COBACORE

Community Based Comprehensive Recovery

Grant Agreement № 313308

D5.3: Report on second intermediate and final evaluation

WP5 Experimentation and Evaluation

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Executive Summary:

This deliverable describes the second intermediate and final experiment and evaluation as part of task 5.4.

The second intermediate evaluation (IMEV2) was held on the 12th and 13th of May at the premises of the Academy for Crisis Management, Emergency Planning and Civil Protection (AKNZ) in Bad Neuenahr-Ahrweiler. Thirty-seven individuals participated in IMEV2 to evaluate new ideas about community liaison concept and new platform features. Representatives from Kreis Viersen, Safety Region Limburg, a volunteer group 'Essen packt an', the Netherlands Red Cross and German Red Cross participated as professional users of the COBACORE platform. Affected community members (5) were simulated by the COBACORE team. The final evaluation (FINEV) took place on the 27th and 28th of October at the premises of the AKNZ. During the FINEV a total 68 people were involved including representatives of the Municipality of Brüggen, Municipality Niederkrüchten, Municipality of Schalmtal, Municipality of Beesel, Kries Viersen, Municipality of Roermond, Safety Region Limburg Zuid, Aftercare Venray , Rijkswaterstaat, Shell, the Netherlands Red Cross, German Red Cross, Homeless shelter and resocialisation NL, Volunteer, University of Paderborn and University of Furtwange.

End-users in IMEV2 judged the community liaison role to be of value and recognised the necessity for a professional that can interact with communities through the platform. The responding community appreciated the community liaison as a point of contact. The professionals appreciated getting an overview of needs of the affected community and an overview of what volunteers were doing. Participants were quite positive on the usefulness of the platform. However, each user group indicated that they needed slightly different support and tailor-made interfaces, something that the provided generic interface did not yet provide. The various features that the platform provided to the affected community were helpful to help them indicate their needs, but the platform lacked feedback functionality that shows the progress of meeting these needs. Members of the responding community and responding professionals indicated that they missed an interface that helped them organise and manage the life cycle of needs and capacities. Professionals wanted ways to verify needs and capacities and ways to community trough chat. Responding community members, responding professionals and coordinating professionals lacked an overview on who is doing what and where that would enable them to coordinate needs assessment and recovery activities.

The FINEV showed the added value of the COBACORE concept. Affected and responding community members interacted immediately in posting and assessing needs and meeting these with recovery activities and capacities. We observed that the community liaison at the tactical level was able to provide situation updates to the professional team and was able to engage with communities for specific needs and activities. The field officers interacted both face to face and through the platform with both the community liaison and communities. These two channels provided redundancy, also enabled direct personal interaction and ability to verify needs, activities and capacities. We did see differences between the German and Dutch teams in how community liaisons worked and platforms were used. The concepts were sufficiently clear and adaptable. We found that the COBAGame was valuable for development and evaluation with multiple and realistic professional teams, structures and processes. This allowed us to conclude that the COBACORE concept: community liaison team and platform fits with various professional structures and processes. The improved platform features were appreciated: 85% of the users want to use the platform, 70% indicated to have sufficient skills for using the platform, 65% would like adjustments and 75% indicated that the Community Liaison is useful and ready to use in practice but also 55% stated that collaborative culture can be improved.

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1 Introduction

This deliverable describes the second intermediate evaluation (IMEV2) and final evaluation (FINEV) as performed within Task 5.4. The IMEV2 and FINEV resulted from the iterative CD&E (Concept Development and Experimentation) approach that the project has adopted from the start.

Task 5.1 has yielded performance assessment indicators that have guided the various evaluation sessions. Task 5.2 comprised of initial appraisals of our concepts in interviews and workshops with end-users in Cork, Berlin, Zilina, Madrid, Rotterdam, Dublin, Belfast and Seville.

The first intermediate evaluation (IMEV) in Rotterdam (Deliverable 5.2, Task 5.3) pointed out that the COBACORE collaboration concept, the needs-capacity matching features and dashboard have operational value for the three user groups: professionals, affected and responding community. We also learned that task-oriented features (like matching needs and capacities and the dashboard) need to be complemented with features for relation-oriented activities (group formation and chat). We learned the importance of features for mobile applications and also the need for non-technical ways to improve collaboration between professionals and communities.

We found that professionals need to prepare for collaboration with communities. The "command and control" style of interaction of professionals did not fit well with the "collaboration" style of interaction by community members. It was found that an organisational and human capacity for collaboration was required. Since the intermediate evaluation, additional technical features were developed (e.g. group formation and chat) and also implemented in a mobile application. In addition, we developed a novel concept to improve information collaboration: the Community Liaison Team (CLT). The CLT is an intermediary team between a professional teams, structures and processes and communities initiatives. The operational value of new COBACORE platform features and Community Liaison Team was tested in the second intermediate and final evaluation with realistic professional teams.
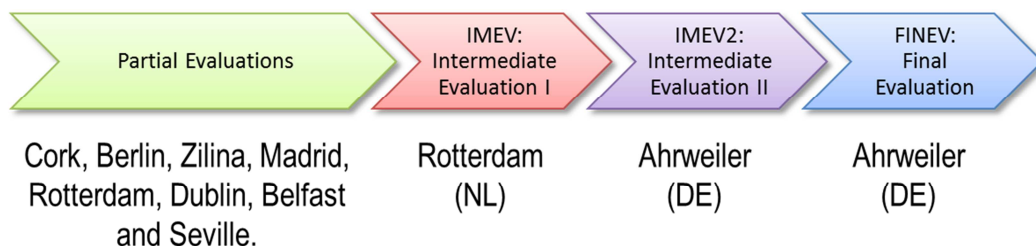
Figure 1: The evaluation sessions in the COBACORE project

To develop new platform features and organisational concept a 'concept development and experimentation' (CD&E) approach was followed: a project structure in which consortium partners develop, test and refine concepts and outputs in an iterative and continuous fashion. At the start of a phase, the results and conclusions of the previous phase are incorporated into the working material. This leads to gradual refinement of the concepts and platform. By continuous empirical evaluation sessions, the results remain practically usable and rooted in

the everyday practice of future end users.

This deliverable focuses on the last two CD&E cycles that help to get the COBACORE collaboration concepts and platform at a mature technical and operational level to enable end-users to experience the added value of the COBACORE approach in a real life scenario. That way, we are able to assess whether the COBACORE approach has added value compared to the current ways of working for both professional responders (PR), affected community (AC) and responding community (RC).

The goal of *Intermediate Evaluation 2* (IMEV2) is to learn about how organisational factors (e.g. team roles, function profile, tasks and procedures); factors concerning collaboration (inter-organisational agreements, communication, familiarity, positive experiences) and training (e.g. integrated understanding and competencies) affect appropriate use of the COBACORE concept and technology. For that purpose, the IMEV2 focusses around the role of the community liaison that interacts with unbound volunteers, professionals from the own organisation and liaisons from other organisations. From the findings from IMEV2, both the platform and the collaboration concepts (operationalised through the Community Liaison Team or CLT) are further improved and tested in a large scale, realistic cross border disaster and recovery scenario that is used for the FINEV. The setup, organisation, used materials and findings of both the IMEV2 and FINEV are covered in this deliverable.

1.1 Evaluation goals

Based on the IMEV and Partial Evaluation 4 and 5 findings, the goal of the IMEV2 is to assess both the platform and the collaboration concept (e.g. the Community Liaison Team (CLT) concept) in a realistic, integrated scenario on a TRL level 6.

The goal of the IMEV2 is to:
- Assess whether COBACORE collaboration concepts have operational value for end-users
- Assess whether COBACORE platform functions and features are useful and usable
- To observe, interpret and evaluate experiences of end-users, experts and stakeholders
- To draw conclusions about operational value of the CLT in practice,
- To define refinement advice for further development, and
- To guide the further design efforts

Based on the IMEV2 findings, the goal of the FINEV is to assess both the platform and the collaboration concept (community liaison team-CLT) in a realistic, integrated scenario on TRL level 7.

The goal of the FINEV is to:
- To demonstrate that COBACORE collaboration concepts in an integrated evaluation with all end users and all functionalities have operational value
- To demonstrate that COBACORE platform functions and features have operational value.
- To demonstrate that COBACORE mobile platform functions and features have operational value.
- To observe acceptance by end-users, experts and stakeholders of COBACORE concept and platform.

- To describe the effectiveness of collaboration and information sharing between groups; decisions to engage other groups and the organisation of community engagement.
- To draw conclusions about operational value in practice,
- To define refinement advice for further development, and
- To guide the post project development efforts

1.2   Research questions

The research questions of IMEV2 are as follows:

- Q1: What is operational added value of the CLT for needs assessment and recovery planning?
- Q2: Does the CLT have a positive effect on community-based needs assessment and recovery planning?
- Q3: Does the COBACORE platform fit with processes, procedures and practices of the CLT?
- Q4: RP: Does the COBACORE platform have the right features?
- Q5: RC: Does the COBACORE mobile platform/app have the right features?
- Q6: Do liaisons of the PC think COBACORE platform features have operational value for their coordination role in needs assessment and recovery planning?
- Q7: Do liaisons of the RC think that the functionality and information that the COBACORE platform/app provides is useful?

The FINEV research questions are as follows:

- Q1: To what degree did the teams communicate needs assessment information?
- Q2: To what degree are decisions about engaging others explicitly made?
- Q3: How is the responsibility to engage others allocated within the team?
- Q4: How skilled are participants in using the COBACORE platform?
- Q5: What platform functions do participants use for engaging with others?
- Q6: Are teams satisfied with community liaison team and the digital angels?
- Q7: Do the teams think that the community-liaison team concept and the COBACORE platform have operational added value?
- Q8: What changes need to take place to make the COBACORE concept work in current working processes and organisations?

2   Evaluation Approach

2.1   Method of analysis

To measure the operational value of the platforms and the usefulness and usability of features of the COBACORE platform and CLT, performance criteria and measurement techniques are defined.

In answering the research questions, for this evaluation a combination of objective and subjective measures has to be sought. Objective measure typically include measures of performance (how many needs and capacities were matched, how many accurate matches were made, how long did it take participants?). Subjective measures typically include opinions on perceived operational value and own experiences (what did participants think of the way the platform supported their activities, how understandable and intuitive was the interaction with the platform?).
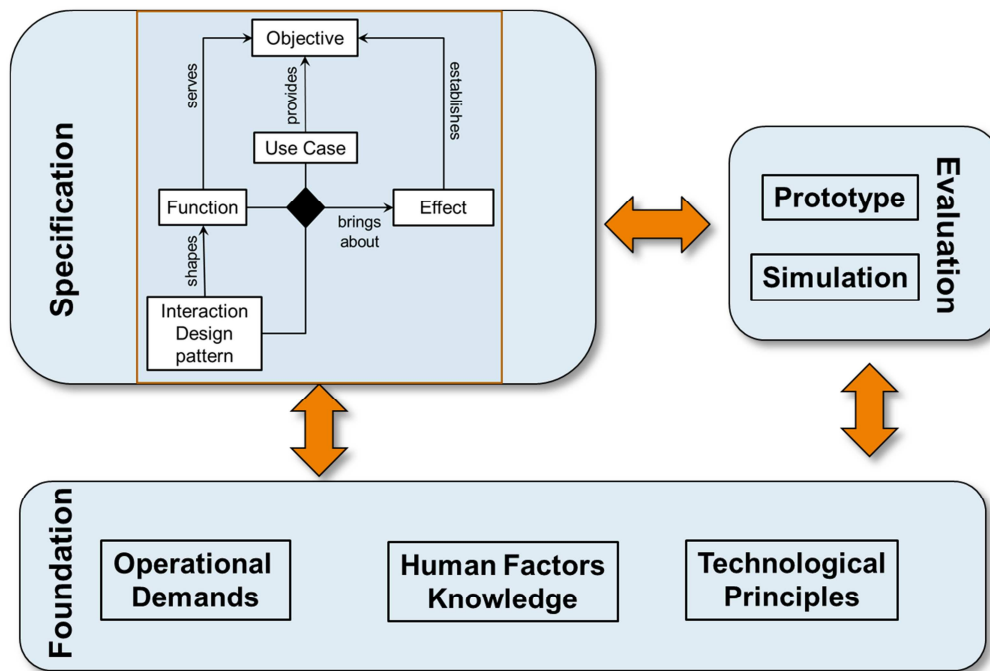

Figure 2: Situated Cognitive Engineering methodology (Neerincx et al, 2008).

As described in Deliverable 5.1, we employ a Cognitive Engineering (CE) methodology, which incorporates scenario-based design (Carroll, 2000; Neerincx et al., 2008)[1]. The main benefit of this approach is that it incrementally refines the requirements baseline and design solutions, based on knowledge about user needs gathered from evaluations. Furthermore, the CE methodology is in line with the CD&E process approach. The framework of performance assessment indicators can be used to specify support claims and requirements for scenarios and use cases together with end-users, experts and stakeholders. From the D5.1 document, a subset of performance assessment indicators was selected to support the FINEV evaluation.

Table 1: List of Performance Assessment Indicators for COBACORE functionality in the IMEV2 and FINEV.

Main Category	IMEV2 questions	FINEV questions
1. WHOLE-OF-COMMUNITY LEVEL	Q1: What is operational added value of the CLT for needs assessment and recovery planning?	Q1: To what degree did the teams communicate needs assessment information? Q2: To what degree are decisions about engaging others explicitly made? Q3: How is the responsibility to engage others allocated within the team?
2. RELIEF EFFECTIVENESS LEVEL	Q2: Does the CLT have a positive effect on community-based needs assessment and recovery planning?	Q6:. Are teams satisfied with community liaison team and the digital angels? Q8: Do the teams think that the community-liaison team concept and the COBACORE platform have operational added value?
3. FUNCTIONAL LEVEL	Q3: Does the COBACORE platform fit with processes, procedures and practices of the CLT?	Q5: What platform functions do participants use for engaging with others?
4. USABILITY LEVEL	Q7: Do liaisons of the RC think that the functionality and information that the COBACORE platform/app provides is useful?	Q4: How skilled are participants in using the COBACORE platform?
5. INFORMATION QUALITY LEVEL	Q6: Do liaisons of the PC think COBACORE platform features have operational value for their coordination role in needs	Q9: What changes need to take place to make the COBACORE concept work in current working processes and organisations?

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[1] For more information on the Situated Cognition Engineering method, see: http://www.scetool.nl

	assessment and recovery planning?	
5. PLATFORM LEVEL	Q4: RP: Does the COBACORE platform have the right features? Q5: RC: Does the COBACORE mobile platform/app have the right features?	Q7: Does the desktop and mobile platform have the right features?

2.2   Performance criteria

In Deliverable 5.1, we constructed a table with performance assessment criteria for COBACORE functionality. In the intermediate and final evaluation, we focus on the levels 3 (Functional level) and 4 (Usability level) due to the development stage of the COBACORE platform. Measures of performance at higher levels (*1: Whole of community recovery* and *2: Relief effectiveness*) will be collected anecdotally, based on end-user estimations. These performance criteria are used to answer research questions (numbers refer to Table 1 in D5.1) and to provide focus for the setup of the exercise, scenario and user profiles.

2.2.1.   Closing Information and collaboration gaps

The table below describes the performance criteria as set in Section 3.5 of D5.1 (Collaboration effectiveness / sharing)

3.5. Collaboration effectiveness / sharing	• Number of actors that are jointly shaping, executing and evaluating collaborative damage, needs and capacity assessments. • Degree of awareness actors have of collaborators (the groups involved, their goals, tasks, needs and capacities) • Number of interactions between actors from different community/user-groups (e.g. citizens, NGO, government) • Degree to which the information shared between user-groups meets their information requirements. • Added value of these interactions for assessments for these user-groups

2.2.2.   Fit with operational processes

Measures that primarily focus on performance criteria from Section 3.1 of D5.1 (Assessment indicators):

3.1. Assessment indicators	Evidence-based community-, situation-, needs-, capacity- and activity assessments: • Timeliness of assessment • Accuracy of assessment • Completeness of assessment • Continuity of assessment • Prioritisation of assessment • Overall quality of assessment

In addition, measures of organisational interoperability:

Organisational interoperability	• Capable of organisational collaboration • Degree to which the use of the COBACORE platform is aligned with standards, best practices and procedures of intended end-users. • Degree to which end-users and their organisations are willing and able to align their standards and procedures to effectively and efficiently use the COBACORE platform.

2.2.3. Perceived operational value

All performance criteria from Section 3.2 of D5.1 (Information Gathering), Section 3.3 of D5.1 (Decision-making) and Section 3.4 of D5.1 (Action).

3.2. Information Gathering	• Speed of information gathering • Continuity of information gathering • Completeness of information gathering • Situational awareness i.e. the percentage of actual world representation by the information gathered. • Quality of information gathering • Quality of feedback of collated information from decision-makers back to local communities • Speed of feedback of collated information from decision-makers back to local communities
3.3. Decision making	• Number of community groups and actors involved in recovery goal setting • Degree of support for decisions • Fairness of decisions • Timeliness of decisions • Number and types of errors in decision making
3.4. Action	• Number and diversity of (prioritised) needs that can be matched by capacities and funding • Number and diversity of (prioritised) damage that can be matched by capacities and funding • Number of projects (that can be monitored) directed at clearly articulated and prioritised community needs. • Percentage of needs met • Percentage of affected community reached • Timing match: speed/timing of resources arriving at desired endpoint • Quantity match: quantity of resources arriving at desired endpoint (% of total resources sent out for the target destination) • Quality match: do the resources delivered match the previously identified needs?

2.2.4. Usefulness and usability

All performance criteria from level 4.1 User acceptance, 4.2 Interaction and 4.3 Usability of functions.

4.1. User acceptance (specific for different user groups)	• Added value of COBACORE for intended user group / process / phases
	• Added value of information models, support functions and interfaces for
	    o Damage, needs and capacity assessment
	    o Prioritisation
	    o Matching
	    o Progress monitoring
	• Trust in the COBACORE system as perceived user group
	    o Information models
	    o Support functions
	    o Interfaces

4.2. Interaction	• Number of interface actions needed • Speed of activities within tasks • Number of errors for activities
4.3. Usability of functions	• Ease of use of function for (team of) user(s) • Satisfaction with function

2.2.5. Method of assessment

To match the combination of measures, we employ a mix of research methods outlined below.

Questionnaires (after day 1 and 2 in both IMEV2 and FINEV)

- On usability and usefulness of the COBACORE platform and separate features for each user group
- On the quality of information and situation awareness for each user group, resulting from interaction with the COBACORE platform.
- On the quality of group collaboration and the extent to which the COBACORE platform supports or initiates these collaborations.
- Comparison questionnaire: making a comparison between conditions with and without the COBACORE platform (after both scenarios).

Observations (during all days)

- Focusing on observable behaviours by user group (representatives) interacting with the COBACORE platform: specifically user errors, moments of positive experiences or puzzlement, work processes.
- Focusing on observable behaviours in interactions between user groups (collaborations supported or initiated by the COBACORE platform)
- Following an observation protocol, trained observers will witness how activities are carried out, with and without the COBACORE platform.

Performance measurements (during scenario with the COBACORE platform)

- Number of needs and capacities indicated to the platform
- Categories of needs and capacities
- Number of (accurate / relevant) matches between needs & capacities
- Plenary feedback / discussion sessions (after)
- Focusing on the usefulness of current COBACORE platform design features

Detailed discussion where user input serves to judge the features and draw out directions for features that are currently missing.

Manipulation: Because the IMEV2 and FINEV evaluations were constructed as a game (COBAGame), care was taken that participants do not choose the strategy of maximizing points in the game to be able to win. In that case, the focus of participants is more on winning the game than using, experiencing and judging the COBACORE platform. Furthermore, care was taken that in the instructions to the participants the COBACORE platform is not presented as the ideal end-point or a high-quality tool. Instructors and observers must remain objective, also during the plenary feedback session, and to document the factual statements and observations they have made. Only this way, realistic and accurate end-user feedback can be collected on the functioning of the COBACORE prototype.

2.2.6. Operationalisation

Questionnaires were being administered digitally using *Survalyzer* (www.survalyzer.com). The observation protocols were defined beforehand and used to structure the observations. Eight observers were divided over the rooms, each focusing on a particular user group (affected, responding and professional). Data from the platform (number of needs and capacities) was acquired after the end of the COBACORE sessions by means of download to Excel format. Finally, a structured protocol was used for the discussion session afterwards.

3   Results

3.1   Results IMEV2

3.1.1.   Observations

Q1: what is operational added value of the CLT for needs assessment and recovery planning?

IMEV2 - Day 1

The participants were asked to indicate to what extent they perceive that the needs assessment went well. On the first day, when the CLT was not operational, the participants were neutral when asked if the needs assessment was a success. The observations and focus group sessions revealed that the professionals and the responding community were working separately instead of together on the first day.

Kreis Viersen judged needs assessment to be successful on the first day (M = 3.86). The Dutch Safety Region did not think that needs assessment was a success (M = 2.00). The Dutch Red Cross and responding community (unbound volunteers) judged needs assessment neither as successful nor unsuccessful (M = 3.00; M = 2.83).

After the first day, both the responding community and the professionals discussed the quality of their collaboration. The responding community indicated that none of the participants was contacted by the professionals through the COBACORE platform, or offline. For the responding community this was disappointing because they organised themselves in such a way that they could have helped more affected persons if they were able to work together with professionals. The professionals focused on addressing needs of large group rather than individual needs and capacities that responding community was addressing. This seems explain the different expectations concerning collaboration. The professionals used the platform to get a general overview which they combined with the official line of information through Situation Reports (SITREPs). During informal conversations during the exercise professionals indicated that working with the platform required a new staff member position. This person should have a better understanding of the platform and be able to triage the needs and capacities that are displayed in COBACORE.

IMEV2 - Day 2

On the second evaluation day, the Community Liaison Team was operational in two different forms. Option A: In the first form, community liaisons were continuously working in their own crisis management group. Option B: in the second form, the community liaisons of German and Dutch professionals and unbound volunteers were working together in a room separate from the teams. In the first form, the community liaisons had to spend a lot of effort in communicating and coordinating with each other because they were working separately. In the second form, they had to spend more effort in communicating back to their own organisations.
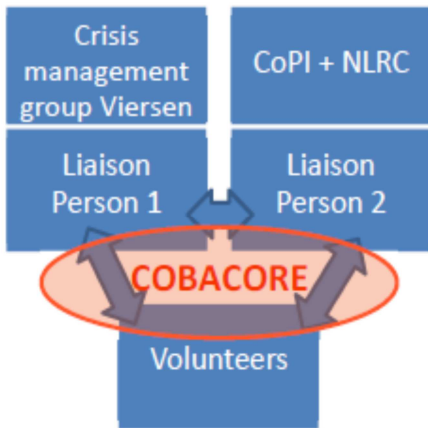
Option A: liaison co-located with team in own organization
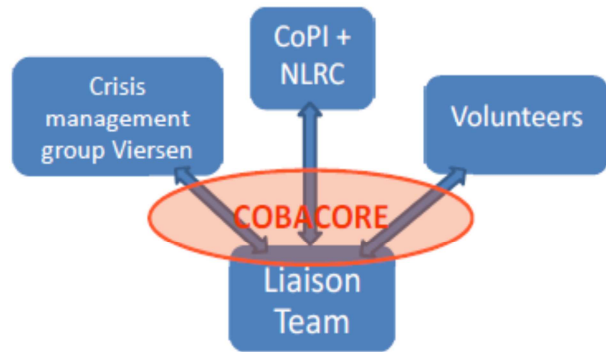
Option B: liaisons from different organizations co-located

After the second day, participants were asked once more if the needs assessment process had improved. This was, interestingly, not the case. The results show that none of the teams were really enthusiastic about the needs assessment that took place on the second day in experiment itself, but participants did see added value in the CLT concept (in one form or another). This can be explained by the fact that CLT members did not 'experience' the added value of the CLT in practice, due to limitations in the experiment setup.

Added value of the CLT

Participants' opinion about the CLT was asked. No distinction was made between the two forms. The average opinion was that the CLT has some added value (M = 3.7). The unbound volunteers that acted as the Responding Community during the evaluation definitely thought the CLT had added value (M = 4.2). Also the German Red Cross thought the CLT has operational added value (M = 4.0). Kreis Viersen and Dutch professionals was less enthusiastic, in their opinion the CLT has only some added value. The Dutch Red Cross did not express a strong opinion about the added value of the CLT (M = 3.0).

Statement: I think the CLT has added value		
	Mean (scale 1 – 5)	
Kreis Viersen	3.67	Slightly valuable
German Red Cross	4.00	Yes, the CLT has value
Dutch Safety Region	3.33	Slightly valuable
Dutch Red Cross	3.00	Neither invaluable nor valuable.
Unbound Volunteers	4.13	Yes, the CLT has value

Q2: Does the CLT have a positive effect on community-based needs assessment and recovery planning?

IMEV2 - Day 1

Closing the collaboration gap between professionals and communities does not solely require a platform where those groups come together, but also a collaborative mind-set from both sides. The first day of the evaluation the focus of the professionals was on their normal work structures. For both the German and the Dutch professionals, shortly after a crisis their focus is on basic and general needs instead of individual needs and capacities. The professionals who first worked with the platform were overwhelmed by all the possibilities the platform offered and the amount of information that the platform contained. During the first day of the evaluation some of the participants noticed the necessity for a professional that both can work with the platform, as well as understand community-based recovery planning. During the first evaluation day, no interaction with the responding community and the professional community did take place. The responding community was not involved in the recovery planning with the professionals. The professionals and the responding community were working separately.

IMEV2 - Day 2

The second day of the evaluation the professional communities worked with a community liaison that had the task to 1) assess the information from the platform and 2) to facilitate interaction between the responding and professional community.

Responding community

The general perception of the responding community after the second day of the evaluation is that they were more involved in recovery planning than during the first day of the evaluation. After approximately one hour, the Dutch Safety Region and the Dutch Red Cross recognised the capacities of the responding community and started to ask the volunteers for additional support. In the focus group discussion, the responding community indicated that the concept of a community liaison person or community liaison team is good, but can be made more effective and more substantive than it was during the evaluation. First, the unbound volunteers expect that the CLT understands the work culture and language of the volunteers. Second, the unbound volunteers indicated that they needed more official information from the professionals and that the CLT could take a more proactive stance. Third, some activities of the volunteers were not noticed by the CLT. For example, one member of 'Essen packt an' (the group of unbound volunteers) notified through the COBACORE platform that a group of 50 unbound volunteers were ready to help, if help was needed. This group was not recognised or used by the liaisons. Fourth, another aspect that caused resistance was that the unbound volunteers needed to register themselves before they were able to assist the professionals. This resistance heightens the barriers for collaboration, information sharing and thus more effective disaster recovery.

To conclude, the responding community experienced that the CLT had a positive effect on needs-assessment and recovery planning but did not truly experience to be part of a collaborative effort between professionals and volunteers.

Professional community

The focus group discussion with the professional community shows that in general the CLT role

had a positive effect on needs assessment and recovery planning in combination with the COBACORE platform. Because the COBACORE platform shows operational information that professionals usually do not work with, the professionals agree that a sort of 'volunteer' expert is needed to assess and combine the information in order to use it in favour of crisis management.

The second day of the evaluation showed that the platform and the CLT helped the professional communities to assess and address the needs and recovery activities. The professional liaisons attempted to facilitate the local groups of the responding community, though still it was not manageable to assess all the activities of the responding community. Some suggestions for improvement were made.

Firstly, professionals indicated that there should be more liaisons in the field to have contact with the volunteers and act as a sort of 'field sensor' for the professional community. One other reason for this is that it takes time for unbound volunteers and professionals to get to know each other. Furthermore, the professionals indicated that a liaison of the unbound volunteers would be useful as well.

Secondly, in the team of Kreis Viersen and the German Red Cross questions arose about the responsibilities, vulnerabilities and accountabilities that come from collaboration with unbound volunteers. This was one of the reasons that unbound volunteers had to register when they worked together with the professionals, so proper identification and registration is definitely an issue to further explore.

To conclude, for the professional communities the CLT requires some adaptation in their normal work structures. As a result the professional communities were still developing the role of the CLT during the evaluation. Therefore, it cannot be argued that the CLT had a positive effect on community-based needs assessment and recovery planning. From the positive side, the combination between the COBACORE platform and a CLT is perceived as useful and the CLT enables the professional community to actually use the platform.

General conclusion

The experiment indicates that both the professionals and responding community need to get accustomed to the CLT concept in practice. Responding community experienced that the CLT had a positive effect on needs-assessment and recovery planning but did not truly experience to be part of a collaborative effort between professionals and volunteers. Professionals indicated that the CLT did not straight away bring added value but could, under specific conditions/specific crises, be useful when large groups of volunteers need to be 'managed'. Both the opinions of the responding community as well as those of the professional communities is that a CLT strengthens the COBACORE platform because 'community-based' needs assessment and recovery planning requires a professional with expertise in that field.

Q3: Does the COBACORE platform fit with processes, procedures and practices of the CLT?

All three communities were instructed to continue working in their standards ways of working, but adaptation for the experiment was needed. For the professional community, both the Kreis and the Dutch professionals needed to adapt their professional working structures, including IT systems to the earthquake scenario. For instance, the Dutch COPI usually uses the LCMS GIS-based system for creating situational awareness. This system was not present during the experiment, therefore the Dutch professionals started to project the COBACORE map on the wall in order to get an understanding of all the needs and capacities that were being uploaded. Similar experiences were felt by the German professionals; the staff was not fully

manned, so one person was made responsible for multiple tasks (e.g. media & planning).
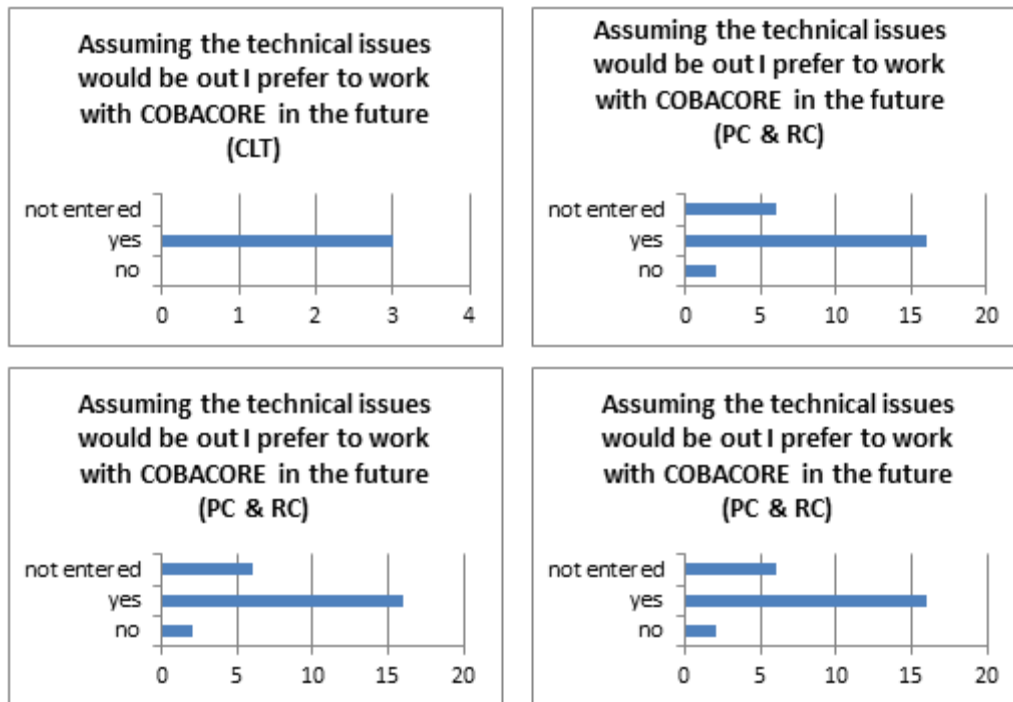
Overall, it can be said that although processes, procedures and practices (training) of the CLT were not 100% clear yet, but the acceptance platform of CLT members is similar to the average platform acceptance overall. Both PC and RC saw added value in the CLT and the platform features, although the CLT structure requires adaptation to the local context in Germany. Group chat was perceived as the most useful function and potentially the social media dashboard as well, but this was not tested during the experiment. Furthermore, CLT members agreed that it is useful to have f2f meetings when discussing concrete activities and in that sense it is a further step after having made contact via chat.
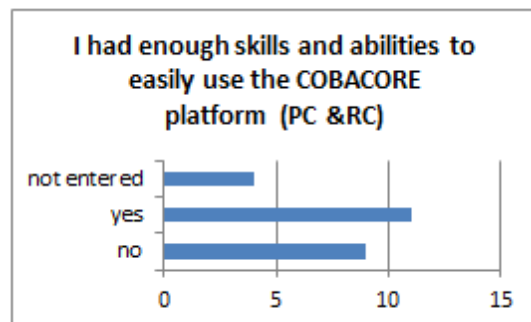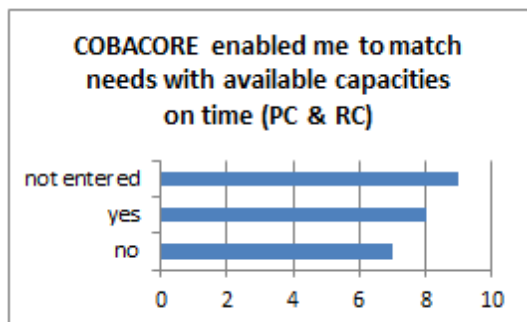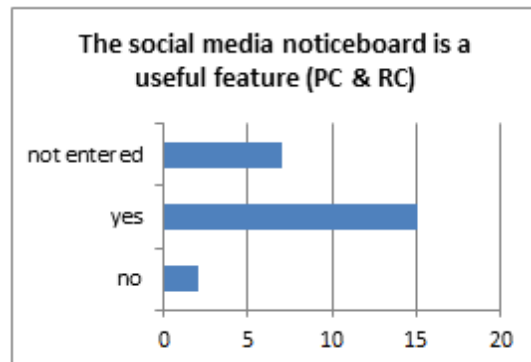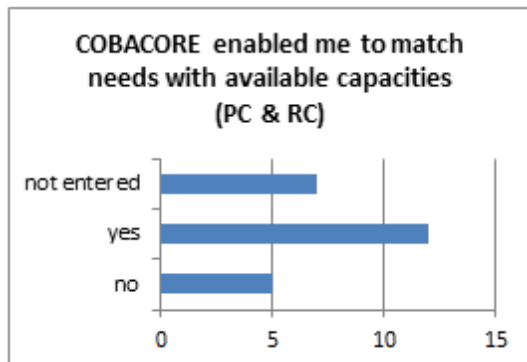
Features that could be tested during the FINEV:

- The disadvantage for the PC with the CLT remained: How can I, as a professional, be certain that this volunteer truly represents a group of people? Am I not wasting precious time? This is something that requires further research (for example, are verified social media accounts enough validation?)

- CLT tools would need to support more teamwork and accelerator features (e.g. some way to quickly paste links to needs/capacities).

- How can we improve verification of group needs/capacities to improve trust for PC?

Q4: RP: Does the COBACORE platform have the right features? 1) real-time evidence base of needs and 2) direct line of contact with AC and RC and 3) support closing information exchange & collaboration gaps between the communities and professionals

Overall, all participants agreed that the platform contained a substantial set of interconnected and useful features. Especially the marketplace, chat and group chat (for setting up group activities) were perceived as very useful. Several challenges for the system continue to exist:

- A key challenge is how the system is to be kept real-time (changing status of needs/capacities)
- Although the platform is built to be as intuitive as possible, users indicate that they do not straight away feel comfortable with using the platform without any training, due to the number of features offered. During the final evaluation, this needs to be compared with the mobile platform. (which is built to serve a larger target group, thus requiring an even more simple interface design)
- One of the central features, the online marketplace, is not performing as required. Partially due to the scenario, users did not experience they were able to match needs with capacities on time. This requires further tailoring for the final evaluation.

Group chat is a useful feature (PC & RC)

not entered	5
yes	17
no	2

COBACORE interface is intuitive (PC & RC)

not entered	8
yes	8
no	8

COBACORE enabled me to match needs with available capacities (PC & RC)

not entered	7
yes	12
no	5

The social media noticeboard is a useful feature (PC & RC)

not entered	7
yes	15
no	2

COBACORE enabled me to match needs with available capacities on time (PC & RC)

not entered	9
yes	8
no	7

I had enough skills and abilities to easily use the COBACORE platform (PC &RC)

not entered	4
yes	11
no	9

Setting up a group activity is a useful feature (PC & RC)

Q5: RC: Does the COBACORE mobile platform have the right features for 1) real-time evidence base of needs and 2) direct line of contact with AC and RP and 3) support closing information exchange & collaboration gaps between the communities and professionals

This question was not answered because the game setup was focused on the desktop platform features.

Q6: Do liaisons of the PC think COBACORE platform features have operational value for their coordination role in needs assessment and recovery planning?

PC liaisons (2 persons) indicated that the platform has operational value. It was mainly used by the Kreis and COPI as additional information channel: to see what volunteers are doing. One person was appointed as liaison/COBACORE manager. Some points that were raised during the focus group discussions that require further attention

- Liaisons indicated that the operational value increases if all volunteers use the COBACORE platform. Conversely, how can you be sure, as a professional, that these are all the needs and capacities that are out there? If there is not enough assurance that the platform covers all known information, then it might be serve any purpose over existing information sources. In the words of an operations commander: '*Facebook groups also work fine for us…"*.
- Operational value goes even further up if PC can trust that RC member is truly representing a group of volunteers
- For the PC, the dashboard feature and map are the most important elements of the platform, especially when combined with the option to find individual volunteers who represent a group. This helps to align volunteer activities with professionals operations.

Q7: Do liaisons of the RC think that the functionality and information that the COBACORE platform/app provides is useful?

RC liaisons indicated the current platform is useful and majority of RC users wants to use it in real life. Especially the marketplace, combined with the chat and map function is helpful. This should also be the central feature in the mobile platform. RC members do not need all available map layers. They usually know where important objects are because they come from the area where the crisis takes place. The platform could be further improved by further extending on the social media plugin: the capability to draw in feeds from other social platforms such as Tiwtter or Facebook. This would not only benefit monitoring purposes, but

also help to observe what non-COBACORE users are doing through a standard coupling with Twitter and Facebook.

3.1.2. Design recommendation IMEV2

The main objective of WP5 was to organise experiments that evaluate the COBACORE concept and platform, draw conclusions about its operational value in practice, and provide refinement advice for further development. This was done in multiple partial and integrated experiments and evaluations across Europe.

Recommendations for further development of the COBACORE platform based on outcomes of IMEV2 are described below. To further guide the design efforts in the next round of design in work package 3 and partial evaluations in work package 5 ideas and implementations for new functions and features and refinements of existing functions are evaluated with end-users. In the final evaluation the final version of the integrated COBACORE platform will be evaluated.

New and improved features that addressed the above described issues are iterative developed and evaluated. In the final evaluation the first feature release set is demonstrated in its final form, the second in its second iteration and the third feature set in its first iteration. The purpose of the final evaluation is as such mixed: demonstration of final parts of the platform and evaluation of intermediate parts of the platform. The final part consists of a user-friendly implementation of functions and features for affected community in mobile applications. The second feature release set is evaluated in a partial evaluation and demonstrated in the final evaluation. This second set consists of new functions and features for professionals and responding communities. A third feature release set can be evaluated in the final evaluation.

Based on the results of the intermediate evaluation of the COBACORE Platform, we can give the following high-level design recommendations for the further development of the platform:

- **Adaptation**: Different interfaces, interaction styles and tooling are needed for different user groups: affected community, responding professionals and coordinating professionals. The system should have one shared information database and multiple interfaces.
    - o Responding community: Focus should be on to facilitate capacity – capacity matching and to provide a good overview of what needs are already being addressed
    - o Professionals: Focus should be to create an overview of 'white spots' where help is not yet provided and to facilitate finding capacities from other groups. Also, for responding professionals the needs/capacity management should include ordering and categorizing (groups of) needs.
- **Intuitive**: The interfaces needs to be as simple as possible to understand and show only that what is relevant for the user's task, e.g. the ability to filter to *own* needs.
- **Usability**: improve usability of needs / capacity management: who is helping when and how? Which needs are addressed? What is the progress and status of this?
- **Groups**: The platform should facilitate group formation, i.e. make it easy to form a group of supporting people around you.
- **Culture-sensitive**: Make it adaptable and scalable to local cultures in Europe
- **Collaboration**: Support communication, coordination & collaboration between responding community and professional responders better. Currently, the platform is overly targeted at the affected community.

3.2   FINEV

3.2.1.   Observations and findings from Focus Group Session per group

See Annex 3.

3.2.2.   Plenary Focus Group Session

Plenary session overall conclusion per user group:

| Group	Comments
Affected community	• this concept can work, some minor issues need to be tackled • direct contacting professionals and other parties allowed • business should be separated from private affected communities • specialist volunteers could be pre-invited (expert skilled worker) to be on call available for SRX or COBACORE
Responding community	• useful tool - helps to voice your opinion as RC • field officer has added value - smoothen the operation • trust and verification is needed - build in a way to ensure people are trusted (credential check) • feedback from RP is needed for what RP is doing is needed (CNN ticker)
Professionals (NL)	• + 1 overview • + communities are heard • + intuitive platform • + liaison very important role • -categories in the platform are not handy • -think about ownership, nationally and internationally • COBACORE is a package deal for the professionals CLT, platform, training • prof need an information officer for handling the process • verify by picture by liaison
Professionals (GER)	• COBACORE does fit in a professional structure. Useful added value after the structure is adapted • language issue needs to be solved - but the platform also helps to speak a universal language • filter option is very useful (time component - expiration date) (organisational) • the CLT needs to 'translate' the platform input into the decision making structures • adoption - use the NCM function already year round, when the crisis strikes, then the municipality can get involved • combine it with existing social media

3.2.4. Questionnaires

Background data

A total of 26 participants took part in the exercise, with the community liaison and the field officers working on a mobile version (tablet) while the other participants worked with the desktop version of the platform. Please note that all following tables in this chapter are percentages, unless otherwise said so.

|	Frequency	Percent
German affected	4	15.4
Dutch affected	4	15.4
German responding	4	15.4
Dutch responding	3	11.5
Dutch recovery	4	15.4
German recovery	4	15.4
community liaison	1	3.8
field officer	2	7.7
Total	26	100

Q1: To what degree did the teams communicate needs assessment information?

All groups combined indicate that they were able to search and browse through the available needs and to align those with their own capacities. Professional participants also indicate they were able to accommodate the needs assessment information in their decision-making procedures. When looking at absolute numbers, it is apparent that the CLT and the PC are slightly more satisfied with the needs-capacity matching process, as illustrated by the table below on the right.
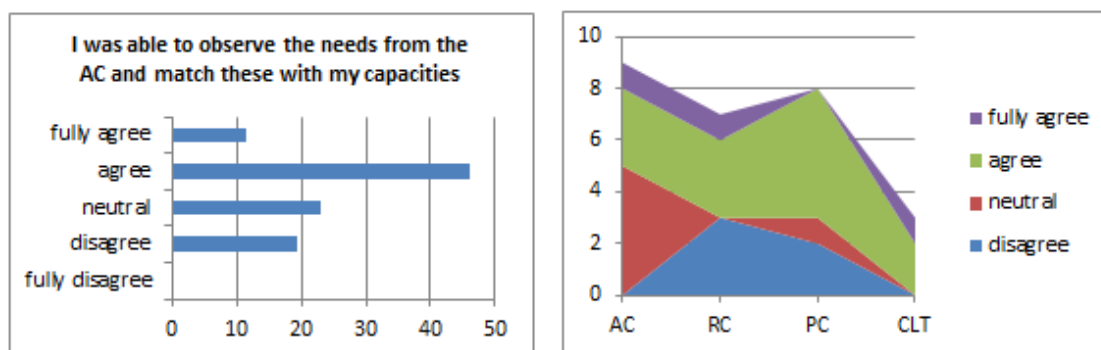

Communication of needs assessment information outside of the users' own community did

take place, but to a lesser extent. This was intentional, as users first had to become acquainted with the setup and their role in the experiment, as well as the platform itself. Only in the last two rounds, more incentives were put in the scenario for all three groups to exchange more information before recovery decisions could have been made.
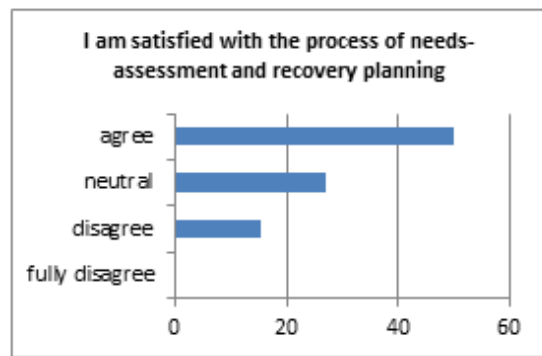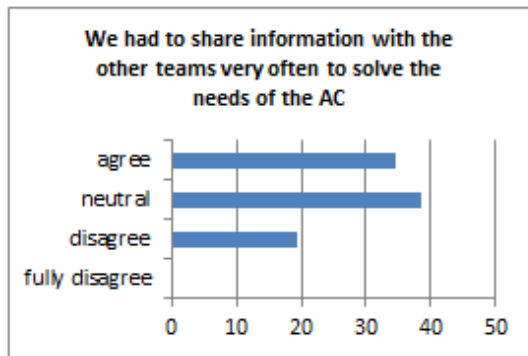
Q2: To what degree are decisions about engaging others explicitly made?

As the platform aims to enhance the mutual 'awareness' of the three users groups about their needs and capacities, the decision to engage other parties to solve a need should have (explicitly or implicitly) been made by participants. As shown, the majority of participants was aware of the needs and capacities available, and most of the participants also considered making use of other peoples' capacities to solve a need. It should be noted that not all participants in the game received explicit incentives to collaborate with others – quite a few needs could still be solved without RC & RP interacting – hence the tendency towards neutral for the last question. When looking at this question in more detail, the PR are more neutral towards the statement *Collaboration with the other teams helped to solve the needs of the AC.*
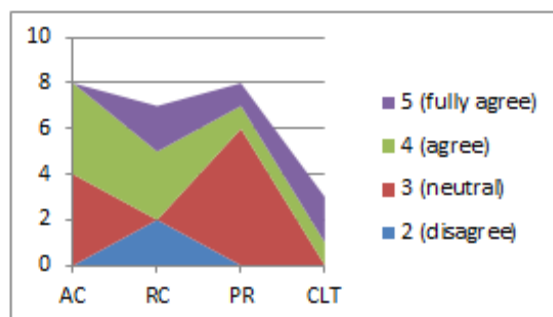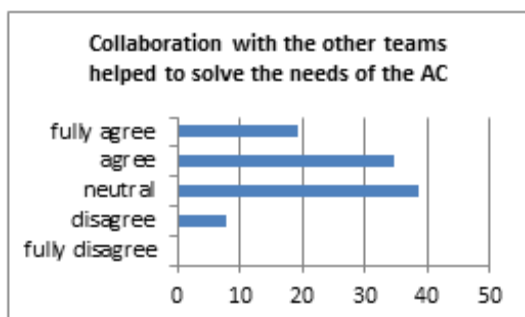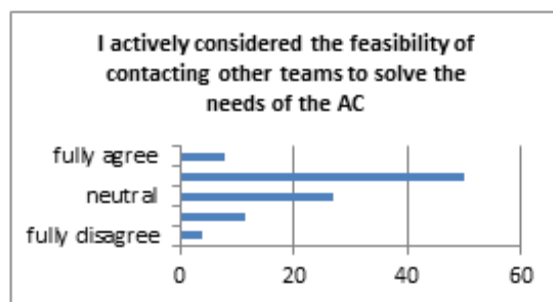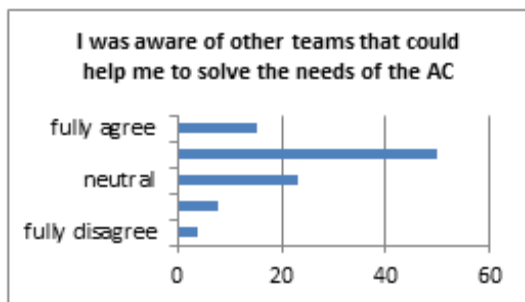
Q3: How is the responsibility to engage others allocated within the team?

As the flow of information from the platform would increase, we assumed that the platform 'interpretation' would be organised in line with the decision-making processes within the team. Thus, making someone responsible to manage or monitor a specific subset of data/information. Questionnaires, as well as observations and interviews show that the professionals quite quickly earmarked a 'COBACORE specialist' – in line with standard decision-making processes. Interestingly, this was also the case for some of the RC – a division was, for example, made to divide a geographical area between two RC members to ensure that all needs in that area were properly covered.
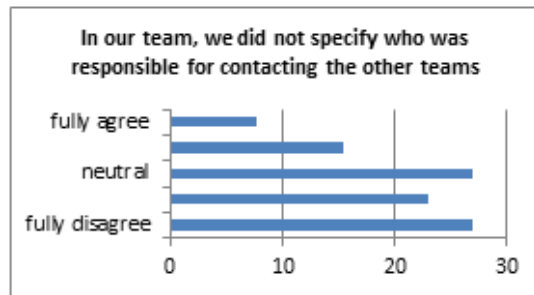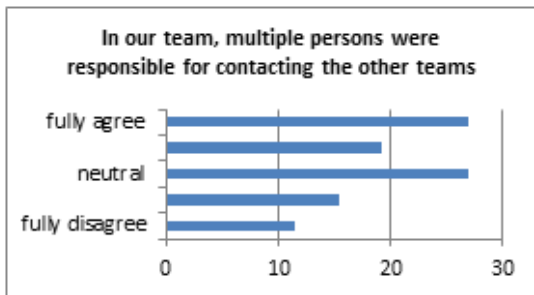
**Q4: How skilled are participants in using the COBACORE platform?**

Data shows that most users did require some introduction into the platform, but the average user who is smartphone-proficient did not appear to have issues in quickly becoming acquainted with the core functions of the platform. Nevertheless, specialised functionalities (importing KML files, using all CLT tablet functions) did require some walkthrough from the COBACORE team member guiding the experiment. Also less tech-proficient people who do not use a computer or smartphone on a regular basis did require more time on the first day to work with the platform.
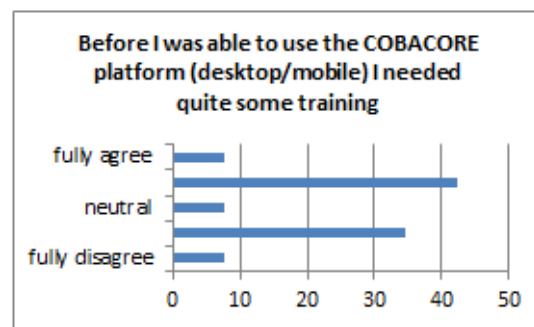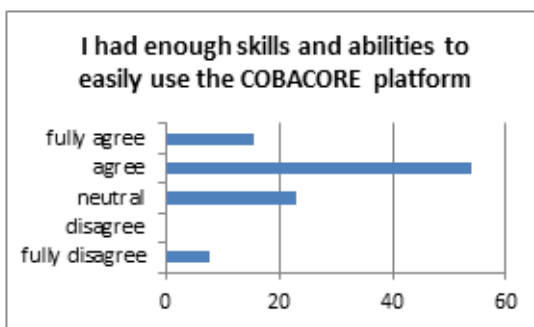
Q5: What platform functions do participants use for engaging with others?

Data shows that participants were very enthusiastic about the platform and felt connected to the other users. They were able to post needs, browse through capacities and information was presented in way that was supportive of their own decision-making procedure. Nevertheless, a central feature of the platform – the needs capacity matching – could be improved further. When discussing this in the focus group sessions, participants indicated they were not able to find relevant capacities to match their needs because of 1) practical limitations ('*capacity too far away', 'not exactly what I need'*) and 2) limited automated suggestions from the system itself. The AC spent quite some time throughout the experiment searching for adequate capacities. Filters were present, but still quite some time was spent on chat and the CLT

'greasing' the matchmaking process.
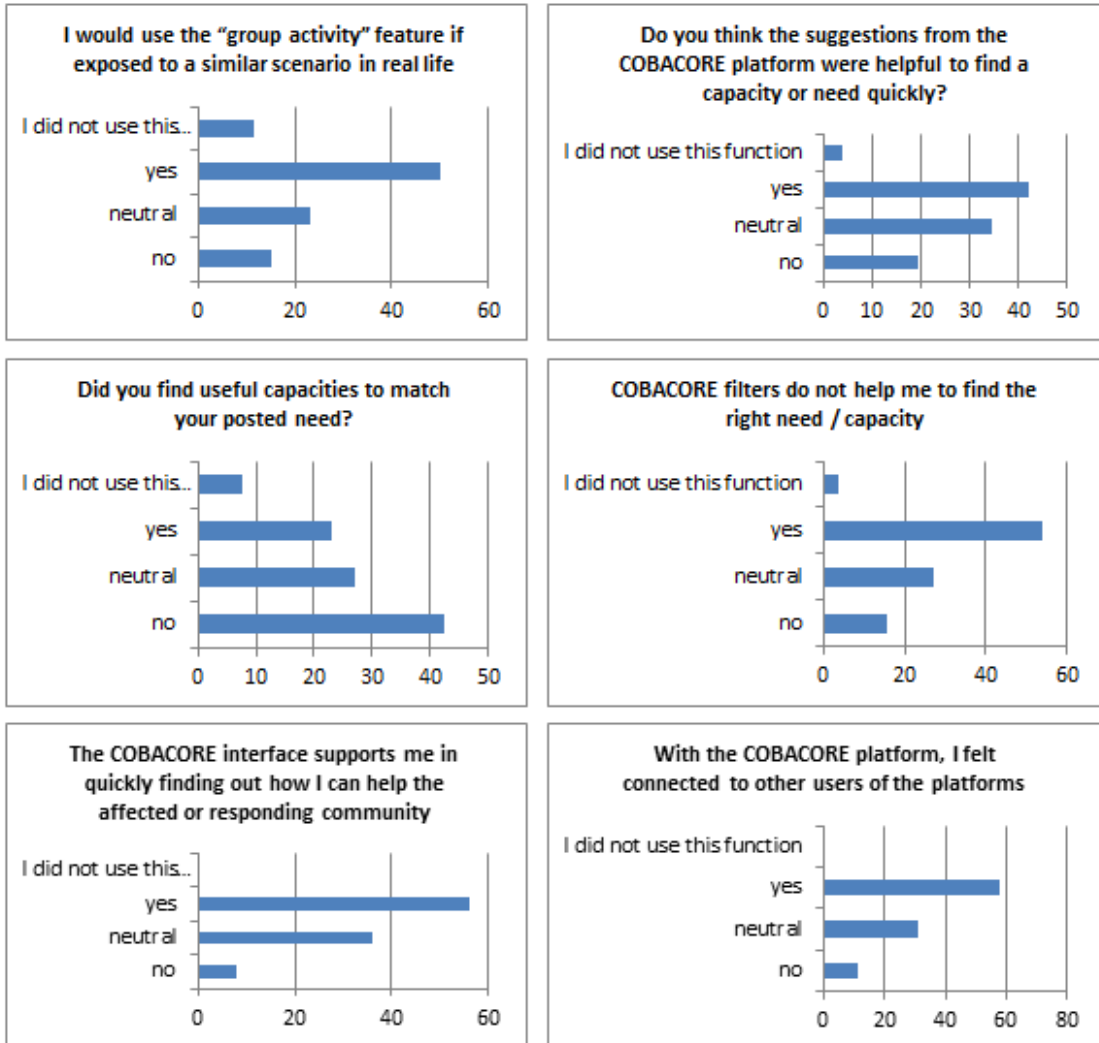
The last table shows absolute numbers per user group on who agreed with the statement *With the COBACORE platform, I felt connected to other users of the platforms.* Again, the PR feel somewhat less connected through the platform then the AC and RC.
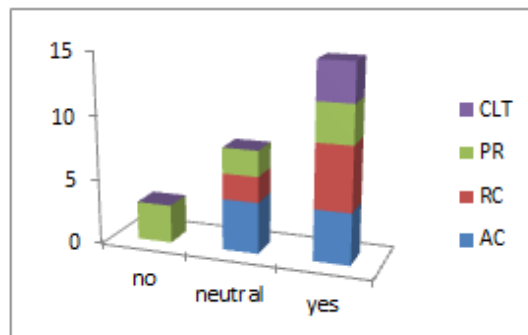
Q6: Are teams satisfied with community liaison team and the digital angels?

Data shows that the CLT is positively evaluated and a large majority thinks the CLT is not only useful in an experimental setup, but could in its current form be applied to real-life crisis situations. Although in practice people would require training for this very particular role, the CLT concept as tested in this setting made good sense to the majority of participants.

On the other hand, the digital angel role was less clear and the feedback slightly less positive. On factor of influence was that the digital angel role was not explicitly introduced to all participants. When entering the questionnaire, one participant indicated she was not familiar with the role of the digital angel. This implies that when during a real life crisis situation, how the 'tech support' and 'help' functionality needs to be set up as the digital angels spent quite some time in the beginning of the first day to guide all users through the platform with various questions. (even though an online walkthrough was available in the platform and a presentation was given before the start of the game)
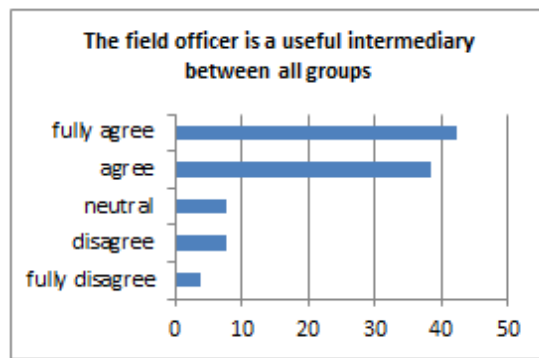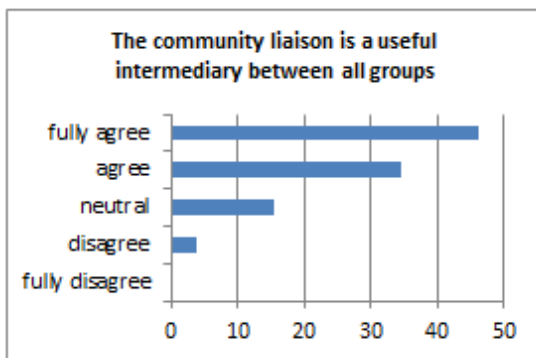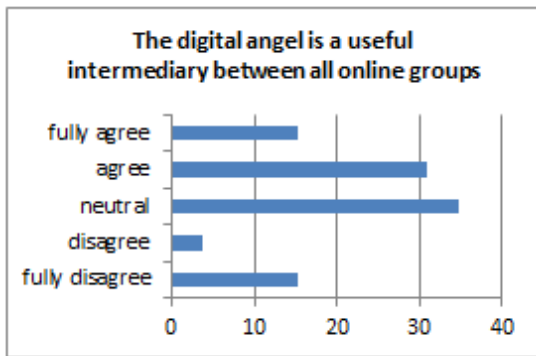
Q7: Do the teams think that the community-liaison team concept and the COBACORE platform have operational added value?

As shown in the graphs below and from focus groups sessions, participants do see most added value in using the CLT and the platform at the same time during a real-life crisis recovery situation. When asking if it would also be possible to deploy either the CLT or the platform, participants were less certain or even negative. During the focus group sessions, this was because both the Dutch and German participants thought that the CLT's roles is strengthened due to the information position and responsibilities they can take up *because* of the

The COBACORE platform *and* CLT should be implemented in the crisis management structures relevant to me

Only the community liaison team (community liaisons + field officers) should by implemented in my country's crisis management structures. The COBACORE platform is not essential for the operation

Assuming any remaining technical issues would be solved, I would like to make use of the COBACORE platform in the future

Only the COBACORE platform (mobile/desktop) should be implemented in my countries crisis structures. The community liaison team has no additional value to the crisis management structures relevant to me

Only the COBACORE platform (mobile/desktop) should be implemented in my countries crisis structures. The community liaison team has no additional value

Q9: What changes need to take place to make the COBACORE concept work for your organisation?

The observations underscore the findings from the focus group discussion as well as the 2016 PE 4, 5 and IMEV2 findings: the COBACORE concept works, helps and stimulates all three communities to work together in a generic post-crisis recovery setting. Although the context may vary, the COBACORE context was positively evaluated in all evaluation sessions. For each

EU country, there might be different legal, technical or administrative hurdles that need to be tackled. Interestingly and in line with previous evaluations, the 'collaboration culture' between the three communities could be further improved.
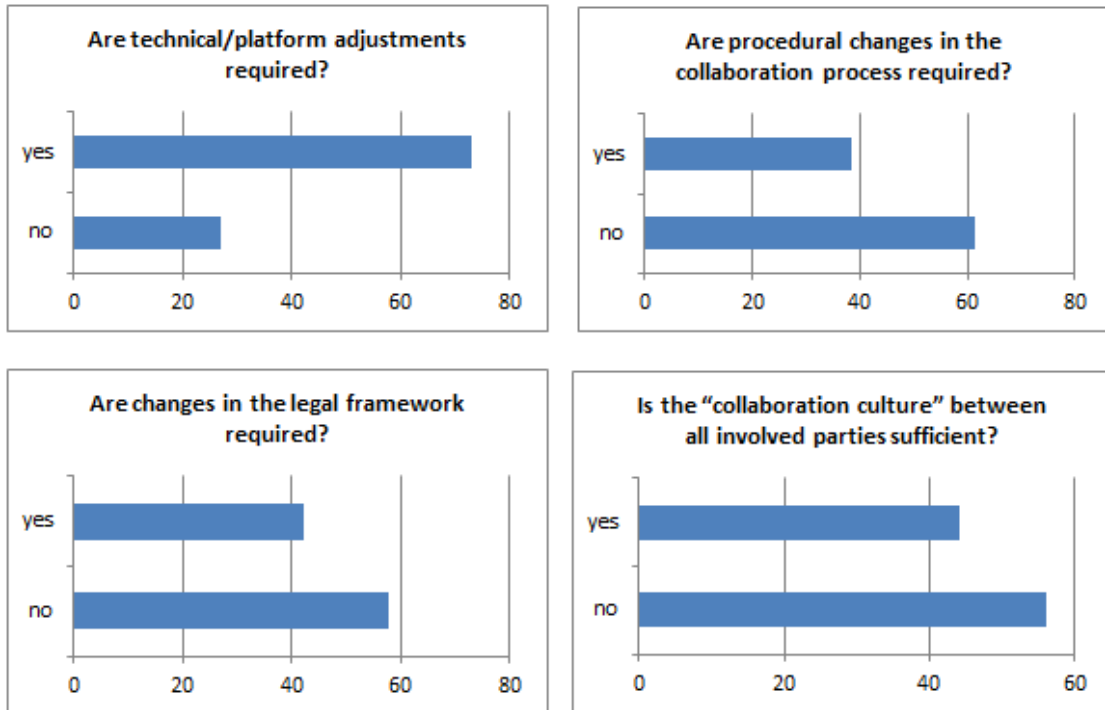
Participants indicated that because mainly the professionals do not have an open culture of information sharing with the public. Professionals use the platform to create an overview of the situation, but continue to rely on structures and processes already present. Although the scenario gave specific injections for the professionals to share more information with the general public (via the platform and via the CLT), a culture change does not take place in a 2 day experiment. If professionals would approach the COBACORE platform more openly, by actively providing feedback to the local population by using communication channels that the public uses, understanding of the challenges that the professionals face will likely improve.

3.3   Limitations of evaluations

IMEV2

Performance criteria were identified beforehand and based on the number of matches that could be made vs. the number of actual matches during the COBAGame. It should be noted that a number of factors influenced the actual performance of the three communities in the game and thus limited the value of these performance criteria.

First, the learning effect. It took the participants quite some time to fully comprehend the COBAGame and the increasing complexity limited the expected improvement of performance. As the game was built up in increasing complexity (first round: one need equals one capacity, third round: one need is tied to multiple capacities plus there is a scarcity of resources) the number of matches made was not significantly improved during the second round on Thursday morning. For both rounds, the number of matches made remained at approximately 30% of the total amount of potential matches.

Secondly, as this was still an experimental setup for both the platform and the game, these two were not perfectly aligned and this was noted by the participants themselves as well. For example, the COBAGame gave professionals incentives to coordinate field responders, but the COBACORE platform did not give the coordinating professionals them any means that they could coordinate with. Thus, a lot of radio traffic was used for coordination. This is the result of the design decision of not focusing in COBACORE on building a coordination tool.

Thirdly, in response to the previous point, interventions of the game development team influenced the type and quality of communication. In the example mentioned above, led to a decision to hand out email addresses to individual participants within the three user groups on the second day. This supported the professionals in their means to steer certain professional field responders to improve means of coordination (professional responder groups were already in possession of portable radios) but this limits the basis for proper comparison.

Fourthly, the social media round had particular factors of influence limiting a good comparison. For example, users were given instructions to work with imaginary Facebook accounts for the game. Facebook did however not accept these fake ID's when registering thus limiting the comparison with a real life situation. Therefore, during the final round, when the best performance result were to be expected as participants would know the game, their role and goals of the other groups, the number of matches made went down to 3% of total amount of potential matches.

In conclusion, participants, and professionals in particular, indicated that the COBAGame induced a certain pressure that is similar to a crisis or recovery situation. The observation team has noted that the three groups were increasingly improving their coordination and overall performance, but the number of total matches made comparing round 1, 2 and 3 did not show a significant improvement in performance. Rather, performance went down considering the number of matches made.

It was furthermore noticed that participants started to perceive the COBACORE platform as being similar to the concept itself. While this is a small nuance, it implies that when people disapprove the COBACORE platform due to bugs, the COBACORE concept itself is also likely to be rejected. Although the project team explained that the project is not a software design project, responses show that this makes little difference to the user perception.

FINEV

There are several limitations to this study. Firstly, performance criteria were identified beforehand and based on the number of matches that could be made versus the number of actual matches during the experiment. It should be noted that a number of factors influenced the actual performance of the three communities in the game and thus limited the value of these performance criteria.

Secondly, the sample size for questionnaires was small. Although several evaluations have taken place, the total number of respondents was consistently low. During the FINEV the number of participants to questionnaires was not higher then 26, thus limiting options for getting statistical significance in the results.

Third, the experiment fast-forwarded the normal dynamics that take place within a post-crisis recovery scenario. Using time jumps helps to assess interaction between three communities at different stages of the recovery situation, but also severely influences the perception on people in which stage such a concept could actually work. More specifically, although the assessment team tried to find recovery experts throughout the project, the actual number of

experts that have experience in a western large scale post crisis recovery setting is quite limited.

Fourth, because of limited time during the FINEV introduction, not all features of the platform could properly explained and shown beforehand. As a result, some features were introduced only halfway during the experiment based on individual feedback form users, thus influencing the overall opinion of all participants on the platform as a whole.

Fifth, cultural differences influenced the perception of the Community Liaison Team concept. German and Dutch crisis management and team structures differ substantially. Dutch crisis management operations are less formal in nature and more task-driven. The procedures in the Netherlands offer more degrees of freedom to professionals and rely more on expertise and experience. The German way of working is more pre-established, with a more structure- and authority-driven approach and more formal role descriptions. These differences caused the Dutch professionals to have more faith in a successful implementation of a CLT into national crisis management operations than the German professionals.

4 Conclusions FINEV

In this project, we provided evidence for the operational value for the COBACORE concept as described in the deliverables, booklet and number articles. We have demonstrated the usefulness and usability of the COBACORE platform as developed in desktop and mobile applications and underlying data frameworks, requirements and specifications. We provided evidence for the usefulness of the Community Liaison to support collaboration between professionals and affected and responding communities. We have furthermore experienced that our CD&E approach using the COBAGame was useful for building awareness for concepts, to discover and learn ways to improve community-based needs assessment and for evaluation of new technological and organisational concepts.

The FINEV observations, focus group discussion and the questionnaires show that the COBACORE concept works: COBACORE in its current form helps and stimulates all three communities to work together in a generic post-crisis recovery setting. These findings are in line with PE 4, 5 and IMEV2 results. Although the context may vary, the COBACORE concept and operationalisation in a platform and CLT was positively evaluated in all evaluation sessions. For each EU country, there might be different legal, technical or administrative hurdles that need to be tackled. Interestingly and in line with previous evaluations, the 'collaboration culture' between the three communities could be further improved. Some specific recommendations for future use are:

- **Adaptation**: Tailored interfaces, different interaction styles and tooling are needed for different user groups in different countries: affected community, responding professionals and coordinating professionals need to be able to work in their own languages. The system should have one shared information database and multiple interfaces and information profiles.
- **Intuitive**: The interface of the app was evaluated positively. Some glitches were still present in the mobile version, but not in the platform itself.
- **Integration**: Align the COBACORE platform as much as possible information in systems already in use, is needed for adoption and alignment with existing procedures and tools. Do not build a new tool for professionals. For affected and responding communities, different tools (apps, websites) are currently in use so a new application could be developed in case a platform would be rolled out.
- **Groups**: The platform should facilitate group formation, i.e. make it easy to form a group of supporting people around you.
- **Security**: Keep privacy issues in mind and avoid misuse of (commercial-sensitive) data

Future use of the COBAGame

The key as aspect of the COBAGame, like the COBACORE concept, is the collaboration between the different stakeholder groups to achieve synergy and enable a faster and more effective disaster recovery scenario. This generalised perspective allows the COBAGame to be used for a wide range of exercises, especially those that involve collaboration between different stakeholders and joint decision-making. The ability to add and remove communication options (as was done in the FINEV), as well as the flexibility to create different scenario's (for example by adding or removing groups, change the nature of the disaster or crisis, and the presented

challenges), make the COBAGame also suitable for other uses. Most notably:

- **Evaluation purposes:** The main motivation for the COBAGame is the use of it as a tool for the evaluation of concepts, especially those addressing communication and collaboration issues between different groups involved in responding to a crisis situation. As the game is designed to provide the environment, the evaluators can decide themselves which communication options should be available, the complexity and the setup. More importantly, because the game provides the environment (and challenge derived from the evaluation objective) and not dedicates the actions undertaken it allows evaluator to examine the behaviour of potential users and actual use of the tools provided.
- **Awareness building**: As the game is centred on decision making, information sharing and collaboration, a common issue in the domain of crisis management and disaster response, the game can also be used to demonstrate certain issues. Because of its table-top setup, it provides a relative safe environment for professionals to experience the challenges and opportunities in setting up and maintain collaboration between different groups first hand. From this notion, additional steps can be taken (for example wrap-up sessions).
- **Training in tools and procedures:** Part of any crisis response organisation is regular training, especially when it comes to procedures and tools. While many training programs exist, they often focus on very specific approaches for specific issues (incident response). The COBAGame focusses on more abstract concepts such as joint decision making, working with unbound volunteers and collaboration. Additionally, the game can be adapted to fit specific needs or allow different scenarios to be played, while keeping the required resources to a minimum. This balance between a comprehensive environment and resource effectiveness to run to the game, make it potentially suitable as a training tool for professionals.

These different purposes each pose slightly different requirements for the COBAGame, especially in terms of the scope. For example, in order to *build awareness* a simplified short version of the game would suffice to give participants a basic understanding of the challenges and opportunities of working with unbound groups. A professional training format would require a more thorough analysis of the learning goals, a more extensive scenario and a better alignment with the local context (current operational procedures, tools in use, local actors and factors of relevance, and so forth).

In addition to more extensive version of the COBAGame used in the final evaluation, several consortium partners have also developed a more lightweight version, used for example in dissemination activities or partial evaluation. This 'boxed' version of the COBAGame is currently being developed further by Tilburg University and its potential to be included as part of the COBACORE package is being researched.

COBACORE has delivered ideas, software and ways to improve organisations and people in community-based needs assessment. We learned that the community liaison team and platform fits with various professional structures and processes. For each new context of use optimisation is to be anticipated. Concerning the context of use, we learned that municipalities and community members envision the use of COBACORE not only after, but also before crisis. A daily use of platform to match needs and capacities in non-crisis times, would familiarise community members and professionals with the platform beforehand, and would build the required social capital in these communities when disaster actually strikes.

Deliverable 6.8 contains a guideline for implementation that can be used to tailor the various COBACORE building blocks to a specific context. The guidelines help to make the organisational and societal change that is needed for a successful adoption of the COBACORE vision - and platform.

5 References

[1] Carroll, J. M. (2000). *Making use: scenario-based design of human-computer interactions.* The MIT press.

[2] Neerincx, M.A. & Lindenberg, J. (2008). *Situated cognitive engineering for complex task environments*. In: Schraagen, J.M.C., Militello, L., Ormerod, T., & Lipshitz, R. (Eds). Naturalistic Decision Making and Macrocognition (pp. 373-390). Aldershot, UK: Ashgate Publishing Limited.

Annex 1: IMEV2 and FINEV setting and participants

IMEV2

The exercise took place on the 12th and 13th of May 2015 at the premises of the Academy for Crisis Management, Emergency Planning and Civil Protection (AKNZ) in Bad Neuenahr-Ahrweiler, Germany. IMEV2 was designed and setup that both the structures of German and Dutch crisis management were taking into account.

The two exercise parts took place in the morning / forenoon, while the afternoons were used for evaluation, plenary-, feedback- and training sessions.

Figure 3: Excerpt from the agenda of IMEV2

FINEV

Like IMEV2 the final evaluation FINEV took place at the premises of the Academy of Crisis Management, Emergency Planning and Civil Protection (AKNZ) in Bad Neuenahr-Ahrweiler, Germany. FINEV took place on the 27th and 28th of October.

All participants were distributed to groups. There were three main groups:

- Affected community
- Responding community
- Professionals (German and Dutch crisis management)

Plus linking/organising groups:

- Overall spectator
- Situation Report team
- Liaison team
- Field officer

Every group had Dutch and German subgroups for running the exercise under Dutch and German crisis management rules. This allowed us to see problems that occur with different systems of crisis management.

Figure 4: Excerpt from the FINEV agenda

There were three exercise parts, two on the first day (forenoon and afternoon) and one on the second day (forenoon). Straight after every exercise part, there was plenty of time for evaluation and feedback sessions in each group. According to this, problems reported by many people were solved very quickly.

Final evaluation took place in the afternoon of the second day. First, every group made a final evaluation of the exercise itself and the COBACORE platform. Afterwards each group presented its results in front of all participants.

Academy of Crisis Management, Emergency Planning and Civil Protection (AKNZ)

The Academy of Crisis Management, Emergency Planning and Civil Protection (AKNZ) is the federal centre for the civil protection in Germany. It is a branch of the Federal Office of Civil Protection and Disaster Assistance (BBK) within the remit of the Federal Ministry of Interior. The AKNZ is closely connected to science and research through numerous German and international co-operations. AKNZ provided its premises, equipment and advice for the design of IMEV2 and FINEV.

The AKNZ is located in Bad Neuenahr-Ahrweiler, Rhineland-Palatinate, Germany, about 40 km south of Bonn. The Intermediate evaluation 2 was held at the seminar building II which consists of the plenary room "VisLab" and five fully equipped exercise rooms. Laptops and telephones as well as smart boards, whiteboards and/or flipcharts, markers, pens, post-it's etc. were available to facilitate the dialogue within the room, both on the content of the scenario as on the findings for the evaluations.

Figure 5: Academy of Crisis Management, Emergency Planning and Civil Protection (AKNZ), Ahrweiler

The floor plan with its five exercise rooms suited excellent to the requirements of IMEV2 and the subdivision of the different groups:

Figure 6: Floor plan and room layout of seminar building for IMEV2

The (German) crisis management group and coordinating professionals from Viersen worked out of exercise room Alpha. The table-top exercise was led by a dedicated exercise game management team. Together with two members of the COBACORE team as well as with five participants playing the affected community members, they were working out of exercise room Bravo. Exercise room Charly could be used as a free conference room. Especially on the second day it was available for and temporarily used from the members of the (now established) liaison team. Dutch professionals were working out of exercise room Delta and the unbound volunteers / responding community offered their help out of exercise room ABC. Finally, the large "VisLab" was used for the plenary sessions at the start and end of each day as well as for a liaison training session after the first exercise part.

Figure 7: Actors in IMEV2

For FINEV room layout was changed. Exercise room "Alpha" was occupied by the German part of the professionals, the crisis management group of the municipality of Brüggen. Affected community was installed in exercise room "Bravo". Responding community was working from exercise room "Charly". Exercise room "ABC" was occupied by the Dutch part of the professionals. Game management and sit rap team worked from exercise room "Echo". Like IMEV2 the large "VisLab" was used for plenary sessions at the start and the end of FINEV.
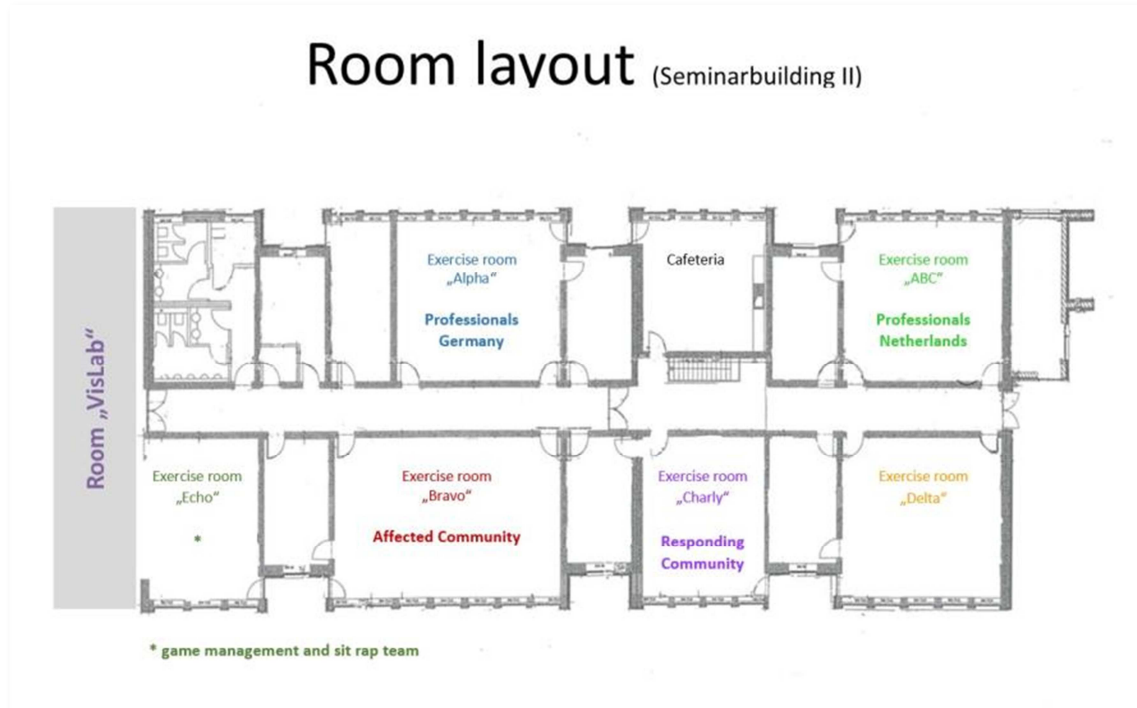
Figure 8: Floor plan and room layout of seminar building II for FINEV

Participants to IMEV2

In total, 37 individuals participated in the Intermediate Evaluation 2 (IMEV2). All participants were asked to join the evaluation for the full two days (on weekdays) to bring their knowledge and experience to the experiment for the COBACORE project.

Furthermore, we had five participants, next to two COBACORE members, playing the affected community. Each of them got five different profiles of affected people with different problems and needs. Another ten participants were playing the responding community / volunteers.

To control the exercise and its course, we had a game management team consisting of up to seven experienced persons.

Organisation	Number
Kreis Viersen	13
German Red Cross	2
Netherlands Red Cross	4
NL Safety Region (Limburg N/Z)	3
Essen packt an	10
Affected community members (simulated)	5
Total:	37

Table 2: Participants to the Intermediate Evaluation 2

For the professionals knowledge of current practice and disaster related coordination skills were needed. For these roles in the scenario, real 'disaster professionals' from the municipality of Viersen, Germany, and representative from different Safety Region from the Netherlands, joined the evaluation. These people have experience with major incidents and are trained and experienced in working along the structures of the professional responders. Since COBACORE does not want to replace existing communication structures, this was an important characteristic for the participants.

In total five people participated as members of the affected communities. Participants consisted of individuals that were asked through the existing network of GRC, NLRC and UZ.

Ten individuals participated in the role of responding communities. This group consisted of volunteers from the initiative 'Essen packt an!' (see below) and individuals that were invited through the existing network of GRC.

Participants to the FINEV

In total, 68 persons participated in FINEV. All persons were asked to join the final evaluation for the full two days to bring their knowledge and experience to COBACORE. Compared to IMEV2 participants came from more different organisations (see below).

For the professionals knowledge of and experience with crisis management were needed. The German professionals consisted of members of the municipality of Brüggen. The Dutch professionals were members of several safety organisations like Rijkswaterstaat and HTO aftercare as well as members of municipality, e.g. Roermond. Those participants have experience with scenarios like this in the experiment and know how to work as professional responders. Since COBACORE does not want to replace existing communication structures, this was an important characteristic for the participants.

Organisation	Number
European Union	1
COBACORE team	18
Netherlands Red Cross	11
Municipality of Brüggen	10
German Red Cross	9
University of Paderborn	3
Rijkswaterstaat	3
Department of Viersen	2
Municipality Niederkrüchten	2
Municipality of Roermond	1
University of Furtwangen	1
Municipality of Schalmtal	1
Municipality of Beesel	1
Safety Region Limburg Zuid	1
Shell	1
Aftercare Venray	1
Volunteer	1
Homeless shelter and resocialisation NL	1
Total	**68**

Table 3: Participants to the Final Evaluation

Eight participants played the role of responding community. The four Dutch participants were recruited by NLRC. The four German participants came from the University of Paderborn, the University of Furtwangen and the GRC. Every participant received one profile. In this profile detailed information were given (e.g. name and function of role; capacities/offers that can be done). With these capacities the participants offered help for those of affected community.

In total nine participants met the role of affected community. The five Dutch participants were recruited by NLRC and Rijkswaterstaat. One volunteer was also part of the Dutch participants. The four German participants were recruited by GRC and homeless shelter and resocialisation

NL. Every participant received one profile. In this profile detailed information were given to the participant (e.g. name and function of the role; problems/tasks that have to be solved). For solving the problems the participants used COBACORE platform. There they inserted their needs and started to activities to make some progress. Participants of both, responding community and responding community, were encouraged to live their role and not to reproduce the profile exactly.
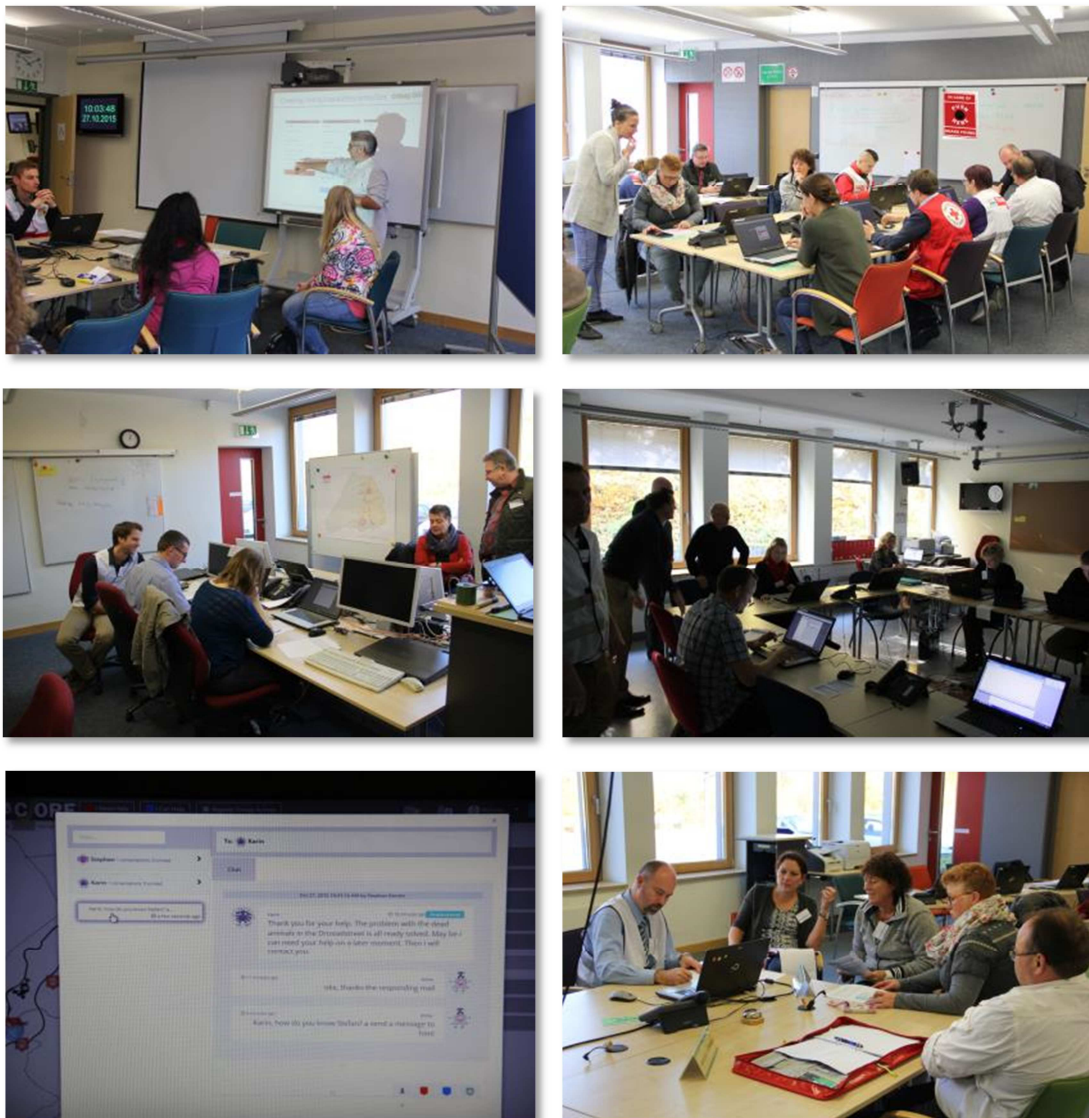
Figure 9: Actors at play in the FINEV

Communication between affected community, responding community and professionals occurred just via COBACORE platform, COBACORE mobile app and telephone call. Members of these groups did not meet physically. Another path of communication was the community liaison team.

Community Liaison Team. Community liaison team (CLT) consisted of one liaison officer and several field officers. Purpose of the CLT was to ensure effective communication and work between the responding/affected community on one hand and the professionals on the other

hand. So the CLT collected information from the responding/affected community (e.g. which needs are very important/urgent/of general interest and how the situation is changing) and implemented them into the professionals' procedures. They also shared relevant information, updates and knowledge from the professionals with the affected/responding community (e.g. suggest follow up actions). For every group (e.g. Affected community Germany, Affected Community Netherlands, Responding Community Germany, Responding Community Netherlands, …) there was one field officer in charge. Therefore, the CLT tried to connect the activities from professionals and the community to each other where possible, to prevent overlap and to create win-wins. German field officers were collected by the GRC, Dutch field officers by the NLRC. The liaison officer was the head of the CLT and coordinated work of all the field officers. On COBACORE this group had more features available than affected/responding community to facilitate work of CLT.

FINEV Game management . This group is divided in several roles:
- game management responding community
- game management affected community
- game management responding German professionals
- game management responding Dutch professionals
- sit rap team responding professionals
- observers
- trainers.

The Game management group was the leader of FINEV and managed all the activities in the exercise. They helped the community (affected and responding) and the professionals to reach the goals set in the briefing document. The sit rap team gave reports of the situation to German and Dutch professionals. They also responded to questions of professionals and gave inserts if needed. Furthermore observers (general overview about the progress of the exercise) and trainers (explain COBACORE to participants and help them with problems) were part of this group.

Participation 'Essen Packt An!'

The volunteer group 'Essen Packt An!' deserves special mention because of their valuable contribute to IMEV2 . The association emerged from the former initiative on Facebook "Essen packt an" (English: "Essen tackles it") that evolved during the storm "Ela" in North Rhine-Westphalia, Germany, in June 2014. Since July 2014 the project has been officially registered as association aiming to realize social projects in Essen. At first, the volunteers supported the disaster and relief forces. From 4500 Facebook group members, about 1500 active volunteers came together during the extreme period. About 700 volunteers had been engaging in the recovery period to remove damages after the storm. Now the association has about fifty members. They engage in different small projects, for example building up playgrounds that were damaged due to the storm. Apart from that, they have been dealing with other social projects in Essen. The initiative started on Facebook and their communication is still based on that platform, with different projects divided into separate Facebook groups. They also use an interactive map on their website (http://essenpacktan.de) that shows the places where volunteers finished work and the places where help is still needed.

Annex 2: IMEV2 and FINEV platform features

The IMEV 2 platform

The COBACORE platform was implemented for the evaluation to support the goals mentioned in the previous section. To test the operational value of the platform and the usefulness and usability of features that are were implemented, participants carried out the scenario both with the COBACORE platform and after that with a mix of existing social media tools.

For the intermediate evaluation, the COBACORE platform was implemented as a web service and is accessible through laptop or mobile device for each of the user groups. Below, a description of primary functionalities and features is provided, combined with screenshots from the application. First, all participants logged in to the web service with the usernames and passwords provided by the test leaders (see Figure 10).
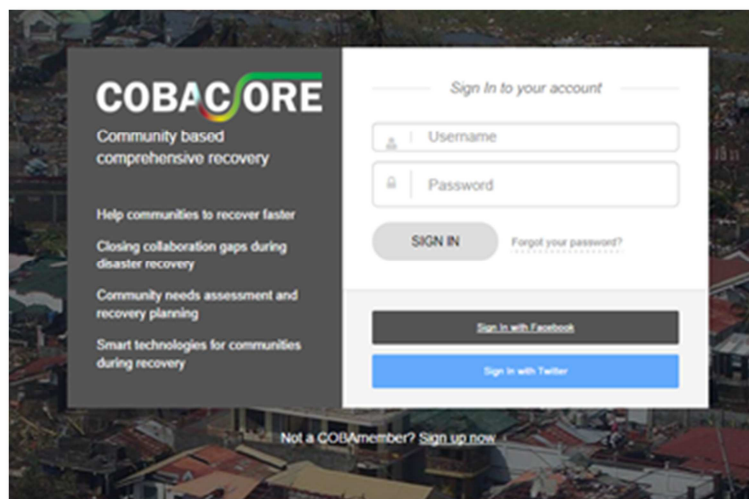
Figure 10: The login screen of the COBACORE platform

Next, participants saw the overview screen (Figure 11) which consisted of two parts. On the left-hand side, the geographical overview was shown with icon overlays representing needs (in red) and capacities (in blue). When clicking an icon, a pop-up window over the map opened up to show details of the need or capacity as well as contact details for the person involved (see Figure 11).

The right-hand side of the screen showed a row of different tab buttons, showing an overview of total needs and capacities (for professionals), personal profile information with uploaded needs and capacities and detailed lists of needs and capacities for other users.

Filling out needs or capacities was done with the two buttons on the bottom right-hand side "I need help" and "I can help".
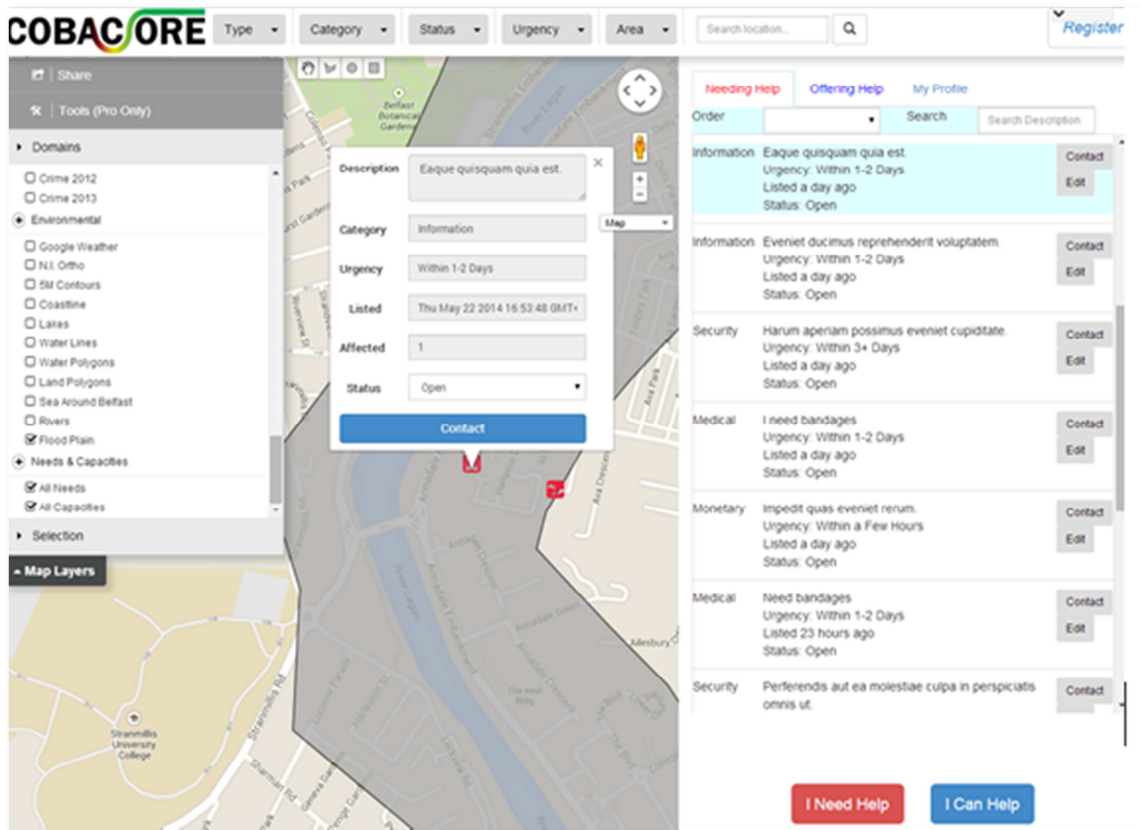
Figure 11: Main overview screen of the COBACORE platform

The needs / capacity overviews could be shown as separate icons or a heat-maps for groups of icons (see Figure 12). This was primarily used for professionals to get insight into how certain needs and capacities were geographically dispersed. Icons themselves represented the category to which the need or capacity belonged.
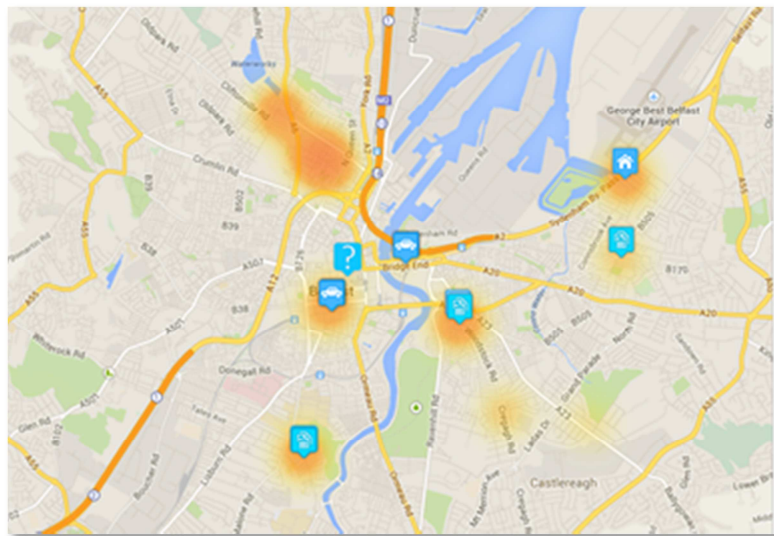
Figure 12: Icon and heat map overview over the map

In addition to filtering icons with the filters in the top-row, different map overlays could be switched on and off from the pull-down menu on the left-hand side (see Figure 13).
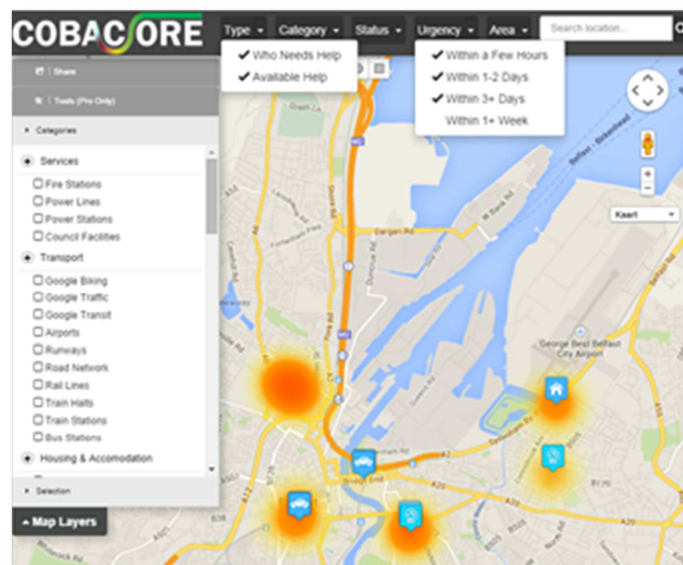
Figure 13: Screenshot of COBACORE filters and map overlays

Uploading needs or capacities to the platform was done by clicking the buttons "I need / can help". This opened a pop-up screen over the map-overview with a number of questions (*who, what, when, where* – see Figure 14). Participants were encouraged to indicate the needs/capacities as elaborately as possible, while staying within their role description. Once a need/capacity was uploaded, it showed automatically as an icon on the map and it was displayed in the need/capacity list overview on the right-hand side. The status of a need could

be "open", "in progress" or "resolved", based on whether a matching capacity was indeed found for that need. The most important feature of the platform was the Suggestions Tab (Figure 15), this tab showed a list of suggested needs or capacities based on the user's needs/capacities and profile. This matching was done automatically based on type of need/capacity and geographical location.
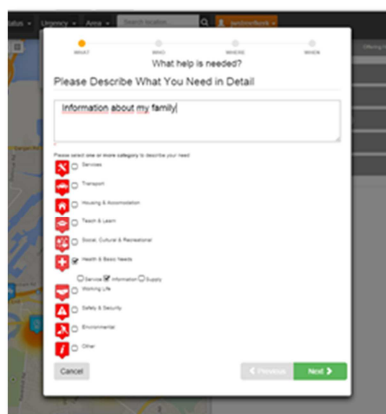
Figure 14: Screenshot of the needs and capacities upload screen
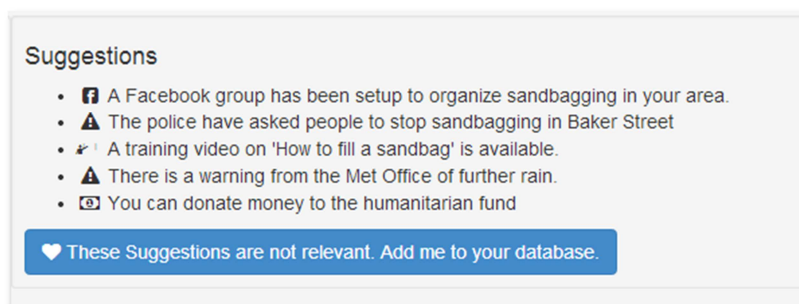
Figure 15: Screenshot of the suggestions screen

The COBACORE platform incorporated a number of tools for professionals. Professionals could upload their own map overlays (such as a floodplain overlay) using Google KML files or fusion tables. In addition, they could generate their own overview of needs and capacities based on areas indicated on the map (see the red circle in the map in **Error! Reference source not found.**). Finally, they could aggregate needs and capacities for different categories in a variety of data representation formats (charts and graphs) in the right-hand side of the screen. These views were adapted to the current filtering of icons on the map (e.g. only icons were included that were within the selected geographical area).
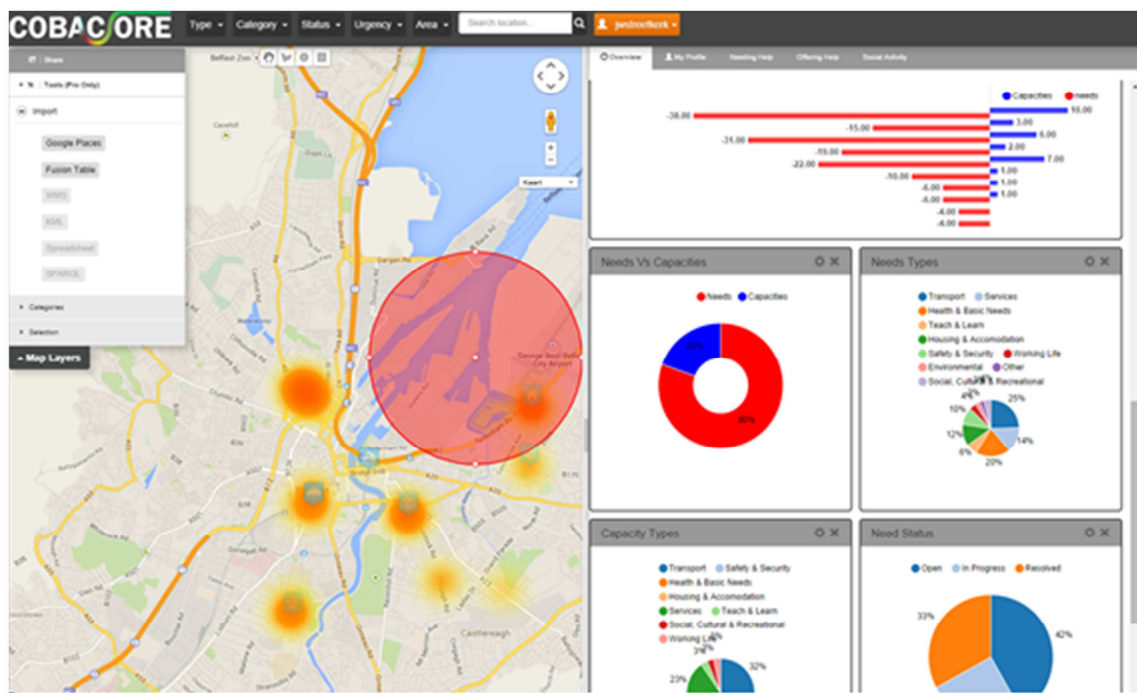
Figure 16: Screenshot showing tools for professionals

In total, the following tools are available for professionals:

- Dynamic situational metrics (e.g. number of needs and capacities)
- When the map is filtered using a map selection, the dynamic metrics change.
- Diverse map layers
- Import layers into the system using fusion tables/spreadsheets
- A quick view of the social activity explorer where a professional can get an overview of what is going on in the situation form across several different social media channels.

The FINEV Platform

Based on the results of IMEV2, the platform was significantly improved based on the feedback from IMEV2. Furthermore, new features were provided in order to fully support the FINEV exercise goals such as the CLT mobile version. A key stated aim of the FINEV was the testing the mobile platform and testing the fit of the Community Liaison Team concept and platform with realistic professional teams, structures and processes. The section that follows outlines the changes that were made to the web and mobile platforms based on the feedback from the IMEV2 and to facilitate the stated aims of the FINEV.

During the IMEV2, the COBACORE platform was tested only in its web version. So, participants were using a laptop only for accessing the platform, no matter the role to be represented.

For the FINEV, the COBACORE platform was presented also in its mobile version. This is an Android native application for testing COBACORE. The COBACORE mobile application has been tested before in Partial Evaluation 5, where an outside exercise was evaluated, but FINEV supposed the first integrated exercise where the mobile application came into play.

The COBACORE mobile app was designed mainly to address the functional needs of the

Affected and Responding community, providing the same features as in the web platform for these roles. In addition, Field Officers had at their disposal a mobile professional feature for verifying information (needs, capacities and activities).

The web platform had been completely redesigned in order to provide a better user experience while using the platform. Improvements for performance had been accomplished and semantic matching had been integrated within the platform to improve needs, capacities and activities suggestions.

Most of the features added to the platform specifically for the FINEV were focused on Groups management and collaboration tools, as well as improving the available professional tools.

Web Platform

The web platform underwent some focused changes based on the findings of the previous evaluations. An outline of all the features available in the current platform can be found in D4.3; this section concentrates on the specific features added to the platform between the IMEV2 and the FINEV. The features and related informational aspects, added to the web platform in preparation for the FINEV, and to be tested during the FINEV are as follows:

Localisation

Native German speakers found it more difficult to use the platform when features were not in their native language. To address this concern for the FINEV it is now possible to switch languages in real-time within the web platform. Currently English and German is supported. To enable other languages, a new language file only needs to be added.
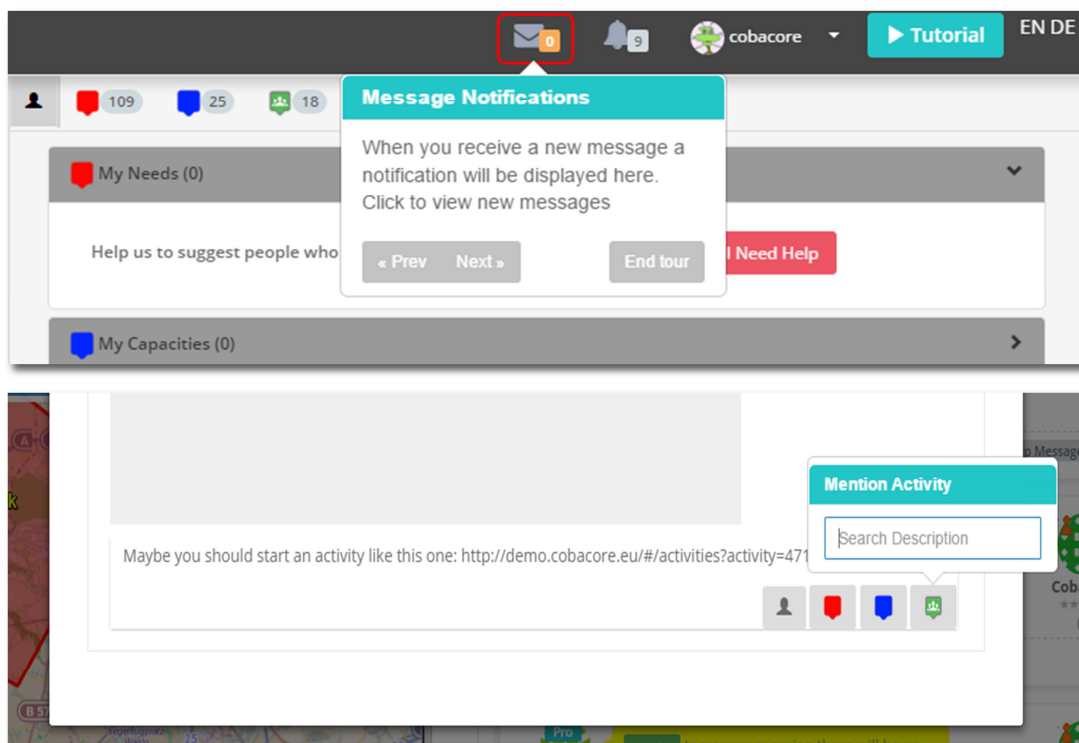
Figure 17: Examples of in-platform support

Tutorials/Guidance

During the IMEV2 users complained that they required much more guidance on the functions

and features of the platform in order to maximise the effectiveness of the exercise. To address this concern, a guided tutorial of the main features is available to all users and was highlighted to all users before the exercise took place.

Mentions/Accelerators:

Another usability suggestion, emanating from both the affected and responding communities during IMEV2, was the ability to quickly reference other needs or capacities while using the chat functionality. Users can now reference links to needs, capacities, activities and users from within their chat window.

Links

Related to the feature suggestion above, hyperlinks within the chat window are now clickable e.g. if users want to point other users to external websites through the chat window, they can now paste the link into the window, send the message, and the receiving user can click on this link to access the external link.

Actor Verification

Another much sought after feature from the IMEV2 from both the responding and affected communities was the ability to validate and vet individual users of the platform. To this end, all users of the platform can give users ratings and also add a comment about any other user.
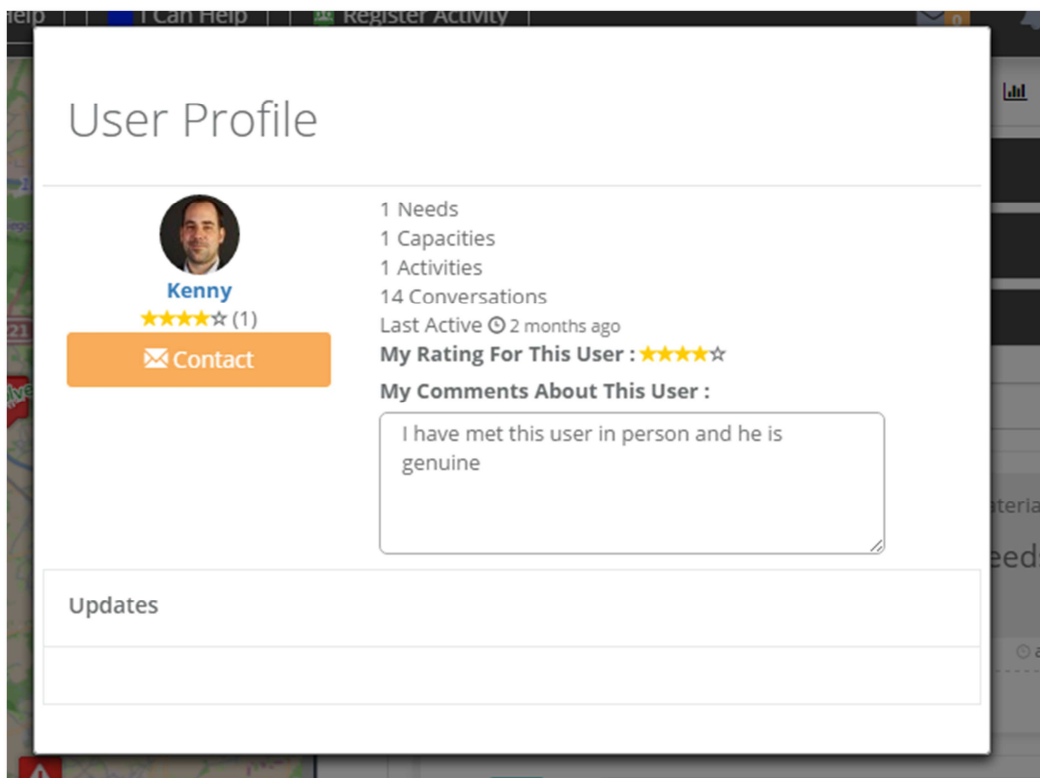
Figure 18: A user profile in the platform

Online/Offline Indicator

To improve the immediacy of responses it was suggested at the IMEV2 that the online status of each individual user should be visible in the web platform. Each user is now given a real time

online/offline status indicator.
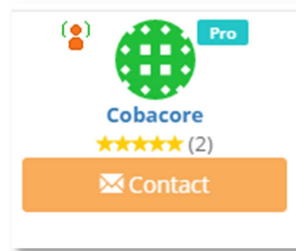
Figure 19: Online/Offline indicator

Verification Status. Professional users in particular, at all previous evaluations, all expressed the importance of being able to verify and validate individual issues emanating from the platform. Introduced into the platform, especially to address this request for the FINEV, is a separate verification status that only professional users can set and see i.e. only professional users will have visibility of this flag in the web platform and mobile apps.
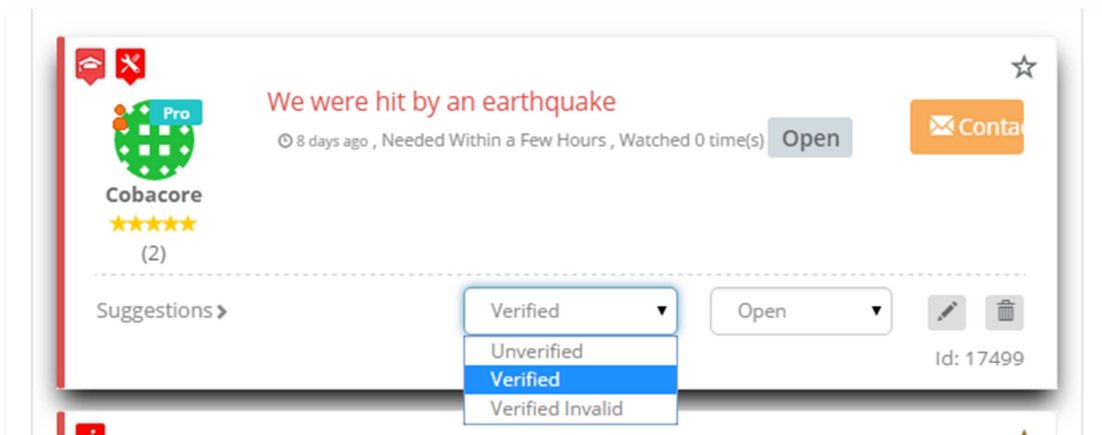
Figure 20: Verification status

Activity Logging. Visibility of the status and actions of other users of the platform was one of the key requests from responding groups at the IMEV2. To facilitate this, the platform will now log and show the activities of users to other users of the platform once they have made contact with each other through the platform. These log messages are now shown in the chat window in chronological order.
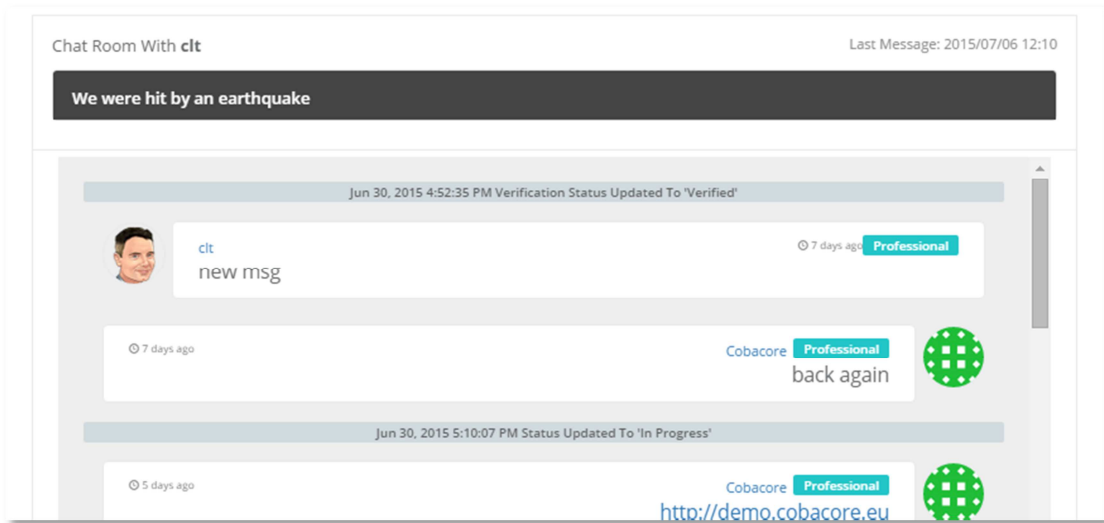
Figure 21: Activity Logging
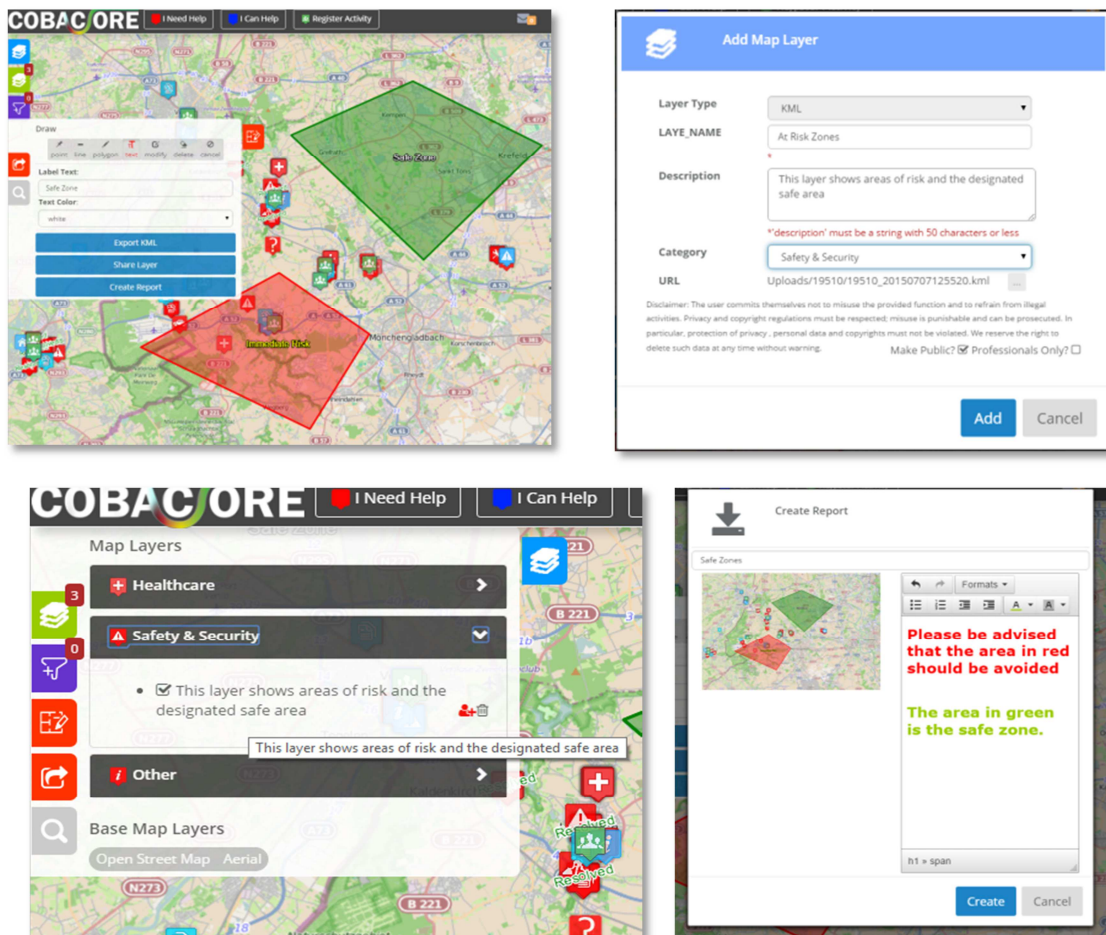
Figure 22: Custom layers and reporting

Group Collaboration Functionality. An important component, missing from the web platform in IMEV2, was the ability for groups of users to come together to collaborate and tackle issues in the affected community. In addition to PMs (private messages), group chats have been implemented to allow members of a group or an activity to communicate within that group. When accessing a group chat, through an activity or a group, the box displays the list of group members that participate in the chat, with a name, picture and an identification label (professional or member of the Community Liaison Team). All members of the group can send messages that are visible for the rest of the members.
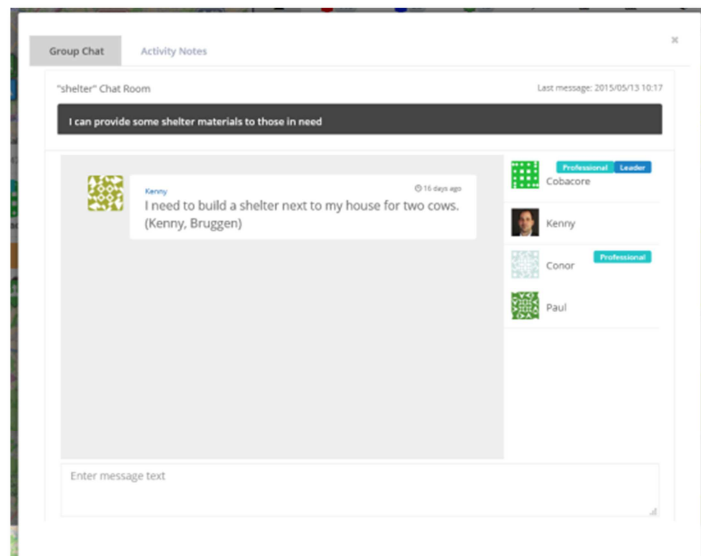
Figure 23: Group Collaboration Functionality

CLT Management. Professional users identified in IMEV2 that they should have the ability to change the security level of other users of the platform e.g. to change a user account to become a member of the community liaison team and thus allow these users to access more of the protected features of the platform. Professionals are now able to manage members of the CLT by accessing this option in the platform.
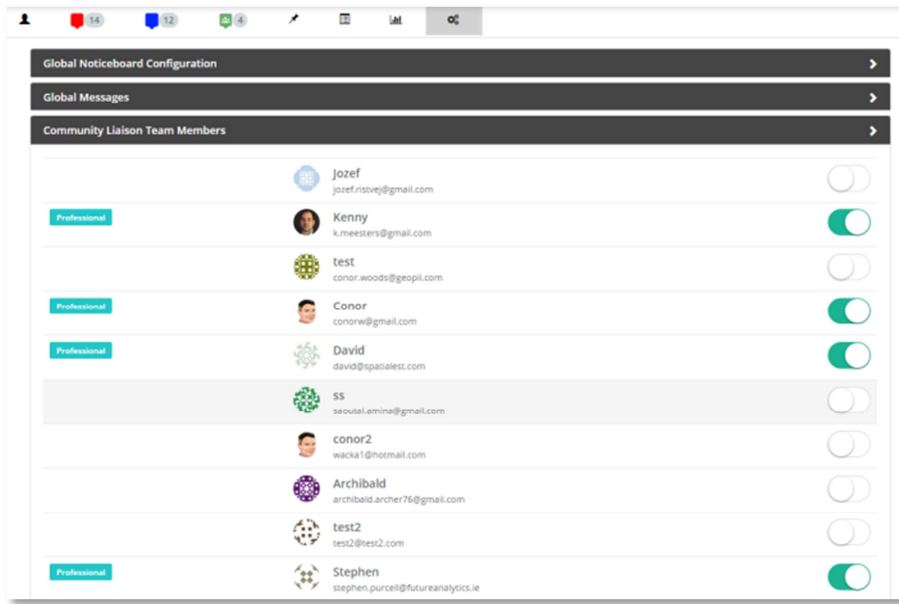
Figure 24: CLT management

Mobile Platform. The main structure of the mobile application remains the same, with the addition of new sections for Activities, Groups, Notifications and Users and Groups. Also, it has been improved in terms of performance and security, and it is possible to provide translations in different languages.
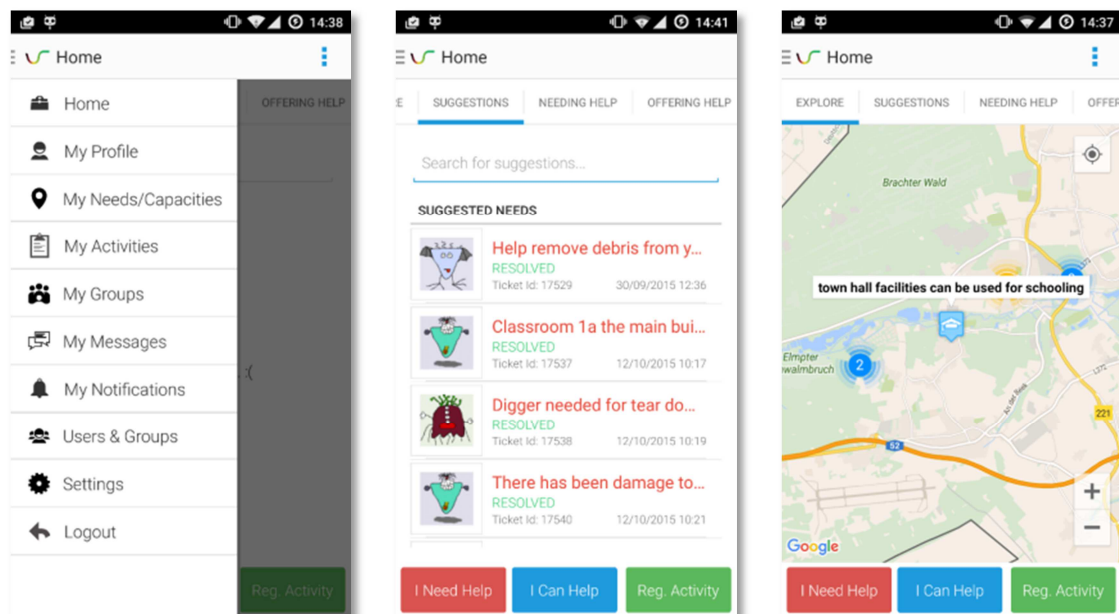
Figure 25: Screenshots of the mobile platform

Features added to the mobile platform for the FINEV could be summarised as follows:

- **Activities overview**. A new tab for activities have been added in order to allow users to find and search for activities posted into the system, in the same way as needs and capacities.
- **Activities registration**. In the main screen of the application, a button is always displayed to allow the user register an activity easily.
- **Groups**. There is a section in the application that allows users to see and manage the groups that they are part of. Users can also invite other members to join the group.
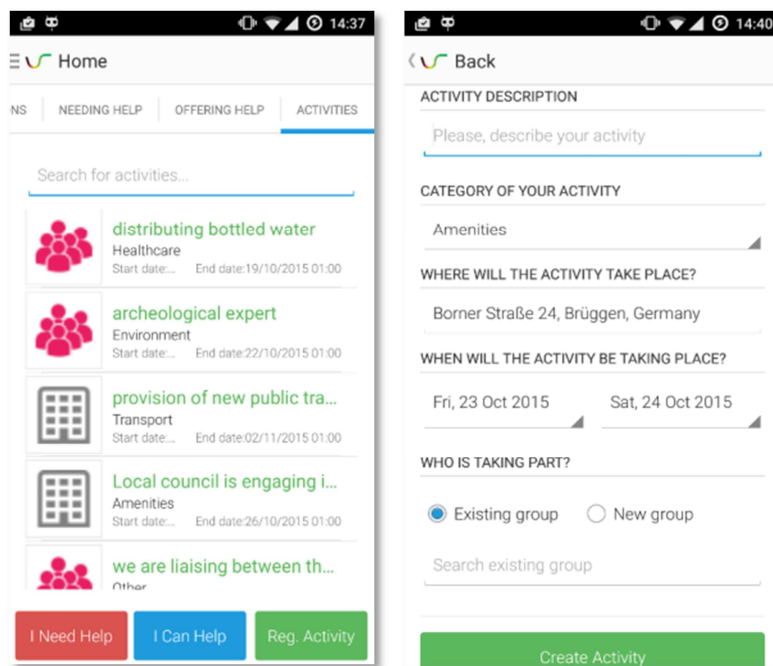
Figure 26: Activities overview and registration
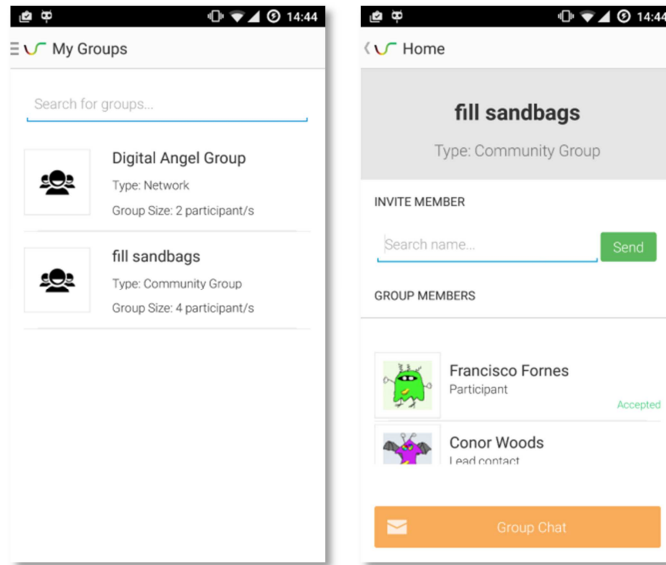
Figure 27: Groups

Group Conversations. Conversations have been redesign in order to allow users to easily identify the subject of the conversation (need, capacity, activity or group).

Users and Groups. There is a section in the application for finding and searching through a complete list of users and groups registered into the platform. It is also possible to contact a user directly.
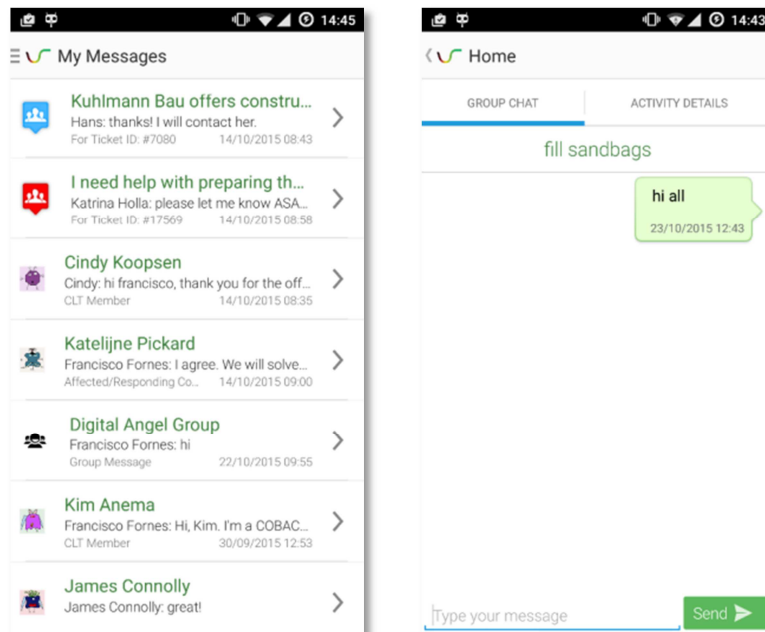
Figure 28: Group conversations

Notifications. Any system administrator notifications, direct or global messages notifications or group/activity invites will appear on this section of the mobile application. For invitations, users can click on the notification to accept or reject the invitation directly.
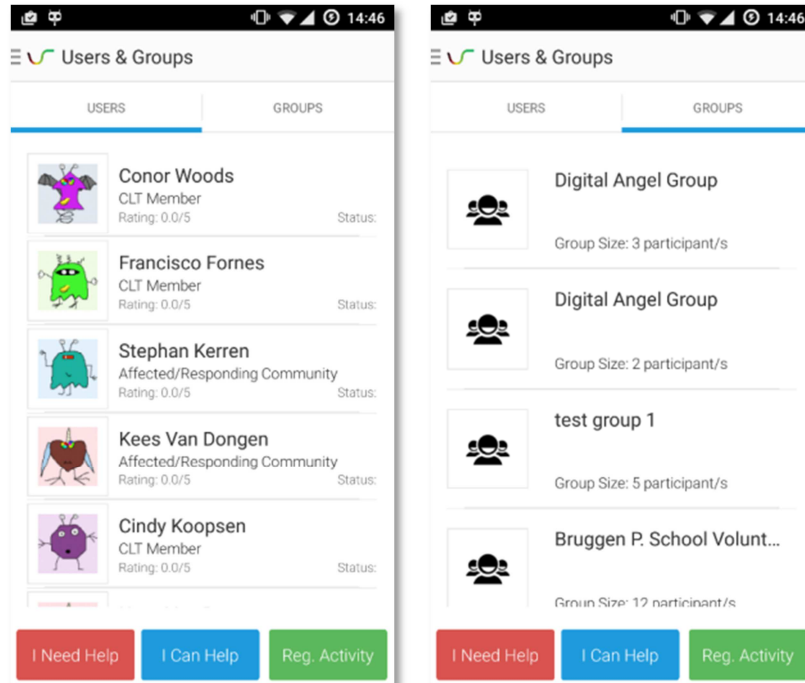
Figure 30: Users and groups
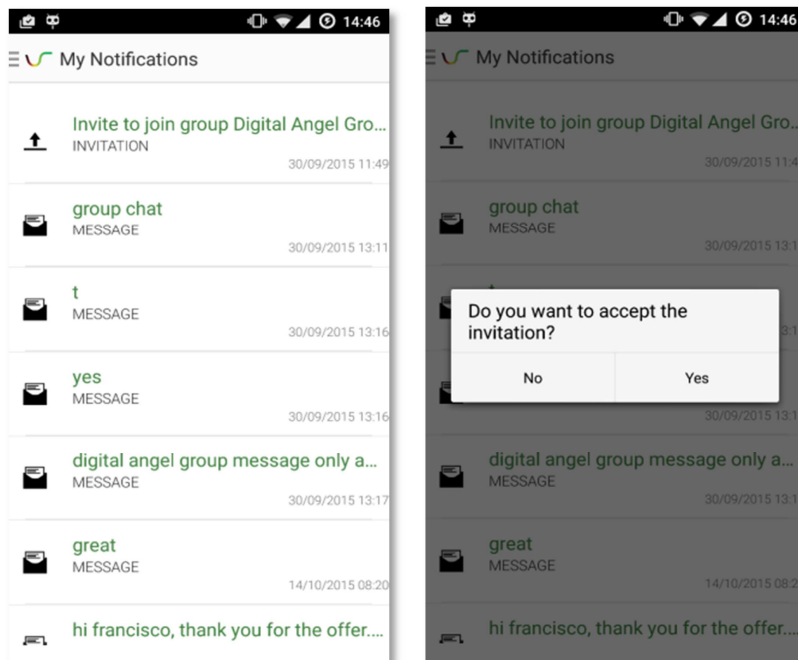
Figure 29: Notifications and Invitations

Annex 3: Observations FINEV

Affected community members

Aspect	Observation
Collaboration with other groups	Collaboration: AC was collaborating mainly with RC in 1st and 2nd round, collaboration with field officers from Dutch side was frequent. *AC vs RC:* • Round 1: talking to each other, 2-3 needs were posted from each community and were in "status in progress", but not solved within R1. • Round 2: the visits of Filed Officer and CLTs were established (Dutch were more frequent, German less). • Round 3: RC and RP were more active, the use and focus on activities as well, collaboration AC and RC on Activities creation and solving. • In the first and second round matching predefined needs and capacities went well, in the 3rd round it went better.
Engagement decisions	AC was not designed to make decisions (according to the predefined profiles, more decision within Round 3, with the need for improvisation), the main concern was regarding the prioritisation of needs (who and how is responsible), use of field officer is also important and was appreciated.
Organisation of engagement	N/A.
Platform use	Most used information came from: 1) chat 2) map and 3) professionals Suggestions for further improvement from participants: • Need of database with contacts to persons in the system/out of the system, but important for the recovery phase (sort of Yellow Pages). • Possibility of adding pictures (photos) and filtering of Suggestions, • Interface with Professionals on platform (direct), • Verification of Field Officer • The registration in mobile app and the system is different (username), • Translated instructions for the system, • During exercises do not use profiles related to private companies, • Next exercise should be organised in real environment not behind computers • General notifications from government (professionals) should be placed on platform only in English or national language and English.

Responding community members

Aspect	Observations
Collaboration with other groups	Field officer has added value – helps to smoothen the operation, but it requires more analysis in different scenarios to assess which different roles this field officer could take in different recovery or crises scenarios. trust and verification is needed - build in a way to ensure people are trusted (credential check)
Engagement decisions	Feedback from RP is needed for what RP is doing, as the RP was not visible on the first day. (too busy with internal procedures) on the second day, this improved for the RC as RP became involved in chat groups and group activities.
Organisation of engagement	Was organised on an individual basis, as each RC member had a platform functionality directly available and did not have any other responsibilities during the scenario other than to respond directly to the AC needs.
Platform use	Platform (mobile and desktop) was very useful to initiate contact between different AC, RC and RP members. After first match was made via the platform, other means (f2f, calling) were better suited for exchanging information in order to get needs-capacity matching process up and running. But this was perfectly fine and the platform should not try to incorporate all means of communication. Just enable users to make the first contact and to establish trust for the RC members.

Dutch recovery team

Aspect	Observation
Collaboration with other groups	From an observer perspective the scenario was not sufficiently 'challenging' for the Dutch professionals. They were always 'comfortably' in control of the situation within the Netherlands side of the border – although interestingly had to be 'probed' to initiate contact with their German Counterparts to offer their assistance. If I had a 'criticism' of the FINEV I would be that more time should have been made available to make the professionals fully aware of the analytical tools that the platform hosts. Conor did go through this briefly as part of the induction but once the game started the professionals seemed fixated with dealing with the needs as they arose and the timelines. These were not fully deployed during the exercise but when the participants were shown them during the final de-brief they were complimentary of the improved situational awareness that this brought.

Engagement decisions	Bearing in mind that the Dutch professionals had not met prior to the event it was interesting watching their approach and internal chains of command which seemed to evolve organically (with the exception of the group leader which we appointed). It was noteworthy that everyone in the room actively engaged with the platform. However, updates on situational awareness - including preparation for the press briefings always came from the same member of the team. I had anticipated that one person would have been assigned to monitor the platform but I guess as it was an exercise in testing the platform it worked better for many operatives to be involved. Interestingly, the Netherlands professionals never felt that it was their role to initiate activities and only became involved when a need or activity required 'professional intervention'. As such it reiterated that COBACORE must be integrated around existing systems rather than be deployed to replace existing systems.
Organisation of engagement	The consensus in the room was that more needed to be done to engage and coordinate volunteer responders and there was an overwhelming sense of positivity that COBABORE offered a genuine platform to facilitate such co-ordination.
Platform use	I think the overriding positive from the FINEV was the stability of the platform (taking into account the firewalls within the building). The fact that the FINEV was not dominated by technical glitches is testament to the technological partners within the consortium. Platform stability is important though in terms of user confidence as it enabled the Netherlands professionals to concentrate on the feature sets specifically.
	The considered key strength of the platform was the 'usability'. All professional responders in the room by the end of the first day were able to navigate their way around the features and functions. The maps and the ability to 'select' specific zones within the disaster area was one of the most appealing features. A further dimension that caught the imagination of the responders was the interoperability of the platform – in particular the ability to 'plug-in' their own datasets was seen as highly beneficial as professional responders did not necessarily want 'another screen' in their control centre. Although not tested in the FINEV this is something the consortium should look to build upon. The communication channels were considered a key strength of the COBACORE platform – that ability to liaise directly between the affected community and the field officers and to set up 'block' communication channels were utilised extensively throughout the exercise.
	A key feature that needs updating is the 'selection' of a specified are within the map. Professional responders commented that when they zoom into a particular location then they would expect any new needs/capacities associated with that area to be automatically updated on their system. At present this is not the case and users are required to 'refresh' and redraw for 'new' inputs to be made available. This seemed a very reasonable expectation and adds value to having professional 'test' the system.

Also take into considerations the different screen configurations for 'help' functions – in the UK this is always top right of the screen – in other countries it is bottom left of the screen. This meant that some of the Dutch professionals did not access all the features.

Professionals were suitably impressed with the speed with which the platform generated needs and capacity matches (some ambiguity at the start as the suggestions exhibited no relevance to the need but this resolved when the platform 'loaded' with more needs and capacities – presently the platform is pre-set to exhibit the top 10 matches – so if only 10 capacities are listed it shows all 10. Possibly something we could look to refine but as the platform 'loaded' the issue resolved itself. The professional community were happy with the quality and speed of the matches as well as the speed of responses during engaged 'dialogue'.

German recovery team

Aspect	Observation
Collaboration with other groups	It was observed that the German recovery team collaborate frequent with members of 1) German affected community, German responding community and German community liaison and German field officers. Interactions with other groups was not frequent. The community liaison gave updates about community needs and initiatives to the rest of the German recovery team. This information was partly gathered from the platform and partly gathered from field officers. The community liaison and field officers interacted with affected and responding communities through the platform. When encountering connectivity problems between community liaison and field officers the group chat function in the platform could not be used. Contact between community liaison and field officers became face to face. The field officers also had face to face contact with affected and responding communities. Interaction between field officers and communities was challenging because the behaviour of volunteer community members cannot be influenced in the more hierarchical manner that works in formal organisations. The collaboration concept in which municipalities support communities to link up and help each other is appreciated. This role fits Municipalities more so than for instance Fire Departments. The community liaison team plus platform fits with professional structures and processes.

Engagement decisions	After the team identified and prioritised recovery themes the Chair of the German recovery team made a deliberate decision to engage the German responding community based on these priorities. After this decision the community liaison and field officers made contact with the communities. The community liaison and field officers were aware of other responding communities that could help and explicitly considered when it was and was not usefulness to engage others. Members of the responding community were trusted for small activities. It could not be observed whether the German recovery team was satisfied with activities performed by responding communities. The interaction between affected and responding community was not monitored in that respect.

During this experiment the German recovery team became aware that they could rely on responding communities to address needs. Engage when priorities of German recovery team are clear and when posted needs are important, urgent and valid. |
| **Organisation of engagement** | The decision to engage communities is made by the chair of the German recovery team. The responsibility to actually engage affected and responding communities was allocated to the community liaison team and field officers. There were two persons for the role for community liaison and two persons for the role of field officer. One of the community liaisons provided situation reports to the rest of the recovery team and implemented decisions concerning community engagement. The other community liaison monitored the platform and managed crisis communication. The community liaisons had to two field officers. One interacted with responding community. The other with affected community. The organisation seemed effective, but community liaisons had to allocate their scarce attentional resources between participating in decision making and communication process of the German recovery team and engagement with communities. There was time between decision making meetings to prepare sit reps and to engage communities. A clear process was missing and might have improved efficiency. Potential attentional bottlenecks can be solved with additional capacity. The German recovery team was of the opinion that the community liaison was a good idea, but that bottle necks should be avoided.

The community liaison team concept was appreciated and the allocation of the community liaison role to two persons was appreciated. |

| Platform use | The German recovery team focusses on the informational content from the community liaison for decision making and does not interact with the platform directly. The following platform functions were used most often by the community liaison: 1) List with needs of affected community members, 2) Chat between Community liaison and affected community members and with field officers and 3) Global messages and 4) Area selection tool. Information about Needs and their status was used most often. The community liaison does not use dashboard and statistics. It seems that priorities of German recovery teams are very specific and that statistics are too broad to be of direct use for sit reps that support decision making. Community liaisons had to share their attention between multiple tasks and did not have a lot of time to filter the right information from the platform. Filters that help select important, urgent and valid needs are required. At the start of the experiment it was not clear to the German recovery team who and how the platform should be used. A more elaborate introduction, training and information on the internet would be appreciated.

A platform that enables the municipality to connect to communities is appreciated. As communities use the channels they know and already use acceptance and adoption of the platform is an important issue to address. The platform must be known, judged to be valuable and be used before a crisis and needs to connect to exiting channels (e.g. Facebook, Twitter, WhatsApp). The language needs to be adjustable for improve ease of use. The function that enables communities to match needs and offers makes the platform unique and in that sense better than existing platforms. A platform that links communities and that matches needs and offers that is available 365 days a years would support adoption. This platform could be monitored when needed and during an event (extreme weather, concert) or crisis the community liaison would joint representing the municipality. The use of filters to avoid information overload and statistics to provide oversight is needed. Instruction, training and information would help appropriate use of the platform. By providing additional information about risks related to the event or crisis the added value and adoption of the platform would increase. Links with existing platforms that communicate risk (e.g. NL Alert) were suggested. |
|---|---|

Annex 4: Community Liaison Team in IMEV2 and FINEV

The rationale

Essentially the COBACORE platform aims to tackle challenges in the communication and collaboration between communities and professionals by providing information; it was a deliberate choice not to interfere with existing planning systems and methods. In these existing systems, better decisions will be made when they are based on better information.

However, the needs for information differ for each user group; professionals have their own language or jargon that regular citizens will not understand - while working with communities implies completely different time schemes and overall objectives than the professionals are used to. Thus, the information shared by one party needs interpretation before it can be used by another party. This interpretation should be tailored; tailored to what information that is available, to the specific party that is using it and to the specific circumstances.

Especially since professionals and communities are not (yet) used to communicating and collaborating with each other, it is unrealistic to assume that people in existing structures, with heavy workloads and busy schedules (both community members and professionals) will be willing to invest time and effort in looking for new information that is not yet tailored. Therefore the online COBACORE platform needs a 'human interface' to be as effective as it can be.

This human interface should be selecting, translating and interpreting the information available on COBACORE into actionable knowledge for each specific user group. Because this function, in short, has to make the connection between the involved professionals and communities it seems appropriate to call it a Liaison function. CLT stands for Community Liaison Team.

The purpose of the CLT is to create a 'shared vision' between all parties involved - about what is needed, what is being done, by who and where. The task of a CLT is erratic with unpredictable sides; since unbounded volunteers by definition are not in any recovery plan.

The design

The CLT is a function that should be prepared for beforehand, the people involved should be trained and tasks should be allocated. This implicates that, at least during preparations and at the start of its deployment, the CLT cannot involve the unbounded volunteers that will become important.

We designed the CLT as a new role in the professional realm; with the task to translate the information available into actionable, relevant and timely information for his or her operational colleagues - and make sure that their communication with the community is as effective as possible.

The Liaison team consists of professional responders from different bodies. Together they function as a point of contact (on and offline) for both the responding community and the professionals and they process, interpret and translate incoming information or look for experts when they do not have the knowledge themselves. If and when appropriate the liaison team can be strengthened from the community side with identified community champions that are invited to join by the existing team-members. The composition of the team must be diverse, with antennae's in various forums.

The addition of a liaison team should fit on existing practices and procedures. The current work and procedures are better informed (about what is needed, what is being done etc.). The liaison team should be clearly visible and findable (on-site and online) and speak with one voice. Preventing confusion for external parties is very important.

The Liaison Team consists of officers already active in the situation, but who take on an additional task. Therefore they need a method (place online) in which they work together. Online this workspace might be 'shareable' in different degrees with outside parties and trusted partners from the community.

IMEV 2

Tasks of the CLT

- Keep track of any relevant activities in the responding community
- Supply the responding community in these activities with information and support
- Collect information in the broadest sense about these activities and transmit, if relevant, to professionals
- Facilitate and guide requests to the responding community
- Act as an intermediary between the responding community and professionals
- Advise professionals on the needs and capacities of responding communities
- Advise responding community on what is and is done and not done by the professional responders - where these responding communities would be most useful
- Facilitate / guide / support requests for information, resources and the like
- Report to professionals about the activities of responding communities
- Share knowledge about supply, demand and activities built up by responding community

Capacities of the CLT

- Create and keep overview
- Assess what is important
- Speak on behalf of / for the responding community (within certain limits / boundaries)
- Coach, guiding responding communities with useful information (without taking control)
- Give expert advice (or quickly look up) on many different fields
- Able to participate and join in structures and processes of professional emergency services.
- Working together, speak the language of several emergency services
- Remain flexible during a deployment (easily following the flow of events)
- Listen, able to deal with many different people with different experiences and questions;
- "Build bridges": between organisational cultures, between jargon and between information systems (social media, operational information sources, and so on).

Implementation during IMEV2

On the first day, the participants joined two training sessions. The first one was about the platform and its functions and features for professionals and responding community. Therefore this training took place in two separate groups. The second training session was about the liaison concept, which should be implemented on the second exercise day. Jointly the participants learned what role the liaisons have and how communication and collaboration can be improved.

Figure 31: Liaison-Training in the VisLab

To test whether and how the COBACORE platform and a liaison team support the collaboration between the different groups the most, we tested two different versions / options during the second exercise day.

In option A the liaison person of the two professional teams were continues part of their own team and were sitting in the same room. They were responsible to observe the platform and the happenings, communicate with the different groups as well as with the other liaison and to keep their teams informed.

In option B the liaison persons formed a liaison team and sat together in a separate room. From there they have made contact with their own teams as well as to the responding and affected community.
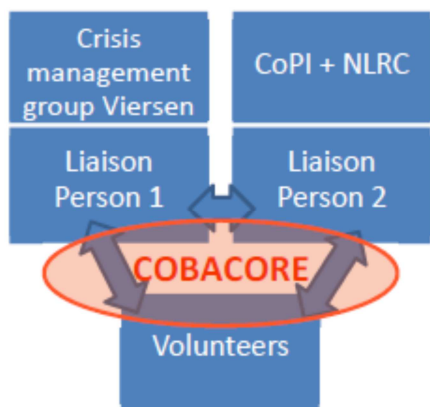
Option A   **Option B**
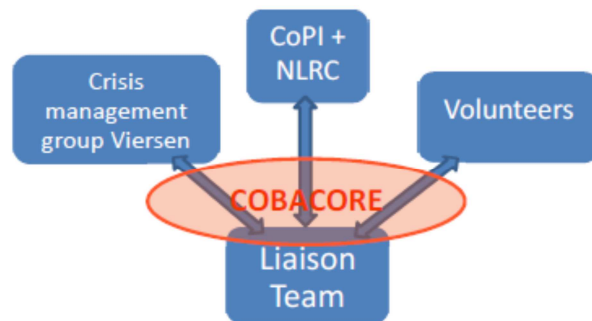
Figure 32: Two options for CLT composition

Community Liaison Team concept in FINEV

One of the obvious learning points from IMEV2 was that training-on-the-job for the Liaison Officers was not enough for trained professionals to feel comfortable in this role and execute it properly. Also, although the affected area in the scenario was cross-border, cross-border dynamics were possible and even desirable in the scenario; there was little cross-border activity initiated by the participants - and the cross-border design of the CLT proved to be unnecessary and maybe even overcomplicating things.

At both sides of the border, both the community groups and the professional teams indicated that they needed the Liaison to be present 'real life' (and not only through the web): "we need both Field officers and (but mainly) actual presence in the crisis team" and "we need someone to translate the information on COBACORE into useful processes and information."

Tasks of the new, improved, CLT designed for the FINEV

1. Provide recurring updates to the Crisis and/or Recovery-team:
   a. *This is going on from the Community perspective*
   b. *This is what you should be acting upon*
2. Guidance in using and understanding the COBACORE environment (*'look at this activity', ' they are doing good things', 'we have 20 people deployed'*)
3. Keeping good willing volunteers out of harm's way in a friendly, collaborative, non-directive manner

**Team members and their role**

The CLT now consists of one Liaison officer at policy level that is represented in the crisis room or the 'Recovery Management Team'. This officer is a professional delegate that is specifically trained for this role and does not have to combine it with another task. The background of this delegate can differ and is depended on national circumstances and prevailing organisational structures. For its function it is important that he or she is part of the 'professional' community (like the Kreis or Red Cross in Germany) and his/her mandate is undisputed.

This one officer has 'ears and eyes' in the field; being field officers that monitor community activities, needs and the collaboration between community and professionals at the lowest operational level. There is no restriction on the amount of field officers; according to the accessibility of areas (1), the amount of damage (2) and the extent of the mobilised responding community (3) the number of filed officers that is appropriate will vary. Field officers are trained volunteers from fro instance the National Red Cross Society; they receive a short training to prepare them for their task - and after that form a team that is being led by the above mentioned professional Liaison officer.

Way of working during the FINEV

One week before the FINEV an online meeting was organised with the two Liaison Officers for the German and Dutch side. In this meeting they were briefed on the COBACORE concept and platform (1), the role of the Liaison Officer in actions, responsibilities and relations (2) and the agenda for the exercise, so that they would understand how their role was translated to the exercise setting (3). After these three elements of explanation, a short thought exercise was done. First by coming up with situations in which the CLT would clearly add value and after that by discussing the approach that would best fit the described situations. By discussing this together the German and Dutch Liaison officer learned from each other's insight and left the meeting with a shared vision.

The Liaison Officers started the FINEV exercise present in the Recovery teams of their respective countries. They got the chance to introduce themselves and their role to the other professionals and listened to the introduction of the other team members. The Field Officers (2 on each side of the border)did not receive any training or briefing before the FINEV. They started the exercise present in the affected and responding communities; listening carefully and introducing themselves as point of contact for the professional help.

After the introductory rounds the two CLTs (one Dutch, one German) gathered amongst themselves and the LO briefed their two FO's on their tasks; they allocated the different communities to one of the FO's and agreed on a 'preferred way of communicating' with each other.

During the two days of the exercise, we saw the CLT evolve in two different directions. At the Dutch Recovery team information was exchanged between officers based on events happening in the scenario and the Liaison Officer choose to fill her task mainly bilateral with the different 'functional officers' – for instance when the information she needed or wanted to share was about communication issues, she invited the communication officer for an one-on-one-conversation. This made her role a very free one, not really part of the team but easily accessible by the professionals when needed. Het communication with the field officers took up most of her time; and she took many 'executive decisions' on what message was communicated back to the communities and which information was relevant enough to be shared with the professional team. In the German Recovery Team the dynamics were more fuelled by processes instead of incidents happening. The Liaison Officer was much more treated as a part of the team; which meant that she spent a lot of time in 'team meetings', but also got the opportunity in every meeting to provide an update on the community dynamics and spontaneous initiatives going on. The team would then, as a group, decide whether or not to collaborate with or inform the community in a certain way. The German Liaison Officer mainly contacted her Field Officers for 'more information on a certain initiative', while the Dutch Liaison Officer used her Field Officers more to send messages and communication into the communities.

The Field Officers role was designed to cover a fictional neighbourhood or area; therefore all four Field Officers were allocated to monitor and liaise with both Responding and Affected communities. In the Dutch CLT this was considered valuable and realistic; in the German context this was perceived differently and the German CLT decided to reassign the communities; all responding communities to Field Officer 1 and all affected communities to Field Officer 2.

Overall, this improved design of the CLT was received very well. Both professionals and communities on both sides of the border provided very positive feedback on their communication with respectively the Liaison and the Field Officers. Remarkably, the actual collaboration between professionals and communities still did not come to flourish fully; even the CLT members were a bit hesitant to allocate important (core) tasks of the recovery process to, unbound, volunteers.

Annex 5: COBAGame and Scenario

For IMEV2, we followed a community-based approach in which affected and responding community members and professional responders collaborated and shared information about needs, capacities, activities and the actors involved. An important facet of the IMEV2 is the incorporation of volunteers in professional operational structures – what role are they allowed to play, how is that coordinated across professional parties, and who takes responsibility for actions.

In line with the Cognitive Engineering (CE) methodology, the 'COBAGame', is designed to provide an evaluation environment that not only accommodates the technical aspects of the COBACORE concept and platform, but also provides ample room to evaluate all the (possible) interactions between the different actors involved in the concept and platform.

Purpose

Despite its name the 'COBAGame' is not designed for (pure) entertainment purposes, but it should rather be considered in the same context as other research methods examining certain behaviours, such as game theory is used in economics. The COBAGame is an extended table-top simulation, providing participants with maximum freedom to make their individual choices allowing evaluators to determine COBACORE's potential to align these decisions to create an improved disaster response.

- **Experimental value**: the primary goal of the COBAGame is to support the validation of the COBACORE development, and therefore a crucial element is the ability to produce useable and consistent data that would help to answer different research questions and provide the required insights for the project to improve its work.
- **Scalable**: the COBAGame will be used in different evaluations, which have different setups. Therefore, it should be possible to increase or reduce the number of participants, and the various group involved. This will also allow to add or remove complexity to the evaluation.
- **Support different contexts**: COBACORE is used and evaluated in different organisational context, for example in the different countries of the consortium partners. In the final evaluation and the intermediate evaluation, the COBAGame should be able to support international (and to some extend unpresented) organisational structures.
- **Different scenarios**: The evaluation setup should be able to cover the wider range of the COBACORE scope and focus as outlined in the Work package 1 documents. Different complexities (see above) and different scenario's (varying in the type of disaster, the impact and other factors).
- **Reusable**: The COBACORE project consist of several larger and smaller evaluation moments, including 2 intermediate evaluations (IMEV1 and IMEV2) and the final evaluation (FINEV), in addition to smaller tests and dissemination activities. A reusable environment ensures consistent and comparable results. Moreover, in the course of the project, partners as well as participants have expressed their interest in the COBAGame itself. The COBAGame is also considered an additional output of the project, adding to the importance of the re-usability.

While there is room for further improvement, in particular for the configuration of an individual evaluation session, the resulting COBAGame addresses all of the above requirements. The resulting evaluation approach (COBAGame) is more a framework that would allow evaluators to design an environment addressing their specific evaluation needs and tailor to their context.

Design

As mentioned above, the COBAGame is designed to allow individual participants to make their own choices. In order to do so, the COBAGame is focused on creating a context rather than providing specific inserts or action for participants to undertake. In the overall environment that the COBAGame provides, participants can make their own decisions, including the use of any tools provided including the COBACORE platform. In the diagram below this environment is illustrated.
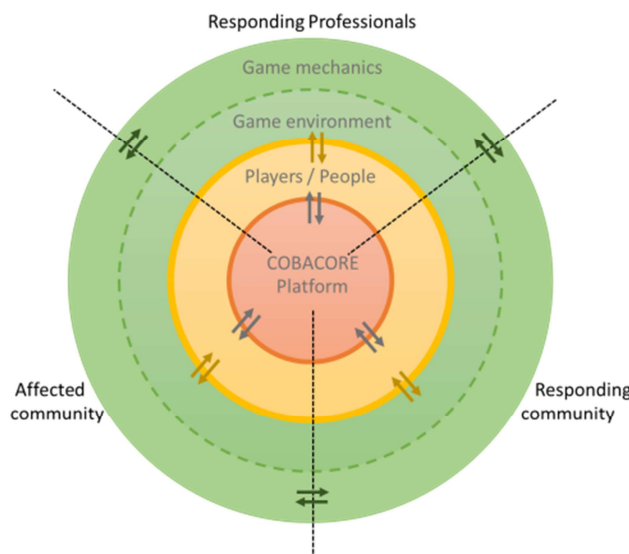
Figure 33: The COBAGame design

The diagram shows the three different stakeholder groups; the core of the COBACORE concept. For each of those groups the COBAGame provides the context, illustrated by the green circles. The participants themselves are depicted by the yellow circles, and the COBACORE platform is placed at the centre, as a mediating/communication tool between the different groups.

The overarching concept are the so-called 'game mechanics', invisible to the players. The role of these mechanics is to ensure a consist game experience, hence the interaction on that level between the different groups. For example, if the professionals undertake a certain action (such as building a sandbag wall) this will have an effect on the situation of the affected community. The game mechanics include processes and spreadsheets to keep the various changes aligned and ensure a consistent overall environment. Informed by these mechanics and the overall state, a game environment is determined, depicted by the second green ring. While this game environment (in the background) is the same for all the participants, the specific information given (and thus the perspective on this environment) differs per group. For example, the affected community will only be informed on changes that they could 'observe' in reality or obtain through news outlets. In other words, the game environment provides the various inserts to the different (groups of) players.

The players themselves cannot directly interact with each other, and are therefore often is separate rooms. This represents the physical separation in reality, and allows the evaluators to impose travel restrictions or delays for example. However, within these limits the players are free to use the information and updates given to them from the game environment to make their own decisions. This includes the use of provided communication options, most notably the COBACORE platform or app, but also social media or even telephone. This allows evaluators to change the specific setup to allow more or less communication options, and for example 'force' participants the use the COBACORE platform, or allow them the choice to use it when alternatives are provided. Note that participants make their own decisions on how the information received from the game environment is used and what they choose to share with others. In addition, information received from the communication options, such as the platform, also informs the participants.

At the centre of the evaluation setup is the communication option, allowing the different stakeholder groups to communicate with each other. As mentioned before, it is up to the evaluators to decide what communications are available (and what restrictions are imposed on them, for example only available after communication have been restored). These communication options allow the participants to directly engage with each other and the effectiveness of the participants to do so by using these tools is an important research element in our evaluation sessions.

Using this setup, it not only enables us to determine the efficiency of the tools (how well they work) but also their effectiveness (how are they being used), providing a much more comprehensive understanding of the (im)possibilities of the COBACORE concept and tools.

Affected communities:

The objective for members of the affected community is improve and speed-up the recovery and development process in for their personal situation and in their community. In other words, the objective is to have as much community, and individual needs matched as possible, through cooperation with the responding communities and the professional organisations. The performance can be measured by the number of individual and group needs that are matched by capacities. This requires for example the affected communities to jointly formulate and prioritise recovery goals and engage responders to get those goals addressed by recovery activities.

- **Environment interaction:** The players in these groups receive a unique profile describing their personal situation, and the situation of their community per stage. Also, a list of needs that should be expressed via the COBACORE platform in a way deemed more effective is included. The players will be notified once their need has been successfully addressed by activities undertaken by either the professional responders, or the responding community. The player is responsible to mark the need as successfully resolved.
- **COBACORE interaction:** The players enter their needs directly into the COBACORE platform. Depending on the prioritisation, efficiency of each player, and their synchronisation, similar or identical needs can appear simultaneously in the system. This puts extra pressure on the responding communities and on the professional organisations, because they have to meet more needs than they can afford with their limited resources and skills capacity. Users are able to tracks their needs.

Responding communities:

The objective of a responding community is to ensure that their capacities and resources are utilised to the fullest and in such a way make a valuable contribution to the recovery and development process in the affected communities. The performance is measured by the deployed capacities are matched with needs of an affected community and its members. Specifically, the number and contributions of the responding community to the activities deployed to address the needs of the affected community. This requires the responding communities to initiate, collaborate and participate in recovery activities.

- **Environment interaction:** The players in this group receive a unique, team profile and a certain set of resource and skill cards required to undertake specific actions. Once the players committed to a project in the COBACORE platform, the cards with the required resources (materials) will be taken away permanently and the human resource cards temporarily. The game managers also check if the all the required skills for a certain action are present. Finally the responding community will be notified if a need has been successfully addressed via the platform.
- **COBACORE interaction:** The players can choose to undertake certain projects by offering them in the COBACORE platform. These can be either projects addressing a specific need or offering support without a specific need present. Furthermore the teams can use all other facilities available in the COBACORE platform, for example collaboration.

Professional organisations:

The objective of the professional organisation is similar to the objectives of the responding community. To use their resources to most completely and effectively address the needs of the affected community. The specific measurements for the performance of the professional organisations are the level of capacities matched with the needs of an affected community member. Specifically the initiation and participation in recovery activities that are directed at recovery goals of the community will improve the game performance. This enables re-directing, empowering and coordinating with responding communities. Development is maximised when more capacities and activities are matched with the identified needs.

- **Environment interaction:** The players in this group receive a unique, team profile and a certain set of skills required to undertake certain action. In addition, the group will have a set of resources at their disposal. Once the players committed to a project in the COBACORE platform, the cards with the required resources (materials) will be taken away permanently and the human resource cards temporarily. The game managers will also check if the all the required skills for a certain action are present. Finally, the responding community will be notified if a need has been successfully addressed via the platform.
- **COBACORE interaction:** The players can choose to undertake certain projects by entering them in the COBACORE system. These can be either projects addressing a specific need or offering support without a specific need present. Furthermore, the teams can use all the facilities available in the COBACORE platform, for example collaboration with the responding community and combine resources.

These goals are designed to create specific and individual incentives (motivations) for each group, related to their role in the COBACORE concept and COBAGame. However, in order to reach their objectives, i.e. enact an effective recovery response, the various responding groups need to rely on each other's capacities and resources while determine in which area certain resources will be deployed. Practically, the majority of the needs that are included in the

profiles of the affected community members, and especially the most complex of them, cannot be addressed by any individual responding community and professional organisation. In addition, the scarcity of resources and the simultaneous demand of the affected areas requires a joint decision. Thus, without exchanging information (using the COBACORE platform) the various group will most likely inhibit others of reaching their objectives as well as obstructing themselves. While it is not explicitly stated cooperation, facilitated by COBACORE, is the key to achieve the objectives at a personal, community, and overall level.

COBAGame use in IMEV2

Since the start of the COBACORE project, and more specifically leading up to the first intermediate evaluation the COBAGame has been under development. While a smaller 'lightweight' COBAGame version has been developed for use in the partial evaluations, the COBAGame version used in the evaluation sessions is a more extensive version.

The COBAGame used in the IMEV2 was largely based on the COBAGame version used in the first intermediate evaluation as described in D5.2. However, a few modifications have been made. In the first intermediate evaluation the COBAGame was designed and implemented as a serious game; most importantly it used cards to represent certain resources and materials that the various groups could exchange in order to address the needs of the affected community. This proved useful for the first introduction to the platform and concept, as it provided the participants with a very structured approach to using the platform (entering the needs from their profile, looking for matches with resources cards and so on). However, this structure was also a downside as participants did not optimally use their 'freedom' to gather information, communicate and make decisions. Rather they were focused on the needs/resources matching process.

During the IMEV2 we addressed this issue by eliminating the use of the resource cards for the responding communities but rather allow them to consider their own available resources, especially for the responding professionals. This allowed the responding communities and professional to consider much more comprehensive actions then 'merely' offering resources to the affected community. This is results in a shift from offering resources to different affected communities to the more the organisation of activities, project and actions which require a variety of resources. This required the different responding groups to work together in order to arrange transport, materials and volunteers. Furthermore, these activities also have a larger affected on the communities for example clearing up roads, reconstructing parks etc.

An additional change required in order to accommodate this less strict approach to the evaluation and implementation of the COBAGame, was the changing role of the affected community. In order to ensure a consistent game environment, but still enable the responders to make their own decisions and undertake their own activities, some variables needed to be eliminated to keep the game manageable. Therefore, the affected community, during the IMEV2, was not played by participants but rather part of the game (or exercise) control. While profiles were still drafted and used, this allowed greater, real-time, control of what was requested by the affected community and how effective the different actions undertaken by the responders were.

Evolution of the scenario

Since Viersen and its surroundings are located in an earthquake prone area, we opted for an earthquake scenario for the IMEV2. On the first exercise day, the scenario started 24 hours after a major earthquake occurred with a magnitude of 7.3 on the Richter scale between

Viersen (GER), Venlo and Roermond (NL). It was one of the worst earthquakes ever in this area. Short time after an aftershock with a magnitude of 6.9 has occurred. The epicentre of the quake was in the village Brüggen and the depth of it was 10 km. The earthquake has caused major damage in both Germany and the Netherlands; various towns and villages were affected to different extents. On the Dutch side some buildings collapsed. Many walls were cracked, many roofs were damaged, different constructions threaten to collapse etc. Damage on the German side were much greater than on the Dutch side. Damage areas were difficult or impossible to reach. On both the German and the Dutch side, there was uncertainty in the population; they did not know where they are still safe. Streets and roads were impassable or blocked by a variety of people and cars that wanted to leave the damage zone. There was no public transportation anymore and a power blackout in the whole area. Needs mainly focused on restoring neighbourhood and infrastructure.

On the second exercise day, the scenario continued 48 hours after the incident. Most damaged areas were still difficult or impossible to reach, volunteers started to organise themselves, professionals started to build up important roads, injured civilians could be evacuated from some areas, public transportation was still out of order, there were lodging problems and shortage with water, food, health care and money supply. Emergency backup generators were set up, most shops were closed and if people could find open shops, they were hoarding.

At the beginning of each exercise part, all participants got a document with a general starting point of the scenario.

Profiles used in IMEV2

According to above mentioned scenario "Earthquake" 25 profiles of Affected community (AC) were created. Each profile had six stages due to number of rounds performed during the IMEV2 and each was devoted to certain name of a person and name of a town where this person lived (German and Dutch side). Character of profiles depended on seriousness of damages caused by crisis event.

Names of rounds/stages listed in profiles:

- Relief (1st day),
- Recovery (2nd day),
- Recovery (3rd day),
- Recovery and Reconstruction (4th day),
- Recovery and Reconstruction (5th day),
- Reconstruction (6th day).

Through team brainstorming activities, biographies for all of each fictive person were created with all circumstances/information needed (address, family members information, age, job description if needed, etc.). Each stage was described according to evolution of the scenario and situation instantly running in affected town (degree of damage of the town and place where this person/family were living, problems that they are facing etc.). Needs deriving from stage description were identified and these were distributed/sent/placed through COBACORE platform to all interested parties during IMEV2:

- Crisis management group Viersen,
- Local Crisis Management Command Post (CoPi)
- The Netherlands Red Cross
- Volunteers

The bio characterisation was the same in each step and description of a stage was changing in time flow and development/evolution of the scenario.

Each profile had six pages but there were not identified needs in each of this stage depending on situational awareness. Needs can be characterised as an individual ones and in some cases there were placed group needs (one block of flats, one street, area etc.). The main challenge for this IMEV2 was if these needs would be matched with capacities that could be offered by above mentioned interested parties.

People who were acting AC were trained before IMEV2 started and got from 3 to 5 profiles to deal with. Each person had one computer and five profiles with predefined name of a person situated in town were created.

COBAGame use in the FINEV

In addition to the changes made to the COBAGame leading up to the IMEV2, several other changes have been made for the final evaluation. The overall objective for the final evaluation in regard to the COBAGame is to provide an even more comprehensive environment, and shift the focus further away from the immediate needs. The final evaluation would shift the focus more toward the later recovery stages, which in turn would change the role of the various participant groups involved. In this setup different professional responders would be active, most notably the municipalities and their administration rather than the emergency services. In addition, the needs of the affected community might be less urgent, compared to immediate rescue operations and relief efforts, but the needs that still exist would be more complex to address. For example, returning to 'normal daily life' (as opposed to being alive) requires for example the opening schools, which in turn requires buildings, staff and transport.

This added complexity led to changes in the COBAGame, both in the 'inserts' (profiles) and the game management (workflows). The profiles for the responding and the affected community contained less specific information, omitting for example specific resources, but include more details about the motivation, the situation and the personal objectives. In addition, the profiles were also designed to be more conflicting: there were opposing interests, claims to same resources and discussions about the priorities. On the other hand, the professionals were given only a generic role outline, as in the final evaluation the professionals involved could act out their 'own role', adding to the more realistic and complex dynamics of the final evaluation.

In addition to the changes in these inserts, the use of resource cards was eliminated as they were in the intermediate evaluation 2. However, in contrast with IMEV2, during the final evaluation more active 'counter-play' was offered. In addition to the profiles, several experienced officers of Kreis Viersen and the Dutch Red Cross were added to the game environment. This provided the opportunity for the professionals to make any decisions they would see fit and relay them directly by phone. These exercise controllers, would interpret the decisions made in the context of the game environment and update it accordingly. For example, if the professional's responders would divert traffic by closing roads, the game environment would reflect new road blocks occurred elsewhere, while the local community was informed that trucks could no longer supply the stores. The addition of these experts to the exercise control allowed a much more dynamic game with a greater freedom of decisions then in the previous evaluations). This also allowed to bring back the affected community as actual participants rather than part of the exercise control as it was in the IMEV2.

A final change was the extension of the communication possibilities between the different groups. Like in the IMEV2 the professionals had the option to use modern telecommunication

such as email and phones, but now also had to option to setup (a limited number of) face-to-face meetings, for example between the municipalities involved. In addition, the professionals now had access to field officers who could provide information directly from the affected community. In other words, the centre of the COBAGame as displayed Figure 33 was expanded to also include all communication and processes that are part of the COBACORE concept.

This all contributed to more freedom and dynamic game-play which in turn led to a shift in focus of the final evaluation towards (joint) decision making, including politics, conflicts and other compounding factors, as was the intend. This shift in focus not only aligned with the desired research objectives and aligned with the original focus of the COBACORE project as described in Work Package 1, but also provided valuable insights in the difficulties faced by all groups involved in these stages.

Profiles used in the FINEV

According to IMEV conclusions we decided to create profiles for FINEV with several changes. We agreed to be mainly focused on group needs and not on individual needs in the phase of reconstruction and recovery. We created needs in profiles three weeks after an earthquake occurrence which better fit last phases of crisis management cycle.

The scenario for FINEV was focused on two towns one on German side - Brüggen and one on Dutch side- Roermond. Within project team brainstorming activities using detailed maps of mentioned towns, web pages and other information there were identified 5 use cases for each town (Brüggen and Roermond) and created 5 profiles for Affected community (AC) on each side with total number of AC profiles 10. In line with these profiles for AC there were created profiles for responding community (RC) describing capacities available for figuring out presented needs. Additionally we created document with additional needs for each side which were not included in created profiles to be prepared to keep the game flow in unpredictable situations. All information included in AC profiles and RC profiles are based on real environment, companies, places, etc.