FP7 Grant Agreement N° 312450

CIPRNet

Critical Infrastructure Preparedness and Resilience Research Network

Project type: Network of Excellence (NoE)

Thematic Priority: FP7 Cooperation, Theme 10: Security

Start date of project: March 1, 2013 Duration: 48 months

D5.4 Report on end-user aspects to be considered in demonstration

Due date of deliverable: 30/06/2016
Actual submission date: 29/07/2016

Revision: Version 1

Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)

Project co-funded by the European Commission within the Seventh Framework Programme (2007–2013)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Security Assessment	**Rafal Kozik**
Approval Date	29/07/2016
Remarks	No issues. Some references to restricted deliverables.

The project CIPRNet has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 312450.

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1 Introduction

1.1 Scope

The purpose of this document is to list and describe those features of CIPRNet's capabilities – the advanced decision support system (DSS) CIPcast [1] and the what-if analysis demonstrator CIPRTrainer [5] – to be emphasized during the planned demonstrations in order to show their added value to the end-users, which comes up to be the main aspect they are interested in. Furthermore, some essential steps to be taken to set up such a demonstration events will be described as well.

It is worth pointing out that most of these features implement requirements elicited – in a continuous collaboration – from operators, stakeholders, and the International Advisory Board who have provided their viewpoints on CIPRNet's capabilities and their possible uses in their operations and for their specific purposes, which will be the core of the planned demonstrations. According to the Description of Work [10], a dedicated demonstration event is planned on Month 40 and its outcome will be reported in the Deliverable D8.7. More demonstrations are planned and these will be described in this deliverable D5.4.

As a first result of CIPRNet's continuous exchange with its target audience, however, we are proud to say that the CIPRNet partners' commitment to do their best to meet the different end-users' needs – along with the interest shown by operators and stakeholders and their effort to provide information – has already led to partnerships for the presentation of new projects and research proposals both at national and international level.

1.2 General process of requirements elicitation in CIPRNet

So far, the collection of the requirements from the users of the CIPRNet capabilities on the aspects to be considered in demonstration has basically been an (informal and "on the job") elicitation process, periodically formalised and reviewed through bilateral meetings with different end-users. Since the beginning of the project, in fact, the CIPRNet partners have devoted a lot of effort in establishing and consolidating strong and collaborative relationships with a number of key stakeholders and end-users in different European countries. This effort can roughly be divided into two phases.

Deliverable D5.1 "Formal Requirements Specification" describes the results of the first phase of requirements elicitation from end-users and stakeholders. The focus of this first phase was on designing and further developing CIPRNet's capabilities with the aim of producing functional prototypes of CIPcast and CIPRTrainer. In the second phase of requirements elicitation, the focus was on feedback from demonstrations and tests of the prototypes. This deliverable D5.4 documents the activities and results of the second phase of requirements elicitation from end-users and stakeholders.

1.3 Document structure

The document is organised as follows. Chapter 2 will clarify how the requirements from the users of the capabilities have been collected so far and the planned step to refine them if needed. Such additional requirements (with respect to the previous Deliverables D5.1 [3], D5.2 [4]) elicited thanks to the partnership with different stakeholders – including the feedback about the proposed usage statistics – will be briefly described in Chapter 3. Chapter 4 will give some information about the demonstration event to be held in Italy, while Chapter 5 describes experiences of and plans for other CIPRNet demonstration events. Lastly, Chapter 6 will draw some conclusions and provide an outlook on future work.

2 End-users' requirements elicitation

2.1 Requirements elicitation for DSS CIPcast

Collaborative relationships have been involved in the design of the DSS CIPcast for the acquisition of their views and needs as well as in the analysis of the CIPcast output at different development stages in order to get useful inputs to improve the technical choices and then to provide a tool as much compliant as possible to their operational needs.

A major role in the achievement of the current results has been played by a number of Italian companies which have been collaborating with ENEA; they have been selected as technological stakeholders able both to appreciate the potential benefits offered by the platform when ready and to collaborate with useful suggestions about the required features. These companies are

- ACEA Distribuzione S.p.a, the electrical distribution operator in the area of Regione Lazio (including the Rome municipality, a district of more than 6 million inhabitants covering a total area of 15,000 km^2).
- ACEA ATO2 SpA, the water distribution operator and the manager of the sewage network for Roma municipality.
- Telecom Italia SpA (currently TIM) the major telecom operator in Italy and one of the largest EU player in the telecommunication arena.

Along with these operators, a major "consulting" role has been played by

- Rome municipality, through its Civil Protection Office and "Risorse per Roma SpA" - an in-house technological company of Rome municipality committed in a thorough city Resilience assessment in the frame of the "100 Resilient Cities" project funded by the US Rockfeller Foundation.
- The Tevere Basin Authority, the public authority committed to the control and protection of the area of all hydrological basins (principal and secondary) of the Regione Lazio.
- The national Fire Fighters Corp.
- The Civil Protection of Regione Toscana, through its in-house "Prato Ricerche Foundation".
- The Civil Protection of the Mantua district.

A role has also been played by the World Bank who has funded a project (on going, carried out with the CIPRNet partner Stichting Deltares (NL) among others) on the risk analysis for landslide, avalanche and earthquakes in the Afghanistan territory which has benefitted of some components of the CIPRNet DSS CIPcast and has, in turn, provided useful feedbacks for improving the tool so that it will efficiently support territorial risk analysis.

As examples of such a fruitful collaboration, we quote the following requirements (prompted by the end-users to the attention of the project as relevant for supporting their work) that have been implemented in CIPcast:

- A number of hazards – which have been initially considered as secondary sources of damage events – have been recognized to be, in turn, more relevant. As such, they have been more carefully considered (i.e. lightning).
- A crucial approximation, i.e. the "adiabatic approximation" done to "decouple" the electrical and telecom systems from all the other infrastructures, has been taken with the approval of the operators. These two networks should be considered highly dependent and tightly linked; for this reason, their mutual perturbation dynamics occur in times that are much shorter than those characterizing the perturbation dynamics to other infrastructures. As such, electro-telecom dynamics have been resolved at first, in

the time scale typical of their interaction (from a few seconds to a few hours) by keeping the other infrastructures substantially unperturbed. Once the electro-telecom perturbation dynamics has been solved, the resulting electro-telecom inoperability has been introduced in the complete infrastructures setting in order to estimate the further perturbation in the other infrastructures.

- The need of regularly update the network topology of the electrical network (due to its frequent modification from the Control Room of the distribution operator) has been suggested by the Operator itself. This has allowed to identify the best mitigation strategy and to provide an effective decision support based on the current and real network configuration.
- The issues related to data confidentiality have been thoroughly discussed with the operators.
- Operators have also required to be provided with a reliable but minimal set of data (carefully chosen among all the possible data to be provided) in order to avoid an useless information overload in the Control Room.
- The Web GIS graphical interface design considered operators' requirements regarding the interface usability and accessibility.
- The data flow implemented within CIPcast, from the monitoring of natural phenomena to the final issue of risk forecast reports for operators and decision makers, has taken into account end-users inputs. In particular, considering the strict collaboration with ACEA Distribuzione SpA, CIPcast implements a data flow for the risk forecast of heavy rain events considering damages on the electrical distribution grid and the impact and consequences on the other technological networks and primary services.
- In a complex metropolitan scenario (such as Roma municipality, chosen as test site) the richness and the independency of different data sources is relevant to produce a reliable scenario prediction. The DSS has highly benefitted from the inclusion of a number of data sources which have been kindly provided by the stakeholders (in particular the real time access to hydrometers, the availability of flooding risk areas not only of the primary basins but also of the secondary basins which, while having a lower relevance in terms of potential disruptions, has much smaller return times with respect to primary basins (a few years, against >50 years for the primary basins); as such they constitute a continuous source of moderate risks (against the larger but more frequent risk due to the primary hydrographic network).
- Stakeholders have also stressed the relevance of the DSS as a stress test and planning tool. This has reinforced and strengthened our activities in improving the synthetic scenario builder tool, in particular to reproduce synthetic earthquakes (Italy, among others, is an EU region with an intense geo-seismic activity) and abundant precipitations (which are identified as events whose frequency and intensity will intensify in the next years as major effects of climatic changes).

All these issues, albeit being present in the original design, have been further modified and improved under the "pressure" of the stakeholders. Actually, the improvement process is still on-going. Operators' continuous feedback helps the Consortium to refine the system, to improve its functionalities, to validate and test its specific parts. Indeed, the general design of the CIPRNet DSS has been proposed with the aim to propose a Multi Hazards Risk Forecast system composed of different functional blocks or steps (deliverable D7.1 [1]). Then, the choice and the implementation of the various tools, algorithms, models used to fulfil each functional blocks have been (and still are) end-users-driven tasks.
Dealing with the end-user aspects to be considered during the demonstration, in the next chapter this document thus reports (in form of requirements) the feedback received by the

stakeholders during both the design and realization phase of the DSS, pointing out that showing the tool added value and its compliance with the end-user requirements during the demonstration event is a critical success factor. After the demonstration event, a final feedback form will be distributed giving the opportunity to suggest, if needed, additional requirements to be analysed and implemented.

Lastly it is worth pointing out that as mentioned in the introduction and above, apart from a concrete contribution to the development of a robust and valuable DSS system, these collaborations have led to new partnerships for the presentation of new projects and research proposals both at national and international level.

2.2 Requirements elicitation for CIPRTrainer

Regarding CIPRNet's second new capability, what-if analysis with CIPRTrainer, the project also started specific exchange with end-users early in the project. The following organisations and bodies provided the most influential feedback:

- CIPRNet's International Advisory Board
- German Federal Office for Civil Protection and Disaster Assistance (BBK, Germany)
- German Federal Academy for Crisis Management, Emergency Planning, and Civil Protection (AKNZ[1] (belongs to BBK), Germany)
- National Institute for Advanced Studies in Security and Justice[2] (INHESJ, France)
- CIPRNet's reviewers
- Firefighters of Mannheim, Germany (March 2016)

The development of CIPRTrainer was guided by the collected requirements in the following way. The initial design, as documented in deliverable D6.1 [5], was guided by the general requirements provided in D5.1 [3]. This led to the creation of a first functional mock-up of CIPRTrainer. This mock-up has been presented to CIPRNet's International Advisory Board at meeting in Bydgoszcz (April 2015). There, we received more feedback on the planned system. In June 2015, we presented the mock-up at INHESJ in Paris to the head of the department responsible for training crisis managers in France. At this meeting, we received a demonstration of the computer-based training system that INHESJ uses. This led to further recommendations and ideas that we turned into requirements.

A specific set of requirements resulted from several exchanges with Advisory Board member BBK, focusing on its needs regarding investigation and modelling of CI dependencies and consequence analysis. A side-line was a personal contact of the CIPRNet coordinator with the head of AKNZ, Dr. Freudenberg. This started with an exchange on the limits of using simulations for hot phase crisis management support. There was agreement that simulation serves well as an instrument for training. Further exchange is planned. Specifically, we plan to demonstrate CIPRTrainer to the trainer crew of AKNZ and receive additional feedback.

In January 2016, the fully functional first prototype was demonstrated at the CIPRNet review meeting in Sankt Augustin, where it was positively received by reviewer and project officer. About four weeks later, the same version was presented and demonstrated at the meeting of the VRGeo consortium of the oil and gas industry in Sankt Augustin, Germany. In June 2016 we gave a final presentation of the first version of CIPRTrainer at the CIPRNet cooperation workshop in Vancouver, BC, Canada.

[1] Akademie für Krisenmanagement, Notfallplanung und Zivilschutz

[2] Institut National des Hautes Études de la Sécurité et de la Justice

A major step forward was the meeting with the head of the fire-fighters of the city of Mannheim, Germany, in March 2016, whom we invited to serve as an external expert. This exchange led to several improvements regarding the scenario storyline, the crisis management actions, the realistic behaviour of scenario elements like emergence and dispersion of the smoke and gas cloud of the simulated cargo train accident, and the paradigm change from a single trainee to a small team of trainees.

The implementation of the requirements and recommendations received between January and June 2016 led to the creation of the second version of the CIPRTrainer prototype (multi-trainee version). CIPRTrainer v2 was employed for conducting a training event with hands-on experience during the third CIPRNet course for students of the postgraduate Master in Homeland Security at UCBM in Rome, Italy, on July 15, 2016 [9]. Eight students (two groups of four students each) conducted a full training session each with CIPRTrainer v2. Both the observation of the students using CIPRTrainer and their feedback led to another set of new requirements and feature suggestions.

Finally, it should be noted that the implementation of CIPRTrainer uses also results from collaboration with other projects. First, the graphical user interface of CIPRTrainer can be configured to display text in different languages (English, German, Dutch). Localisation of the interface goes further by using also national standard icon sets used for crisis management. Since such icon sets are not internationally standardised, it is helpful in cross-border situations for a crisis manager from one country to see, for instance, forces on the other side of the border depicted as familiar icons. This latter idea stems from the EU project FORTRESS. CIPRNet has collaborated with FORTRESS and extended and revised the German icon set and designations, and provided also a French icon set and French designations.

A second collaboration, with the FP7 project PREDICT, yielded insights on commonalities in the different national crisis management governance structures. This enabled us to extract four generic crisis management roles that can be found in many countries and that facilitate the wide usage of CIPRTrainer in other countries. All four roles are supported by the multi-trainee version of CIPRTrainer.

3 End-user requirements for CIPRNet's new capabilities

3.1 CIPRNet DSS end-user requirements

The ongoing activities with end-users and decision makers allowed the consolidation of the end-users requirements that refer, in general, to different functional blocks of the CIPRNet DSS CIPcast. These requirements will thus enrich those already reported in previous deliverables [D5.1, D5.2]. As such, they will be presented in the same way as the previous ones, i.e. by identifying their priority according to the MoSCoW methodology. Please note (see requirement CIPcast#04) that implementing a mechanism for logging access and calls to the different procedures for usage statistics (actually easily done by the application server itself) is not well accepted by the interviewed end-users due to privacy issues.

ID	CIPcast#01	**Priority (MoSCoW)**	M
Source	ACEA Distribuzione S.p.a	**Version**	V0
Description	CIPcast provides each operator with information about potential problems on their network arising from interdependent CIs.		
Comment	Being informed in advance about potential default of services provided by other CIs the operator relies on makes any management strategy more robust.		

ID	CIPcast#01.1	**Priority (MoSCoW)**	M
Source	ACEA Distribuzione S.p.a	**Version**	V0
Description	CIPcast gives an overview about all the relevant natural hazards threatening the CIs		
Comment	The staff in the control room will greatly benefit from being aware of what could jeopardize their network.		

ID	CIPcast#01.2	**Priority (MoSCoW)**	M
Source	ACEA Distribuzione S.p.a	**Version**	V0
Description	CIPcast gives operators a wealth of information about the external environment.		
Comment	Having a complete picture makes any management strategy more robust.		

ID	CIPcast#01.3	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	CIPcast User Interface will be easily usable.		
Comment	The operator cannot struggle to find the information he needs, especially when handling an issue on his network. Relevant information must be easily retrieved.		

ID	CIPcast#01.4	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	CIPcast must provide a reliable but minimal set of data relevant for giving the required overview.		
Comment	It is critical to provide all the needed information, but also not to overload the operator in the Control Room.		

ID	CIPcast#02	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	The risk assessment procedure must be based on the simulation of the reconfiguration procedures adopted by ACEA.		
Comment	The simulation of the reconfiguration procedures allows considering realistic “next network” behaviour.		

ID	CIPcast#02.1	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	The simulator for the electrical distribution grid reconfiguration procedures must be based on the current network configuration.		
Comment	The configuration of the electrical distribution network changes during the day. The reconfiguration procedures depend on the network configuration.		

ID	CIPcast#02.2	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	The simulator for the electrical distribution grid reconfiguration procedures must load the electrical network configuration every 15 minutes		
Comment	The electrical network configuration model shall be updated.		

ID	CIPcast#02.3	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	In case of limited resources, the CIPRNet DSS must employ optimization techniques to understand the best available resource allocation strategy.		
Comment	In case of large crisis it is possible that the available resources (emergency crews, UPS) are not sufficient to restore the whole network. In this case, the operator must take a decision. The CIPRNet DSS will support the operator suggesting the best resource allocation strategy.		

ID	CIPcast#02.4	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	The simulator for the electrical distribution grid reconfiguration procedures must consider traffic forecast in order to better estimate the next network behaviour.		
Comment	Emergency crews need to reach faulted electrical substations to fix problems, UPS must be placed in specific area to feed electrical grid end-users (i.e. customers) therefore it can be said that network reconfiguration procedures relies on traffic.		

ID	CIPcast#03	Priority (MoSCoW)	C
Source	ACEA Distribuzione S.p.a	Version	V0
Description	CIPcast could support planning and preparedness.		
Comment	Being able to reproduce synthetic events allows the operator to plan more effective recovery strategies.		

ID	CIPcast#04	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V1
Description	CIPcast will not log information about access and usage from known IPs.		
Comment	Logging an archiving information about access and usage of the CIPcast DSS could raise privacy and security issues.		

ID	CIPcast#05	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.A, Civil Protection of Rome	Version	V0
Description	During the demonstration event, each operator in its control room should be provided with information about potential problems on its own network arising from relevant natural hazards.		
Comment	The operator in the control room will greatly benefit from being aware of what could jeopardize its network and will be able to better be prepared for the emergency, if it is the case.		

ID	CIPcast#05.1	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.A, Civil Protection of Rome	Version	V0
Description	During the demonstration event, each operator in its control room should be provided with information about potential problems on its own network arising from interdependent CIs.		
Comment	Being informed in advance about potential default of services provided by other CIs the operator relies on makes any management strategy more robust.		

ID	CIPcast#05.2	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.A, Civil Protection of Rome	Version	V0
Description	Each end-users, in its own domain, should be able to easily find the information to put in place an “crisis management” strategy.		
Comment	The operator cannot struggle to find the information he needs, especially when handling an issue on his network. Relevant information must be easily retrieved.		

ID	CIPcast#05.3	Priority (MoSCoW)	M
Source	ACEA Distribuzione S.p.a	Version	V0
Description	During the demonstration event, the DSO operator should be suggested an optimisation strategy to handle the ongoing contingency compliant with the procedures adopted by ACEA.		
Comment	The operator will not accept suggested strategies that are not compliant with his own procedures.		

ID	CIPcast#05.4	Priority (MoSCoW)	C
Source	ACEA Distribuzione S.p.a	Version	V0
Description	During the demonstration event, each operator will be demonstrated that and how CIPcast could support planning and preparedness.		
Comment	Being able to easily set up relevant and interesting synthetic events allows the operator to plan more effective recovery strategies.		

3.2 CIPRTrainer end-user requirements

Exchange with end-users on modeling and simulation of Critical Infrastructures (CI) started long before CIPRNet commenced, namely in predecessor projects IRRIIS and DIESIS [2]. While those previous projects focused, technically, on the proof-of-concept of heterogeneous modeling and simulating of CI and their dependencies, CIPRNet focused on turning the gained knowledge and base technology into practical application, that is, a new capability for end-users. The decision to provide what-if analysis, based on federated CI modeling and simulation combined with consequence analysis, as a training system to end-users mainly form crisis management in civil protection, was already based on feedback received during DIESIS and during the proposal phase of CIPRNet.

The remainder of this section contains the most important end-user requirements specific to what-if analysis/CIPRTrainer that we received as results from exchange with end-users during the implementation of CIPRNet (as described in Section 2.2). Again, we present them in the familiar form according to the MoSCoW method.

ID	CIPRTrainer#01	Priority (MoSCoW)	S
Source	Firefighters Mannheim	Version	V0
Description	Include a realistic evolution of the smoke and gas cloud emerging from the simulated train accident.		
Comment	A realistic evolution of the smoke and gas cloud is beneficial for a more realistic appeal of the simulation to end-users.		

ID	CIPRTrainer#02	Priority (MoSCoW)	M
Source	Firefighters Mannheim	Version	V0
Description	Instead of having a single trainee, CIPRTrainer shall support small crisis management teams		
Comment	This will support a more realistic simulated crisis management experience.		

ID	CIPRTrainer#03	Priority (MoSCoW)	M
Source	INHESJ, UCBM students	Version	V0
Description	Include more information on the situation in CIPRTrainer, like season, weather conditions, "yesterday was a holiday" etc.		
Comment	Depending on such information, responses may be different.		

ID	CIPRTrainer#04	Priority (MoSCoW)	M
Source	INHESJ	Version	V0
Description	Record all information in log files.		
Comment	Essential for post-mortem analysis and training analysis.		

ID	CIPRTrainer#05	Priority (MoSCoW)	M
Source	BBK	Version	V0
Description	Include cascading effects in CI simulation.		
Comment	Simulation of cascading effects would provide a clear added value to end-users.		

ID	CIPRTrainer#06	Priority (MoSCoW)	M
Source	BBK	Version	V0
Description	Artificial CI network models should include all elements of the real CI networks.		
Comment	Artificial CI network models and simulation should be realistic to be of value to end-users.		

ID	CIPRTrainer#07	Priority (MoSCoW)	S
Source	BBK	Version	V0
Description	Include consequence analysis in CIPRTrainer.		
Comment	Consequence analysis (CA) is required in Germany for CIP. CA methods would provide a clear added value to end-users implementing CIP policies.		

ID	CIPRTrainer#08	Priority (MoSCoW)	S
Source	BBK/AKNZ	Version	V0
Description	The training system should accommodate trainees representing administrative and operational crisis management staff.		
Comment	Typically, there is tension and competition between these parts of CM staff, therefore the introduction of corresponding roles would lead to more realistic simulated crisis management situations.		

ID	CIPRTrainer#09	Priority (MoSCoW)	S
Source	Advisory Board UCBM students	Version	V0
Description	Give a visual all text feedback on the effects of actions that the user has executed.		
Comment	This will improve the understanding of the happenings during the evolution of the simulated incident and will lead to a better training experience.		

4 Planned CIPRNet DSS demonstration event in Italy

4.1 Emergency management exercise for city of Rome and CI operators

The CIPRNet Project plans to demonstrate the new capabilities acquired through a national or interregional emergency management exercise [D8.7, to be delivered]. ENEA will contribute to this goal by organizing an emergency management exercise involving different actors:

- ACEA Distribuzione S.p.a for the electrical distribution grid
- ACEA ATO 2 S.p.a for the water drinking and sewage systems
- Telecom for the telecommunication network
- Different departments of Rome municipality

The exercise will demonstrate the possible flow of data among the different actors, how the CIPRNet capabilities can be used during an emergency and how they can be used as a means of collaboration to optimize resources allocation and to improve the emergency management. During the exercise an extremely heavy rain event on the city of Rome will be simulated. Indeed, in the past the city of Rome has been affected different times by heavy rain events with important impacts on CI networks and services.

The identification of the best technical setting for the development of the test case is under discussion with the different stakeholders involved. The presented proposal is about activating two Control Rooms, one for the municipality emergence (driven by the Civil Protection of Roma Capitale), one at the Control Room of the electrical distribution network of ACEA Distribuzione. The Civil Protection of Roma Capitale has been involved by ENEA with a Collaboration Agreement signed by the ENEA Director of the Dept. for Technologies for Energy, on the one side, and by the Director of the Civil Protection of Roma Capitale, on the other side. It is worth pointing out that some stakeholders prefer not to allow attendee who had not contributed to CIPcast in order not to share confidential information (both with potential competitors and foreign entities).

The test case to be elaborated (strongly suggested by Roma Capitale Civil Protection AND ACEA Distribuzione SpA, which, independently from each other, have pointed out the same scenario) could point on a flooding event in the area of Roma Capitale which is "statistically" expected in the next 10 years or less (bi-centennial flooding of the Tevere River). The map of the expected scenario (Figure 1) considers the possibility of the flooding of several area of the city centre (containing a large density of CI elements) with the consequent strong perturbation of a number of networks.

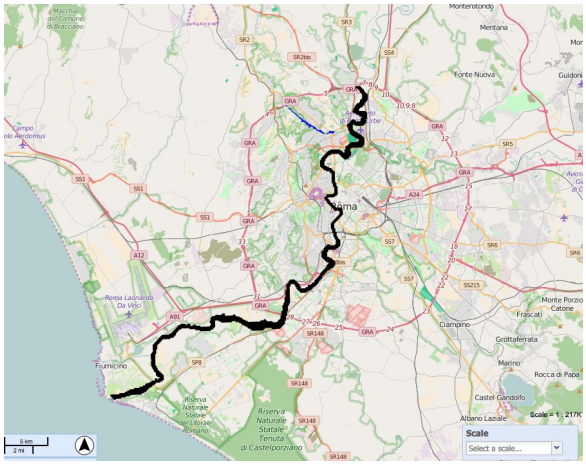

Figure 1: Bi-centennial (return time) flooding scenario of Tevere River in the area of Roma Capitale up to the river mouth.

4.2 End-users' perspective

Regarding the demonstration of the CIPRNet DSS at the Italian event, will aim to show the added value of the framework. In particular:

- ACEA ATO 2 S.p.a will use the nowcasting data to know in advance the areas of the city that will be impacted by the heavy rainfall event. Using their historical data and/or data coming from the town of Rome (historical data about police calls during heavy rainfall events, flash floods risk maps) they will know in advance which part of their urban rainwater drainage networks will be stressed by the event. Using this information ACEA ATO 2 S.p.a will illustrate their possible mitigation actions (inspection of the infrastructures, check of water pumps efficiency and availability).
- ACEA Distribuzione S.p.a and TELECOM will use the CIPRNet DSS impact and consequence assessment outcome to estimate their (next) network performances and to plan possible mitigation strategies to minimize the impacts (for example, UPS efficiency and availability check, early warning alerts to emergency teams and their optimal allocation). In particular, the electrical operator actions should guarantee the functioning status of all the assets useful to mitigate the impacts of the crisis. For example, the electrical operator network reconfiguration actions should guarantee the water pumps functioning status. Indeed, if a blackout affects the functioning status of water pumps used to avoid flooding in specific area of the city, the impacts of the heavy rainfall event can be bigger than expected and will have negative consequences on the technological networks and services in general (e.g. some electrical substations can be flooded).
- Departments of the council of Rome will use the CIPRNet DSS results to have a possible picture of the area of the city that will be stressed by the event. The Demonstration has to show how their mitigation actions can minimize the consequence on the population and services (improve the information to citizens about the crisis, optimization of allocation of resources as for example city police deployment, check the efficiency of their rainwater drainage systems).

5 Other CIPRNet demonstration events

Besides the demonstrations of CIPcast (cf. Section 2.1) and CIPRTrainer (cf. Section 2.22.1), CIPRNet participated also in a dedicated crisis management exercise. VITEX 2016, an international table top exercise for the EU-28, took place on May 11 and 12, 2016, in Dordrecht, The Netherlands. CIPRNet partner TNO supported the organisation of the event, and four CIPRNet staff members participated as experts. Due to the agenda of the exercise it was not possible to give demonstrations of CIPRNet's new capabilities. However, the participants used one of CIPRNet's service, the online glossary CIPedia©.

In the remaining time of the CIPRNet project, the following demonstrations are planned.

- DOMINO 2 – a three day end-user event – takes place in Tiel, The Netherlands, from September 20 through 22. CIPRTrainer v2 shall be demonstrated, with a fully elaborated second scenario (flooding in the border region of Germany and The Netherlands.
- Demonstration event at AKNZ / BBK (date to be agreed). Here, CIPRTrainer v2 shall be demonstrated to the professional crisis management trainers of AKNZ. We expect to elicit further requirements and suggestions for improvements of the system. In addition, specific presentations on cascading effects simulation and consequence analysis will be given to a wider BBK (German) professional end-user audience. We hope that this event will foster the adoption of CIPRNet technology in Germany.
- CIPRNet Master Class 3 – the final Master Class of CIPRNet – is planned for November 23 and 24, 2016, in Sankt Augustin, Germany. The target audience are crisis managers from civil protection (international / EU). Again, we expect both constructive feedbacks for improving CIPRTrainer and hope for producing a tangible impact.

In case that we would not be able to demonstrate CIPRNet's full capabilities at one national or international crisis management exercise – since that depends the on permission of the organisers of such an event, which we cannot guarantee –, we plan to report the results of all the demonstration activities in the forthcoming deliverable D8.7.

6 Conclusion and outlook

The present document reported the results of the elicitation of requirements and recommendations from stakeholders concerning the expected functionalities of CIPRNet's new capabilities. These requirements and recommendations have been mapped onto a number of missing features or improvements of existing features of the prototypes of the new capabilities, CIPcast and CIPRTrainer.

For CIPcast, recommendations have been primarily devoted to the usability issues, concerning the type of necessary information that the different operators and stakeholders, future end-users of the CIPcast platform, have declared to be interested in. The choice of a CIPcast management, made on the basis of Specific Projects (each related to a specific end-user and carrying out specific and targeted information) revealed to be a correct pillar identified in the design phase. Some missing features have been identified and new data have been added, either to be used as such (for providing relevant data at the right time when needed) and to be correlated with other available data for extracting further information. On the other hand, the possibility to gather usage statistics is not widely well accepted and this feedback will be carefully taken into account.

Also for CIPRTrainer, one focus of recommendations concerned usability issues. Other recommendations concerned more realistic scenarios/storylines, and the major improvement clearly was the recommendation to train small teams instead of single persons.

Other than being extremely useful for gathering information, data and requests from the end-users, the elicitation phase has further tightened up the technical relationship with end-users and stakeholders that will constitute a robust background for carrying out the exploitation actions at the end of the project.

Regarding future work, a number of activities have been planned to ensure the continuity of the CIPcast initiative and several players (CI Operators, the Civil Protection, the Fire Fighters Corp in Italy) have already asked to have a CIPcast project up-and-running for their Operation Rooms as soon as the technology will be officially released. For CIPRTrainer, there will be additional demonstration events focused on end-users (DOMINO 2, Master Class 3, BBK) that we will use to both improve the system and to disseminate CIPRTrainer to its target audience.

7 References

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