



PREparing for the Domino effect in Crisis siTuations.

PREPARING FOR THE DOMINO EFFECT IN CRISIS SITUATION

D8.2 Minutes of Workshop 2

“Managing cascading effects: understanding the incident evolution”

Due date: 31/01/2016

Submitted date: 22/09/2015

Document ID: PREDICT-20150922-D8-2

Revision: V1.0



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



FP7-SEC-2013-607697

Document change log				
Revision	Edition date	Author	Modified sections / pages	Comments
DRAFT	15/06/2015	CEIS	ALL	
DRAFT	27/08/2015	VTT	ALL	
FINAL	28/08/2015	CEIS	ALL	
V1.0	22/09/2015	CEA	New template + security boxes	Version submitted

Project co-funded by the European Commission within the Seventh Framework Programme (2007-2013)		
Dissemination level		
PU	Public	✓
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)	



Internal Review			
Done by	Signature	Date	Remarks
Axel Dyevre	Axel Dyevre	28/08/2015	

Security Assessment			
Done by	Signature	Date	Remarks
Axel Dyevre	Axel Dyevre	07/09/2015	No issue
Dominique Sérafin	Dominique Sérafin	07/09/2015	No security issue found

Ethical Assessment			
Done by	Signature	Date	Remarks
Olivia Cahuzac	Olivia Cahuzac	28/08/2015	No ethical issues
Dominique Sérafin	Dominique Sérafin	07/09/2015	No ethical issues

Quality Assessment			
Done by	Signature	Date	Remarks
Yohan Barbarin	Yohan Barbarin	21/09/2015	Approved for publication
Dominique Sérafin	Dominique Sérafin	22/09/2015	Approved for publication

DISCLAIMER

“The contents of this document and the view expressed in the publication are the sole responsibility of the author and under no circumstances can be regarded as reflecting the position of the European Union.”



TABLE OF CONTENTS

EXECUTIVE SUMMARY	7
1.1. KEY ELEMENTS DISCUSSED ON THE UNDERSTANDING OF CASCADING EFFECTS	7
1.2. RECOMMENDATIONS FOR THE PREDICT PROJECT	8
1.2.1. Incident Evolution Framework.....	8
1.2.2. Scope and focus of the PREDICT project.....	9
1.2.3. Future developments and outcomes of the project	9
2. PARTICIPANTS	11
3. TOPIC OF THE WORKSHOP AND AGENDA	12
3.1. TOPIC OF THE WORKSHOP	12
4. MINUTES	14
4.1. WELCOME AND ROUNDTABLE.....	14
4.2. PRESENTATION OF THE PREDICT PROJECT.....	14
4.3. INVOLVEMENT OF END-USERS THROUGH TEST CASES.....	15
4.3.1. Presentation.....	15
4.3.2. Discussion.....	16
4.4. THE CHALLENGES OF CASCADING EFFECTS FROM AN END-USER POINT OF VIEW	17
4.4.1. The European Civil Protection Mechanism (ECPM)	17
4.4.2. Insight from the field - The experience of a Danish Fire & Rescue Service in managing cascading effects	18
4.4.3. Discussion.....	19
4.5. PRESENTATION OF WP3 - METHODOLOGIES FOR UNDERSTANDING THE INCIDENT EVOLUTION: IDEAS & FIRST RESULTS PRESENTATION	20
4.6. UNDERSTANDING END-USER NEEDS	21
4.6.1. Incident evolution in the prevention & planning phases - Debriefing and qualitative reporting of group sessions and discussion on the first questionnaire	22
4.6.2. Group 1	22
4.6.3. Group 2	24
4.6.4. Group 3	26



4.6.5.	Responding to the incident evolution during a crisis - Interactive discussion on questionnaire 2	27
4.7.	CLOSING OF THE WORKSHOP	29
5.	ANNEX 1 – QUALITATIVE SYNTHESIS OF QUESTIONNAIRES.....	30
5.1.	QUESTIONNAIRE 1 – INCIDENT EVOLUTION IN THE PREVENTION AND PLANNING PHASES	30
5.1.1.	Information about the organisations of the participants.....	30
5.1.2.	Cascading effects	31
5.1.3.	Incident evolution: prevention and planning phases	32
5.2.	QUESTIONNAIRE 2: RESPONDING TO THE INCIDENT EVOLUTION DURING THE CRISIS.	35
5.2.1.	Response action guidelines	35
5.2.2.	Progress of response actions.....	35
5.2.3.	Tools and methods for action planning and resource allocation	36
6.	ANNEX 2: PRESENTATION OF THE METHODOLOGY APPLIED BY CEIS TO THE END-USERS WORKSHOPS	38
6.1.	OBJECTIVES OF THE WORKSHOPS	38
6.2.	CONSIDERATION ON THE FORMAT OF THE WORKSHOPS, AND THE NATURE AND NUMBER OF PARTICIPANTS	38
6.3.	CONSIDERATION ON DATA PRIVACY AND ANONYMISATION	39
6.4.	METHODOLOGY FOR PLANNING AND RUNNING THE PREDICT WORKSHOPS.....	40
6.4.1.	Preparatory phase	40
6.4.2.	Logistics and practical organisation	40
6.4.3.	Definition of the objectives of the workshops and preparation of the workshop materials.....	40
6.4.4.	Identification and invitation of the relevant stakeholders	42
6.4.5.	Execution phase	43
6.5.	POST-WORKSHOP ANALYSIS AND INTERPRETATION OF RESULTS	46
6.6.	VALIDATION OF THE WORKSHOP'S OUTCOMES AND DISSEMINATION OF FINDINGS	47



Minutes	
Workshop 2: "Managing Cascading Effects: understanding the incident evolution"	
Meeting location	Brussels, Belgium
Place	CFCI France
Date of meeting	10 June 2015
Host	CEIS
Contact details	ocahuzac@ceis.eu
Type of meeting	End-user Workshop
Work package	WP8

EXECUTIVE SUMMARY

This document synthesises the exchanges held during the second end-user workshop of the PREDICT project. This workshop, organised by CEIS - in collaboration with VTT - in the framework of WP8 “End-user network”, was held in Brussels on 10 June 2015.

This workshop was entitled *Managing Cascading Effects - Understanding the Incident Evolution*. The objectives of this second workshop were:

- To present the first results of WP3 on *Incident Evolution Framework* and to gather inputs on how the incident evolution can be observed, predicted and communicated at the prevention and response levels;
- To exchange with the participants through group sessions and questionnaires, in order to gather best practices, lessons learnt from previous experience, and requirements on incident evolution methodologies and solutions;
- To discuss the many facets of cascading effects including how this issue is taken into account by the crisis management organisations of the participants;
- To expand the community of external end-users of the PREDICT project and to highlight the progress of the project.

End-users showed a great interest in the workshop. Representatives of 16 crisis management organisations stemming from 13 European countries and the European Commission attended the workshop. Seven partners of the PREDICT project were also represented (see list below for more details on the participants).

1.1. Key elements discussed on the understanding of cascading effects

Cascading effects is recognised as a key issue to be addressed in order to improve the work of crisis management authorities. Today, crisis managers tend to deal with the challenge of cascading effects more in reactive approach (drawing lessons learned after an unpredicted event which has disrupted the system) than a predictive one. More work is therefore needed to better prepare stakeholders.

Dealing with domino effects is particularly challenging by definition since a crisis (e.g. an earthquake) may cause secondary (e.g. a tsunami) and tertiary (e.g. a nuclear incident) impacts, which are unpredictable or at least difficult to anticipate. These impacts oblige crisis management authorities to go beyond their capacity, mandate and normal process.

Therefore, this complexity of managing cascading effects challenges all the crisis management cycle from the prevention and planning phases to the recovery phase. The best way to predict and prevent cascading effects may be to consolidate the whole crisis management response capacity: better train and prepare; better coordinate and manage resources; better exchange and exploit information; better collaborate and communicate with other actors etc.

However, dealing with cascading effects also obliges crisis management stakeholders to go beyond the traditional crisis management cycle (mitigation - preparedness - response - recovery) and move



forward towards a predictive approach. Crisis plans and emergency management procedures and plans indeed remain a static answer to a dynamic challenge, which requires flexibility and adaptability.

The following ideas were also discussed:

- Domino effects have been an growing topic for the last 10 years due to the multiplication of interdependencies and the interconnectivity of our modern societies;
- Dealing with cascading effects is - to a large extent - dealing with the hidden phase of the crisis: interdependencies are not visible and potential domino effects are very difficult to identify, predict and follow.
- The level of awareness and the work on the issue of cascading effects is very different from one country to another; from one organisation to another;
- Cascading effects are increasingly included in the risk management procedures and plans, but additional work is still strongly needed;
- Should a crisis cause unexpected cascading effects, crisis management authorities are lacking concrete methodologies and tools to better:
 - a. Coordinate the crisis internally and externally with other actors involved or impacted;
 - b. Manage and allocate human and material resources according to the evolution of the situation;
 - c. Access and exchange information in a horizontal and vertical way.

1.2. Recommendations for the PREDICT project

1.2.1. Incident Evolution Framework

The **seven-step methodology** was highly appreciated since it provides a common framework to comprehensively capture and picture the evolution of an incident. The information available at a specific moment of the crisis is clearly visible. However, it remains a theoretical framework and experience shows that, during a crisis, information will still be the weak or the missing link: available data is sometimes limited, fragmented and difficult to validate. The exchange of data between different levels of managements / different stakeholders is also often very challenging.

Predicting and adapting to the accelerating tempo of the crisis is also a key challenge for emergency management actors. In an increasingly connected and globalised world, our relationship to time and space is changing. During a crisis, a disruption in one sector can swiftly cascade to other parts of the economy and society. Even when initial effects are low and localised, their impact is likely to build up. The effects tend to be uneven, strengthening and weakening as new sectors, or countries, are caught up in the chain reaction. The crisis often scales up extremely rapidly to the next level, while people may think of crises as a phenomenon emerging locally and slowly escalating to regional and national level. In this regard, cascading effect should also be regarded as a vertical issue rather than only as a horizontal issue: crisis management actors need to adapt to the rhythm and scale of an incident to tackle it at the right level.

Lessons learnt from previous experience were mentioned as one of the most effective and used means today for the scheduling of response capacity. Setting-up a clear and adequate **coordination**



capacity is also a key success factor for crisis management. This coordination capacity must gather the competent people around the same table. One of their main roles is **to trace, communicate on, and observe the progress of the incident** and of the response.

1.2.2. Scope and focus of the PREDICT project

Participants validated the interest and the realism of the **PREDICT scenarios**. They formulated recommendations to maximise the engagement with the relevant actors and expressed interest in being involved in the exercises.

Participants pointed out the **lack of consideration for people and human factors** in PREDICT while saving human lives is the 'raison d'être' of the crisis management authorities. They need to focus first on the people that are being rescued rather than on the infrastructure, which comes secondly. In the three PREDICT scenarios, the research presented during the workshop, and the questionnaires, the focus is mainly or even exclusively put on the protection of critical infrastructure. Addressing the human dimension is all the most important as the **behaviour of people being rescued has a huge impact on the work of the crisis management actors**: during a crisis, people behave, act and react in very different and sometimes unpredictable ways. If people should not be forgotten, it is however not possible to put infrastructures and people in competition. Good awareness of the situation and a good understanding of the consequences of one decision should lead the management of the crisis and the evaluation of which action on the field is more a priority than an other.

As people, **the media also puts an external pressure** on the crisis management actors that needs to be considered. Representing both a risk and an opportunity, the increasing access to information and use of social media provides crisis actors with **a privileged channel to detect and mitigate the negative reactions** of people during the crisis and the propagation of negative perceptions.

1.2.3. Future developments and outcomes of the project

Most of the participants mentioned **paper-based crisis plans as the only tools they use to support** the planning of actions and the allocation of resources during the crisis response phase. These documents provide standard operating procedures for the management of a crisis. They are developed at the prevention and planning stages, and further improved thanks to lessons learnt, exercises and return of experience (REX).

This is the reason why they showed a great interest in the technical and software tools to be developed during the PREDICT project. However, they noted that there are a lot of tools already available on the market. In order to avoid duplication of efforts, the PREDICT project should include a gap analysis with regard to decision support tools. It was indicated to the end-users that the added value of the PREDICT project however was to be integrated and plugged in with one another.

The participants are very much interested in knowing more about the functionalities and services of the PREDICT prediction tools. They formulated few requirements and advice regarding these tools:



- One-fits all solution will be difficult to develop and implement. **Tools should therefore be flexible enough and easy-to-use to adapt** to the broad diversity of the target group. Indeed, although the project decided to target on end-users at the management level, there are still a lot of differences at this level, between European crisis management stakeholders (in terms of size, capacity, capabilities, resources, expertise and experience).
- They should address **the need for better collaboration and communication** between the various stakeholders involved in a crisis. In this regard, cascading effects are indeed challenging the capacity of crisis management authorities to process, aggregate, exploit and exchange information supported by different systems. It is therefore important to have an open and public platform where it would be possible to plug existing systems and update and share data in real time.
- End-users have expressed their need to have a tool **to support the management and the allocation of resources** during the crisis. Such a decision-support tool would enable them to identify, where in the cascading chain, the use of resources would have the greatest impact.

The following elements will be addressed in the coming months:

- Tools developers shall present the tools and the added value of the PREDICT Tool suite in regards to existing solutions during the next PREDICT workshops. It was underlined during the workshop that the PREDICT Tool Suite main strength is to focus on cascading effects, a phenomenon not always taken into account in the Member States crisis management organisations. The PREDICT Suite also enables several tools to work together as they are made interoperable.
- An exploitation plan will identify at the end of the project the conditions in which the tools will be provided to interested end-users (implementation, costs, IPR, open protocols to enable users to plug the PREDICT tools on their existing systems and to update them etc.)
- The following three PREDICT end-user workshops will focus on presenting the tools at different stages of development in order to gather end-users needs and inputs to further develop the tools' specifications.

2. Participants

Organisations	Country	Number of representatives
European Commission	European Institution	3
CEA	France	2
CEIS	Belgium	3
Civil Contingencies Agency	Sweden	2
Ministry for Transport	United-Kingdom	1
Lithuanian Representation to the EU	Lithuania	1
VTT	Finland	2
Estonian Rescue Board	Estonia	1
Frederikssund-Halsnæs Fire & Rescue Service	Denmark	3
Lisbon Municipality - Civil Protection Department	Portugal	1
Romanian Red Cross	Romania	1
Slovak Association of Fire Officers	Slovakia	1
Centre européen de prévention des risques d'inondation - CEPRI	France	1
EDP Distribuição Energia, S.A.	Portugal	1
The Finnish National Rescue Association	Finland	1
NMBS	Belgium	1
Veiligheidsregio Zuid-Holland Zuid – Safety Region South-Holland-South	The Netherlands	1
SYKE	Finland	1
Department of Energy and Climate Change	United-Kingdom	1
TOTAL		28
Members of the consortium (non end-users)		7
End-users members of the consortium		2
External end-users		19



3. Topic of the workshop and agenda

3.1. Topic of the workshop

The topic of this second PREDICT workshop was “Managing cascading effects: understanding the incident evolution”. Incident evolution can be described as the temporal and quantitative development of a situation. It considers the outcomes of the domino effect, looks at the progress of response actions and looks at possibilities to prevent and mitigate the consequences. This topic is the focus of the work undertaken in particular by VTT in the project, in the framework of WP3.

Agenda

The workshop was organised following different formats / sessions:

1. General presentations by members of the consortium of the PREDICT project and progress, and the work undertaken in WP3, followed by a discussion in plenary session.
2. Presentation of the Union Civil Protection Mechanism
3. Presentation on the operational experience of cascading effects by an external end-user
4. Understanding of end-users needs through discussions in small groups based on a questionnaire distributed and filled in individually by the end-users.
5. Understanding of end-users needs through discussions in plenary session based on a questionnaire distributed and filled in individually by the end-users.
6. Extensive time was allocated (breaks and group sessions) to enable the discussion between the participants and for the exchange of experiences and best practices.

Below is the detailed agenda of the workshop. The related presentations are attached to this document in one single Pdf file.

09.00-09.30: Welcome Coffee

09.30-10.00: General introduction and roundtable - CEIS (see presentation 1)

10.00-10.15: Presentation of the PREDICT project and progress - CEA (see presentation 2)

10.15-10.30: The PREDICT scenarios and test cases - CEIS (see presentation 3)

10.30-10.50: The Union Civil Protection Mechanism - DG ECHO, European Commission (presentation 4)

10.50-11.10: Managing cascading effects from a Member States perspective - FHFRS (presentation 5)

11.10-11.40: Coffee break

11.40-12.30: Presentation of WP3 - Methodologies for understanding the incident evolution: ideas & first results – VTT (see presentation 6)

12.30-13.30: Lunch break



13.30-15.00: Discussion 1 - Incident evolution in the prevention & planning phase
(questionnaires, focus group session)

15.00-15.30: Coffee break

15.30-15.45: *Debriefing of Discussion 1*

15.45-16.30: Discussion 2 - Responding to the incident evolution during a crisis
(questionnaires, plenary session)

16.30-17.00: *Debriefing of Discussion 2*

17.00-17.15: *Wrap up and Conclusion*



4. Minutes

4.1. Welcome and roundtable

CEIS introduced the programme and the topic of this one-day expert meeting. The objective of the workshop was:

1. To present the first results of the PREDICT project, and in particular the work undertaken in WP3 on Incident Evolution Framework;
2. To discuss how the issue of cascading effects is addressed in European crisis management organisations with variable mandates, missions, capacities, expertise and experience;
3. To gather inputs from these end-users on their understanding and field experience of cascading effects in crisis situation;
4. To help orient the research of the PREDICT project based on these inputs;
5. To consolidate the construction of a broad network of end-users interested in the PREDICT project and topic.

Olivia Cahuzac-Soave (CEIS), leader of WP8 “End-user network”, also explained the role of this series of expert workshop - organised in the framework of WP8 - to engage with a broad network of end-users throughout the course of the PREDICT project. She underlined the opportunity given to the partners to better understand the actual needs of crisis managers and civil protection agencies. Indeed, these workshops aim at understanding how professionals work and what they would expect from tools designed to facilitate their daily work.

The workshop was held under strict Chatham House rule and the representative from the consortium pointed out the important role of the informed consent form distributed to the participants.

Following the introduction of the day, all participants were invited to introduce themselves and their organisations.

4.2. Presentation of the PREDICT project

Dominique Sérafin (CEA), coordinator of the PREDICT project, gave a presentation of the PREDICT objectives highlighting the ambition, objectives and structure of the project. The different partners of the PREDICT consortium were also presented. D. Sérafin particularly emphasised the fact that the PREDICT consortium puts together research organisations, end-users and private companies.

CEIS reminded the participants that the PREDICT project is a research project funded under the FP7 programme by the European Commission.

For more details, please refer to the presentation attached to this document. Information about the PREDICT project can also be found on the following website: www.predict-project.eu



4.3. Involvement of end-users through test cases

Martin de Maupeou (CEIS) went into more details on the "user-centric" aspect of the PREDICT project. He presented the three scenarios developed throughout the PREDICT project and emphasised the role these scenarios play to orient and ensure the added value of the suite of tools being developed in PREDICT for end-users.

4.3.1. Presentation

The three end-user organisations involved in PREDICT as partners were introduced:

- **Safety Region South Holland South (VRZHZ)** is a public organisation founded by 19 Dutch municipalities and with important responsibilities in crisis management response and preparation but also in advising the local government in matters of pro-action and prevention.
- **SYKE** - a centre for environmental research and development which works under the Finnish Ministry of the Environment - is the Finnish competent governmental pollution response authority in charge of measures against pollution incidents and providing assistance in response to marine pollution caused by oil or other harmful substances.
- **UIC** - the worldwide international organisation of the railway sector - promotes rail transport and its stakeholders at world level and meets the challenges of mobility and sustainable development.

The three scenarios being developed by these end-users and the PREDICT partners were also presented:

- **Maritime incident in Finland (with SYKE)¹**: A container vessel is in the waiting area of the Vuosaari harbour in Helsinki. The vessel contains hazardous and noxious substances in several containers. Due to a blackout the vessel loses its power and grounds on small islets. The incident has multiple effects: crew members injured, fuel oil leaks from the vessel, phosphoric acid leaks from a damaged container, traffic stops in the harbour etc.
- **Flooding in a densely populated area in the Netherlands (with VRZHZ)²**: This scenario takes place in a lowland area (polder) between two main rivers in the Rhine-Maas Delta Region. A breach develops in a dike and leads to the failure of all the small dams lying directly behind the dike. During the few days following the break, the water progressively floods several cities, railways, motorways and other CI in the area, which are of vital importance for several activities.

¹ For more information about upcoming workshops related to this case please contact: Tuula Hakkarainen (VTT) - Tuula.Hakkarainen@vtt.fi

² For more information about upcoming workshops related to this case please contact: René Willems (TNO) - rene.willems@tno.nl



- **International railway emergency at the Germany-Belgium border (with UIC)³:** Due to the high speed, several wagons of a train loaded with hazardous chemicals and liquid gas derail. Two tank cars loaded with liquid gas ignite. The other cars are leaking dangerous substance and there is a high risk that the fire will spread to the other wagons. The wind transports the toxic chemical cloud towards the Netherlands and partially Belgium, and the cloud further contaminates ground, water and crops. The derailment shuts down transportation for weeks influencing the railway traffic all around Europe.

After validation, each scenario will lead to the organisation of test cases to implement and test the PREDICT suite of tools in operational conditions. These test cases will consist of three exercises with different formats:

- A Full Scale Exercise (FSX) - Maritime Incident in Finland
- A Command Post Exercise (CPX) - Flooding in densely populated areas
- A Table Top Exercise (TTX) - International railway emergency at the Germany-Belgium border

The stakeholders that will participate in these exercises were also briefly introduced during the presentation. They mainly fall into the following categories of end-users:

- Civil protection authorities at local, regional and international levels;
- Local and national government;
- Public and private critical infrastructures operators.

M. de Maupeou concluded his presentation by mentioning the next step of the PREDICT test cases' development:

- Fall 2015: a first series of workshops will be organised for each test case to validate the scenarios and simulate a preliminary testing of the tools;
- Fall 2016: a second series of workshops will be organised for each test case to test the PREDICT suite of tools in operational environment.

The participants were invited to engage with the respective partners in charge of each test case to provide additional inputs and/or benefit from the result of these field experimentations.

For more details, please refer to the presentation attached to this document.

4.3.2. Discussion

The participants made several comments to enhance the realism of the three scenarios and the engagement with the end-users for each planned exercise. Indeed, each test case should look into more details at the stakeholders that will be involved if such a crisis with multiple effects happens.

³ For more information about upcoming workshops related to this case please contact: Dominique Sérafin - Dominique.SERAFIN@CEA.FR



Regarding the cross border train incident, a Belgian end-user underlined that the SNCB (national railways company) control room - monitoring the system at the national level - would necessarily be involved in the emergency response process. He also remarked that - due to the severity of the incident described in the scenario and the potential domino effects - this crisis would probably be taken care of at the national level.

On the maritime incident, several end-users indicated that they do not clearly identify cascading effects. A member of the consortium replied that this limit had already been pointed out and that the project team was already working on this aspect of the scenario. Another end-user expressed its surprise that the European Maritime Safety Authority (EMSA)⁴ located in Lisbon was not among the listed stakeholders of this test case. Indeed, the core mission of the Agency is focused on responding to ship-source marine pollution caused by oil leak and hazardous and noxious substances.

Finally, a participant remarked that the general presentation of the PREDICT project mentioned energy as the main sector impacted by cascading effects, which is not really reflected in the different PREDICT scenarios. One member of the consortium answered by indicating that the **Dutch scenario** includes the power supply organisations as critical infrastructures impacted by the flood.

4.4. The challenges of cascading effects from an end-user point of view

4.4.1. The European Civil Protection Mechanism (ECPM)

Cristina Brailescu - Policy Officer at the Directorate-General for Humanitarian Aid and Civil Protection of the European Commission - presented the role of the European Civil Protection Mechanism (ECPM). She reminded the legal basis and the fundamental principles that organise the cooperation on civil protection and disaster management at the European level, which primarily lies in the hands of the Member States. The Member States have however an obligation of mutual solidarity and support in case of major crisis. In this perspective, the European Commission through DG ECHO and the ECPM will act as a facilitator to encourage and coordinate cooperation between Member States. Mrs. Brailescu also presented the role played by the EC to encourage, harmonise and support the risk management, disaster prevention and response capabilities of the Member States. She also briefly mentioned the role of the European Response Coordination Centre (ERCC) hosted and managed by DG ECHO: to provide a 24/7 monitoring capacity and coordination physical hub facilitating the dissemination of information and the coordination of the response.

Finally, she mentioned that DG ECHO was very interested in following European funded research projects such as PREDICT, not only for the methodologies and tools developed in the framework of the project, but also for its role in strengthening a community of end-users in the field of crisis management. Understanding end-users needs is crucial according to her, in order to develop the European Commission's agenda with regards to crisis management.

⁴ <http://www.emsa.europa.eu/oil-recovery-vessels/background.html>



Her team would also be interested in using the databases developed in the project for the development of response plans at EU level. She also envisages that synergies be created between the work done at DG ECHO and the PREDICT exercises.

Discussion

One of the participants asked if the ERCC and DG ECHO were able - in the case of a crisis involving multiple Member States - to act as an interface by orienting and rerouting national stakeholders to the relevant authority in another Member States. Mrs Brailescu answered that the ERCC does not intend to be the Point of Contact for all organisations in the EU: should a cross-border crisis arise, it is the role of national authorities to reach their counterparts in other EU countries. The management of a crisis is the sole responsibility of the Member States, even if it involves different EU nationals; and the European Commission does not have to bypass the national organisations. The ERCC will only facilitate the flow of information, in particular using the Common Emergency Communication and Information System (CECIS), a web-based alert and notification application enabling real time exchange of information between registered national organisations and the ERCC. The 2004 Tsunami in Asia was mentioned as an illustration of the successful activation of the ERCC (at this time known as the MIC) that served as an interface and a facilitator in the earliest phase of the emergency response management.

For more information, please refer to the attached presentation.

4.4.2. Insight from the field - The experience of a Danish Fire & Rescue Service in managing cascading effects

Kim Lintrup - Chief Fire Officer at the Frederikssund-Halsnæs Fire- & Rescue Service (FHFRS) in Denmark - presented the main tasks and responsibilities of his organisation that is one of the front emergency services (with the Police and the Prehospital services) in crisis situation for this municipality. M. Lintrup used the example of the "Bodil", a winter storm that affected Northern Europe in December 2013, in order to illustrate the impact of cascading effects on the operational crisis management procedures and actions of this regional fire and rescue service.

Following a brief presentation of the FHFRS resources and mandates, M. Lintrup reminded to the audience that the most important work in a crisis situation is the management of the whole incident from its early detection to the full recovery, rather than the only hot phase, the media usually focuses on. On another note, one of the main challenges of crisis management is the coordination between different people on the ground with different roles and different objectives. The composition of a typical municipality crisis management room gives a good picture of this challenge: the health service, the CI operators (water and electric supply for example), the Police and the Fire & Rescue services will indeed sit in the same room to share their knowledge of the situation and of the actions to be taken on the ground. An important aspect is that these people also have to be aware that each of them is only one part of the solution and they need each other to cover the whole crisis.

Storm "Bodil" was a winter storm that affected northern Europe between the 4th and the 7th December 2013. In Denmark, the storm had an estimated cost of 214 millions euros. One of the main



causes of the unexpected level of the crisis, was the underestimation of the level the water would attain in case of flooding. Indeed, according to the data and the prediction made by the metrological authorities the right level to be prepared for was 2 meters. Therefore, dams and water protections were built according to that estimate. But - mainly due to changes in the wind direction - the water reached a level of 2.06 m, i.e. above normal. This led to water flooding in unexpected areas.

For the crisis management authorities, the main challenge was to ensure the link between the decision-making level and the field level. They also had to overcome unexpected consequences of the flooding: the only bridge to transport directly from the East to the West in the area was closed. Rerouting victims to another hospital was almost impossible, as it was extremely far. The challenge was then to plan how to transport people. It demanded the participation of the transportation services, the infrastructure managers, the municipality and the fire rescue service. The blackout gave another example of delays in the crisis management that better communication and coordination may have prevented: the local power company was mobilized to repair the network but was not able to reach the place due to water.

During the crisis, the rescue services had a tool to simulate and to assess the probable level of water in real time. It is a public tool in open access provided by the Ministry of Environment. Thanks to this tool, they were able to know which people they needed to rescue and move in priority.

According to Mr. Lintrup, one of the main lessons learnt from Bodil is that - during a crisis - crisis responders are always lagging behind the time: they are acting much more in reaction to the events than preventing them. In the Frederikssund-Halsnæs area, there were several important or critical infrastructures/sites that created unexpected cascading events: one SEVESO site (Haldor Topsoe) posing a risk of pollution; a hospital, a shopping centre and a railway station had to be closed. In total, 2000 people had to be evacuated, meaning that the municipality had to accommodate and feed them. Another major challenge was to move the people: sometimes they did not want to be displaced; sometimes it was difficult to reach and move them.

During the recovery phase, the crisis management authorities were also confronted with possible domino effects. They had to deal with people reacting in different ways, reluctant or willing to return home. They had to preserve hygiene and avoid contamination from fishes, and to deal with the problem of wild animals eating these fishes. And last but not least there was also the media pressure: the situation had to be under control and things had to return to normal as soon as possible.

After the event, the different services conducted an evaluation of the whole crisis management operation, highlighting the weaknesses of the system but also trying to focus on the positive lessons. Their processes and communication were strongly improved as a consequence.

4.4.3. Discussion

Several questions arose from the audience. One of the participants asked whether the crisis management authorities encountered unexpected and unforeseen cascading events. Mr. Lintrup explained that the main unexpected event caused by the water flooding was the obligation to close the bridge linking the Western and Eastern parts of the municipality. They were not trained for that and



they had to adapt their response plan as the crisis was unfolding, in particular for the evacuation of injured people. Another parameter, which is really difficult to control in "real life conditions" is the management of people, indeed during a crisis:

- People react differently, feeling isolated and threatened;
- People have different perceptions of the situation compared to those of the crisis management authorities and from person to person.

These perceptions have a huge impact on the work of the rescue services. In addition, very different cases needed to be dealt with when it came to the management of persons: from the moving and protection of elder people, to the management of children gone to school and not able to return home because of the closing of the bridge.

Following a question on the channels used to communicate between authorities, Mr Lintrup answered that the Fire and Rescue services used their own system to avoid the risk of failing overloaded mobile communication networks.

4.5. Presentation of WP3 - Methodologies for understanding the incident evolution: ideas & first results Presentation

The presentation of WP3 by WP leader VTT, underlined the first results of this work package dedicated to "Incident Evolution Framework". The general objectives of this work package are:

- To describe how the evolution of an incident can be observed, predicted and communicated by looking at the temporal and quantitative development of a situation;
- To develop a generic methodology understanding the incident evolution;
- To improve the capability of mitigating potential cascading effects by focusing on the progress of the response actions.

Tuula Hakkarainen (VTT) presented the 7-step methodology designed in WP3 that aims at identifying and assessing the likelihood of cascading effect. The presentation of the methodology was illustrated by the different test cases developed in the PREDICT project. Then, she presented the threat identification process whose objective is to quantify the threat and to assess its evolution and impact if there is no response. Finally, **Terhi Kling (VTT)** presented the work performed in WP3 on the modelling of organisations' response and communication

For more information, please refer to the attached presentation.

Discussions

The presentation was followed by an exchange with the participants.

One of the participants asked what was the definition of Critical Infrastructure used in WP3 and in PREDICT. The members of the consortium answered that their work was based on the European Commission definition and list of critical infrastructures. In addition, CI are identified in each scenario of the PREDICT project. However it was recognised that national and European definitions sometimes



do not match. One of the end-users shared his experience of his country where there is no such list of CI and each sector has to evaluate what is a CI. Another comment from the audience pointed out the difference between national and local CI.

An end-user asked where do “people” fit in the 7-step methodology. Following this question, the audience agreed on the fact that this aspect was not sufficiently taken into account in this methodology, and more broadly in the description of the cascading effect in PREDICT.

One of the participants underlined the importance of building trust between the different stakeholders as a condition to work with this methodology and models. This trust is necessary because this methodology covers the whole spectrum of the crisis and requests information from all the actors to be useful: there is therefore a need for interoperability. Based on the experience in his country, he said that one couldn’t effectively prevent or react in a crisis if there is no trust. This comment reminded to all that the CI is only one of the pieces of the puzzle and one issue among many others when a crisis arises. And this trust that needs to be built is one of the most challenging issues because in crisis situation one will have to sit with people that he/she does not know.

Another comment was made on how to upscale the information and to get the information in crisis situation. The methodology and the models of WP3 include a time frame with a clear view of the information available at a specific time. But it is not realistic to think that one will have a clear and smooth exchange of the information from the local to the management level. Experience shows that the main issue is the speed of information exchange during the crisis. One of the lessons learned of previous crises is also that there will often be a missing link; in the case of the Bodil Storm presented by Mr. Lintrup the missing link in the crisis management plans was the bridge that had to be closed.

Another comment from an end-user pointed out the importance of being aware that the first information one gets may be wrong. In the case of a railway incident for example, a witness may indicate the number of the wagon impacted but - depending on the direction of the train - it may not be the right wagon. People on the scene of the incident are not in their normal state and may have a natural instinct to self-protection rather than taking time to give information on the situation to the first responders. For this reason, a crisis management organisation needs to be able to double check the information to be sure that it is the right place, to assess the impact on people etc. This double check should be conducted in the first fifteen minutes of the crisis, because it will determine how the whole crisis will then be managed and by whom.

4.6. Understanding end-user needs

During this session, the participants were asked to fill in a questionnaire individually (see Annex 1 for a synthesis of the answers and see Annex 2 for the presentation of the methodology used). Then, they were split into three groups and asked to discuss the questionnaire.



4.6.1. Incident evolution in the prevention & planning phases - Debriefing and qualitative reporting of group sessions and discussion on the first questionnaire

Each group appointed a rapporteur who was charged to present the main points discussed within the previous sessions. Below is a synthesis of these presentations.

4.6.2. Group 1

Group 1 was composed of the following participants:

Members of the consortium			
Olivia Cahuzac-Soave	CEIS	Senior Consultant	Acting as Rapporteur and moderator
Axel Dyèvre	CEIS	Director Security & Defence	
End-users ⁵			
Romanian Red Cross	Department of Emergency and Disaster		Senior Management Staff
UK Ministry of Transport	International Rail Security Policy Unit		Senior Management Staff
Swedish Contingencies Agency (MSB)	Global Monitoring and Analysis Department		Senior Staff
Lisbon Municipality	Municipal Civil Protection Department		Senior staff in the Division of operations and support to the population
Slovak Association of Fire Officers	n/a		Senior Management Staff
Frederikssund-Halsnaes Fire & Rescue Service	n/a		Senior Fire Officer

Key issues discussed:

In this group, all but one end-user were representing a crisis management organisation. Both local and nation levels were represented. All participants had a role in coordination of crises.

Strong differences from one country to another in the way crises are managed were pointed out. Structures in place, and the level at which crises are dealt with were also very different: at local or national levels; crisis management in the hands of the police or fire and rescue services depending on the cases.

⁵ For confidentiality issues, the name and exact position of the end-users cannot be disclosed.



In this group, the end-users were focusing more on the planning and preparedness phases of a crisis. Some participants underlined the fact that in their organisations, work is done very much in silo, and it is not always easy to collaborate with other departments. This is an interesting point to take into account, because if the improvement of the cooperation between the various stakeholders in a crisis is often underlined, cooperation within organisations themselves is also crucial and should be the starting point. One participant underlined that cooperation depends often more on people than on organisations and procedures in place.

In the framework of a discussion around the preparation of plans, one participant explained the case of the United-Kingdom where, due to a strong privatisation, all sectors and operators are required to draft their own contingency plans. This is an element to be taken into account when coordinating the crisis and exchanging information.

O.Cahuzac-Soave asked the end-users to what extent cascading effects were taken into account in their countries and/or their organisations. It appeared that the level of awareness and the work on this issue is very different from one country to another. It is definitely work in progress in all countries, as this is a relatively new issue. Member States were often obliged to start looking into this phenomenon because of an event with unexpected consequences that challenged the way they were managing crises. For example, one participant representing the Romanian Red Cross explained that during the flooding in his country in 2010-2011, all resources were sent to one spot. As a consequence of unpredicted cascading effects intervention was necessary in other affected areas, however the capabilities were all used and couldn't be fully deployed before several days. Since this crisis, processes have been changed in Romania.

In Portugal for example, risks are well identified, the work on the mapping of interdependencies and how to better take into account cascading effects has only started (at least for the municipality of Lisbon). In particular, the work is focusing on the development of possible scenarios.

Finally, the group discussed extensively on methodologies and tools available within the participants' organisations and crisis management structures. Few of the participants said they had such tools and methodologies in their country. Most of the time, risk assessments and contingency plans are paper based.

The Lisbon municipality uses GIS and its own databases as well as data from public and private organisations. A predictive tool is being used, which integrated occurrence of events.

In Denmark, it was underlined that there are no connection between sectorial plans. All the needed data seems to be available, however there is no system or tool to enable an access to the data, and an exchange of information between the various stakeholders. A simulation tool exists for flooding, but not yet for other types of risks.

The problem seems similar in the United Kingdom, where several tools exist and are used in silo and there is no comprehensive system to plug them together.

In Sweden however, methodologies are applied in the crisis management organisations. Threats and vulnerabilities have been identified at the national level. Societal functionalities that need to be protected first have been identified as well (vital systems, critical infrastructures). From there, a model (sort of check list) is used, at the same time as a web tool: each municipality can upload its own



PREparing for the Domino effect in Crisis situations.

information (about vulnerabilities for example) in this tool. The information is updated at least every year. This tool identifies also the dependencies (according to grades). It is however not a simulation tool.

Finally, the group mentioned two other important issues:

- The media pressure that needs to be understood and managed during a crisis.
- The importance of expertise. Having people with experience sitting together in a room during a crisis is often the best solutions to manage it, rather than tools. A participant noted that she would rely more on experts during the incident, and use tools for simulation. Analysis is human above everything.

4.6.3. Group 2

Group 2 was composed of the following participants:

Members of the consortium			
Martin de Maupeou	CEIS	Consultant	Acting as Rapporteur and moderator
Terhi Kling	VTT	Risk Management Researcher	WP3 leader
Nico Van Os	VRZHZ	Project Manager / Police officer	End-user in the project
End-users			
Swedish Civil Contingencies Agency (MSB)	Unit for Command, control and collaboration		Project Manager
Estonian Rescue Board	Crisis Management Division		Senior Expert
European Commission	Community Civil Protection Mechanism, Emergency Response Coordination Centre (ERCC)		Policy Officer
EDP Distribuição Energia S.A	Department of Environment, Sustainability and Business Continuity		Expert
Frederikssund-Halsnaes Fire & Rescue Service			Voluntary fire officer; Crisis management analysis

Key issues discussed:

The end-users of this group are mostly working for organisations dealing with risk assessment and risk planning. Their core activity is to develop plans and draft procedures - at a national level - aiming



to prevent a crisis or to facilitate and coordinate response and communication mechanisms in crisis situation. While most of the members of this group work with local, national and international public authorities, one of them works in the Business Continuity Department of a private organisation. However, he is also conducting risk assessment and risk planning to put in place the continuity plans and procedures of his organisation using the standards (ISO etc.) developed at the national and international level. One of the end-users - working for an international organisation - made a comment on the vagueness of the term "crisis management" arguing that his organisation was rather doing emergency response (or disaster) management.

These end-users are in charge of all kinds of emergencies that may impact the activity of their organisation or country from natural hazards to man-made disasters.

Reflecting on the meaning and relevance of the expression "cascading effects", one of the end-users explained that domino effects have been an emerging topic for the last 10 years due to the multiplication of interdependencies and the interconnectivity of our modern societies. Therefore, the risk of casualties and damages - in particular on the economy - are greater. Understanding cascading effects is also a matter of visibility: interdependencies are not always visible and potential domino effects may be difficult to identify and follow. Dealing with cascading effects is - to a large extent - dealing with the hidden phase of the crisis.

The panel pointed out another challenge related to the accelerating rhythm of a crisis: while people usually think of crises as a phenomenon that emerge locally and slowly escalate to regional and national level, now it occurs and spreads much more rapidly. Crises are spreading and escalating to the next level much more rapidly. A crisis occurs in a specific place but the impact may be national immediately. For this reason, it is crucial - in crisis situations - to stress the importance for every stakeholder to adopt a proactive attitude and to encourage the sharing of perspectives and information. In the prevention phase, it is important to put the different stakeholders together and to conduct exercises with other C.I. operators.

Identifying interdependencies and looking at the escalation of risks must be key aspects of the daily work of risk planning and assessment of organisations. Nation-wide risk assessments are very useful to identify the most probable and critical risks for ones sector or critical infrastructure. Each member of the group shared his experience of what is implemented in his country to assess risks:

- Risk assessment may be conducted at the regional or national level depending on the countries;
- Risk assessment need to be updated on a regular basis;
- Conducting an assessment of the risks facilitates decisions to invest and allocate resources - human and financial - to better prepare and respond to crisis situations.

In 2010, the European Commission issued guidelines on risk assessment to support Member States in preparing national assessments. Following the publication of these guidelines and contributions by Member States of their work on risk assessments, the Commission produced in 2014 an overview of natural and man-made risks in the EU.

Then, the group discussed the relevance of the organisation of trainings and the development of scenarios as another mean to identify and better prepare to the management of cascading effects,



and to derive best practices in this field. In this regard, one of the main challenges is to be able to mix the different levels (from the national/strategic decision-makers to the people operating on the ground). A participant added that - in addition to trainings and exercises - organising regular meetings with other critical infrastructure operators (e.g. their security departments or business continuity departments) was also a good opportunity to gather all organisations that may be impacted by cascading effects around the same table to work together on crisis management plans.

To conclude the group discussion, participants briefly explored the pros and cons of decision support tools in crisis situation:

- The main problem is the dissemination of information and the access to information. In this regard, one of the participants, working for a national crisis assessment and planning authority, explained that her/his organisation recently created a dedicated team to use social media for spreading information and achieving a better crisis communication⁶.
- Another end-user pointed out the tendency of people to think that complex computerised systems are necessary to manage crisis. However many still consider that the most important tool is a white board. Moreover, the preliminary condition to be able to manage a crisis is to gather the competent people, ready to cooperate with one another in order to get a comprehensive understanding of the crisis unfolding and of the necessary response actions.

4.6.4. Group 3

Group 3 was composed of the following participants:

Members of the consortium			
Alexandre Custaud	CEA	PREDICT Management Team	Acting as rapporteur and moderator
Tuula Hakkarainen	VTT	Senior Scientist	WP3 Leader
Jani Häkkinen	SYKE	Researcher	End-user in the project
End-users			
European Commission	Civil protection policy unit		Policy Officer
Lithuanian Representation to the EU	Civil protection Team		Attaché

⁶ Reacting to this, one of the participants added that the increasing use of social media was also creating bigger expectation from the people and victims of a crisis who expect to access information very quickly.



Frederikssund-Halsnaes Fire & Rescue Service		Voluntary fire officer; Crisis management analysis
CEPRI	Research Centre focusing on flooding	Researcher / Project manager
Department of Energy and Climate Change	Security and Resilience Policy & Response	Senior Management Staff
NMBS	Management of control rooms	Senior Management Staff
Finnish National Rescue Association	Volunteer Participation in Oil Spill Response	Project Manager

Key issues discussed:

In this group, all but one end-user were representing a crisis management organisation or unit. Local national, and international levels were represented, as well as both the private and public sectors.

Most of the members of the group are dealing with multi-risk crisis management and mentioned that their organisations were including cascading effects (also called domino effects or interdependencies) in their crisis prevention and response capacity. One participant mentioned that to take into account these effects, scenarios were developed for each type of incident. Important work is being undertaken to understand and analyse secondary effect on how to take into account the upscaling of an incident.

In order to observe and communicate on the evolution of an incident, end-users may use situation reports done in real-time, command centres and joint response teams. After the crisis, situation reports are analysed, situation assessment tools are updated and improved, and exercises are organised. All participants underlined the importance of return of experience, exchange of good practices and procedures in order to better take into account domino effects in the future.

During the crisis, coordination rooms have access to several sources of information that support their decision-making process: information stemming from the field in real time, reports and information from authorities at all levels etc. External actors are also consulted, such as volunteer organisations, scientific experts and critical infrastructure operators who indeed may have valuable information on the incident.

4.6.5. Responding to the incident evolution during a crisis - Interactive discussion on questionnaire 2

When it comes to prediction, there are two important aspects that need to be carefully considered:

1. One needs to focus on the people that are being rescued rather than on the infrastructure, which comes secondly.
2. One needs to stress the production process of his organisation to develop effective predictive strategies and plans.



PREparing for the Domino effect in Crisis siTuations.

In crisis situations, the media is always a big issue to take into account. This aspect must be included in the crisis management process. The political pressure is another important aspect: the politicians need to be seen as being in charge.

The risk analysis should also include the impact on the reputation of the organisation.

It is also critical to assess - in the prediction phase but also during the management of the crisis - if one can get the information on where to allocate resources according to the pursued objective. In the presentation of Mr Lintrup, the repair team sent to restore the electricity power but unable to reach the place because of the flooding gave an example of resources not adequately allocated, and information not adequately shared during the crisis management phase.

Cascading effects affect the infrastructures and then the people: these two elements do not enter into competition. During the crisis, the management level must take decisions and find a balance between short-term people-based solutions versus long-term CI solutions. But in order to make this choice, one needs to have a good awareness of the secondary impacts - i.e. the possible cascading effects - that an event could trigger.

One of the participants added that while cascading effects are generally seen as a horizontal issue, there are also vertical issues to consider: it is about assessing what is the competent level to handle the crisis and its potential domino effects. For this reason the local authorities need to be able to scale up to the next levels: if they cannot handle the crisis, then they have to ask the regional and/or national authorities for assistance.

The participants asked several questions on the nature of the decision support tools that PREDICT will deliver and on the conditions for accessing and operating these tools. While the topic of this second workshop was not primarily focused on the PREDICT suite of tools, the audience made several comments on this topic. An important aspect raised was the exploitation phase: how could these tools be deployed and then maintained. This point needs to be addressed in the near future of the project in order to be taken into account when designing the tools. Participants expressed requirements regarding tools to better predict, monitor and communicate on the evolution of an incident.

In this regard, a key lesson learned during the workshop is that there is a broad scope of organisations involved in crisis management. There is also a broad diversity of decision-making levels and structures depending on the organisation. For this reason, a one-fits-all decision support solution would be difficult to develop and implement. To effectively engage with potential users of these tools, participants also underlined the importance of creating a common understanding of what kind of tools PREDICT will develop and what end-users can expect from these tools.

One of the end-users pointed out the usefulness of simulation tools. For instance, in case of an earthquake it would be useful to be able to map the regions at risk and to identify the potential affected areas. This tool would be a kind of G.I.S but rather than only giving the vision of the situation, it would also integrate the simulation of the impact.

Several comments were made on the functional and operational aspects that the tools should have:

1. They should be based on a push system giving immediately access to the information needed. This would be more helpful than a pull system where one needs to find the information.



2. They should help to interlink the organisations and plans.

On a more technical note, one participant reminded the importance of proposing tools based on open protocol. It would ensure that the tools can be plugged into a country's existing system. It is also important to have an open software application so that one can change it to adapt/update it without having to buy a new one. The PREDICT project needs also to think about the financial aspects –in particular in the exploitation phase-, which is one of the main constraints for the end-users.

Another constraint that will have to be taken into account in the development of the tool is the nature of the data these tools will be able to access, to use and to secure.

Regarding the PREDICT suite of tools, participants asked for indication on the practical conditions under which these tools will be made available after the project: costs to use them (license etc.), implementation and initiation, maintenance requirements and costs etc. Another end-user also pointed out the interest of having a comprehensive analysis on the use of tools in terms of pros and cons in specific situations.

4.7. Closing of the workshop

Olivia Cahuzac-Soave thanked all the participants for their active engagement in the workshop and closed the meeting.

She announced that the next PREDICT end-user workshop will take place at the beginning of 2016.

She reminded the participants of the workshops to be held in the autumn in the framework of the three PREDICT test cases, and invited interested end-users to get in touch with the project partners.



5. Annex 1 – Qualitative synthesis of questionnaires

The first questionnaire was filled in by end-users individually and discussed in small groups. The synthesis is based on 19 anonymous questionnaires collected at the end of the workshop.

The second questionnaire was filled in by end-users individually and discussed in plenary session. The synthesis is based on 15 anonymous questionnaires collected at the end of the workshop.

5.1. Questionnaire 1 – Incident evolution in the prevention and planning phases

5.1.1. Information about the organisations of the participants

- **Is your organisation a crisis management organisation? If not what is your link to crisis management?**

The typology of participants having answered this questionnaire was the following:

- 11 participants indicated they were part of crisis management organisations. However, their activities, level of actions and sector of intervention are diverse. These organisations ranged from rescue services - acting as first responders or as an auxiliary of the public authority to provide additional assistance - to central government organisations or departments working on all or part of the crisis cycle, from prevention and preparedness to response.
 - 3 participants were working for organisations acting as a facilitator between crisis management & emergency management at the local and the international level. Their role is to provide coordinating support to crisis management actors during disasters or at the prevention stage to plan crisis management procedures.
 - 2 participants represented national rescue associations that aim at improving the training of people involved crisis management (both volunteers and professionals)
 - 2 participants were from the private sector
 - 1 participant worked in a Research Centre
- **Provide an idea about the size of your crisis management organization/unit? (staff, size of the covered geographical area...)**

The participants are part of organisations having from 50 (associations and local crisis management organisations) to more than 5000 (national ministries) employees. However, the majority of the participants are working for nation-wide organisations with several hundreds of employees.



PREparing for the Domino effect in Crisis siTuations.

- **What kind of crises fall under your responsibility (floods, gas failures, terrorist attacks, epidemics)?**

A large majority of the participants' organisations - as first responders and national authorities performing disaster prevention, preparedness and response - cover all kind of emergencies and have an all-hazard and multi risk approach.

However few participants are focusing on a single sector: transport, environmental issues (oil spill response), and flooding.

- **On which level are your responsibilities in the crisis organisation (top-level management, sector management, operational actions etc.)?**

Most of the participants (9) operate at the management level: their role is mainly to advise policy-makers and to devise prevention and response strategies. However - because of their role (e.g. fire commander) and/or the nature of their organisation (e.g. ERCC) - some participants (4) indicated they also have operational assignments.

- **Which phase(s) in the crisis management cycle are you focusing on (prevention, planning, response)?**

9 of the participants work for organisations (or a unit/department in these organisation) focusing on the prevention and planning phase. 7 work with handling the crisis at all the three levels (prevention, planning and response); and 3 participants were involved mainly during the response phase.

5.1.2. Cascading effects

- **Does your organisation work on cascading effects? Do you also call them cascading effects or do you use another wording?**

With the exception of one respondent answering that his/her organisation was not prepared for cascading effects, all the participants' organisations work on cascading effects to:

1. Include them in their risk management process;
2. Increase public authorities awareness of this risk;
3. Better manage and allocate logistics and human resources;
4. Develop worst case scenarios to inform the generic crisis planning and identify asset interdependencies.



The other words used by the participants to describe cascading effects (which is recognised as the most widely used one) are: consequences, escalation, domino effects (referring to the SEVESO directive⁷), interdependencies, and secondary inputs.

- **Can you give examples of cascading you have been / you could be confronted to?**

Participants shared personal experiences and potential scenarios of crisis situations where they were confronted to domino effects that had direct impact on their activity and risk management procedures, both in a short and long-term perspective: lack of human resources, people put at risk, etc.

- One of the organisations represented, responsible for electricity generation and distribution had to face extreme weather conditions (explosive cyclogenesis) shutting off the communication with the operating field and had to use the old radio network.
- Due to a flooding, the wastewater collector system - with electrical components - had to be turned off, which escalated into possible risks of: sea pollution, no canalisation for waste water, no drinking water etc. But these risks of escalation were managed before the "black scenario" developed.

Participants also mentioned recent and famous cases of crisis with cascading effects:

1. Fukushima, March 2011: an earthquake created a tsunami, which led to major power failures leading to CBRN contaminations.
2. Ebola crisis: the spreading of the virus had cascading effects on border checks, air transport traffic and visa issues.
3. The ash cloud resulting from the volcano eruption in Iceland hindered air transport (in particular for medical purpose)?

5.1.3. Incident evolution: prevention and planning phases

- **How do you try to figure out the incident evolution and the threats/risks resulting from it? How do you benefit from this information?**

At the prevention and planning level, the main means used by end-users to follow the incident and to help in predicting potential associated risks fall into five categories:

1. Early warning sources from public entities and surveillance tools;
2. Direct communication with/from other stakeholders in other organisations, in the competent sector and on the field;
3. Risk assessment plans and development of standard methodologies;
4. Scenario modelling and incidents databases based on the analysis of previous events;

⁷ Article 9 Domino effects - "Member States shall ensure that the competent authority, using the information received from the operators (...) identifies all lower-tier and upper-tier establishments or groups of establishments where the risk or consequences of a major accident may be increased because of the geographical position and the proximity of such establishments, and their inventories of dangerous substances".



PREparing for the Domino effect in Crisis siTuations.

5. Training, exercises, and simulation of an event's consequences to help prepare people and define best practice.

Lessons learnt were also mentioned as an important way to enhance prevention and planning procedures.

- **Do you have specific processes in place for observing and communicating the evolution of an incident?**

Few participants referred to the existence of specific systems to follow the incident but mostly emphasised on specific processes to be set up in case of crisis:

1. Ad hoc common and centralised centres or meetings with the competent stakeholders/staff to follow and coordinate the crisis;
2. Communication and Command and Control channels to link the different levels of the crisis management process;
3. Information obtained from national sources and/or permanent monitoring.

- **What sources of information do you have access to?**

The main sources of information mentioned by the participants are:

1. Early warning tools and systems;
2. Open sources (national and international reports, media reports, Internet, academic and scientific data);
3. Internal information (from the field or databases) on the field situation and on the assets at risk (plans, maps, info from the industry, national databases);
4. National civil protection and local authorities;
5. Experts' advice.

- **How do you use and evaluate the information obtained from previous incident?**

All the participants indicated that they have lessons learnt processes in place to improve their prevention and response capacity and prioritise the necessary actions. This includes the production of:

1. Evaluation reports
2. Statistical studies
3. Academic papers
4. Exercises

These lessons learned processes may be conducted both in the hot and cold phases following the crisis. The formalisation and the dissemination of the lessons learnt to the relevant stakeholders were also mentioned as an important aspect to maximise the impact of the process.



- **Which tools do you or your organisation use for predicting the incident evolution and training for it? At which level are these tools used (management, operational, both)?**

The majority of the participants mentioned training and exercise programmes as the main tool used to better respond to a crisis and its unexpected consequences. While most of the participants said that they did not have specific software tools to predict the unfolding of a crisis, they mentioned country-specific and sector specific tools, as well as methods, such as:

- Risk scenario development;
- Mapping of sensitive areas;
- Situation awareness tools (BORIS);
- Geographical information systems (ARIPAR);
- Early warning tools.

- **Do you use these tools yourself?**

9 end-users mentioned that their organisations were using this kind of tools.

- **If yes, how would you evaluate the ease of use of these tools? If no, why don't you use these tools?**

End-users using the tools mentioned that:

- The tools contribute to establishing standard operational procedures
- The tools are easy to use, but the modelling itself is difficult; one participant mentioned that some tools need consistent and methodological rigour.
- The tool used enables to map sensitive areas according to the threat, which is very useful
- The tools are easy to use because they are made by the organisation, for the organisation

Some end-users justified the fact that they did not use tools by explaining that:

- Their organisation did not have any software tools to predict incidents
- It is complicated to interconnect different sources.

- **What are the main limitations you have identified in the properties of your tools**

- Lack of data available, databases need to developed,
- Tools are more reactive than predictive
- Not dynamic and need to update them

- **What are the main limitations you have identified in the availability of the tools, in the organisation, or the accessibility of education for these tools?**

The end-users using tools mentioned as main limitations:

- The availability of skilled staff



- The price
- Having tools applicable for cross sector failures
- Technical complexity and maintenance

5.2. Questionnaire 2: Responding to the incident evolution during the crisis

5.2.1. Response action guidelines

- **Do you act according to a predefined response plan in a crisis situation? How / when / by whom is this plan defined?**

Most of the respondents' organisations act according to generic response plans, which have been defined internally and/or by the public authorities at the national, regional or local level depending on the nature of the organisation. These plans may provide tools that can be called upon to respond to the crisis, standard operating procedures, assigned personal and equipment, guidelines. However, some of the respondents reminded that flexibility is still needed since crisis management authorities will have to adapt to a specific crisis and to its specific evolution.

- **Does the response plan take into account possible cascading effects and the connections to other responding organizations in a multi-sectorial situation?**

There are four main attitudes regarding the integration of cascading effects in organisation response plans:

- Capacities and mechanisms are planned internally to deal with cascading effects (strategic coordination teams, joint response teams, public-private co-working team etc.);
- Measures are planned to coordinate with external stakeholders (Non-Governmental Organisations, CI operators, etc.) and/or other stakeholders from the same sector (e.g. transport) to prevent or respond to domino effects;
- The possibility of cascading effects arising during a crisis is only mentioned in the response plan and crisis management authorities need to be aware of them but cannot rely on specific mechanisms or guidelines;
- Cascading effects are not included in the response plans.

5.2.2. Progress of response actions

- **How do you estimate the time required for the various steps of response actions?**

Time definition may be dependent on the incident and based on the information given by the stakeholders. However lessons learnt from previous experience and risk planning methodologies were mentioned as means for planning the scheduling of the response phase.

- **How do you trace the progress of the response actions and communicate it with other actors?**



Having a coordination team, unit or referent was mentioned as key to supervise, trace and communicate the progress of the response actions to the different actors involved. These coordination actions may be made and facilitated through different channels: establishment of coordination teams sending regular situation reports, organisation of meetings (telephone conversations, emails, radio, mobile phone, the use of online information tools or platforms). Tools to facilitate the flow and the exchange of information between all actors may also be made available by the public crisis management authorities in crisis situation, such the French CRISORSEC portal mentioned by one of the respondents.

5.2.3. Tools and methods for action planning and resource allocation

- **Which tools do you or your organization use for action planning and resource allocation for different tasks? On which level are these tools used (management, operational or both)?**

At the strategic and management level, the majority of the respondents referred to internal paper-based plans and white boards as the only tools used to support the planning of actions and the allocation of resources during the response phase. The documents mentioned were: cooperation guides, standard operational procedures, databases, and matrixes.

At the operational level, actors on the field have their own procedures, plans and tools.

One of the respondents mentioned a technical tool, the National Crisis Management System used by the Dutch crisis management authorities both at the strategic and operational level (fire, ambulance, police departments and other governmental agencies). It provides a netcentric working platform where all available information is continuously shared between all actors involved during a crisis.

- **Do you use these tools yourself? If not, who in your organization uses them? (profile of users, education, level in the hierarchy)**

The participants identified three main types of users using the tools to support action planning and resource allocation:

- Crisis coordinators at the management level: e.g. mayors or representatives of the municipality, Response unit etc.
 - Information managers supporting the coordination teams
 - Operational commanders on the field at the operational level
- **If yes, how would you evaluate the ease of use of these tools? If no, why don't you use these tools?**

The main factors and parameters that would make these tools easy to use are:

- Practicality
- Easiness of reading
- Easiness of using to train and exercise
- Easiness of updating to include lessons learnt
- Making these paper tools available as software on a computer



- **What are the three main limitations you have identified in the properties of your tools?**

- Not systematic and flexible: each method/tool is restricted to a certain sector which makes the coordination between different sectors (e.g. in the case of a crisis involving cascading effects) difficult;
- Not predictive but rather responsive tools
- Lack of integration of human factors (personal stress, biases etc.)
- Not keeping the information up to date
- Lack of interoperability and standardisation e.g. allowing the connection to other systems from partners
- Lack of common understanding on how to use them and lack of knowledge on these tools

- **What properties and functions would an ideal tool have?**

- A proactive system rather than a reactive tool that adds a significant burden (time and staff) to the existing work of the crisis management authorities
- A push system that will calculate the probability and the gravity of the possible developments of a situation following a risk-based approach, and based on the data you put in the system.
- A tool that addresses the human limits, e.g. corroborating data collected
- A tool that is interactive and enables the access to the systems of other actors
- A tool providing up-to-date contact information
- A tool facilitating the exchange of GIS information in an easy and clear way
- A system with predictive functions
- A system linking and mapping the interdependencies between the CI operators
- A tool providing scenario visualisation
- A flexible and easy-to-use system
- A tool that could be used in any situation or sectorial crisis
- A system based on an all-hazard approach
- A tool that is clear, simple and flexible

- **Do you have any other comments on action planning and resource allocation tools you would like to share with us?**

Action planning and resource allocation should take into account the level of areas affects, the number of people, and infrastructures. In scenarios or inside of each tool it would be useful to add a gradable level of visible effects or the level of disaster starting from lowest to worst case scenario divided on 3 components: human resources, financial resources and logistics.

It seems there are already a lot of such of tools available on the market. So instead duplicating efforts, it could perhaps be more interesting to develop tools that support end-users in their estimation of where in the cascading chain the use of the resources and capabilities would have the greatest impact.



6. Annex 2: Presentation of the methodology applied by CEIS to the end-users workshops

The objective of this annex is to give some indications on the methodology used by CEIS for organising and running end-user workshops. These workshops are one of the main tools used by CEIS to engage in dialogue with a broad range of stakeholders at various points in the research lifecycle of the PREDICT project.

CEIS has a track record of running workshops in the framework of research projects and similar activities in order to engage with and manage end-user communities. CEIS has acquired a strong experience in this domain through several research projects, from logistics to the animation of the workshops. For about ten years, CEIS has organised more than 70 stakeholders' workshops in which participated an average of 20 end-users per workshop representing public Security & Intelligence organisations from across the EU. CEIS enjoys the recognition of participants from various sectors, including: crisis management, counter terrorism, critical infrastructure protection, intelligence, and law enforcement.

6.1. Objectives of the workshops

The PREDICT project includes a series of five iterative workshops to present the progress of the work and to integrate stakeholders inputs into the project's developments. These workshops will allow the target audience of the PREDICT solutions - the crisis management community - to get involved in and to follow the research process. The objective is also for the end-users and the project partners to exchange best practises with their European colleagues. Finally, these workshops are instrumental in increasing the visibility and the dissemination potential of the project by reaching out to practioners beyond the traditional European research community boundaries. The inputs gathered from these workshops will be synthetized in several reports and will feed the deliverables of the various work packages.

The objective and topic of the workshop will be defined in close collaboration with the partners involved in the research activities. Depending on the progress of their research, the needs of these partners may differ from a workshop to another: validating results, collecting data, working on a specific scenario, training end-users etc.

6.2. Consideration on the format of the workshops, and the nature and number of participants

To achieve these objectives, CEIS chose to conduct one-day **frontal and interactive workshops** composed of:



- A Frontal workshop in the morning to introduce the core issue of the workshop related to the project, the state of the art (both from the research and the operational perspective) etc.
- An Interactive workshop in the afternoon to design possible proposals, support networking and experience sharing relevant for the project.

In PREDICT, the objective of the workshops - as stated in the Description of Work (DoW) - was to bring together an audience gathering mixed end-user groups from different sectors and addressing different issues (crisis prevention, preparedness, response, and recovery). For this reason - and to maximise the impact of this European project - the organisation team intends to target stakeholders from various Member States and organisations, with different skills, experience, and expertise in crisis management. The heterogeneity is a necessary prerequisite to achieve the European dimension of the project.

However in PREDICT, the partners agreed that the suite of tools and solutions would primarily address the requirements and needs of the management level, therefore, CEIS **targeted invitation** towards such level as from the second workshop.

Experience has shown that having between 20 and 30 people (including members of the consortium) was the optimum number of participants to conduct such workshops; this choice also depends on time frame, logistics and budget.

6.3. Consideration on data privacy and anonymisation

At the beginning of each workshop, a consent form is distributed to all participants. The purpose of this consent form is to give participants information on the objectives of the workshop and the use of its results. Participants will then be able to decide whether they decide to (actively) take part in the whole seminar or only parts of it. Participants are also informed that all their inputs and remarks will be anonymised following the Chatham House rule. This rule states that: "*When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed*"⁸.

These measures aim at encouraging the openness of the discussion and the sharing of the information by the participants.

⁸ <http://www.chathamhouse.org/about/chatham-house-rule>



6.4. Methodology for planning and running the PREDICT workshops

Building on its solid experience in organising end-user workshops, CEIS developed a consistent and successful methodology for organising workshops while being able to respond and meet the requirements of a specific context and audience. This methodology considers the following steps:

1. Preparatory phase
2. Execution phase
3. Post-workshop analysis and interpretation of results
4. Validation of the workshop's outcomes and dissemination of findings

6.4.1. Preparatory phase

Prior to the workshop, a number of practical and conceptual issues need to be considered. These issues fall into three main categories:

- Logistics and practical organisation
- Definition of the objectives of the workshops and preparation of the workshop materials (presentations, questionnaires etc.)
- Identification and invitation of the relevant stakeholders

It is important to note that these activities have to be conducted sometimes in parallel. At the very beginning of the preparatory phase the organisation will develop a retro planning to ensure the smooth running of the workshop.

6.4.2. Logistics and practical organisation

The room in which the workshop will be organised needs to be spacious enough and have ample wall space to organise it in U-shape. This format facilitates exchange and allows the participant to view the presentations displayed and react instantaneously. During the workshop, tables and chairs would be removed and arrange in a specific way to conduct focus groups. The workshop also requires a white board and a projector with large screen. During the workshop good catering facilities for drinks and lunches will be offered to the participants. Such an environment is essential during the breaks and to facilitate networking. All these logistical arrangements must be fully addressed at least four weeks before the date of the workshop.

6.4.3. Definition of the objectives of the workshops and preparation of the workshop materials

The objective and topic of the workshop will be defined in close collaboration with the partners involved in the research activities. Depending on the progress of their research, the needs of these partners may differ from a workshop to another: validating results, collecting data, working on a



specific scenario, training end-users etc. Based on its experience, CEIS has developed a list of questions to guide the identification of the workshops' objectives; e.g. Which pieces of information do we miss? Does our work lack operational evidence? Do we need to assess the applicability of our work? etc.

Following this first exchange between CEIS and the research partners, a first abstract presenting the main objectives and the expected outcomes of the workshop is drafted. Based on this abstract the key contributors to the workshop can be identified and contacted to provide the necessary inputs. CEIS is in charge of gathering and formatting all the materials to be presented at the workshop⁹. This is to ensure that the presentations are delivered on the same PREDICT template and it also ensures that there is no overlap between several presentations. Finally, CEIS is in charge of ensuring a good timing in the agenda, with a good balance between the type of presentation and information given to the participants. This ensures a good rhythm of the workshop throughout the day, and ensures that the participants stay focused and active in their participation.

CEIS is also in charge of preparing and printing all the materials required on the day of the workshop:

- Agendas to be distributed to the participants
- Consent forms
- Supporting materials (notes, presentations, annex etc.)
- Questionnaire(s) supporting the interactive session(s)
- Evaluation questionnaire

An important part of this process is the questionnaire design that requires attention to many details. Questionnaire design must take into account not only the range of potential variables which might impact upon the issue in question, but also human reactions which can affect and shape possible responses¹⁰. In this regard the knowledge and the experience the organisation team has of the audience is a key factor for success. One of the most significant decisions that can affect how stakeholders answer questions is whether the question is posed as an open-ended question, where respondents provide a response in their own words, or a closed-ended question, where they are asked to choose from a list of answer choices. After the questionnaire is drafted and reviewed, the organisation tests it and makes final changes.

This step is expected to be completed eight weeks before the date of the workshop. This first version would then be enhanced during the process of drafting the workshop's presentations.

⁹ According to the project visual identity

¹⁰ Quantitative methods in Social Research, <http://www.bl.uk/reshelp/findhelpsubject/socsci/topbib/quantmethods/quantitative.pdf>



6.4.4. Identification and invitation of the relevant stakeholders

Depending on the objectives and topic of the workshop, the relevant organisations and participants will be identified and extracted from the end-users' database developed and managed by CEIS for the purpose of the PREDICT project. CEIS will draft an invitation letter, which includes the following elements:

- Title of the workshop and an abstract presenting its objectives (5-10 lines)
- Date and venue
- Target audience
- A brief presentation of the PREDICT project (5 lines) and a link to the website
- A draft version of the agenda
- Information on the reimbursement of transportation and accommodation costs
- Information on the inscription procedure and a point of contact

INVITATION

PREDICT project – Workshop #2

“Managing cascading effects – Understanding the incident evolution”

The PREDICT project team is happy to announce the organization of a second expert workshop on domino effects in crisis management.

- **When:** Wednesday 10 June 2015
- **Where:** Brussels, Chambre Française de Commerce et d'Industrie de Belgique ([Avenue des Arts, 8 - 1210](#))
- **Target participants:** CI operators, accidents & risks analysts, civil protection, fire fighters, public authorities in charge of managing crises etc.

Objective

This second PREDICT expert workshop will be focused on better understanding how the incident evolution can be observed, predicted and communicated at the prevention and response levels. Indeed, predicting and addressing potential cascading effects in crisis situation requires a comprehensive view of the evolution and a better understanding of the key phases of a crisis. By taking stock of existing solutions and exploring innovative methods in this field, end-users will be able to exchange best practices and express operational requirements on incident evolution solutions designed to improve their capability to mitigate potential cascading effects and thus facilitate their daily work.

For more details, please find attached the tentative agenda of the workshop.

The results of this workshop will be used to support the specification of a generic methodology for

Figure 1 - Abstract of an invitation email



The invitation will be sent at the latest 7 weeks before the workshop. Depending on the number of registrations, reminders could be sent. Places are limited and the organisation team ensures that only the targeted end-users enrol in the workshop by carefully and responsively managing the registration of the participants. About one week before the workshop, registered participants will be requested to confirm their participation to allow as many people as possible to participate, and to ensure an actual turnout. They will receive the final version of the agenda including practical information on the venue (map, contact details etc.). The general outline of the agenda of the workshop, to be adapted to each seminar, is the following:

- Introduction of the topics, objectives and format of the workshop [CEIS]
- Roundtable¹¹
- Presentation of the PREDICT project [PREDICT coordinator]
- Presentation by an end-user [external or internal end-user]¹²
- Coffee Break
- Presentation by the consortium on the research performed [PREDICT partner]
- Reaction of the participants
- Lunch break
- Interactive session 1 [CEIS and partners]
- Coffee break
- Interactive session 2 [CEIS and partners]
- Wrap up and main conclusion

6.4.5. Execution phase

The main objective of this phase is to ensure the smooth running of the workshop and to ensure that it reaches its initial objectives. This will be done through a dynamic moderation of the workshop simulating the interaction process and dialogue among participants. Specific participatory methodologies will also be applied to gather information from the end-users during the interactive sessions.

The top three project success factors are user involvement, executive management support and clear objectives¹³. Getting users, executives and other relevant stakeholders together in a guided workshop to analyse problems, set objectives, and define and design the solution are recognised by social

¹¹ Each participant introduces himself, his work and organisation and explains why he attends the workshop (interest, expectations, experience etc.)

¹² The objective of this presentation is to start the day introducing the end-user perspective. This will prove to the participants that the project in general and this specific event aim at addressing their daily activity. It is also important to invite an end-user to give this presentation to strengthen the credibility and the legitimacy of the project.

¹³ Standish Group. The Chaos Report on Best Project Management Practise. The Standish Group, 2000.



scientists as a best way to quickly create stable and high quality requirements¹⁴. A stakeholder is “a person, group or organisation that is actively involved in a project, is affected by its outcome, or can influence its outcomes”¹⁵.

One of the members - **the workshop moderator** - of the organisation team is specifically in charge of animating the whole workshop. (S)he will make the link between the different presentations during the frontal workshop and accompany the participants through the different steps of the workshop. The moderator also ensures that the workshop remains a safe and stimulating space for participants to share their experience.

Frontal workshop¹⁶ moderation

For the PREDICT workshops, this activity takes place in the morning and lasts about 3 hours. The workshop moderator supports the moderation of the frontal part of the workshop programme by ensuring that there is good time keeping and by fostering debates by facilitating specific **question and answer sessions**. To do so the workshop moderator follows these few guidelines:

- Be neutral and objective¹⁷
- Keep it simple to translate - if the need arises - the technical information presented by the research partners to help participants understand each other
- Encourage conversation
- Be focused
- Be timely

Interactive workshop¹⁸ moderation

At least one interactive session takes place in the afternoon. This session is divided into three parts:

- Questionnaire filling up
- Discussion in focus group
- Debriefing in plenary

1. Questionnaire filling up

¹⁴ See for instance: Elias, A. A., Cavana, R. Y., & Jackson, L. S. (2002). Stakeholder analysis for R & D project management. *R&D Management*, 32(4), 301–310. and "Comparative Analysis of Stakeholder Engagement in Policy Development", Sharon Dawes, Natalie Helbig, Jamal Shahin, Catherine Mkude, Gerard Cottere, Bram Klievink, Zamira Dzhusupova, www.policy-community.eu

¹⁵ K.E. Wiegiers. *Inspecting Requirements*. StickyMinds, <http://www.stickyminds.com/sitewide.asp?Function=WEEKLYCOLUMN&ObjectId=2697&ObjectType=ARTCOL>, last visited 2007-08-10, 2001.

¹⁶ For a definition see: D.3.2 – Concept and methodology of Interactive Workshops, Pro Ideal Plus project.

¹⁷ While the rest of the organisation team - as part of the panel - are able to engage in the discussion and share their own views.

¹⁸ For a definition see: D.3.2 – Concept and methodology of Interactive Workshops, Pro Ideal Plus project.



Structured interviews are conducted through questionnaires. Although it is recognised that structured interviews are impersonal and do not provide the best tool to engage with stakeholders, the reason for using questionnaires in these workshops is twofold:

- To collect data that will be analysed after the workshop;
- To initiate and stimulate the dialogue by providing a common basis to all the participants.

Each participant completes the questionnaires separately and individually. The questionnaires are anonymised.

2. Focus groups¹⁹

In the next phase of the interactive session, the questionnaires will be used as a qualitative research methodology. The audience will be split into several groups of maximum 8 people.

Using the focus group techniques, the moderator will use the questionnaire to work with the end-users from a predetermined set of questions. Focus groups are instrumental in stimulating exchanges and in integrating a multiplicity of perspectives and experiences. Although homogeneity and heterogeneity among focus group participants is an issue for consideration in the scientific literature, the focus group method is neither bent on involving all the relevant actors nor on getting a representative sample of the targeted population²⁰. Splitting participants in smaller groups has also a considerable effect on their participation. Indeed, many participants will feel more comfortable sharing their experience with a smaller circle, than in plenary session.

Taking into account these methodological limitations and choices, the organisation team finds the focus group as appropriate to fit the heterogeneity of the audience of the PREDICT workshop and get reliable data for the project, as a wide range of perspectives is sought from a rather diverse sample of stakeholders.

One member of the organisation team and one member of the research team will moderate the focus group. The role of the moderator is to guide the focus group discussions by asking predetermined questions and to ensure the participation of all the participants in the focus group. If necessary, (s)he intervenes in the process in order to stimulate the discussion. Although the moderator makes sure that the discussion addresses the research objectives, his/her first role is to put the participants at ease and get them talking freely. For this reason, he/she will leave the conversation open if s(he) thinks that - although shifting from the initial questions - it is creating a fruitful group interaction.

¹⁹ Powell and Single (1996:499) define a focus group as: 'a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research.'

²⁰ Focus Group (FG), A'sa Gerger Swartling, http://www.ivm.vu.nl/en/images/pt6_tcm53-161511.pdf



The focus group will last around 1 hour. One of the moderators is also appointed rapporteur of the group. In the next phase, (s)he will present the main results of the focus group.

3. Debriefing in plenary

A debriefing session in plenary will follow the focus groups. Each rapporteur will present the main conclusions and topics exchanged during the focus group session. This debriefing will enable the participants to connect ideas and reflect on their approach to the topics addressed in small groups. It also gives them the opportunity to raise concerns on the quality of the questionnaire. Debriefing may also be valuable for the research team, in particular to have a comprehensive picture of the diversity of points of view and opinions developed by the various participants.

6.5. Post-workshop analysis and interpretation of results

Following the workshop, the organisation team will be in charge of drafting the minutes. This report will also include the notes taken by each focus group moderator as well as the questionnaires filled in by the participants. A general description of the workshop process, methods used and adaptations would also be provided. This document is structured as follows:

- Executive summary underlying the main findings of the workshop
- Objectives and topics of the workshop
- Information about participants (country of origin, type of organisation, level of experience)
- Reporting of the frontal workshops and Q&A
- Qualitative results of the interactive sessions
- Lessons learned for the PREDICT project
- Recommendations for future workshops

Using the transcripts of the workshops, the organisation team conducts mainly a qualitative content analysis to analyse the discussion. Indeed, the workshops do not intend to gather a representative sample of a population and conducting quantitative analysis would have very limited interest and poor scientific evidence. Therefore a detailed, qualitative rather than quantitative analysis would provide a clearer picture of the complex set of the operational reality of end-users.

The objective is to compare and analyse the information provided by the participants. The direct interaction and the debriefing phases serve as a tool to improve the quality of the analysis. It provides insights into stakeholders' perceptions of the issues, and on how the target end-users actually work. The team conducting the post-workshop analysis took part in the workshop and has direct experience of the challenges of information analysis. Each member of the team is equipped with state-of-the-art tools and skills necessary to perform qualitative analysis. They are fully aware that the social sciences methods and techniques used (workshop, questionnaire, focus group etc.) may be biased due to the nature of the people involved, the type of questions, the moderation style etc. However the latest



trends and findings in information analysis are part of their training curriculum and help them mitigating the negative effects of these limitations.

6.6. Validation of the workshop's outcomes and dissemination of findings

Once the report of the workshop is drafted, a preliminary version is sent to the participants. The participants are invited to react on this first version and to make comments, using the silence procedure. After this external validation, a new version of the minutes will be drafted and validated with the participants. The report will finally be disseminated to the remainder of the consortium, end-users and relevant stakeholders, and made available on the PREDICT website as a public deliverable.

PREDICT PROJECT PARTNERS

