SecurityResearch
Community of Users

CoU Brief
CBRNe Synergy Building

May 2017 / Issue 1

The CoU is now entering a stage of synergy building. There is a clear need for many different policy sectors to synergise to reach common goals. A network of experts is needed to link users with national authorities. Currently there is a large information gap between CBRNe technology users and suppliers, users and policy makers. Mediation is needed to link research and marketing. This requires a different type of language for different stakeholder groups. The need for synergies is widely recognised now, but there are still many challenges on the way. Identification of the problems, stakeholders' concerns, obstacles and limitations that prevent from successful synergies can pave the way forward to the solutions.

The Community of Users is a substantial effort bringing multidisciplinary actors together to network. New projects emerge that contribute to CBRNe synergy building:

- *The recently started H2020 – SEC 05 – 2016 CBRNe Cluster, Part A project ENCIRCLE - EuropeaN CBRNe Innovation for the maRket CLustEr, uniting the European CBRNe industry;*
- *The upcoming SEC-21–GM-2016-2017 project eNOTICE - European Network Of CBRNe TraIning Centres, putting CBRNe training centres in the focus of attention as the operational link between practitioners and technology suppliers.*

Past and current FP7 and H2020 CBRNe projects have been mapped, knowledge has been shared between different actors and urgent issues have been debated, but true synergy is still in the beginning of its way, and a lot needs to be done to implement it.

Introduction

This CoU brief summarises the topic of CBRNe Synergy Building and relevant EU-funded projects that participated in the 7th Meeting of the Community of Users (CoU) on Secure, Safe and Resilient Societies that took place 15-17 May 2017 at the BAO convention centre in Brussels.

The Community of Users is a DG Home initiative that aims to improve information transfer of research outputs and their usability by different categories of stakeholders. During the meetings and thematic workshops, policy updates and information about H2020 projects are provided and interactive discussions facilitated to ensure that solutions and tools resulting from research will reach users.

Focus

The goal of synergy is to organise heterogeneity of CBRNe stakeholders and opinions by creating a structured link between national and European organisations representing public and private sectors, users and suppliers, under supervision of policy makers, defending the needs of each sector and each side, and striving for the common interests and joint solutions.

The problems of creation of efficient dialogue and synergies between practitioners, technology suppliers and policy makers have been discussed in the CBRNe community for several years. Common understanding of the goals of all the stakeholders, their challenges and concerns, mutual wish to overcome all obstacles and build true cooperation is the objective to achieve for the benefit of all actors. Peculiarities of innovation management processes in the CBRNe field, variety of users demanding the technological solutions, technology suppliers' capabilities, marketing opportunities wrapped up in national and EU policies and regulations – all these versatile factors need to be taken into account when analysing the experience and perspective of CBRNe Synergy Building.

Relevance

In the CBRNe domain involvement of end users is necessary for successful innovation as a condition for future acceptability. Demand – defined as 'end users preferences and needs' – is a key driver of innovation, but strengthening the dialog between the demand and supply side to ultimately obtain the best innovation result fully meeting the needs of end users requires efforts from both sides. This dialog is not working in an optimal way

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yet. Effective communication is critical to the cost effective and efficient interactions between various parties seeking a mutually beneficial partnership.

It is necessary to raise the competence of CBRNe practitioners as demanding end users. To encourage them to suggest innovations and explain their preferences, needs, and gaps in their communication with technology suppliers could stimulate innovation and reach the optimal balance between "technology push" and "users' requirements pull" approaches. Also the continuous dialog would improve understanding of limitations of immature technology and provide realistic expectations.

CBRNe technology suppliers might increase their competitiveness and innovation delivery efficiency if they better incorporate end users in their innovation process. At the users' side there is a willingness to participate in innovation, but rather at the level of enthusiastic individuals than at the level of the organization. The involvement of end users is highly desirable at all stages of innovation management. In the field of CBRNe events response end users are welcome to explore solutions so that performance requirements, functional, design, material specifications correspond to their needs, and this approach meets the expectations both from the supply and the demand side.

Another factor of complexity is the fragmentation of national or regional entities, due to a combination of barriers, such as local regulations, residual preference for national industries, all reinforced by the fact that governmental users are playing a key role in security innovation process.

European and national policy makers in charge of boosting CBRNe innovation with public funding need to improve the effectiveness of their communication both with the technology suppliers and end users. The key is to establish strong communication so that security technology suppliers have access to policy views about immediate necessity, short-term and long-term strategies related to innovation opportunities, and the public sector knows capabilities and needs of all the actors in the field. Evidently, the tools, schemes and rules for systematic cooperation with CBRNe end users shall be introduced into the business culture of both supply and demand side of the process.

Stakeholder perspectives

Even though in principle all stakeholders recognise the need for synergies in CBRNe field, there are still some concerns and obstacles expressed by different categories of actors:

End users

- Lack of information about available research programs to join, about available technological solutions to test and use;
- Sticking to existing practices and resistance against innovative technologies/processes;
- Difficulty to share classified procedures, needs, reveal capability gaps;
- Language. Cross-border links, exercises and other activities presume good communication with participants from other countries, while many practitioners speak only their native language;
- Lack of time and dedication to synergize, lack of staff who would be involved in the R&D, communication with suppliers, managing projects. Participation of users in the EU funded R&D projects requires acquisition of another level of expertise which is project management-driven rather than at the operational level. There are many examples in different EU projects where brilliant practitioners busy with their everyday duties have big difficulties understanding the logic and rules of the Participant Portal, the principles of project management, the procedures of signing a grant, etc.

Research and industry (technology suppliers)

- focusing only on "known" users, with whom the company has been working since long time ago
- too strict requirements for intellectual property right (IPR) protection;
- reluctance to involve users at early stage of development – partly related to IPR issue, because one thing to give a ready and close-to-ready product to users is to test, and another thing is to present a raw solution which is not yet protected;
- need to provide long training to users, so that they can be able to test and use the new technology, otherwise users tend to reject innovations if they do not have enough time to get themselves familiar with its functionality and are not convinced of its advantages.

Policymaking and/or local authorities

- lack of interest in the results of EU projects;
- lack of information about current initiatives, projects in their country and in other Member States.

Policy framework

Over the past ten to fifteen years, the threat of CBRNe intentional attacks, technological accidents or natural hazards has led governments and international organisations to adopt far-reaching regulations and programmes to defend populations against the associated risks, while complementing national measures that address existing gaps and promote exchanges of information and best practices. The CBRNe policy outlined in the CBRNe Action Plan builds on a number of different measures which have been taken forward recently both by Member States and by the European Union. Among various aspects related to CBRNe preparedness and response, CBRNe Action Plan calls for strengthening cooperation, unification of efforts and synergies between all the involved actors.

CBRN risk mitigation at the international, regional and national levels is also an objective of the CBRNe Centres of Excellence (CoE) sponsored by the European Union through the EU instrument for Stability and Peace 2014-2020. They represent one of the key external assistance instruments that enable the EU to take a lead in helping to prevent and respond to actual or emerging crises around the world. The CBRNe CoE is implemented jointly by the Joint Research Centre (JRC) of the European Commission and the United Nations Interregional Crime and Justice Research Institute (UNICRI).

Regarding the sector of Civil Protection, the policy is represented by the EU Civil Protection Mechanism whilst the operational dimension is coordinated by the Emergency Response Coordination Mechanism (ERCC) and the European Emergency Response Capacity (EERC) in the form of EU voluntary pool of pre-committed capacities from the Member states, trained experts and Common Emergency Communication and Information System. This policy is tightly connected to "Disaster Risk Management" policies addressing the management of natural and man-made hazards through EU's Internal Security Strategy (DG HOME), health (DG SANTE), external action (EEAS) and Research and Innovation (DG Research and Innovation). Outside the EU, disaster response is coordinated with the United Nation International Strategy for Disaster Reduction (UNISDR) in relation to the Sendai Framework for Action. The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) is the first major agreement of the post-2015 development agenda. The framework is a 15-year, voluntary, non-binding agreement, which recognises that the State has the primary role to reduce disaster risk but that responsibility, should be shared with other stakeholders including local government, the private sector and other stakeholders. It aims for the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters. It is the outcome of stakeholder consultations initiated in March 2012 and intergovernmental negotiations held from July 2014 to March 2015, which were supported by the UNISDR upon the request of the UN General Assembly.

Projects and project outputs

With the requirement to involve end users in research projects, there are many CBRNe related projects in FP7, in H2020, and in research programs funded by the European Space Agency that either specifically look into the problems of stakeholders' communication, or have a lot to say on the topic from their results and lessons learnt. The projects discussed at the 7th CoU meeting were:

- **TIRAMISU** (January 2012 – February 2016, finished)
- **GIFT** (September 2014 – August 2017, ongoing)
- **TOXI-Triage** (September 2015 – August 2019, ongoing)
- **ROCSAFE** (June 2016 – July 2019, ongoing)
- **ENCIRCLE** (March 2017 – March 2021, ongoing)
- **eNOTICE** (September 2017 – August 2022, upcoming)

The goal of **ROCSAFE** is to fundamentally change the way how CBRNe events are assessed, and ensure the safety of crime scene investigators by reducing their need to enter dangerous scenes to gather evidence, to determine the nature of threats and to gather forensics. For this, ROCSAFE makes use of cost-effective modern remotely-controlled robotic air and ground vehicles (RAVs/RGVs) that are designed for use in rain, wind, and challenging ground surfaces and obstacles. Users are currently involved in requirements collection and technology tests; they drive the project results.

The project **TOXI-Triage** aims to provide an integrated and adaptive response to toxic emergencies for rapid triage. It addresses the operational, technical, ethical and societal dimensions of CBRNe response and recovery. In addition it provides the economic base to develop sustainable CBRNe and multi use systems. A comprehensive field toolbox for CBRNe threats for end users will be developed. The systems and tools are intended for every day use to address important and currently unmet needs. A human breath analysis system is being developed, which is based upon the use of a Gas

Chromatography-Ion Mobility Spectrometer (GC-IMS). The system can be used for Volatile Organic Compounds (VOC) detection in human breath. Possible applications are detection of diseases, analysis of intoxication/work related exposures and monitoring of drug metabolism. The advantages of the system are:

- the possibility of remote sampling;
- no sample pre-treatment needed;
- detection in the low ppb / µg /L range;
- optimised measurement times;
- easy to use; and
- made for field use (only power supply needed).

To develop the system, the project employed user input from a fire brigade and people close to patients. The two projects (ROCSAFE and TOXI-Triage) hold joint discussions and established links for active exploitation of the results after the projects' lifetime.

In order to ensure sustained impact on the demining community and value to the general public, but also to support EU security facing explosive hazard threats (and possibly CBRNe threats) and to welcome, in particular, experts in explosive-related issues, the partners of **TIRAMISU** (and D-BOX) have generated a European Counter Explosive Hazards Community of Experts (C-EH-CE) hosted by the international CBRNe Institute (Belgium).

The following results of TIRAMISU are actively exploited:

- Non-technical survey (NTS) (exploitation of satellite/aerial imagery in order to localise and prioritise the suspected hazardous areas (SHA): T- AIDSS (Advanced Intelligent decision Support System) is the major output, currently used by the Mine action Centre of Croatia;
- Technical survey (TS) (exploitation of Ground (remotely or not controlled) Systems for confirming the presence of explosive devices in the suspected zone (CHA): an area preparation tractor (APT) and a GPR array mounted on the APT were developed and validated by the CTRO (Training Centre of Croatia), currently adapted for counter-IED issues (the IDS Company achieving the development of a remote vehicle equipped with the GPR, called MINERVA, for the Ministry of Defence in Italy;
- Close-in-Detection (CID), Neutralisation, Clearance followed with the development of Metal detector (MD) arrays mounted on a UGV, a combine multi-sensor (MD, GPR, Chemical).

CBRNe forensics focuses on crime scene investigation of CBRNe-incidents, investigation of traditional forensic traces on CBRNe contaminated exhibits and identification and profiling of CBRNe agents. Within the **GIFT** project developments include description of protocols and procedures for crime scene investigation and also the development of sensors to get immediate results that can be used within the forensic investigation of the incident. Decontamination methods have been developed to be applied in combination with traditional forensics traces (i.e. human DNA typing, latent fingerprints, digital data carriers), forensic methods have been modified and tested for their use in a containment, and laboratory methods have been developed to profile specific chemical agents, toxins and biological agents. These developments all come together in the GIFT-toolbox that not only foresees in data transfer and storage of measurements in a way that does meet the forensic requirements, but also provides the crime scene investigator procedures and protocols that should be applied in the specific investigation.

Two new complementary initiatives targeting the CBRNe industrial and technological community, and the CBRNe practitioners and training centres, recently emerged. The **ENCIRCLE** project representing the first part of the CBRNe Cluster is designed to improve competitiveness and procurement of CBRNe technologies for the advantage of both European CBRNe industry and practitioners. The project results will be enabled and promoted in two main channels:

1. Via a web portal, the Dynamic Catalogue, of available tools and technologies facilitating technologies integration and standardisation for SMEs and industries, for various market segments and different categories of users;
2. By providing support to the European Commission in identifying research gaps and proposing means to fill them. The catalogue will recommend, among other functions, the list of (technology) gaps and needs, among which the priority research and innovation topics for the future CBRNe security calls, in particular the second part of the CBRNe Cluster projects.

The **eNOTICE** project will build a network of CBRNe training centres, where the training professionals are seen as a natural operational link between CBRNe practitioners who undergo training and technology suppliers who provide their products to be tested, validated and compared by practitioners. The dialogue and networking between all the stakeholders will be facilitated by means of practical numerous joint exercises organised by the project partners' training centres at their premises that they will open to invited research projects, policy makers and all interested stakeholders.

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Lessons learnt and challenges

There are three key lessons learnt. First, innovations largely depend on enthusiasm of individual people and not on processes - but defined processes can support them to come together, so the main need in synergies is to identify mechanisms, processes that will bring people together naturally and with common goals and interests.

Second, the main need, requirement and prerequisite for successful synergy and collaboration is information. It is highly critical to raise awareness for all categories of stakeholders about available possibilities, capacities, capabilities, good practices, results and those that are possible to create. Usually people do not or cannot collaborate; not because they do not want it, but because they do not know what opportunities are available. Good examples of synergies shall be made known to all actors as encouraging and inspiring examples to follow. Plans and results have to be clear, transparent, and disseminated to all stakeholders. All plans, such as multidisciplinary exercises in training centres, have to take into account needs and interests of all actors – practitioners, technology suppliers, and policy makers - and play on common interests if they want to bring them together for common goals.

Third and last, global priorities in security innovation are often policy-driven, market analysis is playing a minor role, but policy-makers shall do better consultations with the community, taking into account the market and the users' needs of course. Analysis of good examples can help to create a "soft" model of a best successful synergy, identify all the criteria for success.

Organisations shall have possibilities to develop the model that best fits with their own environment.

It is important to create an environment favourable to the emergence of synergies, networks allowing for collaborative innovation management culture.

Way forward

The conditions should be created for long-term collaboration rather than instant marketing. Such a close collaboration presumes co-production of innovation through dialogue, and mutual education between the supply and the demand side. A step forward in this direction is using training centres (TC) as a vehicle for innovation and true dialogue between practitioners and suppliers, with active involvement of policy makers. TC can be and must be used as a vehicle for stakeholders' synergy and innovation. They have all the necessary facilities, infrastructure, resources, knowledge, and access to various categories of practitioners coming to the TC every day for regular exercises. Training professionals are the right people to train/educate practitioners for new innovative technologies, to compare different technological solutions, taking into account all the operational, functional, performance and material requirements, as well as ethical and legal issues that shall be considered during the development and use of the innovation.

Key factor for success of user synergies with technology suppliers entering R&D projects would be present at the users' side of people; or an office that has a relevant manager profile and can navigate in the sophisticated EU project legal and administration environment, and can ensure efficient communication with technology suppliers and policy makers. Another possibility is to hire (external) experts who would do the job on linking and communication with R&D, manage R&D projects, contribute to writing deliverables, etc. for end user organisations. For this, once the need is recognised, user

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organisations can be supported by local authorities, who would create a position and fund this position in the user organisation. The authorities have to recognise the need, and to be explained what profile of new staff is needed and for what purposes. Also, end user networks can define common needs and gaps, to be then transmitted to technology suppliers. Systematic collaboration should enter in the business culture of both user and supplier organisations.

Mechanisms for information classification and sharing such information shall be reviewed, as they often present a major obstacle to the collaboration between users and researchers. Intellectual property right (IPR) issues for both users and technology suppliers can be aligned and balanced as well, so that they do not become a bottleneck in the collaboration.

It is very important for the current and new CBRNe initiatives to be aware of each other. The Community of Users is already making a huge effort in the direction of raising awareness of projects, networks and clusters, and we need to increase the activity to know what other initiatives do, what networks exist and how we can combine efforts to make them complementary and not duplicated, and to fight fragmentation. New projects and new emerging initiatives shall be requested to appear on the condition that they establish, and build upon, collaborate with and reuse results of the existing ones.

Related readings

- EU CBRN Action Plan (COM 2009) 273 final and COM (2014) 247 final: http://europa.eu/legislation_summaries/justice_freedom_security/fight_against_terrorism/jl0030_en.htm
- EU CBRN Action Plan (COM 2009) 273 final and COM (2014) 247 final: http://europa.eu/legislation_summaries/justice_freedom_security/fight_against_terrorism/jl0030_en.htm
- Instrument contributing to Stability and Peace: http://ec.europa.eu/dgs/fpi/what-we-do/instrument_contributing_to_stability_and_peace_en.htm
- Sendai Framework for Disaster Risk Reduction 2015 – 2030: http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

Forthcoming CoU Events

Brussels, Brainstorming on National CoU initiatives, 29 June 2017

Brussels, Plenary CoU and Thematic Workshops, 12-14 September 2017

Brussels, CoU Thematic Workshops, 5-6 December 2017