SecurityResearch
Community of Users

CoU Brief
Common Information Space

European crisis management area has been facing numerous challenges mainly related to the lack of interoperability, interconnectivity and intercommunication. Stakeholders, in their requests, have highlighted the need for enhancing the interoperability in crisis management. Such requests are motivated by a strong belief and empirical evidence that implementation of such solutions would help in European collaborative crisis management actions.

The 7th Community of Users event featured a Dissemination Day of the SECTOR project, a 3-year FP7 research project that delivered a common information space (CIS) for interoperability of first responders. Moreover, the meeting held presentations on three complementary approaches, developed within the cluster of EU projects (i.e. SECTOR, SecInCoRe, EPISEC and REDIRNET), on Pan-European Inventories, Taxonomies, and Standardisation.

Next steps involve further dissemination of common information space, which would contribute to successful exploitation of such tools. Furthermore, it is essential to continue research and awareness raising activities on standardisation and shared taxonomy.

Introduction

This CoU brief summarises the topic of common information space 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 implementation of common information space for interoperability of first responders is a measure, to a large extent, expected by stakeholders at different levels including strategic, administrative as well as operational units. Common information space is a platform where information systems from various disaster management stakeholders, domains may exchange data. This is done regardless of the stakeholders' software. What is more, the application of common information space allows for the reduction of interfaces complexity, meaning there is only one CIS interface rather than N interfaces per legacy system.

Common information space and enhanced interoperability have been issues tackled by the cluster of four European projects, i.e. SECTOR, EPISECC, REDIRNET and SecInCoRe.

The projects have developed complementary approaches on the following:

1. Pan-European Inventories (PEI): put emphasis on the implementation of Pan-European Inventory in order to improve the citizens security;

2. Taxonomies: to highlight the need for a common language to be applied by various organisations and authorities in case of cross border collaboration;

3. Standardisation: focuses on coming up with standards across the technical and terminology areas.

Relevance

Interoperability and common information space are of significant importance, particularly in case of European collaborative crisis management. In European context, there is a large number of adjacent areas across borders, which are prone to natural disasters. It is estimated that approximately 37.5% of the EU population lives in border areas. Combining this with the forecasts of increasing number of natural disasters, cross border collaboration and common information space for first responders might be of dire need.

Development of interoperability platforms and related work on European standards and taxonomies addresses yet another European issue. Namely, such state-of-the-art IT systems are capable of mitigating the problems stemming from cross-border language barriers, cultures, applied software, symbols,

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and data formats. As a consequence, simultaneous collaboration across borders, agencies, etc. is quite complex when there are no available tools as already mentioned common information space.

Nevertheless, despite the incredible potential of the proposed tools, the path towards the exploitation of interoperability tools might still encounter some challenges. This might be caused by the differences between countries in the level of IT systems maturity. What is more, not all countries might be willing to replace their already deployed systems with an interoperability platform.

Stakeholder perspectives

Industry and consumers: there is a positive outlook on the future of interoperability solutions and common information spaces since they offer new possibilities to a range of users. Furthermore, if the market pull for similar solutions continues to grow, it will allow IT companies to expand their services in a rather niche area.

Practitioners: implementation of novel interoperability platforms, e.g. SECTOR common information space, would allow first responders to improve collaborative crisis management and, as a consequently, take timely and sufficient countermeasures.

General public: providing first responders with novel IT solutions would be largely beneficial for the civil society since the collaborative rescue actions would be performed more efficiently. This, in turn, would result in saving more people lives and minimising other losses.

Science/researchers: the cluster of European projects on common information space gave an impetus for further research on interoperability solutions. The aforementioned projects have greatly impacted the work on standardisation and taxonomy across Europe.

Policy milestones

Quite significant work is ongoing in the area of standardisation and in particular through the engagement of process of the EPISECC and SECTOR projects actively participating in the CEN TC 391 working committees. Presently, each project participating at the workshop (i.e. SeCinCoRe, EPISECC and SECTOR) are active contributors to the development of the drafting of the CWA (CEN Workshop Agreement) on Terminologies in crisis and disaster management. In parallel and in tandem both the SECTOR and EPISECC projects have also been active in the advancement of the drafting of a new European standardisation work in Crisis Management – Guidance for developing a strategic capability.

Projects and project outputs

The interoperability, interconnectivity and intercommunication of systems are the current predominant challenges in European crisis and disaster management. As a means of tackling these issues, the European Commission released a call for designing a common information space in 2013 (Theme SEC-2013.5.1.1-1). Four projects were then selected for this purpose:

- EPISECC project (June 2014 – May 2017, ongoing)
- ReDIRNET project (March 2014 – August 2016, finished)
- SecInCoRe project (May 2014 – April 2017, finished)
- SECTOR (July 2014 – June 2017, ongoing)

All these projects focused on the demonstration of the idea of a common information space and possible approaches to its creation. As of 2014, the projects started to work on their approaches on Pan-European Inventories, taxonomies, and Network Enabled Communication. Complementary objectives of each project built up to a common vision of European interoperability. For example, EPISECC aims at defining information semantics standards for message exchange in joint command rooms, while SecInCoRe focuses on information sharing aspects. ReDIRNET contributes with a decentralised framework for interoperability for first responders' systems, and SECTOR provides means to dynamically set-up cross-agency collaborative platforms and information spaces, for information and resource sharing across agencies and across borders.

SECTOR Dissemination Day
The 7th CoU meeting featured the Dissemination Day of SECTOR (Secure European common information space for the Interoperability of First Responders and Police Authorities), a three-year project that aims at establishing the foundations of future Common CCM Information Spaces by expanding the European scientific knowledge base on (cross-border) multi-agency CCM processes and the complications these imply when aiming at setting-up and design cross-border supporting information systems.

SECTOR foundations lay on three cornerstones: (1) European CCM taxonomy – a common language for European agencies in collaborative crisis management, (2) European CCM Meta-Model – definition of dedicated data-schemas by adopting/extending the NIEM framework, and (3) common information space and collaboration platform – enabling dynamic set-up of cross-agency collaboration and information and resource cross-agency and cross –borders sharing.

SECTOR outputs
The SECTOR project has produced numerous results supporting exchange of information among IT systems involved in crisis management and collaborative crisis response by safety partners using the CIS. SECTOR offers a seamless interaction of actors with the CIS through their already familiar IT tools – users don't need to change their tools/systems they already know. SECTOR integrates various EU services such as Copernicus Rapid Mapping and EFAS, Google Crisis

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Maps offering users live and up-to-date information. With the use Interoperability Boxes, new integrators can easily join SECTOR platform by only developing specific application parts.

Other project outputs

The ongoing EPISECC project develops a pan-European inventory of past critical events/disasters and their consequences focusing on the performance of processes, data exchange and organisational boundaries. It also focuses on defining taxonomies and deriving a concept of CIS.

The ReDIRNET project, finished in 2016, has provided a communication solution involving information exchange between agencies in terms of voice, data, images, video, CCTV and remote sensor information.

The SecInCoRe project, finished in 2017, developed a Pan-European inventory of past critical events and disasters, as well as secure, dynamic cloud based CIS, including the inventory and a taxonomy of inventory categories.

Lessons learnt and challenges

Interoperability and that shared knowledge capability remains a complex and challenging area for cross-border crisis and disaster management. The different layers of CIS and interoperability from the physical to semantic poses unique challenges, which the projects participating at the CIS workshop have demonstrated good inwards progress as demonstrated for the benefit of the participating end users in each project. Cross-border, legal, ethical at a national basis, and the weight factor of how best to respond to a collaborative will continue to pose challenges but through the advancements in standardisation, a commitment at policy level, an embrace at national level and of course the emerging technologies delivered by Sector, SeCinCoRe and EPISECC, for example, much benefit can be more readily realised across Europe. The proviso is that there is sufficient take up, advancement and maintenance of the delivered technologies.

Way forward

Answering the common need to establish a common information space, all four projects propose approaches for its realisation. It is essential that the results are exploited and further joint actions in the domain of ethical, legal and social issues, taxonomies and standardisation are expected.

Future steps towards the adoption of a CIS (beyond the projects' lifetime) include:

- Creation of a community of stakeholders;
- Refinement of the stakeholder requirements by giving priority to regional ones;
- Demonstration of the CIS platforms to stakeholders and validation of their impact;
- Provision of a business model to ensure viability of the Pan-European inventories and adoption of the platforms.

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

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