FP7 Demonstration Project DRIVER
DRiving InnoVation in crisis management for European Resilience

Concept and project objectives

Abstract

The Aftermath Crisis Management System-of-Systems Demonstration Programme is funded under the 7th Framework Programme of the EU Commission and consists of two phases: the phase I, a preparatory activity that was performed by three independent projects – ACRIMAS[1], CRISYS[2], and HELP[3] – that analysed the European and UN Crisis Management landscape as well as current requirements and gaps. Further, they proposed solutions ready for demonstration as well as a demonstration concept for the phase II, the actual demonstration activity.
The DRIVER project (phase II) is based on the findings of the ACRIMAS and the CRISYS project and aims at two main dimensions: firstly, the development of a **pan-European test-bed** enabling the benchmarking of new crisis management (CM) solutions and thereby facilitating capability development through the provision of respective methodologies and infrastructure. Secondly, it aims at the actual development of **a portfolio of tools** that improves CM at Member State and EU level. The DRIVER consortium consists of 37 organisations from 13 EU Member States and two associated countries. The total available budget will be roughly 45 million Euros, i.e. DRIVER will be the largest CM project in Europe, if not the world, for the foreseeable future.

Background: crisis management – an ever evolving challenge

Crisis Management (CM) is an ever evolving challenge. Hazards change, both for natural and man-made reasons – climate change being a well-known example of the latter. Vulnerabilities change, for reasons ranging from the establishment of settlements in new areas to societal evolution affecting people's ability to cope with crises. Interconnectedness changes because of increased connectivity in the technical domain, for example the power transmission system, and in the socio-cultural domain as cross-border communities become increasingly important. This does not necessarily mean that the frequency of crises increases, but unless innovation is up to the challenge of producing solutions, which fully exploit modularity, flexibility and adaptivity, then either the cost of capability development or the costs due to inadequate management of ever more complex crises will grow.
On the other hand it is a necessary starting point of CM innovation to realise that European CM capabilities are already a mature and competent System-of-Systems – here interpreted as a federation of heterogeneous and loosely coupled local, regional and national systems able to collaborate in varying configurations and with varying levels of interoperability. Radical change to these capabilities would be very costly and likely incur unacceptable loss of CM capability during a long transition phase.

[1] Aftermath Crisis Management System-of-Systems – phase I: www.acrimas.eu
[2] Critical Response in Security and Safety Emergencies: http://www.crisys-project.eu/
[3] Enhanced Communications in Emergencies by Creating and Exploiting Synergies in Composite Radio Systems: www.fp7-sec-help.eu

DRIVER's Science & Technology (S&T) objectives

For the reasons outlined above DRIVER is not about wholesale redesign of crisis management (CM) capabilities. Instead it is about the simultaneous launch of an ability to adapt European CM to future demands as they emerge by means of a **distributed European test-bed for CM capability development** of virtually connected exercise facilities and crisis labs where users, providers, researchers, policy makers and citizens jointly and iteratively can progress on new approaches or solutions to emerging issues, and of **a well-balanced comprehensive portfolio of CM tools** (here taken also to include solutions, operational concepts, and approaches). This portfolio should supplement the valuable European CM legacy in a cost-effective manner with regard to current and foreseeable challenges.

The test-bed and the portfolio are the two main dimensions of DRIVER – and they also constitute two of the three main S&T objectives, which make up DRIVER's mission, the third being a **more shared understanding of CM across Europe**. The intense interaction by DRIVER with CM stakeholders while developing the portfolio using the test-bed facilities is likely to create more shared understanding among these stakeholders across Europe. Further, this shared understanding is a prerequisite for adoption of the tools of the DRIVER portfolio in Member States (which, however, should not be expected to be wholesale since different countries and regions will still have different needs). Finally, this shared understanding will strengthen the **long-term sustainability of the test-bed**, and ultimately enhance European CM capabilities. Additionally, developing exploitation goals far beyond the project's horizon is an implicit aim due to the scale of the project.

The DRIVER methodology dimension

Inertia to innovation exists in all sectors, but CM and other domains of civil security have some particularly inhibiting characteristics. Since CM organisations will be expected to deal with all types of crises, which are not handled by somebody else, it is easy to question whether a new solution is really better for all relevant contingencies than the one it is proposed to replace.

The above points to the need for a better **evidence-base for CM capability investment decisions**. However, the complexity of CM makes it hard predicting analytically the potential benefits of new solutions and approaches, particularly considering the wide scope of potentially relevant contingencies, and even harder doing this in a way that convinces end-users of investing into those. Therefore there is no other way for building an evidence-base than to start by testing, benchmarking, and evaluating proposed solutions in realistic environments with real users in the context of their actual legacy resources.

However, such testing is difficult because of the risks involved. CM operations deal with human life and health and with vast material values. Putting this at risk by introducing untested solutions is rarely acceptable.

Further, to arrive at sound and validated assessment of benefits and drawbacks of new ideas it is vital to be able to iterate testing under varying conditions, and to control variables that might otherwise have an unpredictable effect on the outcome. In the absence of such systematic approach test and demonstration efforts are unlikely to effectively – and legitimately! – support the development and implementation of novel CM capabilities. As a matter of course Modeling and Simulation will be used in consort with real life experiments – and the full range of intermediate approaches – in order to perform the very large numbers of parameter variations needed and to be able to test even really dangerous scenarios. Also historical experience and expert judgment need to be exploited in a systematic way.

To align the concept of demonstration to the specific challenges of CM and thus, to overcome the difficulties alluded to above, **DRIVER will introduce the concept of campaigns of experiments** (as opposed to a one-shot-validation demo concept) providing an iterative way towards operationalization of innovative solutions, by gradually adapting them to operational constrains, as well as creating acceptance among users through their active involvement, and by

providing evidence to decision-makers that they are cost-effective.
It is a key feature that the experiments get progressively more demanding. As a uniquely large CM project, DRIVER will not focus on a large sequence of small unrelated problems, which could just as well have been dealt with in a sequence of small independent projects. Therefore, in particular the joint experimentation (JE, see also Fig.1) campaigns and the final demo will focus on challenges hitherto beyond the scope of European CM capabilities and typically requiring highly complex interaction between component tools.

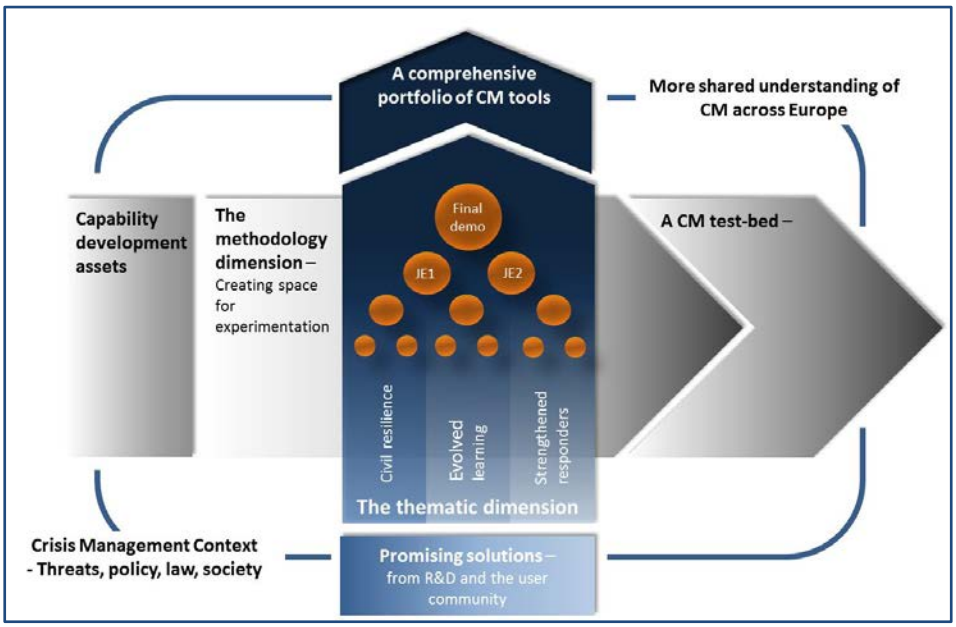

Figure 1: The DRIVER concept

DRIVER's thematic dimension

DRIVER is not mainly about inventing novel solution ideas, but about achieving innovation based on the systematic testing and adaptation of already existing ideas that are grouped into three main thematic strands (civil resilience, professional response, evolved learning; see also fig.1, table 1). Based on extensive assessment exercises the DRIVER portfolio of CM tools will be selected based on cost-effectiveness in relation to current and foreseeable CM challenges and the capability legacy of EU MS.

Components of the DRIVER portfolio of tools ("the thematic dimension", non-exhaustive):

- ✓ Methods and Infrastructure for a **distributed test-bed** for evidence based CM capability and policy development.
- ✓ **Civil resilience solutions:** individual and community resilience; volunteer crisis preparedness; resilience of local governments; crisis communication with the general public; organisation and mobilisation of individuals and communities.
- ✓ **Professional response:** situation assessment tools: e.g. damage assessment, early warning, crisis dynamics, social dynamics, data sharing; tasking and resource management tools incl. volunteer management and logistics and supply chain resilience; interoperability; information exchange & communications.
- ✓ **Evolved learning:** harmonized competence framework; lessons learned framework; training for high-level decision-making; training concept for cooperation of CM professionals and the general public.
- ✓ **Recommendations for CM structures, governance, standards.**
- ✓ Tools for **improvement of societal impact of CM.**

Table 1: The DRIVER portfolio of tools

The DRIVER consortium

Sub-Project 1: Management
Lead: ATOS (Spain)

Project Management Team: ATOS, FOI, Austrian Red Cross, Thales Communications, TNO, Pole Risque, ARTTIC, Fraunhofer, PRIO

Sub-Project 2: Test-bed
Lead: FOI (Sweden)

Test-platform providers: THW (Germany), MSB (Sweden), Pole Risque (France), City of The Hague (The Netherlands), ITTI (Poland)

Sub-Project 3: Civil resilience
Lead: Austrian Red Cross (Austria)
Technical Lead: Fraunhofer IAO (Germany)

Sub-Project 4: Professional response
Lead: Thales Communications (France)

Sub-Project 5: Evolved learning
Lead: TNO (The Netherlands)

Sub-Project 6: Joint experimentation & final demonstration
Lead: Pole Risque (France)
Technical Lead: DLR (Germany)

Sub-Project 7: Impact & sustainability
Lead: ARTTIC (France)

Sub-Project 8: Supporting analyses of CM structures, policy, governance & standards
Lead: Fraunhofer INT (Germany)

Sub-Project 9: Independent social monitoring
Lead: PRIO (Norway)

Further Industries	Further Academia/RTOs	Further SMEs	Further End-users	Further Others
Ecorys EDISOFT GMV Frequentis	AIT JRC Armines University Münster EUSC CSDM University Stuttgart	HKV Consultancy CIES Q4 Public Relations E-Semble Disaster Waste Recovery	Danish Red Cross British Red Cross Magen David Adom PSCE	DIN CITET EOS