2014 - 2020 INTERREG V-A Lithuania - Poland 01/01/2017 - 31/12/2018 |
| Abstract | Main objective of the project is to strengthen cooperation and to improve knowledge and skills of the rescue institutions in cross-border region. Participating institutions seek to strengthen their abilities to solve problems in order to develop better integrated and higher quality public services while ensuring security of the population, environmental protection and rescuing people and property. Based on the all project beneficiaries needs' analysis was decided that the joint rescuer trainings and practical exercises are needed to be organised. Through joint excercises rescuers from both sides of Lithuania-Poland border area will gain new theoretical and practical knowledge, will exchange good practices and will improve their practical skills.<br>For implementation of the joint trainings and practical exercises it is planned to purchase 2 fire-rescue vehicles and other required equipment. This equipment will serve for joint rescue trainings and rescue works after the end of the project. |
| Website | http://lietuva-polska.eu/en/interreg.html |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Regional Headquarters of State Fire and Rescue Service in Marijampole (LT)<br>Consortium members:<br>2. Regional Headquarters of State Fire Service in Bialystok (PL);<br>3. Regional Headquarters of State Fire and Rescue Service in Alytus (LT);<br>4. Regional Headquarters of State Fire Service in Olsztyn (PL) |

| DiveSmart Baltic | |
|---|---|
| Title | Diving with State Maritime Resources Together in the Baltic |
| Contract details | 2014 - 2020 INTERREG VB Baltic Sea 01/03/2016 - 28/02/2019 |
| Abstract | The project attempts to prepare divers for cooperation across the Baltic Sea Region in the case of accidents. With coordination and common understanding of procedures, knowledge of general and specific diving competences and mapping of gaps, a solid and endurable search and rescue organization can be established in the Baltic Sea, making it a safer place to travel, live and work on. Lessons learned from the 2012 accident of Costa Concordia in Italy transferred during a national conference organised by the Italian rescue divers made gaps in Swedish emergency preparedness apparent. The Swedish Coast Guard and the Swedish Armed Forces therefore created a national project that has successfully coordinated all professional Swedish divers and their equipment in order to increase the preparedness and efficiency when an incident occurs. The project attempts to do the same in order to prepare divers for cooperation across the Baltic Sea Region. Incidents have occurred with regularity, and will do so in the future. The Baltic Sea has its history concerning the Jan Hewelius and the Estonia. Several incidents taking hundreds of lives have occurred elsewhere in the world mainly concerning passenger ferries. Maritime spatial planning has also put more people on the sea, which adds challenges to search and rescue of people in distress. Large wind farms have been established in the Baltic Sea and attractive living areas in harbours with floating homes are continuously being built. These environments are where accidents have and will happen and people have been trapped underwater in confined spaces. These situations demand a search and rescue diver response. Another issue for consideration is that people in accidents on water often drown, but many people also die of exposure as the Baltic Sea is a cold sea. Materials, bail out equipment and quick and safe penetration into confined spaces with air can save time and also lives, if different rescue organisations are familiar with each other due to common training and development. The DiveSMART Baltic project will therefore focus on: • |
| Website | https://www.kustbevakningen.se/granslos-samverkan/utvecklingsprojekt/dive-smart-baltic/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Swedish Coast Guard (SE) |

| F.E.M.R.Z. | |
|---|---|
| Title | FIREFIGHTERS AND EMERGENCY MANAGEMENT RECAS - ZAGUBICA |
| Contract details | 2014 - 2020 Interreg IPA CBC Romania - Serbia 30/05/2017 - 29/11/2018 |

| F.E.M.R.Z. | |
|---|---|
| Abstract | FIREFIGHTERS AND EMERGENCY MANAGEMENT RECAS - ZAGUBICA is a project that targets the main exposure the two partners confront when it comes to environmental risks. The project is focused on the measures needed to be undertaken in order to prevent such disasters, by implementing an effective strategy that will determine the present situation and identify the risk areas, a campaign to inform the inhabitants of the area and raise awareness of the environmental risks and equip with efficient tools to minimalize the damage in case of fires, floods, earthquakes, landslides, etc. by reducing the negative impact. In the project are involved two partners Recas city from the Romanian side and Zagubica municipality, from the Serbian side. The reason that this partnership was formed, is mainly because the two public entities, share a lot of resemblance, regarding the climate, the land and vegetation, protected species and habitats, culture and people's willingness to protect the environment and because both are dealing with the same significant common challenge relating to the environment and the emergency situations. Taking this in consideration, it is imperative to considerate that through this project we will manage to overcome the border as a perceived e evisiony situations. Taking this in consideration, it is imperativetwo public entities, share a lot of resemblan with the main objective as to enhance preparedness and awareness in order to face environmental risks and emergencies and also enabling cross-border interoperability and joint actions for innovative systems of environmental protection. The overall objective of the project is to protect our area in the cross-border region from natural disasters and also to reduce the impact in case such a disaster occurs, by enhancing awareness of the environmental risks, acting on the basis of an accurate strategy and using efficient equipment that will improve the emergency reaction and result. By implementing the project we target to reduce the uncontrolled negative impacts that the natural disasters have on our area and also to protect the environment in an efficient and safe way. The end result will be a clear mapping of the risk areas, a strategy that will allow us to intervene efficient and equipment that will both help protect the environment and the firefighters who risk their life. By implementing the project that we envision, we aim to improve the collaboration between the inhabitants of the cross border region in order to grow the capacity for emergency situations in case of natural disasters and environmental accidents. A safe and efficient procedure that deals with the natural disasters is needed in both Recas and Zagubica and in order to create it, we identified a solution in the form of a study that would determine the risks we confront and also the best strategy to act in case of natural disasters. As a result, our project would create a documented base for a significant part of the cross border area, that determines the most vulnerable areas and best procedures to be undertaken in case of natural disasters. The main beneficiaries of this Study would be the partners inhabitants and also, indirect, the cross-border region citizens who would have a clear mapping of the dangers in the area and a standard procedure in case of emergency. Another benefit of this project is the active area monitoring in the field of environmental protection and emergency management regarding the partnership area, offering the possibility for anybody to have free access to the data. Even thou the monitoring will be done differently applied for each specific region, the end results will determine an active evaluated area. The fact that the parties will be equipped with new and efficient utility vehicles and tools, will ensure safety for Recas and Zagubica residents, but also for the residents of limitrophe localities. Another result of the project will be the public information procedure which aims both public awareness and creating a connection between Recas inhabitants and Zagubicaan helping to overcome the border as a perceived be the public informationreater cooperation and contact between regions and communities on both sides of the border. The strategy which aims the preventing and eliminating the environmental threats, that our partnership has envisioned is one of collaboration and joint exploitation of resources in order to ensure a safe and clean environment. This cooperation is necessary given that both the Romanian and Serbian side faces the same problems and share the same principal characteristics (climate, vegetation, culture, etc.), so we believe that a singular effort is not enough to improve and protect our area, but is imperative that a common commitment based on a common understanding of problems, a common vision and a common set of measures is taken. Treating the issue of fire prevention and extinction we have always found that the people choose to have a neutral position or tend not to get involved because, automatically in everyone's mind, is shaping the image of risk and danger. We must understand that both Serbian partner and the Romanian have teams of volunteers (firefighters) who want to be actively involved in this issue, meaning that this problem can be treated from a different angle, that of confronting the dangerous situations with the end purpose of preventing or stopping them. Thus, this project tries to involve all people in order to ensure a safe and healthy environment. The innovative measures introduced by this project not only come in support of protecting nature, but do so in a way that promotes this value. For example, the monitoring device for air quality, humidity and temperature, are powered by renewable energy, the public information that will be done in schools, public institutions and stakeholders is intended to teach the them the value of clean environment and prevention measures using the information gathered from their own community, and also to show them how to use some tool such as using a fire extinguisher. Those are but just a few examples in which being innovative, this project will have a clear and powerful impact. |
| Website | http://www.romania-serbia.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. RECAS CITY (RO)<br>Consortium members:<br>2. MUNICIPALITY ZAGUBICA (RS) |

| EESM | |
|---|---|
| Title | Efficiency in emergency situations management |
| Contract details | 2014 - 2020 Interreg IPA CBC Romania - Serbia 30/06/2017 - 27/02/2019 |
| Abstract | Climate change, environmental accidents, crises caused by humans, is one of the major challenges of our century - a complex area that must improve our knowledge and understanding to take immediate measures to address efficient and fair, in terms cost, the challenges of emergency situations, the precautionary principle. The project is focused on the one of the key challenges of the border region, namely the common challenges in the environment and specific aspect of local preparedness in relation to cross-border emergency situation. Thus, both partners who are facing limited budgets and common needs can share experience and create premises for CBC interoperability in emergency situations. The project aims to improve the capacity of intervention of local public administration in emergency situations, having impact on local communities and volunteer services members of Sisesti and Mosna. The main outputs of the project are related both to the modernization of endowment of local authorities and creation of an operational center and volunteer service for emergency situations in Mosna, together with joint trainings and exchanges of best practices and a joint action plan in emergency developed by the members of volunteer services for emergency situations in Sisesti and Mosna. The purpose of cross-border cooperation is to develop good neighborly relations with countries bordering the EU, and support economic and social development and promoting European values in partner countries in the context of EU enlargement. Local community of Mosna will benefit of a new operational center and a volunteer service for emergency situation, a joint action plan, thus being created the premises for cross border interoperability in emergency situations. |

| EESM | |
|---|---|
| Website | http://www.romania-serbia.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Comuna Șișești (RO)<br>Consortium members: 2<br>2. Local Community of Mosna (RS) |

| Cooperation between PL and LT in Promoting volunteer fire and rescue services | |
|---|---|
| Title | Cooperation between PL and LT in Promoting volunteer fire and rescue services |
| Contract details | 2014 - 2020 INTERREG V-A Lithuania - Poland 01/02/2017 - 31/01/2019 |
| Abstract | The project objective is to increase level of security through the cross-border cooperation in the fight against the common threats and emergency situations, as well as to improve the accessibility of the high quality public services in the area of Poland-Lithuania borderland through development of infrastructure (including purchase of equipped fire trucks ), necessary for the provision of public services. Soft activities include series of demonstrations and trainings; during these events skills and abilities how to deal with emergency situations will be upgraded. Partners also foresee the exchange of experience and good practices. The project will benefit from knowledge, skills and long lasting experience of Polish partners, which will significantly contribute to the development of the emerging rescue system, based on the firefighter's volunteers, in Lithuania. The project's added value – establishment of permanent cooperation between institutions, responsible for maintaining security of both countries, for better coordination of management of shared resources, infrastructure and equipment. |
| Website | http://lietuva-polska.eu/en/interreg.html |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Krasnopol Commune (PL)<br>Consortium members:<br>2. Punsk Community (PL);<br>3. Kaunas District Fire Prevention Service (LT) |

## 8.3.2 Population alerting

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 project is described.

| Research sub-category | FP7 projects |
|---|---|
| Population alerting | POP-ALERT |

Note: in the working paper (FP7 mapping) of DG Home this policy area is referred as Population alert and civil protection in case of emergencies.

The following project has been funded within H2020:

| Zoovel-UC | |
|---|---|
| Title | Inaudible SMART CROWDS SECURITY through existing loudspeakers" |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>October 2016 / March 2017 - EUR: 50.000,00 GA 736783 |
| Abstract | Zoovel Ultrasound Connectivity (Zoovel-UC) project is a D2D connectivity to raise the safety and security in crowded areas such as sports stadiums, concert halls, open space events, subway, etc. providing real-time crowd management. Zoovel-UC technology performs direct and selective communication to the spectators and utilizes geospatial intelligence to shift the flow of fans and minimize crowds in real-time, improving the efficiency of current security protocols. Since the attack on the Twin Towers in 2001, terrorism has been on our collective unconscious as the main threat to security. The recently attacks happened in Paris and Brussels again reminded the vulnerability of the international security system and the difficulty to deal effectively with this type of unconventional threat. Crowd events provide a potential target for terrorist activity, besides they are susceptible to other various threats, such as natural disasters, crowding and fan violence. With the uncertainty of terrorist actions and fan behaviour, it is impossible to ensure a risk-free environment at crowd venues. It is therefore a matter of how event organizers prepare, respond, and recover to mitigate the consequences of emergencies. Good countermeasures and contingency planning can protect crowd areas from disruption and ultimately enhance spectator confidence. |
| Website | http://zoovel.com/en/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Zoovel Technologies Sl (ES) |

The projects were complemented by the following projects funded by INTERREG program:

| Joint initiatives and solutions | |
|---|---|
| Title | Joint initiatives and solutions in addressing emergency situations in the cross border area |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 02/02/2017 - 01/02/2020 |
| Abstract | One of the major issues addressed by the project is represented by the inability of Muncipality of DrobetaTurnuSeverin to alarm properly it's population in case of emergency situations due to the old existing system which is impracticable and does not offer an appropriate alarming coverage for the entire city.<br />Another major problem is represented by their lack of proper specific intervention vehicles, machineries and equipment, from the both partners. Also an important problem identified to the target groups in that the two communities don't have a good knowledge of the risks they might face in the area in which they live, the prevention measure and the behavior they should adopt in case of different emergency situations. The objective to improve joint risk management in the cross-border area will be achieved through the following activities: Acquisition of an alarming system and specific vehicles, machineries and equipment; Awareness raisingto the target groups concerning emergency situations through provided informational materials; conducting seminars and awareness campaigns for the target groups. The results of the project will be: 1 achieved alarm system, vehicles, machineries and equipment purchased, at least 5,000 people informed on emergency situations theme, 1 joint study on risk management in the border area, 117.353 beneficiary inhabitants of the joint risk management, 1 long term joint emergency situations partnership. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Municipality of Drobeta Turnu Severin (RS)<br>Consortium members:<br>2. Belogradchik Municipality (BG) |

## 8.3.3 Public Protection

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Public Protection | PPDR-TC<br>SAFECITI |

The following project has been funded within H2020:

| CUBETTO | |
|---|---|
| Title | New CUBic shElter concepT TO foster living responses |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>May 2016 / September 2016 - EUR: 50.000,00 GA 729438 |
| Abstract | The Cubetto project aims to standardize and offer the first comprehensive bottom-up answer to displaced people living needs, being the first construction model of a shelter made of concrete materials that guarantees: full construction with human and material resources found locally; easy installation, removal and repositioning of all modules (concrete panels, SPF and bent plate structure); highest level of security; energy efficiency and environmental resilience. CUBETTO will impact the urgent emergency problems in EU's border areas, as it's the first process and technologies based solution to provide a shelter that is more a home than a bed, giving a complete European response to practical, psychological and social problems of the global housing needs affecting people living in conflict zones, migration routes, crowded urban and poor rural areas. First results achieved with our tested construction model (awarded in European contest of housing solutions) and the endorsement of companies interested in our building concept, brought us target the sector in which the housing need is higher and imperative. A first recognition of global market opportunities (worth to 4 billion in the next five years) and the overall definition of our shelter model features, have allowed us to roughly evaluate the investment needed (€ 1.25 million) and first deployment projections based on our capabilities, to estimate an overall ROI of 3.32 in the fifth year. In this phase the objective is to assess how to improve the building organization method to standardize the intervention in post-emergency contexts and in crowded urban areas, considering different scenarios for materials use, supply and works streamlining; on the other side we aim to analyze the problematic circumstances in their practical and social components, the intervention procedures and exploitation channels in each environment, along with the precise esteem of economic and financial profitability of the business model. |
| Website | http://www.ecobuildingsrl.it/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Ecobuilding SRL (IT) |

| LETS-CROWD | |
|---|---|
| Title | Law Enforcement agencies human factor methods and Toolkit for the Security and protection of CROWDs in mass gatherings |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-07-FCT-2016-2017.<br>May 2017 / October 2019 - EUR: 2.919.307,50 GA 740466 |
| Abstract | LETS–CROWD will overcome challenges preventing the effective implementation of the European Security Model (ESM) with regards to mass gatherings. This will be achieved by providing the following to security policy practitioners and in particular, LEAs: (1) A dynamic risk assessment methodology for the protection of crowds during mass gatherings centred on human factors in order to effectively produce policies and deploy adequate solutions. (2) A policy making toolkit for the long-term and strategic decision making of security policy makers, including a database of empirical data, statistics and an analytical tool for security policies modelling, and (3) A set of human centred tools for Law Enforcement Agencies (LEAs), including real time crowd behaviour forecasting, innovative communication procedures, semantic intelligence applied to social networks and the internet, and novel computer vision techniques. LETS-CROWD will be a security practitioner driven project, fostering the communication and cooperation among LEAs, first responders, civil protection and citizens in the fight against crime and terrorism during mass gatherings by a set of cooperation actions. The project will put citizens at the centre of the research and will assess and evaluate how security measures affect them, and how they perceive them, while respecting EU fundamental rights. LETS-CROWD impact will be measured under practical demonstrations involving seven LEAs and relevant emergency services units. In order to facilitate the assessment of the performance, transferability, scalability and large scale deployment of these solutions, the demonstrations will be conducted following eleven use cases. |
| Website | https://letscrowd.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Etra Investigacion y Desarrollo SA (ES)<br>Consortium:<br>2. Ayuntamiento de Madrid (ES)<br>3. Crowd Dynamics International Limited (UK)<br>4. Deep Blue SRL (IT)<br>5. European Emergency Number Association ASBL (BE)<br>6. Expert System Iberia SL (ES)<br>7. Fachhochschule fur Offentliche Verwaltung und Rechtspflege in Bayern (DE)<br>8. Home Office (UK)<br>9. Ministerio da Administracao Interna (PT)<br>10. Ministero dell'Interno (IT)<br>11. Ministerul Afacerilor Interne (RO)<br>12. Pluribus One SRL (IT)<br>13. Politiezone Brecht-Malle-Schilde-Zoersel (BE)<br>14. Proprs Ltd. (UK)<br>15. Railsec Ltd (IL)<br>16. Universidad de Cantabria (ES)<br>17. Universita degli Studi di Cagliari (IT) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| MASC II | |
|---|---|
| Title | Mass Shelter Capability project II (MASC II) |
| Contract details | 2016/PREP/03 01/01/2017 - 31/12/2018; EUR: 621400 |
| Abstract | The MaSC II projects builds upon the outcomes and foundations delivered by the first MaSC project (ECHO/SUB/2014/693661) – a common understanding of criteria and planning guidelines for modular mass shelter capabilities. MaSC II is designed to take those theories and concepts and develop detailed supporting materials for the deployment of flexible, scalable and interoperable UCPM mass shelter capabilities enabling effective activation and delivery through the UCPM. (Internal classification of DG Echo is EVACUATION) |
| Website | http://www.mascproject.eu/Pages/home.aspx |
| Consortium (prone to modification in case of GA amendment) | Coordinator: BUNDESANSTALT TECHNISCHES HILFSWERK (THW) (DE)<br>Consortium:<br>1. International Organization for Migration (Switzerland)<br>2. Department for Communities and Local Government (UK)<br>3. Civil Contingencies Secretariat, Cabinet Office (UK)<br>4. National Directorate for Fire and Emergency Management (IR) |

## 8.3.4 International cooperation / Humanitarian aid

| EU-CIVCAP | |
|---|---|
| Title | Preventing and responding to conflict: developing EU CIVilian CAPabilities for a sustainable peace (EU-CIVCAP) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2014 Topic code: BES-12-2014<br>December 2015 / November 2018 - EUR 1.714.975<br><br>REA/B/04 - 653227 |
| Abstract | EU-CIVCAP will provide a comprehensive, comparative and multidisciplinary analysis of EU civilian capabilities for external conflict prevention and peacebuilding in order to identify 'the best civilian means to enhance these capabilities' and address existing shortfalls. There are three inter-related objectives: (1) To assess EU civilian capabilities for external conflict prevention and peace building; (2) To identify and document lessons learned and best practices; (3) To enhance future policy practice and research in this domain. The project will gather, synthesise, further develop and disseminate knowledge and learning on civilian conflict prevention and peacebuilding through the development of a catalogue of lessons learned and best practices reports, the creation of an expert network, engagement through social media, and the organisation of dissemination events in different formats in this area. |
| Website | https://eu-civcap.net/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. University of Bristol (UK)<br>Consortium<br>2. Beogradski Centar za Bezbednosnu Politiku Udruzenje (RS)<br>3. Centre for European Policy Studies (BE)<br>4. Conciliation Resources LBG (UK)<br>5. European Peacebuilding Liaison Office (BE)<br>6. European Union Satellite Centre (ES)<br>7. Forsvaret og Forsvarsministeriets Styrelser (DK)<br>8. Istituto Affari Internazionali (IT)<br>9. Roskilde Universitet (DK)<br>10. The University Court of the University of Aberdeen (UK)<br>11. Transparency Solutions Limited (UK)<br>12. Universiteit Maastricht (NL) |

| GAP | |
|---|---|
| Title | Gaming for Peace (GAP)<br><br>***This project also corresponds to the category 'Training and networking'.*** |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-13-2015<br>September 2016 / February 2019 - EUR 2.035.437,50<br><br>REA/B/04 - 700670 |
| Abstract | GAP provides an efficient and effective means of developing and delivering a training curriculum on critical soft skills (understanding of diverse personnel – including diversity in organisations, gender and culture – effective communication and cooperation in context of diversity) for EU Personnel in Conflict Prevention and Peace Building (CPPB) missions. GAP designs a multiple player online role playing game which simulates scenarios from CPPB missions using an iterative process of curriculum development and refinement through end users' (military, police and civilian personnel) evaluation of the base curriculum by playing the game. The game can be accessed anywhere via the internet, customizable at low cost. |
| Website | https://gap-project.eu/ |

| GAP | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. The College of the Holy & Undivided Trinity of Queen Elizabeth near Dublin (IE)<br>Consortium:<br>2. Akademia Sztuki Wojennej (PL)<br>3. Enquirya BV (NL)<br>4. Future Analytics Consulting Limited (IE)<br>5. Haunted Planet Studios Ltd (IE)<br>6. Institut po Otbrana (BG)<br>7. Laurea-Ammattikorkeakoulu OY (FI)<br>8. Ministerio da Administracao Interna (PT)<br>9. National Defence University (FI)<br>10. National University of Ireland Maynooth (IE)<br>11. Police Service of Northern Ireland (IE)<br>12. University of Ulster (UK)<br>13. Upskill Enterprise Ltd (UK)<br>14. Wyzsza Szkola Policji w Szczytnie (PL) |

| IECEU | |
|---|---|
| Title | Improving the Effectiveness of the Capabilities (IEC) in EU conflict prevention (IECEU) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2014 Topic code: BES-12-2014<br>May 2015 / January 2018 - EUR 2.081.110<br><br>REA/B/04 - 653371 |
| Abstract | The IECEU project analyses and assesses best practices and lessons learned related to civil-military synergies in EU conflict response capabilities, with a view to enhance the civilian CPPB capabilities of EU with a catalogue of practices, new solutions and approaches. It will seek to find out how to increase the interoperability of resources in the crisis management and peace building and what the potential for pooling and sharing of EU capabilities and technologies is. The main goals of the IECEU -project are:1) Analysing and assessing the current situation of on-going and past missions and operations, 2) Learning from lessons provided by these missions and assessing the different options, 3) Providing new solutions, approaches and recommendations for EU to guarantee long-term stability. |
| Website | http://www.ieceu-project.com/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Laurea-Ammattikorkeakoulu OY (FI)<br>Consortium<br>2. Austria Institut Fur Europa- Und Sicherheitspolitik (AIES) (AT)<br>3. Forsvaret og Forsvarsministeriets Styrelser (DK)<br>4. National Defence University (FI)<br>5. National University of Ireland Maynooth (IE)<br>6. Pelastusopisto (FI)<br>7. Roskilde Universitet (DK)<br>8. Saferglobe Finland RY (FI)<br>9. Toussaint Mascia Diana (NL)<br>10. Univerza v Ljubljani (SI)<br>11. Ustanova-Center za Evropsko Prihodnost (SI) |

| iTRACK | |
|---|---|
| Title | Integrated system for real-time TRACKing and collective intelligence in civilian humanitarian missions (iTRACK) |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-10-2015<br>May 2016 / May 2019 - EUR: 3,999,213.75<br><br>REA - 700510 |
| Abstract | This project will develop human-centred technologies that take into account actual real-world practices of humanitarian aid workers and provide policies for better protection and a more effective and efficient response. This project will build the iTRACK system, an integrated intelligent real-time tracking and threat identification system to improve protection of responders and assets and provide information management and logistics services such as real-time information updates and analyses as well as navigation, routing and scheduling. iTRACK will achieve this through an interdisciplinary, socio-technical approach, which will draw on the latest advances in sensor development, GIS, security and privacy, artificial intelligence, information management, risk analysis, and humanitarian logistics. |

| iTRACK | |
|---|---|
| Website | http://www.itrack-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Unitversitetet I Agder (NO)<br>Consortium:<br>2. Arttic (FR)<br>3. Information Management and Mine Action Programs INC (US)<br>4. Intrasoft International SA (LU)<br>5. Knowledge Now Limited (UK)<br>6. Svenska Handelshogskolan (FI)<br>7. Technische Universiteit Delft (NL)<br>8. Teknova AS (NO)<br>9. Teleplan Globe AB (NO)<br>10. Treelogica Telematica y Logica Racional para la Emprese Europea Sl (ES)<br>11. Trilateral Research Ltd (UK)<br>12. World Food Programme (IT) |

| PeaceTraining.eu | |
|---|---|
| Title | Strengthening the Capabilities and Training Curricula for Conflict Prevention and Peace Building Personnel with ICT-based Collaboration and Knowledge Approaches (PeaceTraining.eu)<br><br>This project also corresponds to the category 'Training and networking'. |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-13-2015<br>September 2016 / October 2018 - EUR 1.499.920<br><br>REA/B/04 - 700583 |
| Abstract | PeaceTraining.eu aims to analyse current practices and shortcomings of Conflict Prevention and Peace Building (CPPB) training programmes with a view to providing novel CPPB training methods, curricula and linked activities for CPPB personnel. Using a multidimensional modeling approach, the result is a PeaceTraining.eu Cube Model, which describes curricula structures including stakeholders, new methods, course structures, techniques, e-approaches, tools and entities. The PeaceTraining.eu Web Platform (www.peacetraining.eu) features a knowledge base, stakeholder maps, expert navigators, infographics, best practice libraries, and digital guidebooks as well as additional Training Curricula Setup Utilities and Search Tools for training centres and trainers. EU-level engagement activities include an International PeaceTraining.eu Symposium, thus increasing awareness on the topic while also attracting secondary target groups, including training course providers, educational institutions and trainers. |
| Website | https://project.peacetraining.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Synyo GmbH (AT)<br>Consortium:<br>2. Arge Bildungsmanagement GmbH (AT)<br>3. Balti Kaitsekolledz (EE)<br>4. Bundesministerium fuer Inneres (AT)<br>5. Coventry University (UK)<br>6. Erdmann Daniel (DE)<br>7. Institute for Conflict Research (UK)<br>8. Peace Action, Training & Research Institute of Romania (RO)<br>9. Katholieke Universiteit Leuven (BE)<br>10. Kosovar Centre for Security Studies (XK)<br>11. Philipps Universitaet Marburg (DE)<br>12. Universidad de la Iglesia de Deusto (ES) |

| WOSCAP | |
|---|---|
| Title | Whole-of-Society Conflict Prevention and Peacebuilding (WOSCAP)<br><br>***This project also corresponds to the category 'Ethics, Societal implications'.*** |
| Contract details | H2020 Secure Societies Call: H2020-BES-2014 Topic code: BES-12-2014<br>June 2015 / November 2017 - EUR 1.990.114,25<br><br>REA/B/04 - 653866 |

| WOSCAP | |
|---|---|
| Abstract | This proposal seeks to enhance the EU capabilities for implementing conflict prevention and peacebuilding interventions through sustainable, comprehensive and innovative civilian means, while also addressing some of the dilemmas and paradoxes of external interventions that aim for local ownership in third countries. This will be achieved through the project's Review, Reflect, Recommend and Innovate objectives. 'Review' will assess past and ongoing CPPB initiatives of the EU and its partners in Georgia, Mali, Ukraine and Yemen (and beyond) focusing on three types of EU interventions: multi-track diplomacy, security sector reform, and governance reform. 'Reflect' will create a 'community of practice', providing multidisciplinary forums for dialogue that will be used to validate and apply the evidence base by focusing on cross-cutting themes: local ownership, gender, multi-stakeholder coherence, civil-military synergies and ICTs. 'Recommend' will elaborate a tailored set of recommendations enhanced through direct policy engagement and an international dissemination strategy. 'Innovate' will contribute significantly to civilian CPPB by identifying research priorities and tools, and enhancing the potential of ICTs. The project attempts to address the relationships of peacebuilding actors within a wider cultural and institutional context. It deals with issues of coordination, synergies and inclusivity of peacebuilding efforts, where diverse stakeholders have a role to play in the process. |
| Website | http://www.woscap.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Stichting Global Partnership for the Prevention of Armed Conflict (NL)<br>Consortium:<br>2. Association Groupe ESSEC (FR)<br>3. Berghof Foundation Operations GmbH (DE)<br>4. Institut Svitovoi Politiki (UA)<br>5. Ivane Javakhishvili Tbilisi State University (GE)<br>6. London School of Economics and Political Science (UK)<br>7. Political Development Forum (YE)<br>8. Universitat Autonoma de Barcelona (ES)<br>9. Universite des Sciences Juridiques et Politiques de Bamako (ML)<br>10. Universiteit Utrecht (NL) |

### 8.3.5 Training and Networking

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Training and Networking | CAST<br>CRISIS<br>ELITE<br>ESENET<br>GARTNET-E<br>HYRESPONSE<br>INDIGO<br>L4S |

These projects have been complemented by the following H2020 projects:

| AUGGMED | |
|---|---|
| Title | Automated Serious Game Scenario Generator for Mixed Reality Training (AUGGMED)<br><br>***This project also corresponds to the categories 'Terrorist threats' and 'Organised crime'.*** |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-07-2014<br>June 2015 / May 2018 - EUR 5,535,673.75<br><br>HOME - 653590 |
| Abstract | Development of a serious game platform to enable single- and team-based training of end-users with different level of expertise from different organisations responding to terrorist and organised crime threats. Game scenarios include: advanced simulations of operational environments, agents, telecommunications and threats, and will be delivered through VR and MR environments with multimodal interfaces. The platform offers highly realistic training scenarios allowing advanced interactivity and a suite of tools for trainers. |
| Website | http://www.auggmed-project.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. BMT Group Ltd (UK)<br>Consortium<br>2. Ferrocarrils de la Generalitat de Catalunya (ES)<br>3. Geomobile GMBH (DE)<br>4. ISRA-Team 98 Ltd (IL)<br>5. Kardaras Konstantinos (EL)<br>6. Ministry of Citizens Protection (EL)<br>7. Piraeus Port Authority SA (EL)<br>8. Police and Crime Commissioner for West Yorkshire (UK)<br>9. Serco Belgium SA (BE)<br>10. Sheffield Hallam Univ. (UK)<br>11. Sistema d'emergencies Mediques (ES)<br>12. Univ. of Birmingham (UK)<br>13. Univ. Politecnica de Madrid (ES)<br>14. Univ. of Greenwich (UK) |

| SEREN 3 | |
|---|---|
| Title | Security Research NCP Network 3 (SEREN 3) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-08-2014<br>May 2015 / May 2018 - EUR: 1,995,451.00<br><br>REA - 653450 |

| SEREN 3 | |
|---|---|
| Abstract | SEREN3 aims to facilitate trans-national co-operation among NCPs for Secure Societies, identifying and sharing good practices, and raising the general standard of the support to programme applicants across the EU, Associated and Third countries. To reach the objective above, the project will develop three main activity axes: (1) capacity building of NCPs; (2) strengthening the participation of relevant stakeholders to Horizon 2020 funding opportunities; (3) and supporting networking opportunities within the Secure Societies constituency. SEREN3 will also take into account the paradigmatic change brought by Horizon 2020. This will be reflected in particular in a stronger attention of the network in terms of multidisciplinary competences, consideration of related societal challenges, and linkage with other EU relevant initiatives, funding programmes and policies. |
| Website | http://www.seren-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Agenzia per la Promozione Della Ricerca Europea (IT)<br>Consortium:<br>2. Agence Bruxelloise pour p'entreprise (BE)<br>3. Agencija za Mobilnost i Programe Europske Unije (HR)<br>4. Centro Para el Desarrollo Tecnologico Industrial (ES)<br>5. Centrum Vedecko Technickych Informacii Slovenskej Republiky (SK)<br>6. Council For Scientific And Industrial Research (ZA)<br>7. Dienst Voor Wetenschappelijke en Technische Informatie- Service D'information Scientifique et Technique (BE)<br>8. Foundation For Research And Technology Hellas (EL)<br>9. Idryma Proothisis Erevnas (CY)<br>10. Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk (PL)<br>11. Matimop - The Israeli Center For R&D (IL)<br>12. Rigas Tehniska Universitate (LV)<br>13. Romanian Space Agency (RO)<br>14. Sihtasutus Eesti Teadusagentuur (EE)<br>15. Technologicke Centrum Akademie Ved Ceske Republiky (CZ)<br>16. The Icelandic Centre For Research (IS)<br>17. Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu (TR) |

| TARGET | |
|---|---|
| Title | Training Augmented Reality H2020 Secure Societies Generalised Environment Toolkit (TARGET) |
| Contract details | H2020 Secure Societies Call: H2020-FCT-2014 Topic code: FCT-07-2014<br>May 2015 / November 2018 - EUR: 5,992,359.75<br><br>REA - 653350 |
| Abstract | TARGET will deliver a pan-European serious gaming platform featuring new tools, techniques and content for training and assessing skills and competencies of SCA (Security Critical Agents). Mixed-reality experiences will immerse trainees at task, tactical and strategic command levels with scenarios such as tactical firearms events, asset protection, mass demonstrations, cyber-attacks and CBRN incidents. |
| Website | http://www.target-h2020.eu/ |

| TARGET | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Arttic (FR)<br>Consortium:<br>2. Atrisc (FR)<br>3. Cleveland Fire Authority (UK)<br>4. Deutsche Hochschule der Polizei (DE)<br>5. Ecole Nationale Superieure de la Police (FR)<br>6. Ecole Normale Superieure (FR)<br>7. Fachhochschule Der Polizei des Landes Brandenburg (DE)<br>8. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>9. Inconnect Bv (NL)<br>10. Inconnect Vof (NL)<br>11. Institut De Seguretat Publica de Catalunya (ES)<br>12. Iscc Gmbh (AT)<br>13. Isem-Institut Pre Medzinarodnu Bezpecnost a Krizove Riadenie, No (SK)<br>14. Luxembourg Institute Of Science And Technology (LU)<br>15. Ministerio Del Interior (ES)<br>16. Oslo Center For Science In Society (NO)<br>17. Sisekaitseakadeemia (EE)<br>18. Universite Du Luxembourg (LU)<br>19. Vectorcommand Ltd (UK) |

## These projects were complemented by new projects funded in 2016-2017:

| SEREN 4 | |
|---|---|
| Title | SEcurity REsearch NCP network 4 |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-21-GM-2016-2017.<br>May 2018 / February 2021 - EUR: 1.999.953,75 GA 786680 |
| Abstract | SEREN4 is a 34-month Coordination and Support Action with the overall aim of strengthening the capacities of and cooperation among Secure Societies NCPs and providing high quality support and services to programme applicants and the security community at large with the view to enhancing participation in the security research and innovation area.To reach this objective, the project will develop four main activity axes, corresponding to the projects' specific objectives: 1) capacity building of NCPs; 2) providing targeted services for applicants and security stakeholder to strengthen their participation to Horizon 2020 funding opportunities; 3) supporting networking opportunities within the Secure Societies constituency and 4) carrying out awareness raining activities to ensure that the information about SC7, Horizon 2020, new FP9 and SEREN4 project effectively and timely reaches the target audience. SEREN4 is the continuation and evolution of the precedent network, SEREN3, whose results and lessons learnt have been taken into consideration with the logic of improving the future network and in order to valorize the network's strengths.<br>In addition, new tasks and activities will be implemented to meet the challenges of the security area and requirements of new SC7 topics. The network will seek further opening to a wider target of stakeholders and businesses in the Secure Societies field. SEREN4 consortium comprises 19 Beneficiaries, with a good mix of well-experienced and less experienced NCPs, and representing Member States, Associated Countries and Third Countries. Besides Beneficiaries, the project services will be offered to all officially appointed H2020 Secure Societies NCPs, who will be involved in project activities as "Associated Partners". |
| Website | http://www.seren-project.eu/ |

| SEREN 4 | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Agenzia Per La Promozione Della Ricerca Europea (IT)<br>Consortium:<br>2. Rigas Tehniska Universitate (LV)<br>3. Rannsoknamidstod Islands (IS)<br>4. Idryma Proothisis Erevnas (CY)<br>5. National Authority for Technological Innovation (IL)<br>6. Agence Bruxelloise pour L'accompagnement de L'entreprise (BE)<br>7. Commissariat a l'Energie Atomique et aux Energies Alternatives (FR)<br>8. Turkiye Bilimsel ve Teknolojik Arastirma Kurumu (TR)<br>9. Centrum Vedecko Technickych Informacii Slovenskej Republiky (SK)<br>10. Luxinnovation GIE (LU)<br>11. Foundation for Research and Technology Hellas (EL)<br>12. Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk (PL)<br>13. Council for Scientific and Industrial Research (ZA)<br>14. Agencija za Mobilnost i Programe Europske Unije<br>15. Service Public Federal De Programmation Politique Scientifique (HR)<br>16. Romanian Space Agency (RO)<br>17. Technologicke Centrum Akademie Ved Ceske Republiky (CZ)<br>18. Ministerio de Ciencia, Tecnología e Innovación Productiva (AR)<br>19. Oesterreichische Forschungsfoerderungsgesellschaft MBH (AT) |

| ESSENTIAL | |
|---|---|
| Title | Evolving Security SciencE through Networked Technologies, Information policy And Law |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): support for Innovative Training Networks. Call: H2020-MSCA-ITN-2016. Topic code: MSCA-ITN-2016. January 2017 / December 2020 - EUR: 3.756.496,68 GA 722482 |
| Abstract | Though security is a field of study capable of diverse applications in daily life, security science is a young discipline requiring larger inter-disciplinary effort. ESSENTIAL seeks to develop security science by addressing two of its main problems: the ad-hoc approach to security research and the growing complexity of the security environment. To do so, ESSENTIAL has set itself two main goals: a) to train inter-disciplinary security experts and professionals, to tackle security threats in a systematic manner and b) to increase societal resilience and security by addressing in an interdisciplinary manner 15 research topics, each associated with long-standing problems in the field of security science ranging from modeling security perception and democratizing intelligence to improving security and privacy in data ecosystems. ESSENTIAL will be the first programme of its kind that aims to jointly educate the next generation of interdisciplinary experts in security science, by uniquely exposing the 15 ESRs to: (1) theoretical knowledge and practical expertise in such areas as: (a) the policing and regulation of information-security technology, and (b) the implementation of policies and legal standards within computing and communication systems; (2) real-world environments in law enforcement, intelligence and industry; (3) strong academic guidance offered by highly qualified supervisors and mentors; (4) high tech research infrastructures; and (5) a diversity of interdisciplinary research events, such as workshops, conferences, summer/winter schools. The ESSENTIAL consortium is built upon long-lasting cooperation relations among leading organizations coming from academia, international and national stakeholders and the private sector, many of whom have over 25 years of experience in contributing directly to national, European and UN technology-related policy making. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator<br>1. Rijksuniversiteit Groningen (NL)<br>Consortium:<br>2. Økokrim (NO)<br>3. mnemonic AS (NO)<br>4. Synergetics N.V. (BE)<br>5. Ericsson AB (SE)<br>6. Institutul Pentru Tehnologii Avansate (RO)<br>7. Reality Net System Solutions (IT)<br>Participants:<br>8. Edith Cowan University (AU)<br>9. Consiglio Nazionale delle Ricerche (IT)<br>10. Universita ta Malta (MT)<br>11. Norges Teknisk-Naturvitenskapelige Universitet NTNU (NO)<br>12. Academia Nationala de Informatii Mihai Viteazul (RO) |

## The projects were complemented in the H2020 framework by the following projects funded by DG ECHO:

| | TEAMS 2.0 |
|---|---|
| Title | Training for Trainers for Emergency Medical Teams and European Medical Corps (TEAMS 2.0) |
| Contract details | 2017/PREP/783285 01/01/2018 - 31/12/2019; EUR: 334724.36 |
| Abstract | In February 2016, the EU launched the European Medical Corps (EMCs) to help mobilize medical teams for emergencies inside and outside the EU. This initiative is in line with the Emergency Medical Teams (EMTs) WHO roadmap to improve the quality and coordination of medical teams responding to disasters. The ongoing TEAMS project, founded by the ECHO P&P Call 2016, aims to develop an innovative operational training package focused on teamwork to assist EMCs/ EMTs in preparing for deployment. This next and complementary project, named TEAMS 2.0, will aim to develop a Training of Trainers (ToT) program to train novice and inexperienced organizations' team leaders or training managers on how to effectively use the TEAMS operational training package. (Internal classification of DG Echo is TRAINING - MODULE) |
| Website | http://www.teams-project.eu |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Università degli Studi del Piemonte Orientale Amedeo Avogadro (IT) Via Lanino 1 IT-28100 NOVARA ITALY<br>Consortium:<br>1. University of Manchester (UK)<br>2. Karolinska Institutet (SE)<br>3. Tel Aviv University (Israel)<br>4. Novareckon SRL (IT)<br>5. Humedica e.V. (DE)<br>6. Istanbul Medeniyet University (TK) |

| TEAMS | |
|---|---|
| Title | Training for Emergency Medical Teams and Medical Corps (TEAMS) |
| Contract details | 2016/PREP/16 01/01/2018 - 31/12/2020; EUR: 695906 |
| Abstract | In February 2016, the EU launched the European Medical Corps (EMCs) to help mobilize medical teams and equipment for emergencies inside and outside the EU. This initiative is in line with the Emergency Medical Teams (EMTs) WHO roadmap to improve the quality, accountability and coordination of medical teams responding to disasters. However, the lack of an operationally focused training framework to guide EMC/EMT organisations has been highlighted as an essential gap. This project will develop, pilot and assess a standardized, validated and cost-effective training package, focused on operational team training, adaptable to different types of EMCs/EMTs, and sustainable in resource-poor settings. (Internal classification of DG Echo is TRAINING) |
| Website | http://drmkc.jrc.ec.europa.eu/API/CritechDocumentItems/CritechDocumentItems/Download?contentItemId=7469&forceDownload=false |
| Consortium (prone to modification in case of GA amendment) | Coordinator: UNIVERSITA DEGLI STUDI DEL PIEMONTE ORIENTALE ''A. AVOGADRO'' (IT)<br>Consortium:<br>1. University of Manchester (UK)<br>2. Karolinska Instituet (SE)<br>3. Humedica e.V. (DE)<br>4. Tel Aviv University (Israel)<br>5. Istanbul Medeniyet University (TK)<br>6. Novareckon srl (IT) |

## Projects funded under INTERREG:

| PREpare | |
|---|---|
| Title | PREpare |
| Contract details | 2014 - 2020 INTERREG V-A Germany - The Netherlands 31/03/2015 - 30/05/2018 |
| Abstract | The PREpare project aims at reducing the barrier effect of the border for emergency care and crisis preparedness in the EUREGIO. This project shall allow the implementation and evaluation of concrete pilot actions for reducing legal, organisational, cultural, and language barriers for cross-border cooperation without having to await long processes of changing the legal framework. Thereby, the EUREGIO is supposed to become one acute care region whose inhabitants get the optimal and fastest emergency care even if this is located in the neighbouring country. The backbone of this cross-border cooperation is a EUREGIOnal steering group consisting of the deci-sion makers in the border regions on one hand. On the other hand, working groups consisting of representatives of the professional emergency care organisations take care of the implementation of concrete actions into the daily practice. Two important foci in the project are the knowledge transfer on cross-border cooperation to the staff and the cross-border communication between organisations as well as with patients and the public. Based on an as-sessment of the pilot actions implemented in the project, regional and national authorities can decide after the end of the project if they recommend these actions as "good practices" for implementation in other border regions. |
| Website | http://www.interregiva.eu/home/ |

| PREpare | |
|---|---|
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Bureau Acute Zorg Euregio (NL)<br>Consortium members:<br>2. EUREGIO (NL);<br>3. Landkreis Grafschaft Bentheim (DE);<br>4. Kreis Borken (DE);<br>5. veiligheidsregio Twente (NL);<br>6. Veiligheidsregio Noord- en Oost-Gelderland (NL);<br>7. Veiligheidsregio Ijsselland (NL);<br>8. Stadt Bocholt (Feuerwehr- und Rettungsdienstakademie) (DE) |

| Prodige | |
|---|---|
| Title | Protect the citizens, Defend infrastructures, Manage big events |
| Contract details | 2014 - 2020 INTERREG V-A France - Italy (ALCOTRA) 17/05/2016 - 24/10/2017 |
| Abstract | The general objective is to develop a virtual-reality platform prototype meant to train civil protection operators; a territorial data collection system; and a bidirectional communication channel with the population. The aim is to improve risk prevention effectiveness and emergency management at a cross-border level and to improve the training of civil protection operators in France and Italy. This platform should improve the success of the emergencies' response and raise the number of citizens who can benefit from risk prevention measures. |
| Website | http://www.pro-prodige.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Civil Protection Cuneo (IT)Consortium members:<br>2. City of Turin (IT);<br>3. Higher Institute on Territorial Systems for Innovation (IT);<br>4. Departmental Service on Fires and Rescue of Alpes de Haute Provence (FR); |

| SERIOR | |
|---|---|
| Title | Upper Rhine Tri-national Graduate Academy with security-risk-orientation" |
| Contract details | 2014 - 2020 INTERREG V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein) 01/01/2016 - 31/12/2018 |
| Abstract | Management of the risks currently faced by our societies with regard to finance, energy and immigration pose a considerable practical challenge in border regions. Through the SERIOR project and the establishment of an Upper Rhine Trinational Security-Risk-Orientation Graduate Academy the six universities of the Upper Rhine region wish to sustainably optimise intangible risk management research capabilities. In a new education programme, the project will involve all those responsible for education and the supervision of PhD candidates and postdoctoral researchers, as well as experts in economics, politics and administration. |
| Website | https://www.serior.eu/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Universität Koblenz-Landau (DE)<br>Consortium members:<br>2. Université de Bâle (CH);<br>3. Université de Strasbourg (FR);<br>4. CNRS - DELEGATION ALSACE (FR);<br>5. Ecole Nationale du Génie de l''Eau et de l''Environnement de Strasbourg (FR);<br>6. Universität Freiburg (DE);<br>7. Karlsruher Institut für Technologie - DFIU (DE);<br>8. Université de Haute-Alsace (FR);<br>9. Canton Bâle-Campagne - crédit cadre (CH);<br>10. Canton Bâle-Ville (NPR/CTE) (CH);<br>11. Confédération Suisse (NPR/CTE) (CH) |

| SSN | |
|---|---|
| Title | Safe Schools Network |
| Contract details | 2014 - 2020 INTERREG V-A Romania - Bulgaria 03/02/2016 - 02/02/2018 |
| Abstract | To build disaster resistant communities means to involve whole population of the process of risk reduction, not only responsible institutions and experts. In this context very important group are young people, because in one side they are potential victims in disastrous events, but for other – future resource for disaster protection. The main aim of the project is to raising awareness in the field of efficient risk prevention trough formal and informal education of children and youth in border area (Vidin and Montana districts, Bulgaria and Dolj county, Romania). The way to achieve this aim is through creation of an international network of "Safe schools", educational institutions who put in focus disaster protection and who collaborate in this field and share good practices. Project is oriented to whole school community – school management, teachers, psychologists, and students. The budget of the proposal is 290 930,58 euro. Project activates: Promotion of the project in area to attract participation; Research of needs and resources; International meetings of experts; Development of methodical materials; Web-site development; Implementation of training sessions for school management, teachers and psychologists in both countries; Work of volunteer clubs inside target schools; Implementation of national and international competitions between school voluntary units; Closing forum for dissemination of results; Publications and publicity; Project management. The main result will be 20 schools better prepared for disaster events, which means around 10 000 students, teachers and other staff better protected. In other side the model "Safe School" is also a valuable contribution to the quality of school risk management in the CBC area, because it has potential for multiplication as a good practice. The project will also contribute for development of disaster protection volunteering, using of new methods for motivation trough linking formal and informal education, creating a web-based "community of practice", networking, etc. |
| Website | http://www.interregrobg.eu/en/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Free Youth Centre (FYC) (BG)<br>Consortium members:<br>2. Regional Network for Innovative Education (RNIE) (BG);<br>3. Vasiliada Association (RO) |

## The projects were complemented by the following projects funded by LIFE+ program:

| EU LIFE IP C2C CC | |
|---|---|
| Title | EU LIFE IP C2C CC - EU LIFE IP C2C CC This project also corresponds to the category 'Critical infrastructure protection and urban built environment: Resilience (Resilience of urban built environments, including cultural heritage)'. |
| Contract details | LIFE15 IPC/DK/000006 |
| 01-NOV-2016 to 31-DEC -2022 | |
| Total budget: EUR 11,683,058.00; EU contribution: EUR 7,009,893.00 | |
| Abstract | The overall objective of C2C CC project is to create climate-resilient cities in a climate-resilient region by drawing up with local stakeholders a common, long-term strategy. This strategy will lead to the targeted implementation of local CCA plans, coordinated CCA analyses and activities, and the identification and improvement of the resources and adaptive capacities of citizens, municipalities, utilities and companies in the water sector. C2C CC views CCA plans as a cross-boundary challenge in which coordination, knowledge sharing and capacity building are necessary for improved governance and the development of tools and innovation. The IP focuses on four themes related to the hydrological cycle: sea and fjords, rivers, groundwater and rainwater. These are supplemented by three cross-cutting themes: governance, tools and innovation. The objectives of the hydrological cycle related to the challenges documented in the CCA plans are to: - Increase coastal resilience taking into consideration the environmental state and marine biodiversity and to enhance urban resilience; - Increase the resilience of land alongside riverbanks taking into consideration the environmental state and biodiversity and to enhance urban resilience; - Increase resilience towards rising near-surface groundwater optimizing the use of surplus groundwater; - Increase urban resilience taking into consideration the synergies with green infrastructure and urban livability; - Increase resilience through capacity building, strengthened network governance and cross-border coordinated planning; - Increase resilience through enhanced decision-making processes; and - Increase resilience by generating jobs and green investments. In addition to the IP budget itself, the project will facilitate the coordinated use of €199.78 million complementary funding from EAFRD, ERDF, national and private funds. Expected results: - A 3D model of flooding that combines flood events owing to rainwater, rivers and the sea; - A hydrological model of groundwater that combines surface water with rising groundwater level; - New business models that consider CCA activities; - New methods for city planning that can help prevent flooding (e.g. permeable surfaces); - Warning systems for flooding; - Network governance and integrative planning of large catchment areas. - A range of capacity building events. |
| Website | http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6139 |
| Consortium (prone to modification in case of GA amendment) | Coordinator: Central Denmark Region (DK) |

### 8.3.6 Protective equipment

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Protective equipment | FRESP<br>IF REACT<br>SMART@FIRE<br>SMARTPRO |

These projects were complemented by projects funded in 2016-2017 within H2020:

| Hazijax | |
|---|---|
| Title | Hazard-Sensing, Network Connected Garments for Industrial Safety-Critical Environments |
| Contract details | Industrial Leadership – Innovation in SMEs materials or advanced manufacturing and processing technologies by SMEs. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-02-2016-2017. August 2016 / October 2016 - EUR: 50.000,00 GA 735853 |
| Abstract | Wearable Technologies Limited (WTL) is an early leader in the embedding of washable electronics into smart clothing, having already achieved global sales with our first generation of award winning products which includes functional jackets, vests and belts. The smart garment market is expanding rapidly and is expected to become a global market worth €5.6 billion per annum by 2020. WTL's voice of the customer surveys have identified enormous opportunities for garments which will extend functionality to network connectivity for improved safety in industrial markets. These products represent the outcome of this project. Benefits that arise from this include the ability to sense hazardous chemicals and then indicate danger not only to the garment wearer, but also co-workers and a central control room for large staff deployments. The oil and gas industry provides suitable markets for such garments and discussions with BP have already indicated that they are willing to be early customers. The Hazijax project concept has already attracted the support of companies willing to assist with development, from systems integration (Mediatek, Orange Business) to distribution (T2S, DR Workwear). WTL has a broad IP portfolio and expertise gained from intelligent garment manufacture. We have 5-year forecast sales of €47.2 million to produce a profit of €13.85 million, a breakeven between year three and four and an ROI of 3.62:1. This feasibility study will be used to further quantify in detail the work needed to generate customer confidence in the product, its supply to them and WTL's support of it in use by them. |
| Website | http://www.wearable.technology/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Wearable Technologies Limited (UK) |

# 9. Horizontal issues

## 9.1 Foresight studies on security threats & Roadmaps

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Foresight studies on security threats & Roadmaps | ANVIL<br>CBRNEMAP<br>ETTIS<br>EVOCS<br>FESTOS<br>FOCUS<br>FORCE |

These projects were complemented by projects funded in 2016-2017 within H2020:

| EU-Drones | |
|---|---|
| Title | The European Commission in Drone Community: a New Cooperation Area in the Making |
| Contract details | Marie Skłodowska-Curie actions - Research networks (ITN): Individual Fellowships. Call: H2020-MSCA-IF-2016. Topic code: MSCA-IF-2016. April 2017 / March 2019 - EUR: 160.800,00 GA 747947 |
| Abstract | The objective of this research is to examine how the European Commission is shaping regulatory framework development, production and use of drones considering the diverging interests among actors concerned in Europe (and beyond) where multiple authorities overlap. A comprehensive analysis of drones operations as a whole, including actors' perceptions, expectations, interests and practices is still lacking. This research will therefore study the European Commission's strategy to join and shape the drone community (rule makers, interest groups, manufacturers, operators and users) as well as the impact of its action. Referring to the Commission's policy entrepreneurship literature, it is interested in how the Commission, by building on its competencies and resources, has exercised its leadership capacity to initiate action in a new domain that may not fall de facto under its prerogatives and thus has an effect on a strategic industry. Based on a relational approach, the project will analyse the power structures (configuration of relations, diverging and converging interests, resources, skills), perceptions of issues at stake (discourses) and action rationale (cooperation dynamics, informal and formal practices, strategies and means) of actors involved in EU initiatives: the single drones market, the regulatory framework, as well as research and development. The research methodology will be qualitative and based on a triangulation of methods (documents, discourses and interviews analysis). In line with the researcher's previous work on the Commission's actions in the security sector, it will be argued that the Commission's leadership in drone matters, regarding its market, regulation and development, offers a lever for action to strengthen its position in the field of security at the crossroads between all actors involved as a bridge between the internal and external security, civil and military dimensions. |
| Website | http://www.vub.ac.be/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Vrije Universiteit Brussel (BE) |

## 9.2 Standardisation, Testing & Certification

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Standardisation, Testing & Certification | CREATIF<br>CRISP<br>SLAM<br>HECTOS |

## These projects have been complemented by the following H2020 projects:

| ResiStand | |
|---|---|
| Title | Increasing disaster Resilience by establishing a sustainable process to support Standardisation of technologies and services (ResiStand) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-06-2015<br>May 2016 / May 2018 - EUR: 1,962,553.75<br><br>REA - 700389 |
| Abstract | The goal of ResiStand is to find new ways to improve the crisis management and disaster resilience capabilities of the European Union and individual Member States through standardisation. ResiStand identifies and analyses the drivers, constraints and expectations of main stakeholder communities.Based on this information, gaps in standardisation are identified and a prioritised roadmap for new initiatives will be created. The roadmap will be complemented by a critical evaluation of standards as a tool to improve disaster resilience.The aim is that stakeholders will continuously utilize this "ResiStand Process" in the future, and that the project delivers a better understanding of the potential of standards for contributing to an improved disaster resilience. |
| Website | http://resistand.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Geowise Oy (FI)<br>Consortium:<br>2. Atos Spain Sa (SE)<br>3. D'appolonia Spa (IT)<br>4. Din Deutsches Institut Fuer Normung E.V. (DE)<br>5. European Virtual Institute For Integrated Risk Management Eu Vri Ewiv (DE)<br>6. Forsvarets Forskninginstitutt (NO)<br>7. Fraunhofer Gesellschaft zur Foerderung Der Angewandten Forschung E.V. (DE)<br>8. Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)<br>9. Steinbeis Advanced Risk Technologies Gmbh (DE)<br>10. Stichting Nederlands Normalisatie – Instituut (NL)<br>11. Suomen Standardisoimisliitto Sfs Ry (FI)<br>12. Teknologian Tutkimuskeskus Vtt Oy (FI)<br>13. Treelogic Telematica Y Logica Racional Para La Empresa Europea Sl (ES)<br>14. Trilateral Research Ltd (UK) |

## These projects were complemented by new projects funded in 2016-2017:

| CBRNE STNDS 2017 | |
|---|---|
| Title | ERNCIP CBRNE STANDARDS 2017 and 2018 – support to Mandate 487 |
| Contract details | Secure Societies. Call: H2020-IBA-SC7-ERNCIP-2017. Topic code: IBA-SC7-ERNCIP-2017. June 2017 / May 2019 - EUR: 500.000,00 GA 775989 |

| CBRNE STNDS 2017 | |
|---|---|
| Abstract | The primary aim of this project is to improve the detection of CBRN-E substances in Europe by enhanced cooperation among European research laboratories, advancing common technology standards or detection processes. This goal will be achieved through four work packages, each addressing a specific CBRN-E issue. These work packages will be formed around an ERNCIP thematic group, which will undertake pre-normative assessment on the topics identified as having a priority need, driven by the current security threats faced in the EU. The proposed thematic groups for this CBRN-E Standards project are: Chemical & biological risks to drinking water – Water Security Plan; Radiological and nuclear threats to critical infrastructure – remote expert support & novel detection technologies; Risk assessment and mitigation of explosive threats against structures and soft targets; Vehicle screening against explosive and weapons threats at checkpoints – CEN Workshop Agreement. In order to provide oversight across all these work packages, there will also be a management work package covering the ERNCIP Office's specific activities which will oversee all the other work packages. Each thematic group will undertake pre-normative assessment to identify the current issues associated with the topic, and what options might exist for further harmonisation activities that would improve the security of the EU, and/or help the EU market for security products. In some cases, this may lead to recommendations for specific harmonisation activities, such as changes to existing standards, or even proposals for new standards. Other possible paths that could be identified include a CEN/CENELEC workshop agreement; recommendations for further research, recommendations for EU policy, or even recommending that no further activity is justified.<br><br>***This project also corresponds to the category 'CBRNE (cross-cutting).*** |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Joint Research Centre- European Commission (BE) |

| SAYSO | |
|---|---|
| Title | Standardisation of situational Awareness sYstems to Strengthen Operations in civil protection |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-1. Topic code: SEC-02-DRS-2016.<br>May 2017 / April 2019 - EUR: 1.499.950,00 GA 740872 |
| Abstract | Handling the crises faced by modern societies often requires the coordination of multiple types of stakeholders from different countries. One of the key requirements to manage crisis is to have access to situational awareness (SA). However, current SA solutions (SAS) are not adapted to operate in cross-border contexts and present several shortcomings related to interoperability, data management/processing, decision making, standardisation and procurement. This hinders a reliable sharing of SA information. SAYSO will address these shortcomings and pave the way for the development of innovative European cost-effective Multi-Stakeholders SA Systems (MSSAS) which will provide practitioners with user-friendly solutions, providing a clear picture of the situation at hand with relevant advices. Addressing both the technical and human aspects of technology implementation, SAYSO will define the specifications of future MSSAS on the basis of practitioners' requirements and specify the corresponding Reference Architecture to support the integration of various data into a common operational picture. This architecture will support interoperability and allow the integration of legacy and future SAS. It will also be customisable to practitioners' needs and safeguard adequate privacy protection and data security levels. SAYSO will pursue the agreement and sustainable involvement of a community of practitioners, relevant suppliers and potential procurers, institutions and policy makers to obtain widely accepted results and prepare future procurement actions at EU level. SAYSO will develop a toolkit for MSSAS procurers, which will include tender documentation for SAYSO-compliant MSSAS and a SAYSO Procurers Handbook (with tools to evaluate MSSAS tenders and assess their compliance with the SAYSO specifications and existing standards). A registry of potential suppliers and procurers of MSSAS will be set up. Finally, SAYSO will deliver roadmaps for future MSSAS and standardisation.<br><br>***This project also corresponds to the category 'Multi-hazards situation awareness/early warning'.*** |
| Website | http://www.sayso-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Bundesministerium des Innern (DE)<br>Consortium:<br>2. Arttic (FR)<br>3. Cnet Svenska Ab (SE)<br>4. Department Of Health (UK)<br>5. Din Deutsches Institut fuer Normung E.V. (DE)<br>6. European Organisation for Security Scrl (BE)<br>7. Institut der Feuerwehr Nordrhein-Westfalen (DE)<br>8. Iscc Gmbh (AT)<br>9. Kentro Meleton Asfaleias (EL)<br>10. Luxembourg Institute of Science And Technology (LU)<br>11. Ministere de L'interieur, de L'outremer et des Collectivites Territoriales Direction de la Defense et de la Securite Civiles (FR)<br>12. Stockholms Universitet (SE)<br>13. Universitaet Paderborn (DE) |

The projects were complemented by the following projects funded by INTERREG program:

| ALBINA | |
|---|---|
| Title | Euregio avalanche report |
| Contract details | 2014 - 2020 INTERREG V-A Italy - Austria 03/10/2016 - 29/03/2019 |
| Abstract | The project's main goal is the realization of a joint multilingual avalanche bulletin designed to daily inform citizens about the avalanche situation in the entire Euregio territory. In order to achieve this, the project aims at standardizing the work of the employees through a unified workflow based on EAWS standards for the preparation of the bulletin while organizing apposite periodic training. Communication structures developed within the project will promote and facilitate the exchange of information among experts of the three territories, thanks to a software system that will display the weather station data, observations, snow and avalanche profiles of the whole region and will enable loading of the avalanche bulletin. The exchange of information will occur through standardized interfaces and formats that will facilitate future extensions and connections. The Euregio avalanche bulletin will be presented on the Web site in an intuitive and uniform way thanks to optimized mapping and descriptions based on predefined text blocks. Standardized interfaces with the media and social networks will facilitate the broadcast of the bulletin. All data will be freely accessible thus supporting the Open Data initiative. This first cross-border avalanche bulletin is a decisive step forward in risk prevention and management in the Euregio territory. |
| Website | http://www.interreg.net/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. GECT "Euregio Tirolo-Alto Adige-Trentino" (IT)<br>Consortium members:<br>2. Universität Wien (AT) |

| GPT Bad Nieuweschans 2017+ | |
|---|---|
| Title | GPT Bad Nieuweschans 2017+ |
| Contract details | 2014 - 2020 INTERREG V-A Germany - The Netherlands 01/01/2017 - 01/01/2021 |
| Abstract | The Cross-border police team in Bad Nieuweschans has proven itself. An extended operation, particularly with the targeted controlled-information-flow as component intended to make the operation of the GPT even more effective. The use of the latest investigation techniques and secure data lines and the implementation of digital radio network connections between the police forces of both countries are in the focus of the operational work. A more effective cooperation between the security agencies involved in the border area on the basis of targeted information (collect, evaluate and control) in addition to the feasibility studies for the connection of special equipment and the use of a common information center is the goal of the project. The added value for the economy and population in the Ems-Dollart region is obvious: the expanded police operation makes a significant contribution to increasing the security of the program area. The jointly efficient and effective use of links between the police forces of the Netherlands and the state of Lower Saxony go far beyond the usual level of 'normal' police operations. The improved crime control achieved in this way also means an increase in security for the region. In addition to the listed expenditure for the project at the cost plan, the participating authorities employ further staff (9 employees in GPT and 1 staff for information management). Furthermore, other expenses for the normal operation of GPT are not quantified (operation of radio masts, technical network, ...) which are not introduced as a cost of the project in co-financing. The proportion of the involved authorities in the total cost of the project (staff costs in the amount of approximately 4,000,000, - €, general business needs and personal equipment of the employees in the amount of approximately 300,000, - EUR, ...) estimated here several million euros. |
| Website | https://www.deutschland-nederland.eu/home/ |
| Consortium (prone to modification in case of GA amendment) | Lead partner:<br>1. Polizeidirektion Osnabrück (DE)<br>Consortium members:<br>2. Bundespolizeidirektion Hannover (DE);<br>3. Koninklijke Marechaussee / District Noord-Oost / MPC 33 K (NL) |

## 9.3 Communication systems (Interoperability and communication with focus on security)

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Communication systems (Interoperability and communication with focus on security) | CRISYS<br>DARIUS<br>DESTRIERO<br>EPISECC<br>FREESIC<br>SALUS<br>SECTOR |

These projects have been complemented by the following H2020 projects:

| CIVILEX | |
|---|---|
| Title | Supporting European Civilian External Actions (CIVILEX)<br><br>***This project also corresponds to the category 'International cooperation and humanitarian aid'.*** |
| Contract details | H2020 Secure Societies Call: H2020-BES-2015 Topic code: BES-11-2015<br>May 2016 / April 2017 - EUR 1.100.351,25<br><br>REA/B/04 - 700197 |
| Abstract | CIVILEX aims to identify, characterise and model the communication and information systems in use within the EU Civilian missions, understand the stakeholders' requirements and provide possible solutions to tackle by a future interoperable Situational Awareness, Information Exchange and Operational Control Platform. The objective is to establish, by means of the proposed infrastructure, common understanding and enhance situational awareness about crisis management in EU civilian external actions. The project would take a hybrid approach, aiming both for a technical solution for information exchange (a platform that stimulates low-level, secure ad-hoc communities of interest) and for institutional changes (leading to agreements on exchange formats for civilian parties). The envisaged platform should facilitate the engagement of EU civilian actors (including CSDP missions, EU Delegations, ECHO offices and Member State Embassies), UN offices and other non-EU actors, as well as certain overlaps with military actors. |
| Website | http://www.civilex.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. ATOS Spain SA (ES)<br>Consortium:<br>2. European Centre for Development Policy Management (NL)<br>3. European Union Satellite Centre (ES)<br>4. Fraunhofer Gesellschaft zur Foerderung der Angewandten Forschung E.V. (DE)<br>5. Istituto Affari Internazionali (IT)<br>6. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek – TNO (NL) |

These projects were complemented by new projects funded in 2016-2017:

| BroadWay | |
|---|---|
| Title | Innovation activity to develop technologies to enable a pan-European interoperable broadband mobile system for PPDR, validated by sustainable testing facilities |
| Contract details | Secure Societies. Call: H2020-SEC-2016-2017-2. Topic code: SEC-04-DRS-2017.<br>June 2018 / January 2022 - EUR: 11.818.294,70 GA 786912 |

| BroadWay | |
|---|---|
| Abstract | The BroadWay project will take the first procurement steps to enable 'interoperable next generation of broadband radio communication systems for public safety and security' to improve Public Safety and Disaster relief organisation's (PPDR's) service to Europe's citizens, and enhance interoperability across borders. The primary goal of this project is to: 'Procure Innovation activity to develop and demonstrate TRL8 technologies that will enable a pan-European interoperable broadband mobile system for PPDR, validated by sustainable testing facilities' This project implements a Pre-Commercial Procurement (PCP) with the purpose to realise innovative solutions for the implementation of the 'SpiceNet Reference' architecture as defined by the BroadMap project. A pan-European pilot system will be developed within the timeframe 2021, validated by sustainable test capabilities, and to the satisfaction of a European wide team of public safety practitioners. The BroadWay partnership is comprised of 11 buyers in 11 countries, who represent the organisations with responsibility for transition to broadband for Public Safety Communication within their country. All buyer partners are from EU member states. 4 are the direct responsible Ministry within their country, and 7 are the delegated authority in their country, responsible to operate public safety communication networks. Our buyers represent the operation of public safety communication for 1.4Million public safety practitioners in their respective countries. 49 practitioner organisations from a total of 19 countries have offered to take part in the pilot validation/evaluation activities as members of our Practitioner team. A total of 60 additional organisations have expressed their support for the BroadWay project. The BroadWay team, plus this additional support, covers a total of 23 European Countries with 7 additional countries represented by their ministries responsible for public safety communication. |
| Website | |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Public Safety Communication Europe Forum AISBL (BE)<br>Consortium:<br>2. A.S.T.R.I.D. SA (BE)<br>3. Suomen Virveverkko OY (FI)<br>4. State Infocommunication Foundation (EE)<br>5. Ministero dell'interno (IT)<br>6. Narodni Agentura pro Komunikacni Ainformacni Technologie SP (CZ)<br>7. An Garda Siochana (IE)<br>8. Serviciul de Telecomunicatii Speciale (RO)<br>9. Bayerisches Rotes Kreuz (DE)<br>10. Kentro Meleton Asfaleias (EL)<br>11. Ministerio del Interior (ES)<br>12. Bird & Bird LLP (UK)<br>13. Ministere de L'interieur (FR)<br>14. The National Police of the Netherlands (NL) |

| OpSec | |
|---|---|
| Title | Goodmill - Operational Security Through Ensured Connectivity |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>February 2017 / January 2019 - EUR: 1.357.737,50 GA 755919 |
| Abstract | Goodmill Systems is a global market leader in critical broadbandc onnectivity for vehicles enabling Public Safety and Security (PSS) professionals to utilise mission-critical applications and information on the go. The Goodmill w24e router meets the challenges defined in EC report on the suitability of Commercial Cellular Networks for Mission Critical Broadband, which are reliability, resilience, extensive coverage and price stability. The w24e router utilises commercial networks alongside dedicated networks and wifi to ensure continuous data connectivity. Goodmill is the first in the world to provide seamless and reliable switching between the best available broadband data networks. This ensures uninterrupted connectivity even on moving applications PSS are using increasingly. For the European PSS end user this is a low capex and low opex market-ready solution that provides unparalleled reachability and uninterrupted connectivity to all data crucial for a successful mission. The need for faster data connections will increase and create strain for public administrations to invest into a solution. Traditionally this has meant a new dedicated network that can cost upwards to billions of Euro per EU state. Goodmill router is an alternative that guarantees connectivity now. Through the use of the dedicated networks, commercial networks, WiFi connections, and other routes for data transfer, the availability up to 99.9% can be ensured at all times on the field, depending on the country and available networks. The OpSEC project aims at bringing an updated version of the router to market to answer the challenges in breaking to the US markets. Through technological development and piloting, a successful market entry will be guaranteed and a market share of 20% will be obtained by year 2020 and European standing is obtained on the US-dominated market. |
| Website | http://goodmillsystems.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Goodmill Systems OY (FI) |

## 9.4 Information / Communication systems for Disaster Management

### 9.4.1 Communication systems / response coordination for first responders

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Communication systems / response coordination for first responders | DITSEF<br>E-SPONDER<br>ESS<br>GERYON<br>INFRA<br>OD<br>REDIRNET<br>SECRIROM<br>SPARTACUS |

In Horizon2020, no dedicated research projects or studies have been carried out in the area of Communication systems / response coordination for first responders.

### 9.4.2 Communication systems with focus on disaster management (general)

As a cross-reference to previous projects funded under FP7 (see acronyms in the table below), the reader is invited to consult the CoU Mapping Document published in 2016 (see footnote 1) in which the following FP7 projects are described.

| Research sub-category | FP7 projects |
|---|---|
| Communication systems with focus on disaster management (general) | C2-SENSE<br>CRISCOMSCORE<br>ISITEP<br>SECINORE |

These projects have been complemented by the following H2020 projects:

| BROADMAP | |
|---|---|
| Title | Mapping Interoperable EU PPDR Broadband Communication Applications and Technology (BROADMAP) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2015 Topic code: DRS-18-2015<br>May 2016 / April 2017 - EUR 2,169, 137.50<br><br>HOME – 700380 |
| Abstract | Collection and validation of the PPDR (Public Protection and Disaster Relief) organisations' existing requirements with the aim to establish a core set of specifications, and define transition roadmaps for research and standardisation for the future evolution of European interoperable radio communication solutions for public safety and security, within legal procurement constraints. Additional aims are to improve PPDR's service to Europe's citizens and enhance interoperability across borders. The project includes nuances of societal differences, including different cultures, geography, processes and legal frameworks. |
| Website | http://www.broadmap.eu/ |

| BROADMAP | |
|---|---|
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Public Safety Communication Europe Forum AISBL (BE)<br>Consortium<br>2. An Garda Siochana (IE)<br>3. Bayerisches Rotes Kreuz (DE)<br>4. De Gaulle Fleurance & Associes (FR)<br>5. Direktoratet for Nodkommunikasjon (NO)<br>6. Kentro Meleton Asfaleias (EL)<br>7. Magen David Adom (IL)<br>8. Ministere de l'Interieur (FR)<br>9. Ministerio del Interior (ES)<br>10. Ministero dell'Interno (IT)<br>11. Ministry of Interior (HR)<br>12. Ministry of Security - Bosnia and Herzegovina (BA)<br>13. Ministry of the Interior (FI)<br>14. Myndigheten for Samhallsskydd och Beredskap (SE)<br>15. Pelastusopisto (FI)<br>16. Poliisihallitus (FI)<br>17. Polismyndigheten (SE)<br>18. Politidirektoratet (NO)<br>19. Service Public Federal Interieur (BE)<br>20. Serviciul de Telecomunicatii Speciale (RO)<br>21. National Police of the Netherlands (NL) |

| EMYNOS | |
|---|---|
| Title | nExt generation eMergencY commuNicatiOnS (EMYNOS) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-19-2014<br>September 2015 / March 2018 - EUR: 4,130,493.00<br><br>REA - 653762 |
| Abstract | The main objective of EMYNOS project is the design and implementation of a Next Generation platform capable of accommodating rich-media emergency calls that combine voice, text, and video, thus constituting a powerful tool for coordinating communication among citizens, call centers and first responders. Additionally, issues such as call routing/redirection to the closest-available call center, retrieval of the caller location, hoax calls prevention, support for people with disabilities, and integration of social media will be addressed. EMYNOS will enable users to make emergency calls across heterogeneous devices using various mature technologies. |
| Website | https://www.emynos.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Fraunhofer Gesellschaft Zur Foerderung der Angewandten Forschung E.V. (DE)<br>Consortium:<br>2. Harpo Sp. Z O.O. (PL)<br>3. Hellenic Open University (EL)<br>4. MCS Datalabs (DE)<br>5. Navcert GMBH (DE)<br>6. Oecon Products & Services GMBH (DE)<br>7. Osterreichisches Rotes Kreuz (AT)<br>8. Osterreichisches Rotes Kreuz Landesverband Steiermark (AT)<br>9. Public Safety Communication Europe Forum Aisbl (BE)<br>10. Serviciul de Telecomunicatii Speciale (RO)<br>11. Technological Educational Institute of Crete (EL)<br>12. Turksat Uydu Haberlesme ve Kablo Tv Isletme AS (TR)<br>13. Voztelecom Sistemas S.L. (ES) |

| NEXES | |
|---|---|
| Title | NEXt generation Emergency Services (NEXES) |
| Contract details | H2020 Secure Societies Call: H2020-DRS-2014 Topic code: DRS-19-2014<br>May 2015 / May 2018 - EUR: 5,760,836.00<br><br>REA - 653337 |
| Abstract | NEXES aims to research, test and validate the integration of IP-based communication technologies and interoperability into the next generation emergency services. NEXES innovates the approach to the dynamics between emergency services and citizens, allowing (i) the use of total conversation capabilities in emergencies, (ii) the exploitation of improved location information, (iii) the leverage of Internet-enabled connectivity to enhance interoperability and shared awareness among emergency services. |
| Website | http://nexes.eu/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. Rinicom Limited (UK)<br>Consortium:<br>2. Aimtech Consulting Limited (UK)<br>3. Ambulance and Emergency Physicians Association (TR)<br>4. Azienda Regionale Emergenza Urgenza (IT)<br>5. Deveryware (FR)<br>6. European Union of the Deaf Aisbl (BE)<br>7. Insta Defsec OY (FI)<br>8. Institute of Communication and Computer Systems (EL)<br>9. Ministerio Dell'Interno (IT)<br>10. Omnitor AB (SE)<br>11. Orange Romania SA (RO)<br>12. Police and Crime Commissioner for West Yorkshire (UK)<br>13. Poliisiammattikorkeakoulu (FI)<br>14. Prefecture de Police (FR)<br>15. Teamnet International SA (RO)<br>16. Telekom Slovenije DD (SI)<br>17. Univ. v Ljubljani (SI) |

| ShaMROCK | |
|---|---|
| Title | Secure professional Mobile Radio Over Commercial networKs (ShaMROCK) |
| Contract details | H2020 Secure Societies Call: H2020-SMEINST-1-2014 Topic code: DRS-17-2014-1<br>February 2015 / July 2015 - EUR: 50,000.00<br><br>EASME - 663021 |
| Abstract | ShaMROCK will deliver a broadband Professional Mobile Radio(PMR) system running over standard cellular networks. Such a system is used by Emergency Services and Professionals to firstly, reduce costly dependency on dedicated networks, to secondly, increase communication resilience and network reliability and thirdly, to support a new generation of point-of-use urban infrastructure protection applications. |
| Website | http://www.genaker.net/ |
| Consortium<br>(prone to modification in case of GA amendment) | Coordinator:<br>1. ESI Mobile Solutions SL – Genaker (ES) |

These projects were complemented by new projects funded in 2016-2017:

| GICA | |
|---|---|
| Title | Geolocalisation of Individuals in Critical Areas |
| Contract details | Secure Societies. Call: H2020-SMEINST-1-2016-2017. Topic code: SMEInst-13-2016-2017.<br>April 2017 / September 2017 - EUR: 50.000,00 GA 762383 |
| Abstract | If an accident or an attack occurs on a sensitive industrial site, the ability to quickly locate people is key to save lives. The existing solutions (identification badges, paper logbooks, GPS etc.) are not appropriate to answer users' needs in this specific context. IDRE used its expertise in indoor and outdoor geolocalisation to develop an innovative solution based on LoRa-RF protocol, tags (smart electronic devices), gateways (telecommunication part), computation algorithms, a storage database and a visualization interface. The solution is enough accurate, easy to deploy and operate, scalable, low-cost, respectful of the private life and guarantees data protection, thus ideal to meet the requirements of the users (workers, security managers, decision-makers). The markets identified are composed by Seveso sites in Europe (more than 10 000 sites) and more widely by every single critical industrial sites in Europe and in the world. The project will contribute to reduce the vulnerabilities of critical infrastructures regarding natural or industrial risks, terrorism and malicious behavior, one of the major objective listed by the European Union. Before reaching the worldwide market, based on its TRL6 product and first commercial contacts, IIDRE needs to collect key information. The Phase 1 will allow to improve the knowledge of customers, to better assess the competitive environment, to refine the offer, to protect the business innovation project, to improve the commercialisation strategy, to prepare the scaling-up phase and to update the business plan.<br>In the Phase 2, the objectives will be to proceed to the ATEX certification of the tags that will be deployed within the industrial sites, to undertake demonstrations with major worldwide stakeholders (such as MICHELIN or TOTAL), to set-up the manufacturing plan and to refine the market replication strategy. By 2023, IIDRE will generate a turnover of €14.2M and create 79 jobs. |
| Website | http://www.gica-project.eu/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. IIDRE (FR) |

| | IPCOM |
|---|---|
| Title | Next generation IP-based smart Push-to-Talk communication device for public security |
| Contract details | Secure Societies. Call: H2020-SMEINST-2-2016-2017. Topic code: SMEInst-13-2016-2017.<br>July 2016 / June 2018 - EUR: 1.712.375,00 GA 726317 |
| Abstract | Paumax, doing business as "AINA Wireless", is a Finnish developer of wireless communication devices for professional users of Push-to-Talk (PTT) over IP. Paumax aims to drive the convergence of Walkie-Talkie Radios with modern Mobile Broadband technology. Mobile Broadband (WiFi/LTE) offers a wide array of versatile usage: PTT, Video recording, geo-locating, emergency dispatch and other functions can be applied to public safety operations. Governments and businesses have invested billions into IP based communication from network infrastructure to smartphone PTT apps, yet innovation for the usability lag behind. Even though smartphones can run versatile applications, in practice they are little useful for public safety officials, because their job requires them to stay hands free. You cannot chase a criminal and operate a touch screen phone simultaneously. Remote-Speaker-Microphones are indispensable. For this reason many public safety authorities continue using Walkie-Talkie Radios for PTT - despite the high costs - and use a smartphone for anything else. Paumax recently launched a Bluetooth Speaker-Microphone, solving the immediate demand from public safety. Designed as a remote control of public safety smartphone apps, it features multiple buttons for PTT, Emergency, and programmable buttons to assign tasks of an app to the remote device. In continuation Paumax plans to further develop and commercialise a market-disrupting device that combines the resilience of a Tetra Radio with the versatility of smart technology: The IP Communicator. This handheld device will run any PTT app directly loaded onto the speaker-microphone and connects directly to a wireless network. This eliminates the need for smartphones, Radios and Bluetooth all together, takes full advantage of Mobile Broadband while maintaining decades of grown user habits. And it is capable of maintaining critical communications, even when commercial networks fail due to natural or terrorist catastrophes. |
| Website | http://www.aina-wireless.com/ |
| Consortium (prone to modification in case of GA amendment) | Coordinator:<br>1. Paumax OY (FI) |

# 10. WAY AHEAD

Most policies dealing with Disaster Risk and Crisis Management have established operational links with research. For example, the CBRN and Explosive Action Plans include the goal to strengthen and prioritise research. Furthermore, an engagement in further research cooperation with international partners is promoted with a view to enhancing synergies and avoiding duplications, using existing scientific networks, taking into account the research work performed by EDA, JRC and ESRIF (expired in 2009), organisation of periodic meetings by the Commission. While interactions among research and policies are high on the policy agenda, much remains to be done to improve the way information flows from the different communities involved in implementation of both research outputs and policies. This includes capitalizing on past research and enhancing cooperation among EU Member States organisations. The complexity of the security sector stems from the wide variety of actors involved and the lack of coordination mechanism at EU and national level regarding the transfer of information and their actual use by implementers and decision-makers. The need for enhanced coordination and information sharing form the basis of the Community of Users on Safe, Secure and Resilient Societies described in this paper.

Prior to developing a Community of Users (based on existing communities which are presently fragmented) with the view of improving science-policy-industry-operator's links in the context of Horizon2020, it was essential to **understand the architecture** of the research framework and how it interacted with various policy technical/ scientific challenges. This was the subject of the mapping carried out for FP7 projects and now H2020 projects from the 2014-2015 calls, as well as ISF projects, which are described in the present document. These should not be regarded as an impact assessment (i.e. no analysis was done about the actual impact and use of research outputs on policies) but rather as a means to better understand the complex science-policy working environment at EU and national levels and propose a mechanism to **streamline information flows and transfer in the future**. The analytical value of the document stands for the "matrix" established between research and science, i.e. a factual image of the present situation. For the time being, it does not go as far as analysing the real outputs of research regarding policy implementation but complements the work of the Commission's Disaster Risk Management Knowledge Centre (DRMKC) which intends to improve science-based services and analysis, the use and uptake of research and operational knowledge as well as to advance science and technology in DRM.

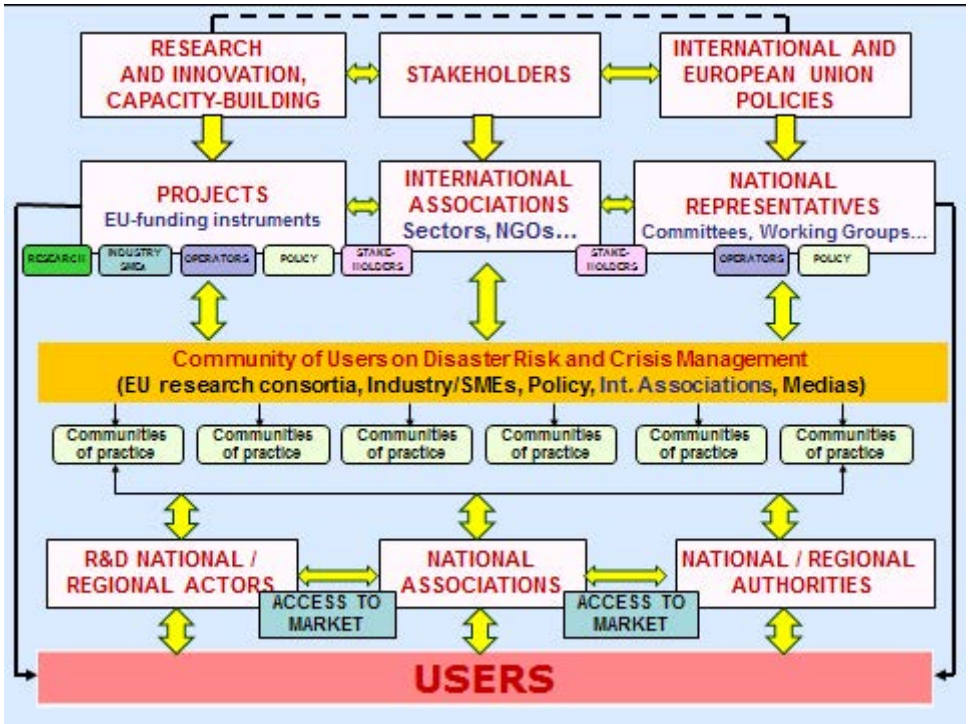
Based on this report (complementing the FP7 mapping), CoU objectives will be pursued, from the short to the long term, as described in details in Section 2 "Tasks and objectives". Besides the technical objectives and the coordination of a better information exchange system, the Community of Users on the long term has the capacity to rise sharing of experiences among different actors involved in disaster risk and crisis management, with possible initiatives leading to synergies in the EU and beyond.

What is at stake here is to create a mechanism involving different levels (EU, national and regional) by which the different actors, and primarily the "users", will be able to rapidly trace back information and experiences issued from research, capacity-building and training projects, giving them the possibility to identify and contact right persons at the right time to get the feedback that they are looking for via the CoU dedicated website. Regular information exchanges and debates orchestrated by the Community of Users have readily enabled to better channel the information to the "users", which will have a direct effect on research programming, policy implementation and update. It will also have an effect on the involvement of end-users at various levels, e.g. in steering committees of Horizon 2020 projects, consortia, and cater links between research projects and capacity-building / training initiatives, e.g. making links with training programmes and centres, modules exercises, etc.

The Community of Users has the potential to become a useful complementary supporting group on research related activities to EU security policies (not duplicating existing advisory groups dealing with policy implementation but rather channelling information about research outputs) in the framework of which the European Commission with the EU Member States (through the policy and programme committees), EU Agencies, Intergovernmental Agencies, International Organisations and the wide range of sectors concerned (research, industry, operators) will cooperate for boosting implementation of research outputs, including their usability for policy implementation in the Member States (through information given to relevant existing committees and advisory groups). This will in addition have the capacity of returns of experiences from Industry and practitioners to the EU level, and enable to identify the most potential technologies, tools and methods in order to support their access to the market.

The Community of Users, along with the DRMKC, now enable to better visualise / identify research (and on the long term capacity-building and education) projects related to different themes relevant to safety, security and resilience. While this network is progressively establishing "horizontal" dialogues and helping interactions among different disciplines and actors, it will not have the capacity to create operational links with users at large without dedicated thematic networks (referred to as "Communities of practice").

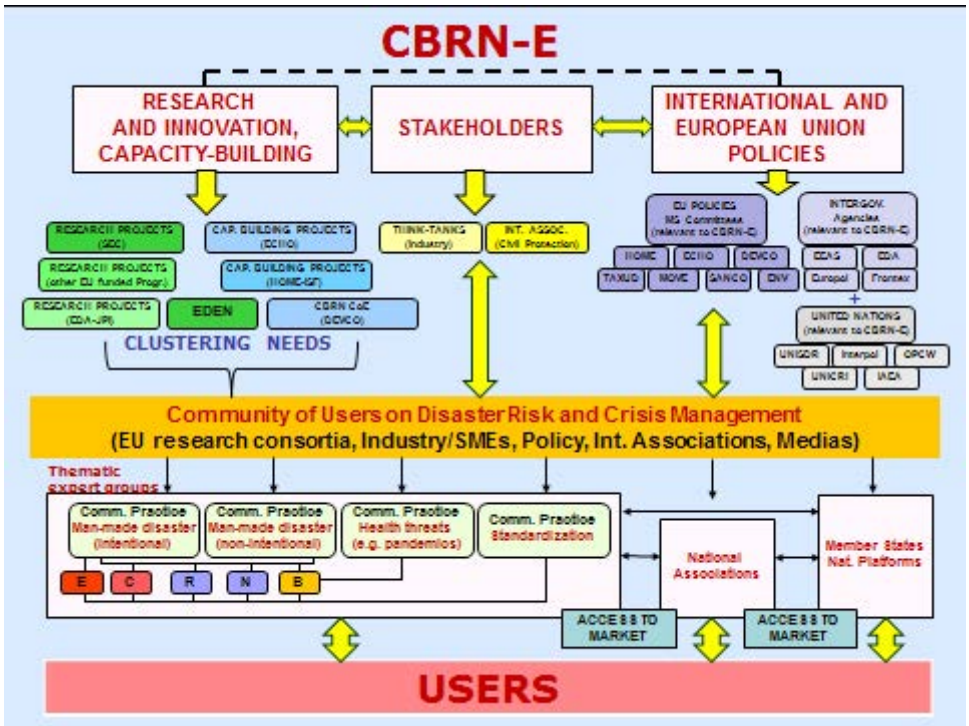
**Linking CoU to Communities of practice**




This need for "vertical" transfer of information from the EU to the national and the regional levels could be fulfilled by connecting the CoU to appropriate expert networks or communities, either existing or to be developed, that would play the role of knowledge integrating and "translating" bodies at European levels, with the mission – in support and in connexion with MS authorities – to effectively relays research outputs (e.g. new tools or technologies, methods etc.) to appropriate users at national, regional and even local levels. This process of pulling EU research outputs to users, i.e. transforming these outputs into outcome, can only be possible through an effective partnership with users. In other words, if the CoU provides on a regular basis information on new tools / technologies or other research information, different "communities of practice" might format this information to address different categories of users (policy-makers, scientists, industry/SMEs, practitioners, civil society) and undertake ad-hoc actions to ensure that potentials of EU research developments are known and possibly applied by them. This flow of information would enable that we do not miss opportunities (or duplicate work) and would also create effective bridges among the EU down to the citizen's level with possible feedback received and contributing to further research programming.

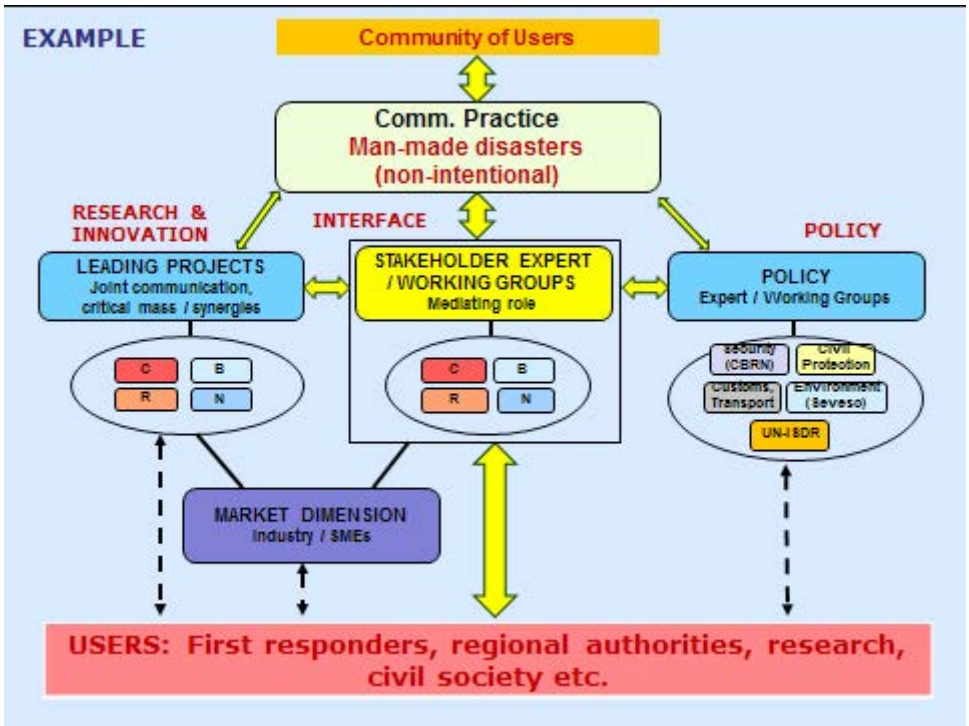
Two examples are given below to illustrate this purpose. In the CBRN-E area, the CoU will continue its efforts in identifying relevant projects funded by different (research, capacity-building) programmes with the aims to propose clustering initiatives through platforms of information exchanges. Stakeholders will continue to interact with these programmes to help interfacing with relevant policies. The CoU is naturally not interfering with policy development and implementation, but contacts are readily established with different policy bodies, enabling to inform users about possible updates and helping research information to be efficiently disseminated to policy actors. The "Community of practice" need to be activated to relay ad-hoc information to users as shown below.

**Main actors in the CBRN-E area**



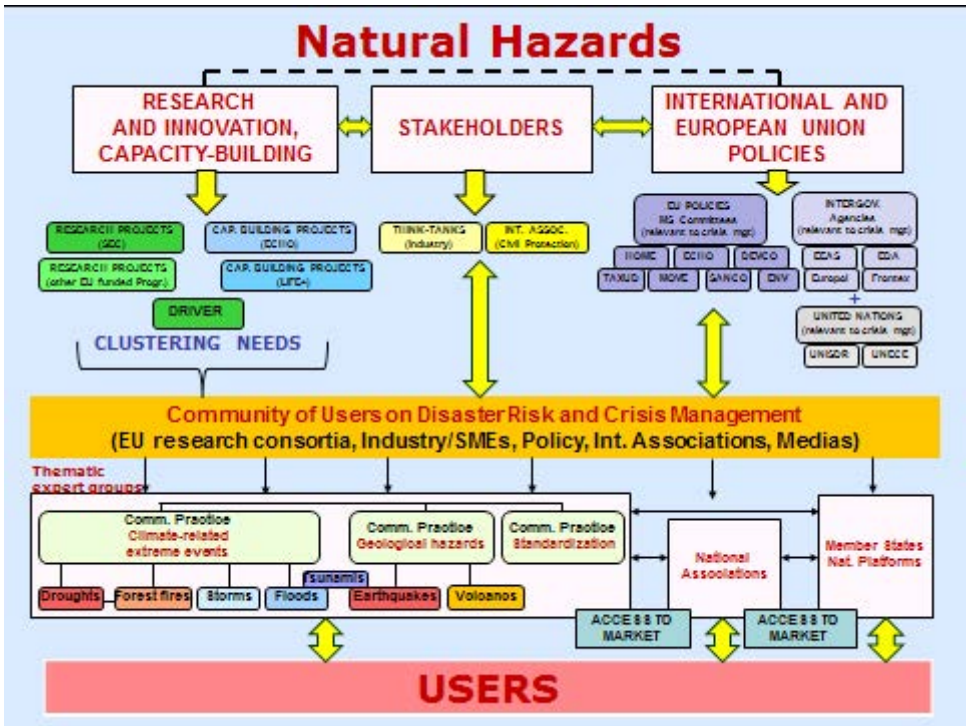

Zooming into the CBRN picture, this would imply that each Community of practice gets a comprehensive overview of leading projects in their area (research, capacity-building, training / education), help bringing these projects together if and when possible so that synergies and a critical mass may be built-up. Interfacing among research & innovation and other actors in the industry and policy areas should be facilitated by stakeholder expert / working groups with a mediating role, i.e. able to translate / format the information to target speciticially different users (e.g. specific technology information addressed to industry, support to a specific policy action with reference to the appropriate regulation ect.). In bridging the different "worlds", there is a greater chance that users will get better channelled information as the knowledge base would in principle become consolidated and made known to a wide range of different actors.

## Channelling information in the CBRN area

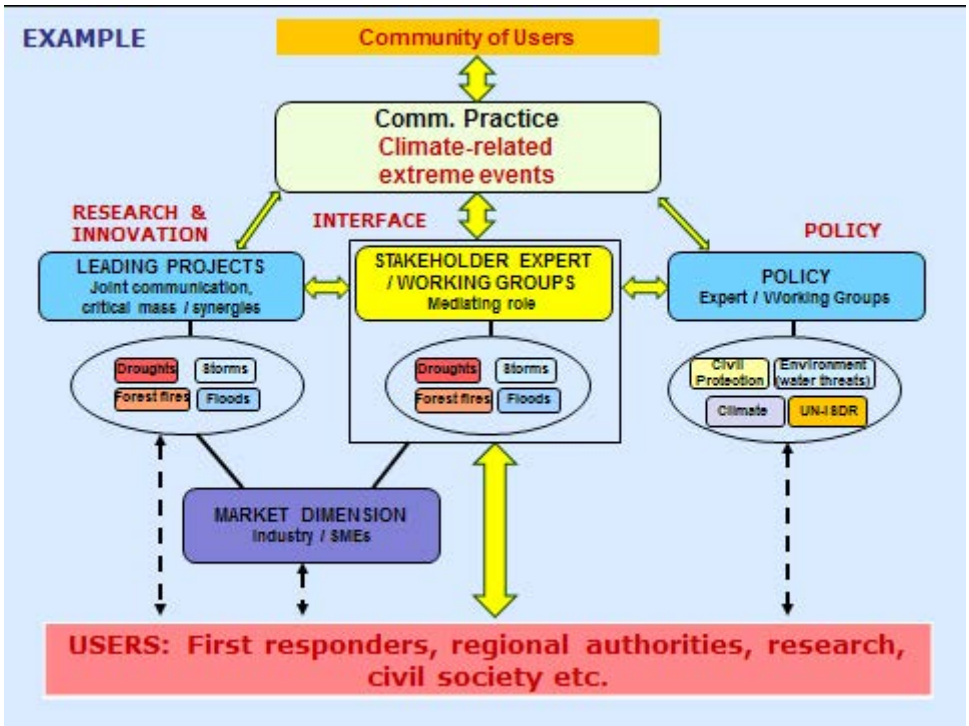



The same can be examplified in the area of natural hazards, taking into consideration the different "communities" and hazards.

## Main actors in the Natural Hazards area



## Channelling information in the Natural Hazards area




In conclusion, the Community of Users has the vocation to act as a facilitating platform, creating links and dialogues among different actors / disciplines (the "horizontal level") and among different levels (from EU to local). Based on the present mapping, a similar architecture has been used to develop a website which will facilitate information searches (not repeating what is readily in place but rather providing paths helping users to more easily find information per themes / areas). This mapping will be complemented on a regular basis (annually) for H2020 and other projects, and the CoU will pursue the organisation of gathering events to consolidate a culture of exchanges at EU level for the sake of improved safety, security and resilience of our societies.

**Getting in touch with the EU**

**In person**
All over the European Union there are hundreds of Europe Direct Information Centres.
You can find the address of the centre nearest you at: http://europa.eu/contact

**On the phone or by e-mail**
Europe Direct is a service that answers your questions about the European Union.
You can contact this service

– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

– at the following standard number: +32 22999696 or

– by electronic mail via: http://europa.eu/contact

**Finding information about the EU**

**Online**
Information about the European Union in all the official languages of the EU is available on the Europa website at: http://europa.eu

**EU Publications**
You can download or order free and priced EU publications from EU Bookshop at: http://bookshop.europa.eu. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see http://europa.eu/contact)

**EU law and related documents**
For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

**Open data from the EU**
The EU Open Data Portal (http://data.europa.eu/euodp/en/data) provides access to datasets from the EU. Data can be downloaded and reused for free, both for commercial and non-commercial purposes.

DR-03-18-391-EN-C

Publications Office