ACRIMAS Report Summary

Project ID: 261669
Funded under: FP7-SECURITY
Country: Germany

Final Report Summary - ACRIMAS (Aftermath Crisis Management System-of-systems Demonstration)

Executive Summary:

ACRIMAS was a 15 months Support Action with 15 partners from 10 European countries, dedicated to provide comprehensive advice to the European Commission DG ENTR in preparation of the call for a Demonstration Project on Aftermath Crisis Management and to develop a roadmap for the execution of this demonstration.

This roadmap elaborated a systematic development process for CM systems, procedures and technologies in Europe, to be implemented within the demonstration project.

The proposed process aims for gradual evolvement of CM capabilities through demonstration and experimentation (DE) activities, transfer of related knowledge between stakeholders and at promoting an environment for co-development of CM technology and methodology where users, providers and researchers can work together.

ACRIMAS further emphasized community-building which will be considerably supported by the execution of the subsequent Phase II, bringing together the various key stakeholders and available DE infrastructures in a case-by-case demonstration or experimentation activity.

Large-scale incidents (man-made and natural) inside and outside the EU require a coordinated response from crisis managers and first responders across Europe and with resources from all levels of government. Currently, CM in the EU can be regarded as a highly diversified ‘System-of-Systems’ integrating organisations and components with different cultures, policies and assets as well as various stakeholders and procurement schemes.

To identify the critical need areas and topics within this current CM ‘System-of-Systems’ to be addressed by the demonstration programme in Phase II, ACRIMAS followed a scenario-based and user-centric work approach.

ACRIMAS was scenario-based in the sense that characteristic CM scenarios were identified, selected and developed to constitute a sound basis for ensuring the work of posing user needs and requirements in the area of Aftermath Crisis Management. Based on these scenarios, current weaknesses and gaps in CM in Europe and potential solution thereof for demonstration and further R&T were identified and integrated in a roadmap for Phase II. The scenario approach embraced an all-hazard view, including the EU external dimension.

ACRIMAS was user-driven in the sense that users and other stakeholders like first responders, authorities and governmental bodies as well as the supply side were actively involved throughout the project process, some of them as full partners, most of them linked to the project through a supporting Expert Group and dedicated project workshops. They have played a central role in complementing and validating the scenario analysis by expressing their needs and requirements to be addressed by DE activities in Phase II, and the demonstration concept elaborated.

ACRIMAS prepared a roadmap setting out the main areas and relevant topics of CM to be addressed by the Phase II. In addition, ACRIMAS delivered a demonstration concept for the Phase II, describing how and where the DE activities in Phase II
should be conducted.

Project Context and Objectives:
The FP7 security research project ACRIMAS – Aftermath Crisis Management System-of-systems Demonstration Phase I – is a so-called Support Action to prepare the actual, large Demonstration Programme on Aftermath Crisis Management – the Phase II –, which has been published as a call for proposals in the last work programme of the FP7 security research in 2012 (6th call). As a Support Action, ACRIMAS did not deliver new research and related results on aftermath crisis management, but a strategic roadmap setting out the main areas and relevant topics of crisis management to be addressed by concrete demonstration and experimentation activities in Phase II. These areas were to be identified and sequenced in the roadmap delivered by the project. In addition, ACRIMAS was to develop a demonstration concept for Phase II, describing how and where the demonstration and experimentation activities in Phase II should be conducted.

Besides these two main deliverables, an important objective of ACRIMAS was to raise awareness among the relevant stakeholders in Europe about the upcoming Demonstration Programme and its preparation by ACRIMAS.

Crisis Management – current context
Fundamentally, the ultimate goal of CM is to ensure a timely, co-ordinated and effective response to any large-scale crisis, man-made or natural, be it caused by terrorist or criminal means, natural disasters, or major industrial or technical accidents, both inside and outside the EU, as recently outlined by ESRIF (European Security Research and Innovation Forum, 2009). In the context of this project, a crisis is understood as an:

“incident affecting a society with the potential to cause loss or damage to persons, property or the environment which requires extraordinary coordination, resources, and skills in response”. Subsequently, CM relates to a “process of planning and implementing measures aimed at preventing, reducing, responding and recovery from a crisis” (ISO, 2010).

Crisis Management (CM) is a core capability of modern societies. Managing the return to normal life in case of major incidents as quickly and swiftly as possible is paramount for limiting damage, chaos, and panic. At the same time, CM is a complex multidimensional discipline, incorporating both the managerial aspect of organising the mission and the technical facilities employed to assist. This mixture becomes even more intricate as CM evolves along the phases of a crisis, ranging from pre-incident to post-incident phases. CM requires the involvement of a wide range of stakeholders with different responsibilities, backgrounds, capabilities and perspectives, including civil protection forces, first responders such as Police, Fire Fighters, Civil Protection, Health Services, Non-Governmental Organisations, sometimes even the military, and the public at large. CM, thus, is a highly diversified and heterogeneous area with different approaches developed in terms of different local, regional and national CM cultures, applied technologies and available assets in Member States (MS) of the European Union (EU).

Further, the growing globalisation and interdependence between countries calls for an increased number of cross border or external (outside Europe) CM operations involving a diversity of responding services, adding complexity to the other challenges crisis managers and first responders face. The close collaboration and effective, targeted information sharing between all the actors involved is therefore crucial if the response to an emerging crisis requires has to be quick, efficient and decisive. These elements, together with the resulting necessity to inter-operate in a multi-national set of multiple organisations including the affected public generate new challenges for CM.

The above mentioned multi-faceted CM landscape in Europe is reflected in policies, operational procedures, organisations, assets, budgets and personnel at all levels of the ‘CM System’. This highly diversified and complex “CM architecture” reflects the EU maxim of “national responsibility and European solidarity”, based on the subsidiary and proportionality principle. National sovereignty and responsibility has led to different CM approaches in the MS, ranging from more centralistic approaches (e.g. France, Italy, Spain) to fully federal, subsidiary approaches (e.g. Germany, The Netherlands, Scandinavia). CM approaches are further characterised by different degrees of involvement and collaboration of civil and military institutions – some MS being much more advanced in the “joint” vision –, and by individual and specific CM system solutions that generally exhibit little or no interoperability across borders.

While the role of the EU predominantly was limited to facilitate the “European solidarity” by e.g. co-ordinating requests for support in catastrophic incidents from MS and outside the EU and the deployment of available MS assets, recent EU initiatives
in CM respectively with relevance for CM have been launched to improve the performance of the EU itself in crisis situations. The main initiatives, covering partly the internal as well as the external dimension of EU security, which were to be acknowledged by ACRIMAS, included:

- The Community Mechanism for Civil Protection: co-ordination of the deployment of civil protection units from MS in major disasters via MIC, the Monitoring and Information Centre of the EU, run by DG ECHO, Civil Protection Unit, and facilitated by a set of supporting tools (CECIS, the Common Emergency & Information System, the training programme and the concept of Civil Protection modules),
- The provision of strategic assets like GMES (DG ENTR) and GALILEO (DG TREN) and ESA (including space research), and of CM-related R&D, in particular security research (DG ENTR), ICT (DG INFSO) and policy research (DG RTD),
- ESRIF, the European Security Research and Innovation Forum, which focused in its final report among other areas on the mid- to long-term research and innovation needs in CM in Europe,
- Humanitarian aid, co-ordinated by DG ECHO,
- The Instrument for Stability (IfS), external aid instrument for quick response to political crises or natural disasters in 3rd countries (complementary to humanitarian aid), supporting non-proliferation and countering “global threats”, co-ordinated by DG RELEX,
- Civilian & military CM capability development (implications of the Lisbon Treaty).

In contrast to military operations, the civil crisis management system-of-systems does not belong to one entity as civilian operations do not obey to a strict unique chain of command. Although the coordination and the tactical command and control are joint, the various organisations keep their chain of command to a large extent and use their respective legacy systems. This situation increases complexity as no central organisation can impose the same organisational, procedural and technological choices to everybody involved. Any development – be it technological, methodological, procedural or policy-related – of CM based on a blueprint, or even a static vision, will therefore not be feasible. This is the common understanding of the ACRIMAS consortium, and as such the baseline for our work identifying and highlighting those CM areas and individual topics, which should be addressed by the Demonstration Programme to allow for a gradual evolvement of CM policies, procedures and technologies.

ACRIMAS’ main objectives

The main objectives of the ACRIMAS project were

• The development of a demonstration roadmap for the phase II demonstration project
• The development of a phase II demonstration concept
• To raise awareness among the relevant stakeholders in Europe about the upcoming Demonstration Programme and its preparation by ACRIMAS

To achieve these objectives the work was structured into seven different work packages (WPs) contributing to the overall objectives as follows:

WP1 - Project management: Dealt with the project management, including technical, financial and administrative management.

WP2 - Political and legal framework: Analysed the political, legal and societal aspects of CM. Together with WP3, this provided a basic framework for all other WPs to consider.

WP3 - Scenario-based missions and tasks analysis: Conducted a mapping of threats and hazards leading to crisis situations challenging EU CM. Identified general parameters characterising CM scenarios in an all-hazard approach, adequately illustrating the related, main missions and tasks in CM. Validated the relevance of the mapped threats and hazards, and identified CM scenario characteristics with external experts and proposed potential demonstration scenarios for the Phase II.

WP4 - Gaps and requirements analysis: Used the outcome of WP2 and WP3 to identify and validate the gaps, shortcoming and discrepancies of current CM missions, tasks, procedures etc. to be addressed in Phase II. Collected user needs, expanded from the initial input from WP3, and set requirements and prioritised to define the main axes and objectives for Phase II.
WP5 - Approaches and solutions identification: Dedicated to identify and analyse potential solutions to the needs and gaps with respect to the thematic areas as found in WP4, by particularly taking into account the results of completed and on-going EU projects in the CM domain (FPs 5, 6, 7, and PASR). Selected promising solutions based on their relevance to cope with the WP3 scenarios and to solve the gaps as defined in WP4. Further, investigated selected technical solutions by assessing maturity, usability in different crisis situations, upgradeability and interoperability. Listed potential (technical and non-technical) topics for demonstration & experimentation in Phase II, and topics that require additional R&D.

WP6 - Demonstration concept & Roadmap for Phase II: Used the outcome of WP4 and WP5 to provide a list of prioritised topics to be addressed by experiments and demonstrations in the phase II. Additionally WP6 assessed what infrastructure will be needed for demonstrations within CM, such as demonstration platforms or mechanisms to assure the dissemination of demonstration results. Developed top-level guidelines on how to perform demonstrations in the area of CM. Provided the methodology for the selection of an optimal portfolio of demonstrations (in contrast to simply viewing them as isolated projects) taking into account their interconnectedness. Prepared the ACRIMAS demonstration concept of a continuous integrative CM process, based on the above tasks, together with the experience from previous WPs and an adaptation of available DE methods to the CM context.

WP7 - Awareness raising and dissemination: Gathered all essential activities of awareness rising and dissemination. Made available the results of ACRIMAS - validated by the users and stakeholders linked to the project through their dedicated involvement in two ACRIMAS workshops, the ACRIMAS pilot case and the Final Event - to the wider CM community that should also adhere to the objectives, approach and content of the Phase II.

Project Results:
Main results/foreground of WP2 “Political and Legal Framework”

The description of the political and legal framework of aftermath CM in the EU, subject of ACRIMAS work package 2 (WP2), was mainly supposed to provide the overview necessary on the current political and legal (institutional) set-up of aftermath CM in Europe to be taken into account when identifying and recommending activities for the subsequent demonstration project on aftermath CM, the Phase II. It served the need to understand the political and legal mechanisms in which CM operations are embedded and organized in MS and the EU.

To describe the political and legal framework of aftermath CM in the EU, both, EU level and MS level have been assessed. At EU level, main instruments, laws and regulations, relevant institutions and their roles and responsibilities have been described. For the MS level, four case study countries have been selected, trying to cover important factors and their different characteristics that have strong influence on the political and legal setup: a) Germany, b) Italy, c) Sweden, and d) Greece. Criteria for the selection have been e.g. the structure of the national CM systems (centralized vs. decentralized) and nature of cooperation via the MIC (MS frequently providing support vs. MS frequently receiving support).

The description resulting from a literature analysis was complemented by interviews conducted with relevant national and EU experts and stakeholders in the field of (aftermath) CM. In addition, the ACRIMAS project workshop on 30 June 2011 in Bonn, Germany, where WP2 results were presented and discussed with CM stakeholders, contributed to validate and complement the results (see also D7.5 “ACRIMAS 1st Workshop Report”).

The investigation of the legal and political framework of aftermath CM at EU and MS level has provided important insights into the institutional and political set-up, laws and regulations relevant in disaster response and recovery in the EU.

The results of the work in WP2 have been included into two deliverables.

Deliverable D2.1 “Report on current CM framework” describes not only the current situation in EU/MS CM, but also identified anticipated trends indicating the overall direction of the future legal and political framework of CM at EU and MS level. An analysis of the current setup and of future trends regarding legal and administrative CM structures at the EU level has been conducted. Thereby, all relevant EU bodies involved in CM (the Commission, the Council and the European External Action Service) were comparatively screened, and evaluated regarding their legal and institutional provisions related to CM. Further, an analysis of the heterogeneity of CM structures at the MS level has been performed also describing approaches and
conditions for bi- or multilateral cooperation in CM. By choosing a case study approach (Germany, Italy, Sweden, and Greece) representing different national administrative structures and further differences in the EU, characteristics of the current diversified legal and administrative CM framework and their trends were derived. The deliverable also elaborated conclusions and recommendations for the Phase II, derived from the results listed above.

Deliverable D2.2 “Report on misfits” describes the challenges to be faced with regard to the development of a more coherent “System-of-Systems” structure for aftermath CM in the EU. The deliverable contains an analysis of the challenges regarding legal and administrative CM structures at EU level, an analysis of the challenges deriving from the case studies (Germany, Italy, Sweden, and Greece) and a description of general challenges at MS level, mainly extracted – and generalized – from the case studies as well as conclusions and recommendations for the Phase II.

Current issues and anticipated trends identified by WP2 were:

• Disasters are expected to increase in frequency and magnitude – amongst other reasons, due to the increase of man-made technological, social and environmental risks and climate change. Thus, the need for cooperation within the EU system in the field of CM will most likely remain – if not even rise – in the near future.

• The CM structures in the EU are currently changing, with the Lisbon Treaty as one major driver. For the Lisbon Treaty to have further positive impacts on the coordination between different CM systems at the EU level, the collaboration between EEAS (including CSDP) and European Commission activities in disaster response and recovery needs to be improved. So far, the division of responsibilities for CM between the EEAS and the Commission is seen as not evident.

• Besides EU-internal cooperation, the cooperation with other international organizations, especially the UN and the NATO is and will remain very important.

• An open but important question is, how the Solidarity Clause will be materialized, and how to deal with the tension between solidarity and sovereignty regarding EU cooperation. Associated key questions to be answered are: Where is the “entry point” to the EU-system? Who shall have the leadership in the EU-system? What kind and magnitude of crises shall trigger the clause? Which coordination procedures are appropriate? Which decision-making and coordination mechanisms are to be activated? How could existing structures and procedures be as effectively and efficiently as possible, thus avoiding unnecessary duplication or, worse, responsibility gaps?

• A basic challenge for EU cooperation is the differing national political views on to the future role of the EU in aftermath CM, including the MIC/EERC. Also the ability and willingness to contribute to joint CM operations very much differ among MS. As there are no commonly owned EU-assets, EU disaster response and recovery is dependent on MS’ assets, structures and their political commitment to contribute. For the Phase II, the different attitudes need to be taken into account. It is important that the topics selected, be those technical, organisational or of other kind, are consistent with different political and legal futures.

• Especially between neighboring countries, a direct communication and provision of assistance based on bilateral agreements is a common fact and often preferred over activating the EU mechanisms. A clear benefit of bilateral agreements (as opposed to EU-level assistance) is that respective legal and organizational conditions for the cooperation are comparatively easy and flexible agreed between parties. An unsolved issue is the identification/definition of an ‘optimum balance’ between regional cross-border arrangements and EU-level cooperation in the area of disaster management. Further, it needs to be elaborated if experiences and lessons learned/best practices for regional cooperation can be applied to improve EU cooperation, and vice versa.

• The major challenge for the development of a more coherent “System-of-Systems” CM structure in the EU is the diversity of structures in MS. Important factors being responsible for differences in the aftermath CM framework at MS level are the
governmental systems – decentralized systems (autonomy of administrative units in implementation and execution of disaster response and recovery policies) vs. centralized systems (a national department directly implements measures in case of intense disasters), and variants in between –, high or low occurrence of disasters, often offering or often requesting assistance to other countries, and systems less or highly compatible with EU legislation.

• Challenges in the legal and political framework at MS level need to be taken into account for Phase II, and thus were of relevance for the remaining work in ACRIMAS. An important field is coordination, which involves, amongst others, difficulties due to federal structures (which somehow mirrors the situation at EU level), different levels of equipment, infrastructure and knowledge, unclear chains of command, high levels of bureaucracy, different uses of terminology, and improvable media management. Issues that derive from those challenges are political objectives with regard to decisions on whether or not to provide assistance and insufficient critical reflections on past CM actions. Further challenges are financial restraints, as for example the general economic situation of MS, or restrictions limiting assistance only to cases were funding is provided.

• As the EU seems to become more ambitious and willing to respond to humanitarian disasters and crises outside EU area, the security of first responders and humanitarian aid workers may need to be paid more attention to. Humanitarian response operations are increasingly taking place in volatile situations that increasingly may require civil-military cooperation. For example, a challenging situation would be a request for assistance from the international community to a natural disaster taking place in a fragile or fallen state where security of first responders/ humanitarian workers to be deployed cannot be guaranteed. So, value could be added by using civilian response teams (CRTs) under the CSDP civilian instrument. It is a recommended element for the phase II to investigate disaster related situations where both, traditional means (through MIC/EERC) and CSDP tools might a) improve the security situation, and b) assist in the recovery phase with a longer term perspective of societal recovery.

Main results/Foreground of WP3 “Scenario-based Tasks and Mission Analysis”

ACRIMAS was scenario-based in the sense that “characteristic CM scenarios” have been identified, selected and developed to constitute a sound basis for ensuring the work of posing user needs and requirements, finding solutions and documenting corresponding R&D needs and demonstrations topics to be integrated in the roadmap.

The scenarios generally embraced five major different categories of crises (based on the four major ESRIF scenarios) and thus, followed an all-hazard-approach:

• natural disasters
• industrial accidents
• terrorism and crime
• external interventions/humanitarian crises
• other disaster scenarios.

The selection of the concrete scenarios to be developed was driven by the aim to provide a structured, top-down approach to identify those most relevant/urgent/critical areas of European CM, which need to be addressed by the subsequent Demonstration Phase II project.

Specifically, WP3 aimed at:
• Threat analysis: mapping of threats and hazards leading to crisis situations challenging EU CM,
• Parameterisation of scenarios: identification of general parameters characterising CM scenarios in an all-hazard approach, adequately illustrating the related, main missions and tasks in CM,
• Validation workshop: validation of the relevance of the mapped threats and hazards, and identified CM scenario
characteristics, with external experts,
• Reporting: including a proposal for potential demonstration scenarios in Phase II.

WP3 had to serve a two-folded role in ACRIMAS. Primarily, it had to complement the context analysis of CM in the EU started in WP2 by providing an overview on relevant threats and hazards (potentially) leading to disaster situations inside and outside the EU, and on the related CM characteristics. This overview then was used, among other means, in the subsequent WP4 to discuss and identify with end users in CM their main needs for future improvement of their CM capabilities in the light of the various scenarios, and in WP5 to help to develop a CM mission and tasks structure, to which the results of the broad survey on approaches and solutions potentially matching the identified improvement needs could be mapped. Secondly, it is expected that the proposed, characteristic (exemplary) CM scenarios can be used in Phase II of this demonstration programme, when there is the need to develop concrete scenarios for the demonstration and experimentation campaign(s), allowing the Phase II project consortium to use the WP3 scenario matrix as a checklist to verify what individual scenario elements and parameter need to / should be taken into account and specified.

Effectively, WP3 analysed in a first literature review available information on natural and “man-made” disasters in Europe and worldwide from various sources, among others, national risk analyses from EU MS (e.g. The Netherlands), the Emergency Database (EM-DAT), and studies e.g. from the European Environment Agency (EEA) and the Munich Re insurance company. The results of this review were used to develop a first list of 44 typical disasters and crises (the so-called “threat/hazard map”), categorised in five groups (natural disasters, man-made incidents like e.g. major industrial accidents, terrorism & crime, ‘external interventions’ like e.g. large-scale movements of people, and “Others” like e.g. an economic failure of a country), further classified using EM-DAT and each briefly described. As it is the understanding of the ACRIMAS project that the subsequent identification of current capability gaps and needs in EU CM should be based on an all-hazard perspective, i.e. not be prejudiced by any pre-selection of “most relevant” scenarios, this list attempts to cover the widest range of disasters and crises to be used as a reference when discussing with CM end users in WP4 their concrete improvement needs.

In a second step, this list has been expanded to a “scenario construction table”, where, based on results from the literature review as well as from expert opinions gathered through interaction with the CM stakeholder community, 27 general characteristics (parameter, like e.g. the location of the scenario, the weather conditions, the density of the population, etc.) of disaster scenarios have been extracted and added to the list of threats and hazards. This scenario construction table is intended to be used in the preparations for the execution of the Phase II project, when concrete demonstration and experimentation scenarios will have to be developed, with the need to address these characteristics. For each of the 44 disasters and crises listed, one example how a scenario can be constructed has been elaborated and validated with the involvement of external experts in a WP3 workshop.

Finally, also a list of typical CM capabilities was derived using the various disaster characteristics in the scenario construction table. This list contains 54 individual CM tasks, classified in 5 categories (physical safety tasks, social safety tasks, medical care tasks, community response tasks and cross-cutting tasks) and clustered into response capabilities, recovery capabilities, cross-cutting and main supporting capabilities, and so-called “prerequisites” like e.g. evaluation and training tools & methods. All tasks have been briefly defined, setting the context together with the scenario characterization table for identifying capability gaps in WP4 and also identifying and clustering possible solutions in WP5.

The results of the literature review and the threat/hazard map (i.e. the list of typical disasters and crises) can be found in the first deliverables of WP3, which is D3.1 “Threat/Hazard Map for EU CM”, while the work and the results on the scenario construction table and the CM tasks list are presented in the second deliverable D3.2 “Scenario proposal report for EU CM”.

The above mentioned results led to the following recommendations coming out of WP3:
• Use the scenario construction table as a tool for taking preventive measures;
• Harmonize and standardize Crisis Management elements (capabilities);
Main results/foreground of WP4 “Gaps and Requirements Analysis”
The task of WP4 was to analyse development needs within disaster management from the end-users perspective, and to identify areas or topics where development is important and research, development and demonstration activities could provide benefit.
To this end, a literature review and, more importantly, a stakeholder consultation approach were chosen. This means the identification of improvement needs has been driven by consultations with end-users using questionnaires, interviews, and workshops.
The consultations provided an overview of what areas are perceived as being in need of development by the end-user community, as well as an indication of how critical different areas are considered to be.

WP4 had been divided in 3 tasks and associated deliverables:
- Task 4.1 – Inventory Report
- Task 4.2 – Gap analysis
- Task 4.3 – Requirements Specification Report

The first deliverable, D4.1 “Inventory Report” provided an overview on relevant crisis management organisations, capabilities and procedures. The objective of this deliverable was to provide an overview and high level description of the tasks performed by the key organisations involved in Crisis Management (CM) and their procedures.

The results given in D4.1 can be summarized as follows:
- Based on a gap-driven approach and providing the reference frame for the gap analysis, the content of this deliverable represented a first preliminary high level picture of gaps and needs in CM.
- Although each one of the 27 Member States (MS) has its own issues and within a MS, the situation can be different in each region and for the different services (Civil Protection, Firemen, Police, Health Services, etc.), it is possible to focus on situations/gaps that appears to be common throughout the various nations and that have been experienced and reported in different situations (scenarios).
- It is evident from the information collected that the most relevant problems/opportunities concern the coordination of the multitude of activities performed for Crisis Management, rather than the support of specific tasks.

The second deliverable 4.2 “Gap Analysis Report” describes the methodology followed to carry out the mapping of improvement needs carried out within ACRIMAS WP 4 (Gaps & Requirements Analysis) and outlined the improvement needs identified. The methodology was designed to meet the specific needs of the ACRIMAS work approach (end-user driven).

The different steps can be summarized as follows:
1. The initial activity in WP4 was to define and demarcate the problem area to be addressed and to break it down into subareas, in preparation of the consultation process. The European Commission expectations, as expressed in the call to which ACRIMAS responded, were analyzed, followed by a review of the project proposal. Outputs from WP3, in particular the initial findings on areas with likely improvement needs from WP3 workshop on “Disaster scenario selection and characterisation”, were incorporated. Scoping and subareas were discussed in a project internal meeting. Then, key sub-areas were identified and formulated as consultation questions. This material was distributed to the consortium partners and was refined in a number of iterations.
2. Respondent identification was carried out by identifying a number of categories of stakeholders which need to be consulted. The ACRIMAS contact list was used as a basis, and was sorted according the identified categories. Consortium partners were asked to provide further respondents. The respondent list was reviewed for comprehensiveness in terms of responder categories and further stakeholders were identified to fill the gaps. Furthermore, all national PoC (point of contact) agencies for the MIC (Monitoring and Information Centre) of the EC were added to the respondent list.

3. Based on the problem scoping, consultation protocols were developed to serve as basis for questionnaires and interviews. The questionnaires were developed around a core of about 10 open questions to which the respondents were asked to provide written answers to. The questionnaires were produced in three different variants to better suit different categories of stakeholders. The interviews were designed as semi-structured interviews, using the same core questions but complemented with exploration guidance and with further questions added on a case-to-case basis, to draw upon specific competencies of the respondents.

4. Questionnaires were provided by a web-based system and by word documents distributed via email. Responses were managed in accordance with applicable law on the protection of privacy.

5. Interviews were carried out by different partners. The interviews were documented using text reports.

6. A revised scoping effort was carried out. This was done through a project-internal workshop. The purpose of this effort was to identify suitable sub-areas to form sessions in the workshop. Due to the limited time available in the workshop, this involved a prioritization. This was primarily based on knowledge gained from the questionnaire answers.

7. Based on the revised problem scoping, the workshop was planned and carried out. It was designed as a half-day introductory presentation part and a half-day workshop part. Three workshops consisted of three parallel sessions of moderated brainstorming around three themes (“Coordination and command”, “Communications” and “Awareness and Assessment”), followed by a joint reporting and discussion session. The outcome of the workshop was documented by dedicated ACRIMAS rapporteurs in all sessions.

8. All material from the questionnaires, the interviews and the workshop was put into a repository. The responses were clustered into thematically similar categories, and by iteration of this process, a number of topics were identified.

9. All topics were further researched by using literature and fact-finding interviews. Based on this, textual descriptions were developed, in the format that can be found in D4.3 “Requirements Specification Report”.

10. The topics and their descriptions were discussed in validation interviews and provided for review to stakeholders. This process was based on a set of validation questions. The feedback was gathered and incorporated into the report.

The third deliverable, D4.3 “Requirements Specification Report” provided a detailed specification of the gaps in CM that were identified during the consultation campaign. In order to describe the gaps in a comprehensive manner the following sections for the description of the gaps have been defined:

- Background: Giving a general background an description of important characteristics of the area which the improvement need concerns
- Improvement opportunity: This is a key section, which describes in more detail what needs to be improved within the area
- Constraints: This section describes key constraints which any solutions have to respect to be applicable. Constraints are in many cases very important in order to understand the improvement needs – difficult constraints can be the reason that no
Main results/Foreground of WP5 “Solutions Identification”

The main objective of WP5 was to identify potential and promising approaches to solve the gaps and to address the development needs (as defined in WP4 – Gaps & Requirements Analysis) to cope with the scenarios (as developed in WP3 – Scenario-based Task & Mission Analysis) in terms of policy, research, technology and other resources. This included a survey of on-going and planned work, technology foresight, operational and methodological possibilities and policy developments.

More specifically this WP aimed at:

- Specifying approaches and promising solutions being available (or mature) and therefore could be involved/elaborated in a Demonstration and Experimentation environment (in Phase II);
- Listing promising solutions not being technologically ready for demonstration yet, i.e. that require substantial further R&D.

The results of these activities served as input for WP6 (D&E concept & Roadmap) and were achieved by combining (i) the knowledge and expertise of the consortium partners, (ii) desk research concerning the current research situation and ongoing (technical) developments, and (iii) consultation of experts (e.g. the members of the ACRIMAS Advisory Board, and representatives of a number of on-going R&D projects).

In WP4 a wide inventory of improvement needs has been carried out by stakeholder consultation. This resulted in a list of 26 improvement needs from an end-user perspective (see also D4.2 and D4.3). For each of these improvement needs, a quick-scan has been carried out within WP5 to identify approaches and solutions to meet these needs.

To carry out the quick-scan analysis in a harmonised way, the ACRIMAS conceptual model on crisis management has been developed. Furthermore, the improvement needs were clustered.

This resulted into the following twelve clusters:

- Capacity building
- Community awareness raising (Society’s resilience)
- Prepare civil-military cooperation
- Harmonisation
- Training and exercises
- Evaluation
- C3 and Situation assessment
- Volunteer management
- Inform and Involve the public
- Information management
- Supply of basic services to enable crisis management operations
- Logistics

These clusters were allocated among the WP5-consortium partners corresponding to their expertise to carry out the state-of-the-art investigation. The investigation for approaches and solutions concerned both R&D and products. It comprised European projects (FP6, FP7, PASR), national projects and developments (in MS, but also outside Europe), developments at international organisations (e.g. UN, NATO), NGOs, available products, and finally on-going research activities at universities. Within WP5 a
couple of internal and external workshops took place to discuss on intermediate results.

Each of the clusters was elaborated. Areas to be analysed were:
• Background information on the cluster (e.g. definitions and trends);
• Ideal situation, especially the ideal situation within 5-10 years;
• Problems to be solved (based on the gaps / improvement needs that were found within WP4);
• Quick-scan investigation, i.e identification of promising solutions
• Assessment of solutions with respect to DP-II-readiness or requirements for further R&D (TRL level).

As mentioned above, ACRIMAS WP5 also developed the ACRIMAS conceptual model on CM in order to structure the results coming out of WP4 and WP5.

The model provides a systematic approach to generically describe (i) crises and crisis developments, (ii) the different dimensions of CM, (iii) operational tasks involved in CM, (iv-v) tasks for preparation and support of the CM process, and (v) CM equipment:

• Crises and crisis developments: Characterization of crises according to their type and to different kinds of characteristics (type of incident, e.g. earthquake, flood, extreme heat; type of external characteristics, e.g. weather, location; type of population characteristics, e.g. population density, self-helping capacity of the population) and resulting first (e.g. fatalities), second (e.g. effects on food supply) and third (e.g. social and political stability) tier damage.
• The different dimensions of CM impacting on crises development and thus, on the magnitude of damage and likelihood of cascading events. Components of CM as an activity were identified as:
  o Organisation: Organisational structure, Legal aspects, Financial aspects, Clear description of crisis management Tasks (see below), Authorities and Responsibilities;
  o Procedures: Operational procedures (doctrine, CONOPS10, SOP11, ...) with respect to carrying out crisis management tasks stand-alone and/or in cooperation with other entities;
  o Personnel: Amounts of various types of personnel and their specific competences to perform their tasks, including skills how to deal with uncommon situations (e.g. having to cooperate with other unfamiliar entities, languages, etc.);
  o Equipment / Tools: Facilities/Infrastructure (e.g. a hospital with a certain IC-capacity), Special equipment (specific vehicles, protective equipment, sensors, ...),
• Operational, supporting and preparational tasks involved in CM (see D5.1 Approaches and Solutions) and the respective equipment needed to perform those.

Main results/Foreground of WP6 “Demonstration Concept & Roadmap”
Deliverable D6.1 “Roadmap” provides a description of the main themes that the ACRIMAS project proposes the demonstration programme to focus on, as well as a description on how these themes were derived from the needs identified in Work Package 4. In deliverable D6.2 “D&E Concept”, a concept on how the instrument of demonstration projects is best applied to these themes to arrive at operational solutions will be described. Together, the two deliverables form the outcome of the final step of the ACRIMAS work approach.

D6.1 “Roadmap”: Topics for the phase II
The topics identified in WP4 were gathered from a needs perspective. That is, they represent topics which practitioners consider to be priority areas for improvement. Based on the iterative process of stakeholder consultation carried out in that work package, ACRIMAS claims that all areas are relevant candidates for being supported by crisis management research. However, as argued in Deliverable D6.2 “D&E Concept”, demonstrations projects are a quite special instrument with a dedicated role in the process of delivering benefit from research into crisis management practice. Therefore, there could be,
and indeed are, areas of crisis management research which are very relevant to support, but for which inclusion into a DP is not the best mechanism to provide this support. Thus, an initial activity carried out in WP6 was to identify what topics are suitable for demonstration, and which one should be recommended for other effort, e.g. dedicated R&D projects.

Second, as experimentation campaigns, as explained in D.6.2 concern the testing and refinement of solutions in different operational contexts, an analysis was carried out to investigate in what contexts different needs are relevant, and if they take different characters in different contexts.

Third, (contextualized) topics were clustered according to certain principles, to arrive at suitably sized strands of demonstration – bodies of research that are feasible and suitable to carry out as one integrated experimentation effort.

Following the demonstration concept, as described in D6.2 the DP Phase II should consist of a number of experimentation campaigns (see also below).

As disaster management is a very heterogeneous area, it would be unmanageable to treat all development needs in one integrated activity. Thus there is a need to identify suitable clusters of areas which are necessary or suitable to be treated together and which as a whole do not form a larger body than is feasible from a project management and experimentation perspective.

At heart of this is to evaluate how strongly linked different aspects are. Strongly linked aspects need, of course, to be treated in an integrated way, while we need to accept that weakly linked aspects are treated in separate strands (while possibly allowing for cross cutting activities as a remedy for this trade off).

Two main dividing lines were identified, one distinguishing between issues primarily centered on the EU-internal and the EU-external dimension, and one distinguishing between solutions focusing on issues in the response phase and in the preparedness phase.

The main argument for separating EU-internal and EU-external issues into separate strands is the vast organisational and legal differences, which have an immediate impact on the character of operations. In particular, the commanding authority in the external case is always the local government, by definition a non-EU entity, and the main coordination entity is the United Nations. Therefore, all issues related to the EU role in overall coordination, planning and strategy have a distinctly different character in the external and internal perspective.

Another argument, more related to field-level activities, is that the capacities deployed in practice tend to be quite different. For example, the deployment of mobile quarters for response personnel is rarely a significant part of internal response, while it is critical in external response. On the other hand, many major internal capacities, such as standard firefighting capacities, are essentially never deployed to international disasters (for good reasons).

With respect to the response and preparedness perspective, it is evident that these two, in a sense, are intimately interrelated. For example, performance in the response phase will be directly linked to the level of preparation achieved in the preparedness phase, and preparatory work has to take into account systems, resources and practices that are used in the response phase. Neither the less, looking at solutions dedicated to needs in the respective phase, we claim these are fairly independent.

Using these main dividing lines, we arrived at four main categories. Inside each category, on further step of clustering was done, based on the character of the improvement needs concerned, arriving at the proposed strands of demonstration:

**Demonstration strand “Strengthen common operations” (EU-internal):**

- **Objective:** Improve the ability of European response forces to work together.
- **Background:** EU forces will increasingly work together, for example when a Member State needs assistance from abroad and when a disaster crosses borders – or even extends to the whole of the EU – and thus requires coordination across borders. While efforts are already being carried out to strengthen this ability, further development is most relevant. Needs for improvement exist both on the technical and the doctrinal side.
- **Development areas (e.g.):**
Improve the ability to exchange information between agencies across borders including both situational and operational data.
  o Promote cross-border harmonization of language and terminology.
  o Provide solutions which present exchanged data in a way that supports a common understanding of the overall situation.
  o Strengthen resource management in large-scale disasters.
  o Provide mechanisms and tools for tasking across borders.
  • Examples for action / way ahead:
    Develop concepts of use and iteratively refine those by experimentation within the areas of
    o Information exchange between agencies,
    o Access to common, distributed databases,
    o Systems supporting resource management,
    o Visualisation of disaster situations, with particular regard to cross-border situations.
  o Develop procedures and identify suitable support systems for tasking across borders, and test these.
  o Use the DP infrastructure to engage stakeholders to identify priority agreed for
    o language and terminology harmonization.

Demonstration strand “A resilient EU with a prepared population” (EU-internal):
  • Objective: Improve the disaster resilience of EU society and their communities, as well as their PPDR (public protection and disaster relief) organisations through an iterative development and implementation of resilience concepts and community preparedness programmes.
  • Background: The public is always a key actor in disaster response, in a variety of roles. It will be the affected population when disaster strikes, but will also carry out significant response efforts, both independently and voluntarily, and in support of relief agencies. The understanding of hazards and risks inherent to their daily living conditions, how they can evolve to disasters and what to do in this case is an area in need of constant improvement.
  • Development areas (e.g.)
    Develop tools and solution that promote better understanding among the public about:
    o Risks and how they are mitigated,
    o The characteristics of disasters,
    o How to act in different disasters,
    o How the public can support in disaster situations.
  o Improve the ability of PPDR organisations to assure effective flows of validated, balanced information (risk and crisis communication) to the public and to the media (incl. bi-directional information flow through social media).
  • Examples for action / way ahead
  o Participative approaches to increasing the public’s understanding of disasters, their ability to cope in disasters and their support the response should be developed and tested.
  o Concepts and systems that support joint and effective flows of information to the public and the media (and vice versa) should be developed and tested.

Demonstration strand “Learning across borders” (EU-internal):
  • Objective: Improve the ability of European response forces to train effectively and share their lessons learned.
  • Background: Learning from experience is a key element in improving disaster management. To harvest the vast experience base available throughout, mechanisms and systems that allow for cross-border transfer of lessons and cross-border learning are required. While cross-national exercises are already implemented in some cases, other areas of joint learning and crisis management capacity building are still underdeveloped.
  • Development areas (e.g.):
    o Sharing & implementing lessons learned & best practices: improve the exploitation of the EU-wide fragmented identification, collection, structuring and dissemination of responder experiences gained in incidents and exercises, in particular through a cross-agency and cross-border approach.
Cross-border & harmonised training: improve the mutual understanding of how different response organisations work together and achieve economies of scale through more coherent training programmes and the transfer of good training practices across borders and agencies.

Examples for action / way ahead:
- Best practices for lessons learned processes should be assessed and a common denominator should be identified (across agencies and borders) process through iterative development and testing.
- System support for disseminating lessons across borders should be provided and refined.
- System support for effective implementation of lessons should be provided and tested.
- Existing and emerging opportunities for cross-border training of different levels of crisis managers and responders should be assessed, and further solutions identified.

Demonstration strand “Demand characterization and needs assessment” (EU-external)

Objective: Improve the ability to assess the priority relief to be provided in different timescales in a disaster.

Background: Needs assessment is a key activity in international disaster response, aimed at identifying what has to be provided to the affected area. By demand characterization we mean the wider process of combining the information on the needs of the affected population with information on relief already cared for, and translating this into consequences and actions for all relevant parts of the relief supply chain.

Development areas: While needs assessment is an established area, which is already supported by tools and methods, there are a number of development areas within the wider context of demand characterization:
- Initial demand characterization: Information from the affected area is scarce in the very early phases of a disaster, time to analyse this information is very limited and the agility of the supply chain may be limited. Therefore, methods that allow for initial demand characterization (in terms of historical, empirical data appropriately analysed, taking into account the abilities of the supply chain) should be developed.
- Contextualized needs assessment: Contextual information (e.g. on medical facilities available in the affected area, response capacities of the local government and health and environmental conditions) has a tremendous impact on what relief needs to be provided. Evidence-based methods to integrate such information into the needs assessment process should be developed.
- Full process support: While needs assessment provides critical information from the field, it is equally important to make sure this information is transformed into action in the relief supply chain.
- Understanding the relief provided: Beyond the very initial stages of a disaster, the priority relief to be provided will depend on what needs have already been cared for. Systematic gathering of this information together with its integration and visualization with respect to demand characterization should be developed.
- Joint and disseminated assessment: A number of different organizations carry out needs assessments. Key contributors are the Red Cross and Red Crescent Movement, OCHA and the EU. Solutions supporting quick and effective assessment collaboration across agencies and dissemination of assessments to the relevant stakeholders should be developed.

Examples for action/way ahead: Investigation of the demand assessment cycle in disaster situations by appropriate experimentations in order to identify relevant approached and solutions from:
- Decentralized information management
- Visualization
- Modeling and simulation

Demonstration strand “A clear and coordinated humanitarian system” (EU-external)

Objective: Provide an EU contribution towards a humanitarian system with less duplication, better matching between needs and resources and a more effective collaboration between agencies.

Background: Experience, as identified in numerous studies, has shown that the international disaster relief system faces significant difficulties. A multitude of organizations providing relief, all with best intents, respond to disasters without an adequate understanding of the full situation and without sufficient coordination among themselves. This causes at least duplication and gaps, in some cases even conflict and bottlenecks. The challenges underlying this state are at a deep and
structural level, involving the basic role-play between agencies, their mutual trust and their ability to work together towards shared objectives. As long as these difficulties prevail, the coordination problem seems intractable with little chance of achieving full benefit from, for example, technical support systems.

- Examples for development areas: While one should not expect DP Phase II to solve the problems outlined in the background, it is a unique instrument which could provide a significant contribution towards resolving these problems. The objectives of such an effort would include:
  - Roles and responsibilities should be made clearer, more stable over time and agreed by major parties;
  - Mutual trust and understanding among agencies should be reinforced;
  - Clear requirements should be developed for those organizations that wish to fulfill a certain role.

- Examples for action/way ahead:
  - Use the test-bed provided by the demonstration infrastructure to allow stakeholders to elaborate concepts in a neutral context and to test those in a safe environment, discovering in a participative manner the benefits and drawbacks of different approaches;
  - This process should be supported by the tools in the demonstration infrastructure, including: evaluation and performance assessment, data gathering, modeling and simulation, scenario and serious gaming methodologies, including support tools
  - Relevant tools and systems should be provided in this process, including: systems promoting information sharing in decentralized environments, solutions for log-keeping and warehousing of information, visualization tools to understand the relief effort as a whole.

Demonstration strand “Adaptive and effective relief logistics” (EU-external)
- Objective: Contribute to cost-effective, timely and scalable supply chains for disaster management.
- Background: Logistics in disaster management is at the same time a prerequisite, a bottleneck and a cost driver. In-field logistics is driven by the constraints of the affected area, and the key activity for local logistics staff is to manage those constraints. The global supply chain on the other hand allows for many degrees of freedom, and the appropriate design and planning of this chain has a tremendous impact on the speed and cost of delivering aid.

- Important areas within global relief logistics include:
  - access to strategic transport;
  - procurement strategies;
  - prepositioning and warehousing;
  - cross-agency collaboration and information sharing.

- Examples for development areas:
  - Improve the ability to develop an adequate logistics strategy by: Transferring and generalizing best practices between organizations and agencies, developing tools, including modeling and simulation that provide decision support to strategic decisions within logistics
  - Improve access to strategic transport by exploring the effective use of existing resources, including public-private partnerships, contracting strategies and possible use of the military.

- Examples for action/way ahead
  - Develop and test cross-agency logistics concepts supported by adequate analysis tools;
  - Develop and evaluate partnership agreements between disaster management agencies and providers.

D6.2: the ACRIMAS demonstration concept

CM is a complex and inherently dynamic activity. We have no means to foresee in any detail what types of disasters may hit the EU in the future, nor how they will affect the population, society in general or the response system. The threats and our vulnerabilities are in constant evolution and ideally so should be the ability to cope with them.

Thus, the development of CM capabilities and the research and development (R&D) efforts in support of this must be aligned with these characteristics. In particular, neither one-time efforts nor the development of monolithic technical systems are likely to be able to meet the requirements of constant change management.
However, with an adequate interpretation of the DP Phase II instrument, it can provide an excellent tool to strengthen the adaptability of CM concepts, capabilities and procedures to future challenges, and by doing so increase the disaster resilience of Europe.

In more concrete terms, a DP Phase II needs to contain a number of constituents which allow the participants – end-users, industrial partners, research organizations, public communities, disaster management policymakers and others – to iteratively progress within a number of areas in CM. This includes discovering innovative concepts of operations, developing new forms of coordination and cooperation, introducing new technical solutions and experimentally testing and further learning about these in realistic environments.

A key problem in this approach is that it is usually not feasible to test drastically new concepts or technologies which we do not yet know how to use optimally in real operations, at least not without significant precaution. Therefore, there is a need to first identify, prepare and provide infrastructure for experimentation in CM.

This infrastructure needs to be provided to support the execution of DP Phase II, but also forms an important deliverable – a CM test-bed – allowing for sustained progress even after the DP has ended.

In concrete terms, infrastructure should include:

- Methods and mechanisms for evaluation and performance measurement, adapted to the needs in experimentation;
- Support tools that allow for planning, management, control, information gathering and recollection of experiments;
- Simulation methods and models that allow for testing of concepts, procedures and technology cost-effectively and with assured validity;
- A network of exercise grounds and field labs.

Due to the heterogeneity and interdependency of CM capabilities and actors, DP Phase II must look at several areas in parallel to achieve impact. Each area should be a cluster of important topics which need or benefit from being addressed jointly – a strand of demonstration.

A demonstration strand should consist of a number of iterations of concept development and experiments, as visualized in D6.2 “D&E Concept”.

At the heart of this iterative development approach is the idea to have stakeholders within CM areas jointly develop new approaches and concepts, including the use of new technology, and gradually refine these into fieldable solutions.

Throughout the process, realistic experiments, which generate feedback and help to adjust and refine the novel idea or approach, should be carried out.

Moreover, the process must allow stakeholders to experience the benefits and drawbacks of different concepts through participation.

This understanding of a DP Phase II allows not only technology to be addressed, but also adjustments to doctrine and procedures, training needs, equipment requirements and organizational changes.

Thus, the experimental approach to a DP aligns with the system-of-systems approach in its full sense.

Potential Impact:

Crisis events over the last number of years has led security to be a major concern for European citizens, placing it in the forerun of European (and worldwide) priorities. As seen from these events, the impact of incidents (whether natural or man-made) on infrastructures and people may be very large or even dramatic:

- Direct economic impacts by loss of goods, destruction of facilities, etc
- Indirect economic impacts by disruption of necessary services to persons or organisation (transport for example)
- Disruption of energy supplies, creating a domino effect and hampering with the various phases of successful crisis management
- Destruction of natural sites and of environmental quality
- Creation of panic and fear in the general the population

The extent and impact of upcoming crisis thus calls for ever increasing collaboration among CM organisations, at local, regional, national and transnational level. However, this collaboration has to face the current conditions for EU CM which are
characterised by heterogeneity, multiple disciplines, numerous actors, diversified approaches to CM in terms of cultures, used technologies and available assets and most often, interoperable CM systems.

The situation outlined thus calls for an approach to CM based on a ‘system of systems’ concept and this is where the major contributions and impact of ACRIMAS come in. ACRIMAS does not merely deliver a roadmap for future research or static user requirements that can be realised in a demonstrator. Rather, ACRIMAS brings an integrative CM process – a continuous management method for CM, based on D&E activities, which is adaptable to and specifically intended to suit the ever changing conditions of European CM – eventually a future CM testbed –thereby working towards an continuously improved, integrated and more effective EU CM and, in the end, towards alleviating consequences of crises in terms of economic damage, material loss and human suffering

In specific, the following impacts expected by the call are listed below along with the project results targeting these impacts:

Expected Impact: “Through comprehensive preparation (not proposal preparation) of the demonstration project, the action will provide a solid basis for the description of its phase 2 as well as for sequencing and describing research tasks to be called for in future security Work Programmes.”

Results

• ACRIMAS produced a clear roadmap that will be used to define the content (demonstrations) of the phase 2 in the Security Research Work Programme. As the also technology drivers have been identified within the context of ACRIMAS, the results of the project will also have an impact on the RTD content of the future FP7 calls, and beyond.
• The Phase 2 programme will demonstrate the maturity of a set of integrated legacy systems and new technologies, thus validating the roadmap to be delivered by ACRIMAS.
• The roadmap is based on a solid R&D process based on the steps of creating the baseline (scenarios, needs, user requirements, technical solutions), preparing the methods (D&E, CD&E), and planning the demonstration. The approach is pan-European, including a thorough review of previous RTD efforts (national and international projects and related studies in the CM domain).
• The ACRIMAS consortium brought together a team with partners from several MS and from diverse disciplines in order to combine cutting edge thinking and innovation with experience, in-depth knowledge with an overall view, local knowledge with industrial bodies, technological expertise with user domain knowledge, and research skills with proven hands-on experience. The consortium embraced a mix of participants representing the variety of background, including leading research institutes, an international university, two SMEs and major EU industrial players in the security domain, and several end-user and non-profit organisations. Together this consortium covered all the most central CM areas, technologies and applications that are required from a pan-European after-math crisis management system, thereby warranting that all the technical and scientific goals of the project were met. The strong representation of end-users, in the consortium, in the Advisory Board, and in the Expert Group and two end-user validation workshops ensured a roadmap based on user needs.

Expected impact: “It will achieve qualified Europe wide awareness of relevant industries (including SMEs), universities and research establishments of the upcoming demonstration project identifying key players and performance profiles of other required contributors, allowing for their effective and balanced access to the action.”

Results

ACRIMAS has built up a wide network of relevant key stakeholders in the field of CM which is then included in an expert database (see D7.3 “ACRIMAS contact database). This network consists of (i) the ACRIMAS consortium, which itself brought together competent and experienced people from various disciplines dealing with CM and directly related fields, (ii) the ACRIMAS Advisory Board of outstanding experts in the field of CM, and (iii) the ACRIMAS Expert Group of people originating from technical, methodological or political areas (be it from the government/EU agency, research or the end-user side) that were not directly represented within the ACRIMAS consortium, but whose competence was essential for the success of a project preparation which is very much characterised by being a cross-cutting activity. This network had full access to all ACRIMAS actions and also represents the competence basis for a successful phase II of the demonstration programme.
Expected Impact: “It will also achieve qualified Europe wide awareness of relevant end users, governments and other bodies, facilitating and providing guidance concerning the real-life implementation of the system of systems to be demonstrated.”

Results
• See above: ACRIMAS expert network
• In specific, the strong representation of end-users in the consortium (NIFV, KEM, TRCS, via PSCE) and in the Advisory Board (BBK, LOCC, Amsterdam Fire Brigade) and Expert Group (BBK, BZK, via IAEM, SVBF, UN-SPIDER, cf. D7.3) has contributed to user wide dissemination and acceptance of ACRIMAS results.

Socio-economic impact
As a CSA, i.e. a non-technological study, ACRIMAS does not have a direct socio-economic impact. However, the demonstration concept elaborated by the project potentially has a strong impact on the CM innovation process and thus, on the quality of European CM as well as on the competitiveness of the European technology supplier side.

As outlined above the ACRIMAS demonstration concept is based on the idea to overcome the inertia to innovation and change in CM (i.e. testing of solutions in realistic environments and creation of acceptance among users). It provides the idea of an evidence based methodology to assess the usefulness of novel CM solutions for end-user organisations. The mentioned inertia is not a European phenomenon, but a general issue in CM, here and abroad. Thus, the opportunity for step-wise optimization and the assessment of cost efficiency and effectiveness will provide a significant competitive advantage for European CM solutions. One of the main ideas of the ACRIMAS demonstration concept is to create a European test-bed for CM solutions that will survive the duration of the phase II and thus, provide a distributed facility to support evidence-based CM capability building in Europe. Thereby, the ACRIMAS results can contribute to (i) improved, adaptable and better coordinated CM at national, EU and UN level, (ii) CM community building, and (iii) a positive stimulation of future CM research. We believe that particularly small and medium sized enterprises will profit from the proposed approach and from the opportunity of accessing the end-user community via the bridging element the test-bed provides.

Wider societal implications
One of the needs and challenges for CM identified through the ACRIMAS stakeholder consultation is a better involvement of the general public into the entire CM cycle using traditional and social media as well as other means.
This clearly identified need opens the path to a paradigm change in CM that widens the traditional view of CM being an activity of a small part of the society (the crisis managers and first responders) to a definition that includes the entire society into the CM process and focuses on overall societal resilience.
Further ACRIMAS emphasizes the strong link between the preparatory phase and the response phase of the CM cycle (see above) and thus, the need to look at all phases when trying to build societal resilience. Necessary measures to involve the general public to the best extend possible will thus, not only be to improve the self-helping ability of individuals, but also to implement measures to increase and maintain trust and societal cohesion within the European society that will ultimately lead to a better and more reliably networked and consequently, more resilient society.

Main dissemination activities
The dissemination of the knowledge stemming from the ACRIMAS project involved the liaison with identified CM key players, the ACRIMAS project workshops, the ACRIMAS website, presentations at well-established conferences/workshops, scientific publications in acknowledged journals and an ACRIMAS final event in Brussels. Dissemination activities aimed at targeting local as well as national, EU and, to the extent possible, international levels. Recipients was all relevant key players of EU policy units, EU and Member State (MS) end-users, CM suppliers and NGOs, while special attention was given to inform MS, EC and UN representatives about activities and results of ACRIMAS. These dissemination activities provided the basis for further
networking, knowledge sharing including sharing of best practices and lessons identified of relevance for the upcoming
demonstration programme (DP), and for contributing to a community wide discussion in CM of present and future needs to be
addressed by the DP.

ACRIMAS contributed not only to the dialogue on the future of crisis management in Europe in general, but fostered this
dialogue by proposing a common vision on how to approach the Phase II of the DP. ACRIMAS further established a project
network of government representatives, users, research centres, universities and industries for exchanging information on and
prioritizing of problems, user requirements and technological solutions in the areas of CM with the final objective to facilitate
coordination of activities and transfer of knowledge around the user needs and their related technological objectives in this
area. The network in particular identified priorities for actions in research and development, testing and validation,
standardisation, implementation of legal instruments, etc.

In order to better support the preparation of the second phase of the DP, it was regarded necessary to identify and prioritise
the user needs in crisis management to be addressed by possible demonstrations through systematic stakeholders’
consultation (authorities, agencies, operational end users, industry, Research & Technology Organisations - RTOs -, academia,
and others).

A key part of the awareness raising and dissemination work conducted in ACRIMAS was the realisation of the project
workshops (in work package (WP) 7) with the pre-committed ACRIMAS Expert Group and other relevant players. The
workshops were the assumed best way to identify common improvements needs, capability requirements and potential
technological and non-technological approaches and solutions to meet the needs, by integrating them into the DP. The
consortium also approached national and European associations in the field of CM (e.g. DKKV – German Committee for
Disaster Reduction, TIEMS – The International Emergency Management Society, IAEM – The International Association of
Emergency Managers, etc.) in order to guarantee broad involvement of various end-users, decision and policy makers. At the
end of the project, a final event was organized that presented the work conducted and engaged all stakeholders to provide
input, comments, suggestions, etc. to the recommended draft roadmap for the DP. The feedback from the final event was
considered and, where feasible, incorporated in the final roadmap.

The ACRIMAS website (www.acrimas.eu) is – also after the termination of the project - used to facilitate the distribution of
project results to those groups that are not connected to the ACRIMAS stakeholders’ network or that did not participate in the
workshops or other stakeholder meetings. The website is an easily accessible medium that contains all publicly available
deliverables from the project, as well as the proceedings from the project workshops.

Liaison: The basis for effective dissemination of ACRIMAS results was the identification of key players of CM and their
respective performance profiles as well as the identification of pillars of the future EU CM systems including solutions for the
implementation of an efficient future policy. This implied the need for awareness of initiatives and activities, at national or
international level, and their respective interlinkages to the phase II DP. In order to gather relevant expertise as well as to
ensure the promotion of best practices, to assure the impact of ACRIMAS on potential partners and to maximise visibility of
ACRIMAS to the community, a second step was to build up close relations to identified liaison partners and to link to
organisations involved in any upcoming CM solution or system (see also D7.2 “ACRIMAS Dissemination Report”, D.7.3
“ACRIMAS Contact Database” and D7.4 “ACRIMAS Liaison Report”).

Relevant partners to liaise with were CM public authorities, advisors and specialists, the CM systems and solutions suppliers
(i.e. manufacturers, devices and bandwidth providers, media, telecom operators, universities, etc.), standards development
organisations, members of other existing projects in this field and the members of the scientific community related to CM
topics. It was also important to establish close contact with different EU and UN organisations (for a list cf. D7.4 and D7.3) and
to attend the respective fora, meetings, seminars and similar events. ACRIMAS further liaised with relevant initiatives in which
members of the consortium were already actively involved.
ACRIMAS Workshops: The objectives of this task were primarily to share knowledge, information, lessons learned and good (best) practices with and to get feedback from stakeholders on a face to face basis. This was to be done in dissemination workshops organised and hosted by ACRIMAS in different European countries (Germany, Czech Republic), but also by ACRIMAS partners acting as guest speakers in workshops and courses organised by other networks as well as EU and UN organisations. In this context it was especially important to liaise with existing conferences, workshops and networks such as the different groups mentioned in D7.2 with EU and UN organisations and with members of different current or past EU funded project consortia engaged in the same area.

A further objective was the creation of synergies with the various EU and UN organisations engaged in CM by involving those organisations into the ACRIMAS results.

The actual ACRIMAS workshops were not only important for the consortium by means of feedback for ACRIMAS results, but also with regard to the development of further steps and recommendations for the improvement of CM systems and supporting solutions. Last but not least these kinds of face to face meetings generated a valuable basis for networking and cooperation among participants. Outcomes of the workshops were published on the ACRIMAS website.

Scientific publications: Scientific publications are a specific and important mean of project result dissemination, in particular challenging as ACRIMAS was a Support Action and not a Collaborative Project undertaking research and development activities. However, scientific publication in different fora (journals and conferences) included:

- Proceedings of the Fraunhofer Future Security Conference 2011,
- Proceedings of the TIEMS conference 2011,
- United Nations University Policy Brief.

ACRIMAS website and web references: Almost from the beginning of the project, the ACRIMAS website (www.acrimas.eu) was available and maintained throughout the duration of the project providing information on ACRIMAS and results of the ACRIMAS work. The objective of the website was and is the provision of an interactive and dynamic forum where all knowledge of various stakeholders can be shared continuously. It is disseminating the existence of the ACRIMAS project to all entities supporting CM and the concerned public. ACRIMAS partners were responsible for the dissemination activities and updated it periodically, according to the project’s progress. The choice of a website has also been made on the premise that it is inexpensive to construct, update and maintain, and also provides interactivity with the user.

The ACRIMAS website provides a link to an interactive discussion forum in LinkedIn allowing users (and the general public including all members of the abovementioned networks) to express their opinions on the ACRIMAS related services and topics. The website provides a search engine for easy access to information, and also incorporates a library of downloadable material, information and news.

Content of the website is composed of the ACRIMAS overall description, results and workshops summaries, description of pilot case and related performance results (in deliverable D6.2) and a forum for discussion (via LinkedIn). A dynamic, protected space for the share and provision of content project internally among partners was generated via SharePoint.

ACRIMAS final event and pilot case: Especially at the end of this Phase I project it was important to bring the knowledge acquired by ACRIMAS to the attention of the stakeholder community in CM, including EU and UN stakeholders that could disseminate ACRIMAS information further within their network. The final event of ACRIMAS was planned to have a workshop-like character with room for discussion and provided an overview on the present CM situation, on future developments in CM and the respective demonstration needs in Europe for representatives from supply and demand side. This in particular included a presentation of a pilot case, undertaken during the project life to assure to some extent ‘tangibility’ of project results and recommendations (namely on the proposed demonstration concept), although they represent purely preparatory work for Phase II to come. The information disseminated at this event was intended to influence new work programmes and
collaborative projects that were set up between European and also non-European partners. Additionally, the final event provided the basis for access to new business opportunities in Europe for the participants.

Presentations at the final event by the consortium comprised the ACRIMAS outcomes, the pilot case and first “lessons identified” including results of the user feedback, and findings on identified European CM systems and solutions, and further improvement needs. A report summarising all relevant results of the final event was elaborated and used to update the ACRIMAS website (for further details of the ACRIMAS Final Event and the Pilot Case cf. D7.9 ACRIMAS Final Event Technical Report).

Conference presentations: Dissemination was also planned to be conducted via participation in events (workshops, seminars, conferences, meetings) organised by other relevant parties. Target groups were emergency organisations (users), relevant EU bodies, media, industry and governments in different countries. Presentations of the ACRIMAS concept and results were in specific intended for the following, well-established conferences:

- European Security Research Conference 2011 (SRC’11), Warsaw, Poland
- Future Security Conference 2011, Berlin, Germany
- European Congress on Civil Protection and Disaster Management 2011, Bonn, Germany
- ISCRAM 2011, Lisbon, Portugal (proceedings)
- TIEMS 2011, Bucharest, Romania
- PSCE conference 2011, Warsaw, Poland
- TIEMS Workshop 2012, Rome, Italy

Exploitation of results
Since ACRIMAS was not an RTD activity, it did by definition not produce any foreground exploitable by the partners. In fact, ACRIMAS provided the EC DG ENTR with the information needed to prepare the call for the phase II and to invite all relevant stakeholders to be part of the demonstration preparations and the actual execution.

In detail, ACRIMAS developed
- A end-user consultation based roadmap containing relevant demonstration topics that were clustered due to knowledge area and their suitability to be demonstrated in a comprehensive effort
- A demonstration concept outlining the important aspects to be taken into account when demonstrating solutions and approaches for CM
  o Iterative experimentation to operationalize solutions
  o Multiple experimentation environments (system-level, scenarios etc.) in order to simulate the multi-dimensional character of CM
  o Creation of acceptance of novel solutions among the end-user community
- The ACRIMAS network and the EU CM contact database to enable the EC to invite all relevant stakeholders to the “demonstration process”

List of Websites:

www.acrimas.eu

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Related information

Result In Brief  Roadmap for crisis management

Documents and Publications  final1-acrimas-logo.pdf

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Last updated on 2014-08-01
Retrieved on 2019-07-29

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