



**SEC-2010.4.1-1**  
**AFTERMATH CRISIS MANAGEMENT – PHASE I**  
**- ACRIMAS -**

**D6.1 ROADMAP**

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**Coordinator:**

Hans-Martin Pastuszka, Fraunhofer Institute for Technological Trend Analysis (INT), Euskirchen, Germany

**Tel:** +49 22 51 18 298

**Fax:** +49 22 51 18 38 298

**Project website address:** [www.acrimas.eu](http://www.acrimas.eu)

**Authors D6.1**

Martin Hamrin (FOI, Stockholm, Sweden)

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# 1 Introduction

## 1.1 The ACRIMAS project

### 1.1.1 ACRIMAS objectives

ACRIMAS is a 15 months Support Action with 15 partners from 10 European countries, in which a roadmap is developed for an upcoming Demonstration Project (in Phase II) within Crisis Management (CM).

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

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

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

### 1.1.2 ACRIMAS work approach

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, and various stakeholders and procurement schemes.

To identify the critical areas and topics within this current CM „system-of-systems“ which need to be addressed by the demonstration programme in Phase II, ACRIMAS follows a scenario-based and user-centric work approach.

ACRIMAS is scenario-based in the sense that characteristic CM scenarios will be identified, selected and developed to constitute a sound basis for ensuring the work of posing user needs and requirements, identifying current weaknesses and gaps in CM in Europe, looking at potential solutions and documenting corresponding demonstration topics and R&D needs to be integrated in a roadmap for Phase II. The scenario approach embraces an all-hazard view, including the EU external dimension.

ACRIMAS is user-driven in the sense that users and other stakeholders in terms of first responders, authorities and governmental bodies as well as the supply side are 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 play a central role in complementing and validating the scenario analysis by expressing their needs and requirements regarding the identification of relevant CM topics, which should be addressed by DE activities in Phase II, and the demonstration concept to be elaborated.

### 1.1.3 Terms used and their understanding in ACRIMAS

According to the call text of SEC-2010.4.1-1 “Aftermath crisis management – Phase I”, the ACRIMAS project has to focus on ‘aftermath crisis management’ as it was outlined, i.e. that it covers the response to large-scale disasters (man-made and natural) inside and outside Europe. However, the ACRIMAS project felt the need to briefly state its common understanding of the relevant terms used to achieve a common understanding, as in particular in the scientific community the term “crisis management” not necessarily need to be understood as “disaster response”. Consequently, the ACRIMAS project referred to terms and definitions as provided by ISO in its TC on Societal Security (TC 223):

- **crisis:**  
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
- **crisis management:**  
process of planning and implementing measures aimed at preventing, reducing, responding and recovering from a crisis
- **disaster:**  
a situation where physical damage or loss of life have occurred which exceeded the ability of the affected organization, community or society to cope using its own resources
- **(disaster) response & recovery:**
  - *Response:* measures taken during or immediately after a disaster to meet the immediate needs of the affected and minimising the impact on the incident
  - *Recovery:* activities designed to return conditions to an equivalent level acceptable to society
- **“aftermath crisis management” (ACRIMAS understanding):**  
the response to & recovery from large-scale disasters (man-made or natural) inside and outside Europe, including the preparation for response and recovery.

#### 1.1.4 ACRIMAS expected results

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

## 1.2 The present report

This document 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, a concept on how the instrument of demonstration projects is best applied to these themes to arrive at operational solutions will be described. Together, these two deliverables form the outcome of the final step of the ACRIMAS work approach, as described by figure 1.

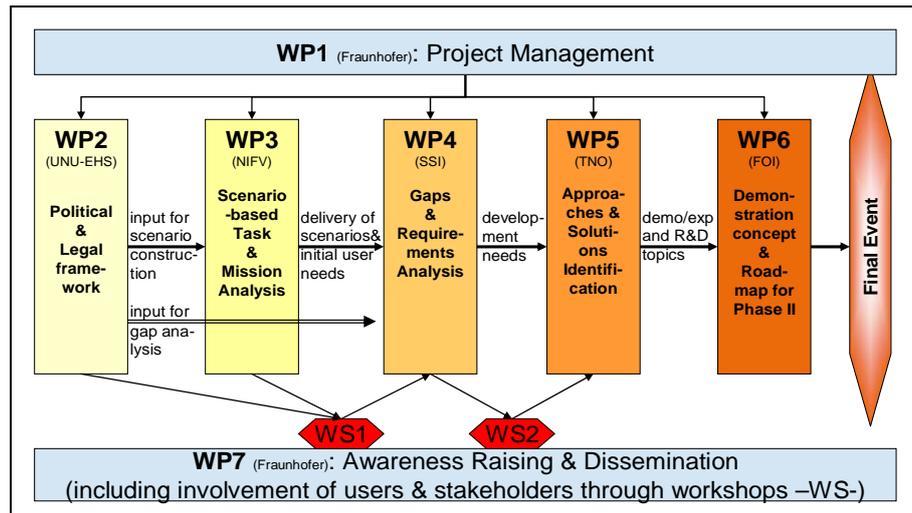


Figure 1 – The ACRIMAS Work approach

## 2 Improvement needs revisited

In ACRIMAS Work Package 4 a stakeholder consultation campaign was carried out, gathering expertise from more than 200 practitioners to identify priority areas of disaster management in need of improvement. The effort followed an iterative approach, where respondents were asked to comment on previously gathered and analysed material to arrive at a consolidated understanding<sup>1</sup>.

The identified improvement needs from Work Package 4 formed the starting point for the work in Work Package 6 (WP6). For this reason, we provide here the list of needs, sorted according to the elements of the ACRIMAS Conceptual Model. For further descriptions of these needs, please refer to ACRIMAS Deliverable D4.3.

<sup>1</sup> Thus the approach followed was closely related to the Delphi methodology, the main difference being that the set of respondents did not remain completely stable.

## 2.1 Validated topics

**Table 1 – List of validated improvement needs**

| <b>Group</b>                                 | <b>Category</b>                     | <b>Identified need</b>                                    |   |
|--|-------------------------------------|---|---|
| <b>Preparatory efforts</b>                   | <b>Policy and capacity building</b> | Analytic support to capacity building                     |   |
|  |                                     | Capability and capacity mapping                           |   |
|  |                                     | Ability of donors to assess the impact of their funds     |   |
|  | <b>Training and exercises</b>       | Joint and harmonized training                             |   |
|  |                                     | Effective exercises                                       |   |
|  | <b>Evaluation and development</b>   | Strategic evaluation and performance assessment           |   |
|  |                                     | Sharing and implementing lessons and best practices       |   |
|  | <b>Civil-military interaction</b>   | Agreed interaction procedures with military organisations |   |
|  | <b>Doctrine and procedures</b>      | Certification and vetting of skills and competencies      |   |
|  |                                     | Harmonization of language and terminology                 |   |
|  | <b>Community awareness raising</b>  | Understanding of disaster management among the public     |   |
|  | <b>Supporting activities</b>        | <b>Coordination, command and control</b>                  | Efficient tools for tasking and resource management           |
|  |                                     |   | Volunteer management  |
| <b>Situation assessment and sense-making</b> |                                     | Early warning capabilities                                |   |
|  |                                     | Understanding specific crisis dynamics                    |   |
|  |                                     | Understanding the relief effort as a whole                |   |
|  |                                     | Demand and needs assessment                               |   |
| <b>Information management</b>                |                                     | Inter-agency information sharing                          |   |
|  |                                     | Retention of information and log-keeping                  |   |
| <b>Information gathering</b>                 |                                     | Acquisition of information from external sources          |   |
|  |                                     | Efficient ways to gather data from responders             |   |
| <b>Logistics</b>                             |                                     | Logistics strategy  |   |
|  |                                     | Access to strategic transport                             |   |
| <b>Infrastructure</b>                        |                                     | Responder communications in remote areas                  |   |
|  |                                     | Provision of energy to responder activities               |   |
| <b>Task-level activities</b>                 |                                     |   | Evolved management of information to the media and the public |

### 3 Selection criteria, contextualization and clustering

The topics identified in Work Package 4 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, we claim 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<sup>2</sup>.

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.

#### 3.1 Selection criteria

Two characteristics of the DP are central to determine what topics are important for inclusion into the project (see D6.2):

- Problems should have a systemic character
- Promising solutions or approaches should be available

The concept of systemic character may require some explanation. A topic has been considered as systemic if it concerns a problem which requires a view towards the whole or a very significant part of the disaster management community and its capacities. A very clear example of this is “harmonized terminology” – this only becomes a meaningful issue to discuss when looking beyond purely local parts of Crisis management, and only becomes challenging when looking at fairly large parts. An example of low systemic character is the provision of energy – here it is perfectly feasible to have one solution in one place, and a completely different one in another without any difficulties incurred.

The presence of promising approaches has been assessed by expert judgement. Further information on this topic is presented in D5.1.

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<sup>2</sup> They could for example be better managed by smaller, dedicated projects.

The scores of the different improvement needs as assessed by ACRIMAS is shown in Table 3.

**Table 2 – Assessment of scores along the main demonstrability parameters**

| <b>Improvement need</b>                                       | <b>Systemic character</b> | <b>Availability of near-mature solutions</b> |
|---|---------------------------|--|
| Analytic support to capacity building                         | High                      | Yes  |
| Capability and capacity mapping                               | High                      | Yes  |
| Ability of donors to assess the impact of their funds         | High                      | Yes  |
| Joint and harmonized training                                 | Medium                    | Yes  |
| Effective exercises   | Medium                    | Yes  |
| Strategic evaluation and performance assessment               | High                      | Yes  |
| Sharing and implementing lessons and best practices           | High                      | Yes  |
| Agreed interaction procedures with military organisations     | Medium                    | Yes  |
| Certification and vetting of skills and competencies          | Medium                    | Yes  |
| Harmonization of language and terminology                     | High                      | Yes  |
| Understanding of disaster management among the public         | High                      | Yes  |
| Efficient tools for tasking and resource management           | Medium                    | Yes  |
| Volunteer management  | High                      | Yes  |
| Early warning capabilities                                    | Medium                    | Yes  |
| Understanding specific crisis dynamics                        | Medium                    | Under-mature                                 |
| Understanding the relief effort as a whole                    | High                      | Yes  |
| Demand and needs assessment                                   | Medium                    | Yes  |
| Inter-agency information sharing                              | High                      | Yes  |
| Retention of information and log-keeping                      | Medium                    | Yes  |
| Acquisition of information from external sources              | Medium                    | Yes  |
| Efficient ways to gather data from responders                 | Medium                    | Yes  |
| Logistics strategy  | High                      | Yes  |
| Access to strategic transport                                 | Medium                    | Yes  |
| Responder communications in remote areas                      | Medium                    | Over-mature                                  |
| Provision of energy to responder activities                   | Low                       | Over-mature                                  |
| Evolved management of information to the media and the public | High                      | Yes  |

As can be seen from this table, almost all areas score well on the parameter related to the availability of mature solutions. One areas has been assessed as under-mature – understanding crisis dynamics – meaning many of the solutions and approaches in this area require further R&D before they can be put into operational use. This does not exclude that there are some already mature enough areas that can be included. Therefore, aspects of this improvement need have been included in the proposed strands of demonstration.

Two areas have been assessed as over-mature. This means that the main problems reported in these areas have been assessed as solvable by commercially available products, the main problem being the availability of these products. For the communications area, lack of availability is probably mostly due to cost issues. For the energy provision area, cost is one factor and lack of a sustainable customer base is another.

With respect to the parameter systemic character, the scores are more varied. The score has been used to set the priority of an area in the strands of demonstration, and no strict threshold for inclusion/non-inclusion has been used. Also, while an area has been assessed as less systemic as a whole, certain sub-issues can have a more systemic character. For example, while training as a whole received the score “medium”, there are aspect of training, such as those related to cross-agency interaction, which have a very systemic character.

## 3.2 Contextualization and clustering

Already in Work package 4, the improvement needs were partially described in terms of how and if they manifest themselves in different contexts. In particular, improvement needs have different levels of relevance and sometimes different content in the context of response outside of Europe and response inside of Europe<sup>3</sup>. In addition to this, improvement needs were analysed in terms of requirements in the preparatory phase and in the response phase<sup>4</sup>. These two perspectives were also used to contextualize and cluster (elements of) improvement needs into thematic areas. The overall assessment on relevance in different contexts is depicted in Table 4.

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<sup>3</sup> The big differences between these contexts are further described in D2.1.

<sup>4</sup> Note that prevention and recovery were initially out of scope of ACRIMAS. However, certain aspects of these phases have been integrated into the proposed strands of demonstration as they have been considered as inseparable from key elements already included.

**Table 3 – Improvement needs as they relate to the internal and external dimension**

| <b>Improvement need</b>                                       | <b>Relevance for the external dimension</b> | <b>Relevance for the internal dimension</b> |
|---|---|---|
| Analytic support to capacity building                         | High  | High  |
| Capability and capacity mapping                               | High  | High  |
| Ability of donors to assess the impact of their funds         | High  | Low   |
| Joint and harmonized training                                 | Medium                                      | High  |
| Effective exercises   | Medium                                      | High  |
| Strategic evaluation and performance assessment               | High  | High  |
| Sharing and implementing lessons and best practices           | Medium                                      | High  |
| Agreed interaction procedures with military organisations     | Low   | Medium                                      |
| Certification and vetting of skills and competencies          | High  | Medium                                      |
| Harmonization of language and terminology                     | High  | High  |
| Understanding of disaster management among the public         | Medium                                      | High  |
| Efficient tools for tasking and resource management           | Low   | Medium                                      |
| Volunteer management  | Medium                                      | High  |
| Early warning capabilities                                    | Medium                                      | High  |
| Understanding specific crisis dynamics                        | Low   | High  |
| Understanding the relief effort as a whole                    | High  | Medium                                      |
| Demand and needs assessment                                   | High  | Low   |
| Inter-agency information sharing                              | Medium                                      | Medium                                      |
| Retention of information and log-keeping                      | Medium                                      | High  |
| Acquisition of information from external sources              | Medium                                      | Medium                                      |
| Efficient ways to gather data from responders                 | Medium                                      | Medium                                      |
| Logistics strategy  | High  | Low   |
| Access to strategic transport                                 | High  | Low   |
| Responder communications in remote areas                      | Medium                                      | Medium                                      |
| Provision of energy to responder activities                   | High  | Low   |
| Evolved management of information to the media and the public | Medium                                      | High  |

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

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 the same time, almost all aspects of crisis management are to some extent interlinked. Therefore, with any subdivision into focussed areas, it will always be possible to identify issues which cut across these areas. Thus, the problem of identifying good candidates for sub-areas is a trade-off between manageability and comprehensiveness.

At heart of this is to evaluate how strongly linked different aspects are. Strongly linked aspects need, of course, 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).

In ACRIMAS, the identification of sub-areas was done with the Demonstration project in mind. As the purpose of this project should be (see D6.2) to operationalize promising solutions and approaches, the assessment of how strong or weak a link between different areas were was done from a solutions perspective. Areas were considered as strongly linked if solutions in the respective areas are closely integrated or interlinked, and in particular if they need to be developed in immediate interaction with each other. For example, while the training of responders and the command systems they use in the operational phase can be considered strongly interrelated in some sense (since training is a prerequisite for being able to use a command system properly), they were not considered strongly interlinked in a demonstration sense, since *solutions supporting training* (e.g. training simulators, metrics for evidence-based training etc) are not intimately linked with *solutions supporting command* (e.g. command systems, command doctrine etc). Actually, training solutions will likely need to be quite generic with respect to specific solutions related to command, to be applicable in different contexts.

Two main dividing lines were identified, one distinguishing between issues primarily centred on the EU-internal and the EU-external dimension, and one distinguishing between solutions focussing 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 perspectives. 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 fire-fighting 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 practiced that are used in the response phase. Nether 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 illustrated by figure 2.

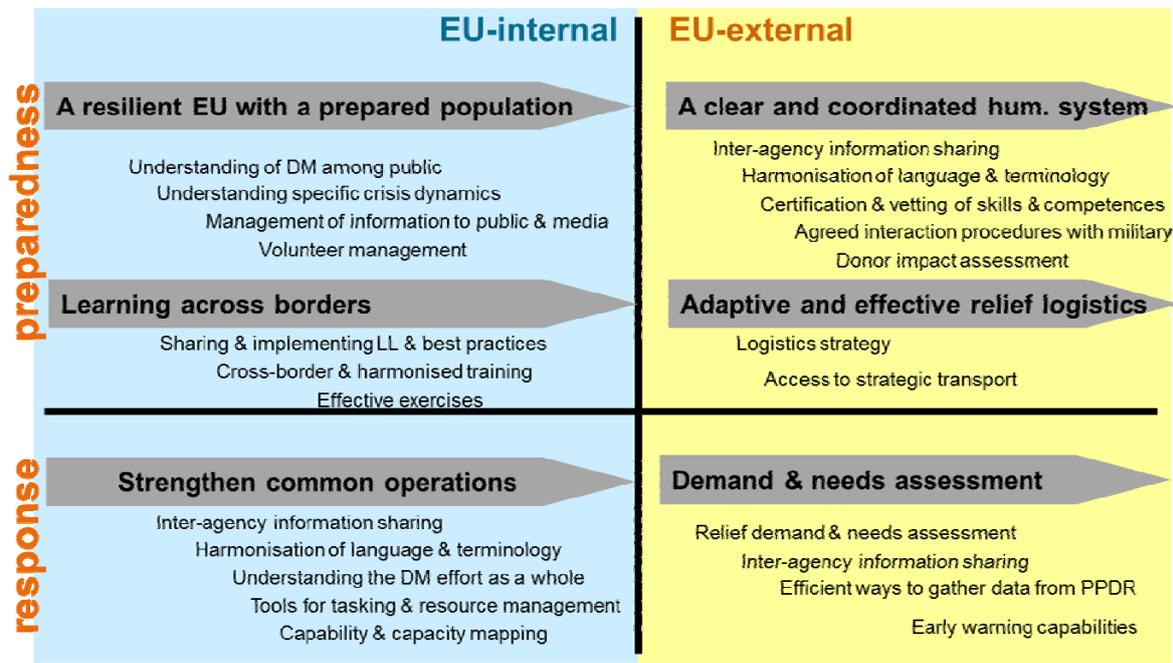


Figure 2 – Proposed strands of demonstration

## 4 Proposed strands of demonstration

In the previous chapter, the process for contextualizing and clustering the improvement needs into strands of demonstration was described, arriving at the set of strands illustrated by figure 2. In this chapter, we will describe these strands of demonstration in more detail.

### 4.1 Demonstration strand “Strengthen common operations”:

#### 4.1.1 Objective:

Improve the ability of European response forces to work together.

#### 4.1.2 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.

#### 4.1.3 Development areas (e.g.):

Improve the ability to exchange information between agencies across borders including both situational and operational data.

- Promote cross-border harmonization of language and terminology.
- Provide solutions which present exchanged data in a way that supports a common understanding of the overall situation.

- Strengthen resource management in large-scale disasters.
- Provide mechanisms and tools for tasking across borders.

#### **4.1.4 Examples for action / way ahead:**

Develop concepts of use and iteratively refine those by experimentation within the areas of

- Information exchange between agencies,
- Access to common, distributed databases,
- Systems supporting resource management,
- Visualisation of disaster situations, with particular regard to cross-border situations.
- Develop procedures and identify suitable support systems for tasking across borders, and test these.
- Use the DP infrastructure to engage stakeholders to identify priority agreed for language and terminology harmonization.

## **4.2 Demonstration strand “A resilient EU with a prepared population”:**

### **4.2.1 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.

### **4.2.2 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.

### **4.2.3 Development areas (e.g.)**

Develop tools and solution that promote better understanding among the public about:

- Risks and how they are mitigated,
- The characteristics of disasters,
- How to act in different disasters,
- How the public can support in disaster situations.
- 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).

### **4.2.4 Examples for action / way ahead**

- 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.
- Concepts and systems that support joint and effective flows of information to the public and the media (and vica versa) should be developed and tested.

## 4.3 Demonstration strand “Learning across borders”:

### 4.3.1 Objective

Improve the ability of European response forces to train effectively and share their lessons learned.

### 4.3.2 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.

### 4.3.3 Development areas (e.g.)

- 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.

### 4.3.4 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.

## 4.4 Demonstration strand “Demand characterization and needs assessment”

### 4.4.1 Objective

Improve the ability to assess the priority relief to be provided in different time-scales 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.

#### 4.4.2 Development areas

While needs assessment is an established area which is already supported by tools and methods, within the wider context of demand characterization there are a number of development areas:

- **Initial demand characterization:** In the very early phases of a disaster information from the affected area is scarce, 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, and which takes into account the abilities of the supply chain should be developed.
- **Contextualized needs assessment:** Contextual information, for example on medical facilities available in the affected area, response capacities of the local government and health and environmental conditions have 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, equally important is to make sure this information is transformed into action in the relief supply chain.
- **Understanding 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 integration and visualisation of it with respect to demand characterization should be developed.
- **Joint and disseminated assessment:** A number of different organisations carry out needs assessment. Key contributors are the RC movement, the UN OCHA and the EU. Solutions supporting for quick and effective assessment collaboration across agencies and dissemination of assessments to the relevant stakeholders should be developed.

#### 4.4.3 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
- De-centralized information management,
- Visualisation,
- Modelling and simulation.

### 4.5 Demonstration strand “A clear and coordinated humanitarian system”

#### 4.5.1 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 organisations providing relief, all with best intents, respond to disasters without an adequate understanding of the full situation and without sufficient coordination between them. This causes at the least both duplication and gaps, and in some cases 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, e.g. technical support systems.

#### **4.5.2 Development areas**

While it should not be expected to solve these problems outlined in the background, a DP is a unique instrument which could provide a significant contribution towards progress. 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 on those organisations who wish to fulfil a certain role should be developed.

#### **4.5.3 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, including data gathering,
- Modelling and simulation,
- Scenario and serious gaming methodologies, including support tools.
- Relevant tools and systems should be provided into this process, including:
  - Systems promoting information sharing in de-centralized environments,
  - Solutions for log-keeping and warehousing of information,
  - Visualisation tools to understand the relief effort as a whole.

### **4.6 Demonstration strand “Adaptive and effective relief logistics”**

#### **4.6.1 Objective**

Contribute to cost-effective, timely and scalable supply chains for disaster management.

#### **4.6.2 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 is for local logistics staff 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.

### 4.6.3 Development areas (e.g.)

Improve the ability to develop adequate logistics strategy by

- Transferring and generalizing best practices between organisations and agencies,
- Develop tools, including modelling and simulation that provide decision support to strategic decision within logistics.
- Improve access to strategic transport by exploring effective use of existing resources, including public-private partnerships, contracting strategies and possibly use of the military.

### 4.6.4 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

## 5 Concluding remarks

In this report, we have described a process by which the improvement needs described in work package 4 have been transformed into strands of demonstration. The set of strands of demonstration provides a set of areas in which demonstration and experimentation activities can be carried out to achieve tangible progress towards operationalization of solutions, and which can be carried out reasonably independently of each other.

The proposed strands of demonstration are:

- Strengthen common operations
- A resilient EU with a prepared population
- Learning across borders
- Demand characterization and needs assessment
- A clear and coordinated humanitarian system
- Adaptive and effective relief logistics