driver+

Driving Innovation in Crisis Management for European Resilience

D922.11 - LIST OF CRISIS MANAGEMENT GAPS

SP92 - TEST-BED

MARCH 2018 (M47)

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The DRIVER+ project

Current and future challenges due to increasingly severe consequences of natural disasters and terrorist threats require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management. DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is a FP7 Crisis Management demonstration project aiming at improving the way capability development and innovation management is tackled. DRIVER+ has three main objectives:

1. Develop a pan-European Test-bed for Crisis Management capability development:
    - Develop a common guidance methodology and tool (supporting Trials and the gathering of lessons learnt.
    - Develop an infrastructure to create relevant environments, for enabling the trialling of new solutions and to explore and share Crisis Management capabilities.
    - Run Trials in order to assess the value of solutions addressing specific needs using guidance and infrastructure.
    - Ensure the sustainability of the pan-European Test-bed.
2. Develop a well-balanced comprehensive Portfolio of Crisis Management Solutions:
    - Facilitate the usage of the Portfolio of Solutions.
    - Ensure the sustainability of the Portfolio of Tools.
3. Facilitate a shared understanding of Crisis Management across Europe:
    - Establish a common background.
    - Cooperate with external partners in joint Trials.
    - Disseminate project results.

In order to achieve these objectives, five sub-projects (SPs) have been established. **SP91** ***Project Management*** is devoted to consortium level project management, and it is also in charge of the alignment of DRIVER+ with external initiatives on crisis management for the benefit of DRIVER+ and its stakeholders. In DRIVER+, all activities related to Societal Impact Assessment (from the former SP8 and SP9) are part of SP91 as well. **SP92** ***Test-bed*** will deliver a guidance methodology and guidance tool supporting the design, conduct and analysis of Trials and will develop a reference implementation of the Test-bed. It will also create the scenario simulation capability to support execution of the Trials. **SP93** ***Solutions*** will deliver the Portfolio of Solutions which is a database driven web site that documents all the available DRIVER+ solutions, as well as solutions from external organisations. Adapting solutions to fit the needs addressed in Trials will be done in SP93. **SP94** ***Trials*** will organize four series of Trials as well as the final demo. **SP95** ***Impact, Engagement and Sustainability***, is in charge of communication and dissemination, and also addresses issues related to improving sustainability, market aspects of solutions, and standardisation.

The DRIVER+ Trials and the Final Demonstration will benefit from the DRIVER+ Test-bed, providing the technological infrastructure, the necessary supporting methodology and adequate support tools to prepare, conduct and evaluate the Trials. All results from the Trials will be stored and made available in the Portfolio of Solutions, being a central platform to present innovative solutions from consortium partners and third parties and to share experiences and best practices with respect to their application. In order to enhance the current European cooperation framework within the Crisis Management domain and to facilitate a shared understanding of Crisis Management across Europe, DRIVER+ will carry out a wide range of activities, whose most important will be to build and structure a dedicated Community of Practice in Crisis Management, thereby connecting and fostering the exchange on lessons learnt and best practices between Crisis Management practitioners as well as technological solution providers.

Executive summary

DRIVER+ is an end-user driven project ultimately aiming at providing added value to Crisis Management (CM) practitioners. To serve this purpose, the understanding of the CM practitioners' needs appears as one building block of paramount importance, on which future activities, like designing Trials, should be developed.

Elaborating a consolidated view on the current and future capability gaps in CM was carried out as part of the Updated Gaps Assessment task (T922.1), in which a "capability gap is understood to be the difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks." (1)

The conducted work specifically aimed at identifying the CM capability gaps of the end-users partners and at better understanding and describing such gaps. This initial set of gaps was challenged and enriched through an in-depth analysis of the available literature in this field and during an assessment and validation workshop involving the wider CM community.

The result of this process is the compilation of 21 Crisis Management capability gaps organised in 5 CM functional domains: decision support; information sharing and coordination; engaging the population; resource planning and logistics, casualty management.

While the description and the detailed results of the assessment can be found in section 3 of this document, the figure below presents an overview of the list of 21 Crisis Management capability gaps with their assessment results.

No	Gap	Acknow-ledgement	Current capability	Severity	Urgency	Relevance for Trial
1	**Modelling and visualisation of chemical and radiological threats' dynamics** Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the incident commander					T1
2	**Assessment of cross vulnerabilities** Limitations in the cross vulnerabilities (people, property, environment) assessment to optimise task prioritisation and decision making					T1
3	**Adequate COP environment** Lack of a "Common Operational Picture" environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander					T1
4	**Real-time data and information fusion to support incident commander decision making** Limits in the ability to merge and synthesise disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making					T2
5	**Exchanging crisis-related information among agencies and organisations** Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)					T2,3, 4

No	Gap	Acknow-ledgement	Current capability	Severity	Urgency	Relevance for Trial
6	**Common understanding of the information exchanged in response operations** Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations					T2
7	**Understanding CM capabilities of participating organisations** Lack of mutual knowledge or alignment of operational needs and procedures between different organisations responding to the same crisis scenario					T3
8	**Shared awareness of status and planned efforts in CM operations** Insufficient understanding of the overall current and planned response efforts as well current strategies across organisations during a crisis					T3
9	**International cooperation in aerial firefighting** Lack of common doctrines and procedures supporting international cooperation in aerial firefighting					T2
10	**Public warning with feedback** Lack of effective public warning systems with the ability to verify whether the information reached the recipient					T1
11	**Communicating with the public during a large crisis** Shortcomings in policy and procedures for communicating with the public during a large crisis					T4
12	**Incorporating information from multiple and non-traditional sources** Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations					T2,3
13	**Managing spontaneous volunteers** Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration					T3,4
14	**Addressing the psychological stress of volunteers** Low awareness and lack of ability to address the risks of adverse mental health effects and decreased psychosocial wellbeing in spontaneous and trained volunteers following response operations					T3
15	**Resource management during long-term response operations** Insufficiencies in terms of resource management (human resources, hardware, etc.) during multi-stakeholder long-term response operations					T1
16	**Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis**					T4
17	**Large scale evacuation in urban areas** Shortcomings in planning and managing large scale evacuation of population in urban areas					T4
18	**Use of virtual reality to enhance preparedness for large scale evacuation** Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise					T4

No	Gap	Acknow-ledgement	Current capability	Severity	Urgency	Relevance for Trial
19	**Coordination in dealing with large numbers of severely burned casualties** Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level					T2
20	**Locating casualties in large forest fires** Limited ability to identify the location of injured/ trapped/ deceased casualties in large forest fires					T2
21	**Providing medical assistance to casualties** Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters' units)					T2

Legend:

Number of practitioners (the workshop participants) considering this as a capability gap **> 80%**				
Average consideration of the current capability as **"fair" to "poor"**				
Average consideration: gap has **"important consequences" to "very serious consequences"**				
Average consideration: gap is **"somewhat urgent" to "very urgent"**				

Figure 0.1: Overview of the 21 CM capability gaps assessment

The major overall results of the gaps assessment validation process can be summed up as follows:

- 91% of the gaps are validated by more than 50% respondents (19 gaps out of 21).
- Among which, 29% of the gaps are validated by all (100%) respondents (6 gaps).
- Capability dimension: current capability is considered fair to poor in 71% of the gaps (15 gaps out of 21).
- Severity dimension: 52% of the gaps are considered severe (11 gaps out of 21).
- Urgency dimension: 33% of the gaps are considered urgent (7 gaps out of 21).

As presented in Figure 0.1, most gaps are validated and shared among workshop participants, however the situation differs depending on the size and severity of the crisis; and the level of required crisis management (local or regional versus national). There is a common agreement among participants that the technical dimension of the gaps is often not the main constraint, as training, organisational, legal, cultural aspects also play a key role.

Because the DRIVER+ aim is not to deliver a complete list of validated CM capability gaps, the approach is on a gap by gap basis and therefore no overall threshold has been set up to declare a gap as being validated. For DRIVER+ future activities (and in particular for the Trials), the contextualisation of gaps is crucial. Moreover, the participants in the workshop repeatedly stated that they can only assess the existence (or not) of the gap for their own country or organisation, but not in general. It is the responsibility of the Trial teams to "digest" the results of the gaps assessment and the analysis of the group discussions and the questionnaire, and decide how they intend to approach the gaps in their respective Trials (see section 4.2).

This deliverable does not intend to deliver a comprehensive and complete list of CM gaps covering all countries and all Crisis Management functions, but it rather offers an overview of the topical issues faced by the practitioners partnering in DRIVER+, validated by additional end-users beyond the consortium. This

work consists in the formalisation of the practitioners' needs and thus serves as a basis to design the Trials to be conducted within the project. It also intends to help the solution providers to understand where and how their solutions can support the CM operations. Last but not least, it presents a list of topical issues to feed further activities with the CM community (e.g. I4CM conferences).

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List of Acronyms

Acronym	Definition
AZF	AZote Fertilisants – Factory in Toulouse
C3	Command, Control and Communication
C4I	Command, Control, Communications, Computer and Intelligence
CAP	Common Alerting Protocol
CBRN-E	Chemical, Biological, Radiological, Nuclear, and Explosive materials (NRBC-E in French)
CM	Crisis Management
COP	Common Operational Picture
DFCI	Défense de la Forêt Contre l'Incendie (forest fire protection plans in France)
DoW	Description of Work
DRIVER	DRiving InnoVation in crisis management for European Resilience
DSS	Decision Support System
ECPM	European Civil Protection Mechanism
EDXL	Emergency Data Exchange Language
EMS	Emergency Medical Service
ERCC	Emergency Response Coordination Center
EU	European Union
FEMA	Federal Emergency Management Agency (USA)
FR	France
GIS	Geographic Information System
GPS	Global Positioning System
GR	Greece
HR	Croatia
I4CM	Innovation for Crisis Management
ICT	Information and Communication Technology
INSARAG	International Search and Rescue Advisory Group
ISO	International Organisation for Standardisation
IT	Information Technology Italy
I4CM	Innovation for Crisis Management
JXDM	Global Justice XML Data Model
LCMS	Landelijk CrisisManagement Systeem (National COP tool of the Netherlands)

Acronym	Definition
MHPSS	Mental Health and PsychoSocial Support
NGT	Nominal Group Technique
NIEM	National Information Exchange Model
OASIS	Organisation for the Advancement of Structured Information Standards
OCC	Operational Coordination Center (Netherlands)
OCHA	UN Office for the Coordination of Humanitarian Affairs
PoS	Portfolio of Solutions
PT	Portugal
SAR	Search And Rescue
SOPs	Standard Operating Porcedures
SRH	Security Rehion Haaglanden
TÖ	Team Österreich
TSO	Technical Standard Orders
UGAW	Updated Gaps Assessment Workshop
UN	United Nations
UNISDR	United Nation office for Disaster Risk reduction
VISOV	Volontaires Internationaux en Support Opérationnel Virtuel

1. Introduction

1.1 Background

DRIVER+ seeks to improve the way capability development and innovation management are tackled, by testing and evaluating solutions that address the operational needs of practitioners dealing with Crisis Management (CM). Therefore, it is of utmost importance for the project to start by understanding what are the main problems that CM practitioners are currently facing and build upcoming DRIVER+ activities on this basis, to ensure that the project results corresponds to the practitioners needs.

The four Trials to be conducted during the project duration, are therefore required to be focused on the capability gaps, i.e. "the difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks" (1), as identified by the CM practitioners.

Thirteen capability gaps were already identified in the former phase of the project (referred to as DRIVER) (2) (3) and a number of them remain relevant for practitioners while new ones have emerged. At the end of the past period, practitioners reaffirmed their expectations that such gaps should be addressed by innovative solutions tested in future DRIVER+ activities.

In parallel to the research projects funded by the European Commission in the area of CM capability gaps[1], several studies have been commissioned on this topic in the USA (4) and in Europe (1) and a discussion through the "International Forum to Advance First Responder Innovation"[2] has started regarding EU-USA cooperation potential on this matter. Both the legacy of DRIVER and other literature served as the basis for the work to be carried out.

1.2 Purpose and scope of the gaps assessment in DRIVER+

Within DRIVER+, a "capability gap is understood to be the difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks." (1). Thus, the work carried out as part of the Updated Gaps Assessment task (T922.1) aims at:

- Identifying the gaps the Trials end-user coordinators are interested to focus on, and better understand and describe such gaps;
- Enlarging the acceptance of the identified gaps by the wider CM community by engaging with practitioners beyond the project consortium;
- Ultimately, ensuring the project's added-value to practitioners by grounding the DRIVER+ Trials on validated gaps assessments and thus on the topical capability needs limiting the practitioners' action.

However, it is to be noted that this work does not aim at delivering a comprehensive and complete list of CM gaps covering all countries and regions or all CM functions.

1.3 Approach

Based on the adopted definition of a Crisis Management capability gap, a list of criteria (section 2.1.22.1.1) was developed to ensure common understanding was developed to ensure common understanding of

[1] Such as HELP (www.fp7-sec-help.eu); ACRIMAS (http://ltlab.tno.nl/acrimas/attachments/article/111/D4-3_ACRIMAS_Requirements_specification_report_v2.pdf); CRISYS(http://www.eos-eu.com/files/Documents/CRYSIS/CRISYS_deliverables/CRYSIS_D4_3_The_results_of_the_CRISYS_project.pdf)

[2] http://internationalresponderforum.org/

what CM capability gaps are within DRIVER+ and to align the approach among the participants of this task, offering a frame to support the identification and formulation of the initial list of gaps by the Trials end-users coordinators. Following internal discussions, each Trial end-user coordinator proposed a list of 5 to 10 gaps. A bottom-up approach was implemented to avoid affecting their perception by providing them with lists of gaps compiling responses from other practitioners, and collected in other contexts. The list of gaps from all Trials was then harmonized, and the resulting list of 21 gaps (section 3) was organised in operational categories by tagging one or several CM function(s) to each gap.

Four main sets of references (see details in section 2.1.1.1) were selected from the literature to support the DRIVER+ gaps assessment process. In parallel of this desktop research, the Trial end-user coordinators prepared a description of the status of the gap in the context of their Trial along two main axis: a) what is the current situation ("current capability") in terms of process, solutions and wider context (norms, standards, legal…); and b) what is the capability necessary to reach adequate levels of performance. This offered a contextualisation of the gaps with specific constraints and opportunities related to country or type of events, to support the design of the Trials.

The listed gaps were then challenged by experienced CM practitioners external to the project consortium during a dedicated workshop. The aim was not to reach a perfectly representative audience, but rather to engage with external practitioners to be invited to partake in the Trials. This phase aimed at validating and assessing the identified gaps with the wider Crisis Management (CM) community and the involved participants were asked to focus on the relevance of the identified gaps and their priority (urgency, severity). The intent was also to enrich the project's description of the gaps, using the participants' knowledge and experience.

The discussions were organised in 4 parallel focus groups based on the five CM categories. A DRIVER+ partner acted as moderator to foster the exchanges between participants into a productive group discussion, encouraging all participants to express their view, to react to other's opinions and to obtain an agreement with regard to the status of the gap. After presenting a summarised description of each gap, a common structure was followed in all sessions and for all gaps, to maximise the comparability of the collected data. The groups gathered from 7 to 11 external participants and observing DRIVER+ partners were responsible for collecting qualitative data using a common template (see Annex 13).

Then participants were asked to fill in a questionnaire to collect quantitative data. The questions were referring to the declared expertise (knowledge and experience) of the participants regarding the gap. The respondents were asked to acknowledge the existence of the gap, and assess it (current ability, consequences on the ability to perform the CM functions, urgency for solving the gap). Then, they were asked to check possible interdependencies between gaps and, last but not least, participants were asked about their expectations from DRIVER+.

38 external stakeholders (from France, The Netherlands, Germany, Italy, Sweden, Portugal, Poland, Greece, ERCC), were invited to participate in the workshop, based on the relevance of their profile and expertise. The participants were almost exclusively practitioners, including fire-fighters and incident commanders from local to national levels, red-crosses, police officers, national authorities with responsibilities in terms of Chemical, Biological, Radiological, Nuclear, and Explosive materials (CBRNE) issues, water boards, military officers.

To enlarge even more the validation basis, and to provide an opportunity to practitioners who could not attend the workshop to react, the results of the workshop were shared with additional profiles for a final review of the methodology, the gaps description, and the validation results (see Section 2.4.3).

1.4 Reader's guide

This deliverable is structured in three main parts.

Section 2 presents the different steps in developing the DRIVER+ list of CM capability gaps, from the identification and the description of the gaps using desktop research to the validation with practitioners during the workshop. Section 3 is the core of the document and provides a description of each of the listed

gaps together with the validation results. Finally, section 4 provides an overview of how these results will support the future project's activities, notably with regards to the design of the Trials and the engagement of external stakeholders.

2. Methodological approach

This section of the document presents the rationale behind the gaps assessment work carried out in DRIVER+. It provides the DRIVER+ definition and understanding of what a CM capability gap is in the frame of the project presents the gaps identification and description process as well as their validation with external stakeholders.

2.1 Defining a Crisis Management Capability Gap

The first step in this process was to define what a CM capability gap is in order to ensure common understanding among all involved participants.

2.1.1 Looking into the literature

In addition to past DRIVER work (2) (5), several studies have been commissioned recently in Europe and in the USA specifically on crisis management capability gaps. A first step was therefore to understand their methodological approaches, scope and outcomes and based on these aspects select the main references supporting the DRIVER+ work (taking also into account the publication date); and to review their results.

2.1.1.1 Identification of main references in the literature

The following four main sets of references were identified thanks to consortium partners knowledge of the CM needs, and desktop research, and selected to support the DRIVER+ gaps assessment process:

- First Responders - Identifying capability gaps and corresponding technology requirements in the EU, European Commission DG HOME, January 2016 (1).
- Project Responder 5, Final Report, Homeland Security Studies and Analysis Institute, August 2017 (4).
- The series of Capability Gap Analysis Synopsis, The International Forum to Advance First Responder Innovation, Homeland Security Science and Technology, starting from January 2017 (6) (7) (8).
- Corpus of DRIVER+ documents including: DRIVER PROJECT, D41.21 “Vision on Response 2025” (5), and D610.1 Milestone 2 Report “Achievements, Lessons Learnt and Recommendations, Expertise of practitioners and Trial owners” (2), February 2016.
- Those have been retained using the following criteria:
- Scope: focusing on Crisis Management at large, while not on a specific area.
- Outcomes: presenting lists of gaps.
- Methodological approach: gathering needs and gaps from first responders.
- Recentness: providing results from 2016 and afterwards.

Besides, those references are complementary: The European dimension is covered by several studies (First Responders (1); DRIVER reports (2) (5)) while the USA one is acknowledged in “Project Responder 5” (4). Furthermore, a global synthesis is also taken into account through the series of “Capability Gap Analysis” reports (6) (7) (8). It is worth mentioning from a methodological perspective that the First Responder study’s approach is drawn from the “Project Responder 4” (2014) (9), with “Project Responder 5” (2017) (4) being an update of this previous version.

Other references were considered but not retained as they provide redundant information with the selected ones presented above. For instance the selected “First Responders” study (1) uses inputs from Project Responder 4 (9) which was therefore not retained within the list of main references. The same goes for “ACRIMAS gap analysis” (10) whose material is presented in DRIVER reports (2) (5) (11) that are selected as main references.

Other documents were not satisfying all the criteria stated above. For instance, some reports are focusing on specific areas and not on Crisis Management at large like ResiStand “Standardisation gaps analysis” (12).

Other references like the "Report from the commission to the European Parliament and the Council on progress made and gaps remaining in the European Emergency Response Capacity" (13) focuses on capacity related gaps, which are difficult to be addressed in the frame of DRIVER+. Another interesting document was the "FEMA gap analysis program guidance" (14) but the latter was finally not retained as it has been published in 2009 and its content can be considered as outdated. Furthermore, it does not offer a list of gaps.

2.1.1.2 Definition available from the literature

The definitions below were considered with special attention while defining the DRIVER+ approach.

Definition of a "gap":

- "A 'capability gap' is understood to be the difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks. Capability gaps […] are not restricted to only technical areas." (1)
- The Memorial Institute for the Prevention of Terrorism (MIPT) commissioned the Project Responder study to identify the capabilities that emergency responders most needed to respond to large-scale incidents. In the wake of the Oklahoma City Murrah Building bombing, MIPT sought to understand gaps between the existing capabilities of responders and what was actually needed for effective and timely response" (4)
- "end-user gaps: Gaps describe what is missing from the current handling of a […] event and how it should be handled in an ideal world." (15)
- "Difference between the level of functionality (or other attribute) that is required and the level of serviceability (capability) that is or will be provided"[3]

Definition of a "capability":

- "the means to accomplish one or more tasks under specific conditions" (16)
- "the capacity […] to achieve a measurable result in performing a task under specified conditions [and to specific performance standards]."4

Definition of a need:

- "End-user needs: Needs describe what is needed to fulfil a certain function, or perform or improve a given task." (15)

2.1.2 DRIVER+ approach

Based on the literature and presented above, the following definition, from First Responder's study was adopted as it was considered by the task partners as the more complete yet very clear: *"A 'capability gap' is understood to be the difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks.".* This definition is now integrated into the ongoing terminology work of DRIVER+ (17).

The list of criteria presented below was developed to ensure a common understanding of Crisis Management capability gaps within DRIVER+ and more specifically align the approach amongst the practitioners involved in this task. It also offers a frame to support the identification and formulation of the initial list of gaps by the Trials end-user coordinators. This approach was developed upon request from the

[3] ISO 11863:2011, ISO TR 15686-11:2011, ISO 15686-10:2011

[4] https://doi.org/10.11610/Connections.05.1.03

SP92 - Testbed leader (JRC) and task partners and was further discussed and validated during the first SP92 – Testbed coordination meeting[5]. It can be summed up as follows:

Stating a gap is the expression of an operational problem and should state a limit in the ability to perform a CM task to the adequate level of performance. A gap statement should be self-sufficient. It is a stand-alone sentence; no particular description is needed to understand it. It is explicit and immediately understandable by other crisis managers (not using jargon/vernacular).

In terms of scope, the gap should relate to the focus of the four Trials mentioned in the DoW (situation assessment and logistics; high level coordination and decision making; emergency supply to the population and handling of dyke breaches and other damages; volunteer management) as well as the identified CM areas in the DoW (coordination; information exchange; situation assessment; resource management; communication; enhancement of a common operational picture). On the contrary, daily work and small incidents are not in scope.

The gaps can be of different nature: technical (ex: the ability to link different systems, to integrate data from difference sources, etc.); or non-technical, i.e. organisational, political, legal (ex: integrating different organisational processes, or overcoming legal incompatibilities); or a combination of several dimensions.

Regarding granularity, a gap should be broad enough so that it is not scenario specific and so that several research questions can be derived from it. The closing of the gap can be monitored over time (i.e. possible to understand how the assessed operational benefit of a solution during a Trial impact the closing of the gap). The gap statement can be common to different crisis management organisations in different contexts (countries, etc.). However, the description of the gap is context specific, meaning that in the cases where a gap is identified for several Trials, the gap status may drastically differ from one context (Trial) to the other (Trial).

The gaps should be phrased in a common manner, expressing a limitation in a capability (using words like “lack of”, “barriers in”, “shortcomings in”, “insufficiency in”, etc.).

The cross-border or international dimension is a key component of several gaps listed and therefore it was agreed among the task partners not to identify this point as a gap *per se*.

2.2 Identifying the gaps in DRIVER+ context

Based on the agreed definition of a gap and the common approach presented in the previous section, the identification of the DRIVER+ gaps was carried out first on a Trial basis and then discussed and refined across Trials.

2.2.1 Listing the gaps from the Trial perspective

Table 2.1 provides a summary of the four Trials of DRIVER+ for the reader to understand the context of the work on CM capability gaps carried out as part of DRIVER+.

Table 2.1 Summary of Trials

Trial	Description
1	Trial 1 will be prepared and conducted as a table top decision-making simulation together with field exercise component. The main scenario for the Trial is a large scale chemical accident. During maintenance work on a chemical plant in a border region an error in the maintenance of reservoir with chemical waste. Toxic, mud like, fluid floods nearby localities in a matter of minutes. The eventual 60 square kilometres of affected land include several villages and towns, where initially 15 people died and 200 people get severe toxic injurie; and a river that crosses

[5] 29th and 30th November 2017. SP92 coordination meeting. Hosted in Ispra by JRC.

Trial	Description
	the border into neighbouring countries. This results in destroyed crops, toxic injuries to livestock, a disturbance in the water supply causing immediate water shortage. The incident requires deployment of evacuation forces as well as a high number of decontamination forces from multiple countries to deal with the increasing number of toxic injured people. The scenario will require a commitment of stakeholders (end-users) from every crisis management level (local, regional, national and international).
2	Trial 2 objective is to improve cooperation and coordination between different organisations, or agencies within and across different countries using innovative solutions for large scale and complex crisis. The scenario includes multiple incidents with cross-border dimension occurring on several sites. The main event is a large forest fire threatening wildland urban interfaces. The main mission objective is therefore to "suppress the fire", to protect (1) people (casualties), (2) goods and infrastructures, and (3) the environment. A support from the EU Civil Protection Mechanism is requested. Additional man-made and natural events will complete the scenario to increase coordination needs and exchanges of information at horizontal level between agencies and countries, as well as vertical level along the command chain, to challenge the selected solutions. Because of widespread effects of this kind of incidents and limited possibilities to it in real-life conditions, the Trial will be organised as a table-top exercise based on a simulated environment.
3	Trial 3 shall be organised jointly with the biannual national Red Cross exercises based on a realistic and suitable scenario and adequate locations that offer exercise and training possibilities for the participating teams in a EU context, including exercising different response techniques according to the scenarios deployed. The Trial will evaluate a selection of tools contributing to international or national CM processes, especially in the fields of: volunteer management; standardisation for representation of information; flexibility and ability to interoperate; and improvement of the vertical workflow (up and down) of information. Natural hazard like earthquakes, floods or heavy rains with moods are the most likely scenarios. Participants will be involved in different phases of an operation deployment (i.e. activation, mobilisation, deployment, operations, hand over, departure) supported by operational vehicles, equipment and Red Cross staff and affiliated volunteers.
4	Trial 4 will be prepared and conducted as a table top simulation Trial. The main Trial objective is to find solutions for shortcomings in managing and planning large scale evacuation of the population in urban areas and to find solutions in managing the side effects. Solutions can be found in support by virtual reality to enhance preparedness in case of a large scale evacuation, solving limitations evacuation planning, managing of resources, and communication with the effected public., all related agencies and organisations must have the ability to exchange crisis related information by using a common operational picture (COP). The main scenario of trail 4 will be a dyke or sluice breach caused by technical failure or by bad weather conditions. A part of the Safety Region Haaglanden (The Netherlands) will be affected. Cascade effects will be power outrage, telecommunication failure, flooded roads, failure and shortcomings of fresh drinking water and food for the population outside and in in the affected area. This kind of crises cannot be managed by the Safety Region and their regional crisis partners only, but requires deployment of evacuation forces and volunteers to deal with the increasing number of exposed people and to manage all cascade effects.

Following a bottom-up approach, the end-user coordinators of each Trial were asked, based on the agreed criteria (see Section 2.1.2) to list the main gaps they face (based on the crisis they have faced before or are considered as major threats). The objective was to identify the gaps from the partners end-user's

experience, while avoiding to affect their perception by providing them with lists of gaps compiling responses from other practitioners, and collected in other contexts.

Following internal meetings and discussions in their organisations[6], each Trials end-user coordinator proposed a list of 5 to 10 gaps. The main guiding question was What is your interest in taking part in a Trial? On which issue do you want to focus in the Trial? What are the problems you want to investigate or participate in resolving through the Trial? Are you willing to collaborate with a specific kind of other practitioner organisation during the Trial (and therefore identify gaps affecting this cooperation)?

This list was first discussed bilaterally with the task leader to refine the statement and the wording so that it meets the criteria list. It was then challenged by (questions, comments, remarks) the other partners (i.e. other end-users or researchers) involved in the task to make sure that the statement is fully understandable by other end users.

Some of the partners initiated the process from the gaps that they identified in the design of the experiment(s) conducted during the previous phase of the project, then updating (if the gap has evolved since 2016) and refining them (to match with the DRIVER+ updated approach), while other partners started from a blank page. This is the case of the end-user coordinator of Trial 1, that was involved in DRIVER as consortium member. To limit potential discrepancies, the project documents related to gaps were shared with this new partner at the start of the process.

The outcomes of this process was four initial lists of gaps, one for each Trial.

2.2.2 From a Trial based approach to a project wide cross-Trial approach

As described in the DoW of DRIVER+, the gaps assessment process is meant to have a project wide span, not to be duplicated for each Trial. Therefore, after the identification of the gaps on a Trial basis, discussions took place among the partners to harmonise the lists and identify overlaps. The alignment of vocabulary was a first step towards harmonisation. Clarifications were found in the DRIVER+ terminology to ensure a common understanding and consistent use of words across the gaps of the list (e.g. “spontaneous volunteers”, “trained volunteers”, “unbound volunteers”, etc.). Discussions between practitioners (i.e. the Trial end-user coordinators) were also fostered to converge towards the same use of expression (e.g.. use only “incident commander” and not “head of rescue operations”, etc.).

Once the initial lists of gaps from all Trials have been harmonised and merged together, several overlaps and redundancies became evident. Therefore, agreements on common formulation where found for the gaps that look rather similar to each other. A compromise was not found for all of them due to the fact that slight differences were very significant to the practitioners and that the proposed wording was not representative of the stated problem. This work resulted in a list of 21 CM capability gaps (presented in section 3). Table 2.2 shows the redundant gaps for which a common agreement was found (see Gaps 5, 11 and 13 coloured in grey).

Table 2.2: Gaps allocation per Trial

Gap number	Trial 1	Trial 2	Trial 3	Trial 4	Gap number	Trial 1	Trial 2	Trial 3	Trial 4
1	x				**12**		**x**	**x**	
2	x				**13**			**x**	**x**
3	x				14			x	
4		x			15	x			
5		**x**	**x**	**x**	16				x
6		x			17				x

[6] At least one face to face internal meeting for each trial, in addition to several ongoing discussions and virtual meetings.

Gap number	Trial 1	Trial 2	Trial 3	Trial 4	Gap number	Trial 1	Trial 2	Trial 3	Trial 4
7			x		18				x
8			x		19		x		
9		x			20		x		
10	x				21		x		
11				x					

After the list of 21 Crisis Management capability gaps was agreed amongst all partners of the task, the gaps were organised per CM functional domains, or *"broad operational categories in which similar needs are consistently identified"* (4).

This was realised by tagging one or several Crisis Management function(s) to each gap, using the DRIVER+ taxonomy of functions (18). The list was subsequently organised in five functional domains, as follows:

1. Decision support.
2. Information sharing, situational awareness and coordination.
3. Engaging the population (warning, crowdsourcing, crowd-tasking, volunteers).
4. Resources planning and logistics.
5. Casualty management.

This categorisation was then used to organise the parallel sessions of the workshop (grouping the last two categories in a common session for practical reasons). It is to be highlighted that the task partners agreed not to organise the sessions per Trial to keep an overall project approach and avoid working in silo for each Trial, with no cross-fertilisation.

2.3 Describing the DRIVER+ gaps

This section explains the logic behind the description of the gaps, providing information on both the origin of the material used and presenting the added value of such information.

2.3.1 Using the gaps found in the literature

One of the criteria for selecting the main references from the literature was that the identified reports should provide a list of CM gaps. Therefore, the lists of CM capability gaps were retrieved from each of the four main references presented in Section 2.1.1.1. Such lists are available Identification of main references in the literature in Annex 2.

A matching process, consisting in checking for each DRIVER+ gap identified if there is a relevant reference in the lists from the literature, was conducted with a double objective:

1. To verify if the gap has already been identified in other contexts.
2. To get an overview and a general description of the gap from the literature.

For the DRIVER+ gaps where the material was available in the literature (columns A and B in Table 2.3 below), such material was used in the preparation of the workshop. For the two other gaps (column C), the general description of the gap was prepared by the partners who have identified it, based on their knowledge and experience. Table 2.3 shows the DRIVER+ identified gaps for which there is a match in the selected literature. The dark yellow colour indicate a good matching level while the lighter yellow indicates a partial match. The lines in white shows that such gaps are not identified at all in the considered literature. The detailed results of the matching process are available in Annex 3.

Table 2.3: Identification and description of gaps in the considered literature

Gap number	A. Well identified and described in the literature	B. Not described per se, but existing related broader gaps identified in the literature	C; Not identified or described in the literature	Gap number	A. Well identified and described in the literature	B. Not described per se, but existing related broader gaps identified in the literature	C; Not identified or described in the literature
1		x		**12**	**X**		
2		x		**13**	**X**		
3	x			14		x	
4	X			15	X		
5	**X**			16		x	
6	x			17		X	
7		x		18		x	
8	X			19			x
9			x	20		X	
10		X		21		X	
11	x						

2.3.2 Description in the specific context of the Trial

In parallel of this desktop research, the Trial end-user coordinators prepared a description of the status of the gap in the envisioned context of their Trial (mainly in terms of concerned countries).

This offered a contextualisation of the gaps detailing specific constraints and opportunities related to country specifics or type of events specifics. In the case of a gap being shared by different Trials, the different contexts under which the gap is considered are detailed. This is realised in order to provide added value to the DRIVER+ Trials design.

The description unfolds along two main axis:

i. What is the current situation ("current capability") in terms of process, solutions and wider context (norms, standards, legal…)?
ii. What is the capability necessary to reach adequate levels of performance in terms of process, solutions and wider context (norms, standards, legal…)?

2.4 Engaging with practitioners beyond the consortium for validating gaps

The Updated Gaps Assessment Workshop (UGAW) was the second phase of the gaps assessment work within DRIVER+. After drawing the list of gaps, checking their acknowledgement in the literature and describing them, DRIVER+ partners wanted to have those gaps challenged by the European CM community, in order to extend the knowledge base.

Experienced practitioners in the field of Crisis Management were expected to compose the main audience of the workshop. Rather than involving participants whose profile and geographical coverage would perfectly reflect the European's diversity and account for all CM functions, the main objective was involving external stakeholders the partners wish to later engage in the Trials given their experience and relevance.

2.4.1 Methodological rationale and workshop organisation

The second phase of the gaps assessment mainly aims at validating the gaps by the acknowledgement from experts beyond the consortium validating a) the relevance of the identified gaps and b) the priority of such gaps (urgency, severity). It was also meant to check the potential interest from external stakeholders on

specific gaps and received feedback on the specific status of the gaps in the envisioned Trial context. The workshop was designed to enrich the project's description of the listed gaps, using the participants' knowledge and experience sharing. Last but not least, it was the first activity within DRIVER+ to engage with external stakeholders, and therefore limit self-centeredness.

The workshop was organised in four parallel sessions based on the CM areas retained for organising the gaps (section 2.2.2): decision support; information sharing, situational awareness and coordination; engaging the population (including warnings, crowd sourcing, crowd tasking, volunteers); resources planning and logistics, casualty management. The participants were pre-allocated to the focus groups based on their domain of expertise and to respect a certain country and profile balance. Only a few participants asked to be re-allocated to other groups. The description of each group composition is presented in more detail in section 3.

In order to meet such objectives, a mixed-research approach (qualitative plus quantitative methods) was used. The workshop was therefore organised along two strands of activity for each gap: a group discussion and a questionnaire to be filled in for each gap by the participants (the workshop agenda is available in Annex 4 and the questionnaire in Annex 6).

2.4.1.1 Group discussions

It was decided among the partners involved in this task to organise the discussion in small groups so as to give the opportunity to the external practitioners to provide their opinion. The process of literature review and the description of the gaps provided the basis for the preparation of the groups discussions.

The discussions were organised in focus groups which consist in "group discussions among carefully selected individuals guided by a skilled moderator who follows a well-constructed but loose and flexible interview guide." (19). This method was selected not only to gather feedback from experts (we could have run individual interviews for that purpose), but also to capture the exchanges between the group members. The possibility for them to meet experts from other countries and organizations was also a key incentive to involve them in this process.

One DRIVER+ partner acted as the typical focus group moderator (to be distinguished from an interviewer which acts in a question/answer format) whose role was to foster the exchanges between participants into a productive group discussion (20). The objective was to encourage all participants to express their view, to react to other's opinions and to obtain an agreement with regard to the status of the gap (i.e. whether it is shared perfectly or with certain distinctions, or not at all).

After shortly presenting a summarised description of each gap, a common interview guide (i.e. a series of open-ended questions organised from the more general to the more specific) was followed by the moderator, which was similar in all sessions and for all gaps, in order to maximise the comparability of the results between the groups and between the gaps. The first round of discussions was organised around questions related to the current situation:

- Do you observe/experience the same gap? Do you agree with the description? If yes, why?
- If not, how would you change it? Why would you change it in this way?
- If you do not observe the same gap in your organisation, can you explain why according to your current capability (solutions, procedures, etc.)?

The second round was focusing on items related to the gap closure:

- If you share the same gap, what are your needs in terms of technical or non-technical (i.e. procedures, standards, etc.) solutions to close this gap?
- Do you know promising solutions that could help to reach the adequate level of performance in carrying out your Crisis Management functions (use sticky-note on the panel)?
- What type of further Research and Development (R&D) is required?

The groups gathered around 7 to 11 participants in addition to the moderator and the secretaries, the latest being DRIVER+ partners observers in the sessions and responsible for collecting qualitative data in writing through a common template (Annex 13).

Based on the literature analysis, the Nominal Group Technique (NGT) applied in the Project Responder 5 study (4) and in which "a group is convened to identify a problem, devise solutions and make a decision through a collaborative process designed to identify consensus" (4) was considered but not fully applied. Indeed, in this approach, the last step after sharing of ideas and discussions is voting and ranking by a show of hands. However, in DRIVER+ case, it was deemed easier to organise this part through questionnaires to a) limit the potential bias in the gap assessment that is introduced by publicly displaying the vote, (especially in an international context where country competition might influence the vote); and b) collect more quantitative data and take time to analyse the data afterwards. The approach was therefore adapted to fit DRIVER+ objective, time and resources constraints.

2.4.1.2 Questionnaire

After the group discussion, participants were asked to fill in a nominative questionnaire which was the basis for collecting quantitative data. The respondents were given a list of predetermined responses from which to choose their answer. At the end of the questionnaire a free-text box has been added in order to give them the possibility to provide further comments.

The questions related to the gaps were formulated in relation to the declared expertise (i.e. knowledge and experience levels) of the participants. The respondents were also asked to acknowledge or refute the existence of the gap (within their organisation, within their country), and assess it (current ability, consequences on the ability to perform the CM functions, urgency for solving the gap). Then, the participants were asked to highlight possible interdependencies between the identified gaps and, last but not least, they were asked to inform about their expectations from DRIVER+. An example of questionnaire is available in Annex 6 of this report.

The analysis of the data collected through the survey was done using different approaches. Computing ratios (for instance for the percentage of respondents confirming the gap) was one of the method used. The advantage is that resulting percentages are simple and easy to understand. Grades were also derived from the obtained answers to provide value to each of the three gaps assessment dimensions, i.e. capability, severity and urgency (e.g. in a question like "What is your organization's current ability regarding this gap?", the grade is calculated using the following scale: "very good" (1); "fair" (3); "poor" (5)). This method was also applied for the self-declared knowledge and experience in dealing with a specific gap of the respondents. Both methods enable a comparability between the gaps.

In some cases, respondents were separated in different categories to show discrepancies. For instance, on the assessment of the three gaps dimension (current capability, urgency, severity), the results were calculated both for all the respondents, and specifically for respondents declaring a high level of experience in dealing with the gap. The objective in doing so was to have both a result with a higher statistical significance (more responders) and with a higher weight (higher expertise).

The results are presented using radar graphs in the case of the gaps three dimensional assessment. It provides a visual support to understand the gaps amplitude and explains what is the respective share of each of the three pillars in the resulting amplitude. Regarding the expertise, levels of knowledge and experience are presented together on a scale from 1 to 5.

In addition, the comments provided in the free comment box where included in the observer reports summary of the group discussions for each gap (available in section 3 for each gap in the respective "Key inputs received during the workshop " lines), as it generally summarised comments actually made by the participant during the discussion.

Those two types of activities were complementary as questionnaires were aimed at collecting individual inputs (the unit of analysis is the individual), while focus group aimed at recording a group dynamic with people comparing and contrasting their views (the unit of analysis is the group).

2.4.2 Workshop results

2.4.2.1 Participation

As a prerequisite before interacting with external practitioners during the focus group sessions, the overall objectives and expectations from the workshop were explained to them, and the list of gaps was shared upon registration. Moreover, and also in advance of the workshop, the type of data to be collected together with the type of data collection and analysis methods to be used were introduced to them. The participants were informed that the results from the research based on the data collected during the workshop will respect anonymity[7]. At the workshop registration onsite, they were asked to sign the informed consent form that was shared in advance.

Altogether, 61 people participated in the UGAW.

Among those participants, 38 were external stakeholders (i.e. not members of DRIVER+ consortium), coming from: France, the Netherlands, Germany, Italy, Sweden, Portugal, Poland Greece, ERCC (Emergency Response Coordination Center); the two most represented being France (due to the workshop location) and the Netherlands (thanks to a very active participation of the Dutch partners in engaging with external end-users).

Contacts from Hungary (Department for Water Diplomacy and Tied Aid Credits Division for the Danube Region Strategy, Ministry of Foreign Affairs and Trade of Hungary) and Spain (Civil Protection General Directorate) confirmed their interest in the workshop, but were unable to attend on these dates. A lack of representatives from Austria is to be noted, not because of a lack of interest, but rather because of the internal delay in the organisations to appoint the right persons.

The participants were almost exclusively practitioners, incident commanders from bronze to gold levels (mainly fire-fighters officers, but also military officers) as well as police officers. NGOs were represented, in particular Red-Cross societies from several countries, together with national authorities (responsibilities for CBRNE issues notably), Water boards also participated. The list of external organisations represented at the workshop and their geographical coverage is available in Annex 5.

2.4.2.2 Overall outcomes of the workshop

The workshop enabled to collect qualitative information during the parallel sessions discussions as well as quantitative data through the questionnaires. The detailed results are presented gap per gap in the next session 3). However, the major overall results of the gaps assessment validation process can be summed up as follows:

- 91% of the gaps are recognised by more than 50% respondents (19 gaps out of 21).
- 29% of the gaps are recognised by all (100%) respondents (6 gaps).
- Capability dimension: current capability is considered fair to poor in 71% of the gaps (15 gaps out of 21).
- Severity dimension: 52% of the gaps are considered severe (11 gaps out of 21).
- Urgency dimension: 33% of the gaps are considered urgent (7 gaps out of 21).

A complete table with the overall results of the questionnaire is available in Annex 7.

As presented in the figures above, most gaps are validated and shared among participants, however the situation differs depending on the size and severity of the crisis; and the level of required crisis management (local or regional versus national).

[7] To preserve the anonimity, no list of participants is provided in this report; also, there is no mention of the specific positions of the participants to limit the possibility to identify them. However, the list of organisations represented in the workshop can be found in Annex 5, and the list of organisations contacted for the review of the results in Annex 15.

Because the DRIVER+ aim is not to deliver a complete list of validated CM capability gaps, the approach is on a gap by gap basis and therefore no overall threshold has been set up to declare a gap as being validated. For DRIVER+ future activities (and in particular for the Trials), the contextualisation of gaps is crucial. Moreover, the participants in the workshop repeatedly stated that they can only assess the existence (or not) of the gap for their own country or organisation, but not in general. It is the responsibility of the Trial teams to "digest" the results of the gaps assessment and the analysis of the group discussions and the questionnaire, and decide how they intend to approach the gaps in their respective Trials (see section 4.2).

The discussions were rather smooth and simple, with participants understanding each-others and sharing the same challenges. However, some diverging positions emerged on specific examples used to describe the gaps. There is a common agreement among participants that the technical dimension of the gaps is often not the main constraint, as training, organisational, legal, cultural aspects also play a key role. Participants repeatedly expressed a need for terminology clarification (i.e. long term, large scale, hazard, insufficient, different types of volunteers). Some of the gaps statements require a slight reformulation.

The feedback of the participants during the meeting was positive. They expressed their interested for understanding how things were done and organised in other countries and what kind of different models and procedures are in place elsewhere. Besides, without specific request, several participants came to the organising team to declare their willingness to be involved in future activities of the project, and notably in the Trials.

2.4.3 Review of the workshop results

Following the conclusion of the Updated Gaps Assessment Workshop (UGAW) and the analysis of the results, a questionnaire was sent out to 6 external CM practitioners and 4 members of the Advisory Board (AB) to review the results. The objective was to verify with additional CM practitioners and experts (notably from countries like Norway, or UK, not represented in the UGAW) that the gaps assessment results, and the way they are presented, are of relevance. Those experts were either invited to the workshop and unable to attend yet indicating that they would be interested in reviewing the results (6 persons); or they are members of the project's Advisory Board (5 persons). The list of organisations approached can be found in Annex 15 of the present document.

These identified experts were invited to review both the methodology and the findings from the workshop for each of the 21 gaps as well as to assess whether they agreed with these findings. In order to do so, a two-pager note summarising the methodological approach (based on section 2 of the present deliverable) was prepared and packed with the 21 sheets detailing the gaps description and assessment presented in section 3 of this report.

This assessment was recorded as a score on a Likert Scale of 1 – 5, with 1 being Strongly disagree through to 5 being Strongly agree. An additional comments box was available for the experts to provide further feedback or additional information, if they so wish, as presented in Table 2.4 below:

Table 2.4: Questionnaire template for the review of the workshop results

Gap 1 – Do you agree with the key inputs received during the workshop?				
1 - Strongly disagree	**2 - Somewhat disagree**	**3 - Neither agree nor disagree**	**4 - Somewhat agree**	**5 - Strongly agree**
Comments:				

Because of the tight deadline considering the necessary amount of work to conduct the analysis and elaboration of the present document, only 3 questionnaires have been returned at the date of submission of this deliverable. However, those reviewers that have returned the questionnaires have scored the inputs from the UGAW very positively.

Concerning the methodology, the average score is 4.5. The reviewers considered that "in general the approach was very appropriate to the task" and shared positive comments about the area of the study: "the operational categories cover the domain appropriately". However, they also underlined that "heavy disasters are rare. Not all consulted experts dispose of sufficient experiences from real disasters. Sufficient knowledge cannot always be derived from the experiences of the everyday disaster response for preventive and preparedness measures in sufficient quality".

The average, or mean, scores across all 21 gaps is 4.8. The detailed results for each gap are presented in Annex 14.

In addition, some experts, even though they could not return the full questionnaire (for timing constraints or because they do not feel they have the expertise to review all the gaps), provided interesting comments on specific gaps[8], that will be of use for the design of the concerned Trial (example of Gap 9 - Lack of common doctrines and procedures supporting international cooperation in aerial firefighting for Trial 2).

2.5 Main challenges encountered throughout the process

Both the partners knowledge and experience, the literature and the workshop provided a lot of insightful material. The overall gaps assessment process was nonetheless challenging even though, the obstacles and constraints were of a different nature at the preparation phase and during the validation workshop.

It took long discussions among the group to get a common understanding of what the gaps are and to agree on their level of granularity. This explains why some gap statements are rather general while others are very specific. Moreover, the right balance between the general gap statement and the gap status within the context of a Trial was difficult to grasp for the project partners and even more for the external participants who participated in the validation workshop.

The heterogeneity of the approaches between the Trials was also a constraint to accommodate within the common methodological approach applied for the gaps assessment. This relates to the fact that a) some practitioners are more used to apply research methods and therefore more comfortable in following a strictly structured approach; b) some partners possess the DRIVER history while other are "new" partners in DRIVER+; and c) the interaction with the network of external practitioners differ from one Trial to the other.

In addition, timing constraints dictated by the interdependencies of activities within the project had an impact both on the identification and formulation of gaps but more importantly on the mobilisation of external stakeholders.

The main challenges encountered during the workshop relate to the limits of the applied research methods. Indeed, to carry out focus groups, a skilled moderator, able to keep discussions on topic and data relevant is required. However, not all moderators were familiar nor experienced with this approach. Also, a major flaw of focus groups is the potential for a moderator to influence participants' responses and interaction. There is no obvious indication that this actually happened during the workshop, but this is very difficult to assess. Besides, the use of focus groups in international settings is even more delicate as socio-cultural bias may enter into account on top of language barriers.

Furthermore, secretaries, even though in a role of silent observers, did participate several times in the discussions, notably to compensate for the fact that their countries were not represented among the participants, and to answer to direct questions asked to them by the participants. Even though the data collection was organised through a common secretary template, the "observer dependency" ought to be taken into account for the analysis of the qualitative data.

[8] Long and detailed comments received by email, and shared with the concerned trial teams.

3. DRIVER+ updated list of crisis management capability gaps

This section is the core of the deliverable. It presents the list of 21 Crisis Management capability gaps with their description and assessment.

The gaps assessment overall results are explained in section 2.4.2.2. while Figure 3.1 provides an overview of the list of gaps with their main assessment results. More details are available in Annex 7 and 9 of this deliverable.

No	Gap	Acknow-ledgement	Current capability	Severity	Urgency	Relevance for Trial
1	**Modelling and visualisation of chemical and radiological threats' dynamics** Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the incident commander					T1
2	**Assessment of cross vulnerabilities** Limitations in the cross vulnerabilities (people, property, environment) assessment to optimise task prioritisation and decision making					T1
3	**Adequate COP environment** Lack of a "Common Operational Picture" environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander					T1
4	**Real-time data and information fusion to support incident commander decision making** Limits in the ability to merge and synthesise disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making					T2
5	**Exchanging crisis-related information among agencies and organisations** Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)					T2,3, 4
6	**Common understanding of the information exchanged in response operations** Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations					T2
7	**Understanding CM capabilities of participating organisations** Lack of mutual knowledge or alignment of operational needs and procedures between different organisations responding to the same crisis scenario					T3
8	**Shared awareness of status and planned efforts in CM operations** Insufficient understanding of the overall current and planned response efforts as well current strategies across organisations during a crisis					T3
9	**International cooperation in aerial firefighting** Lack of common doctrines and procedures supporting international cooperation in aerial firefighting					T2
10	**Public warning with feedback** Lack of effective public warning systems with the ability to verify whether the information reached the recipient					T1

No	Gap	Acknow-ledgement	Current capability	Severity	Urgency	Relevance for Trial
11	**Communicating with the public during a large crisis** Shortcomings in policy and procedures for communicating with the public during a large crisis					T4
12	**Incorporating information from multiple and non-traditional sources** Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations					T2,3
13	**Managing spontaneous volunteers** Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration					T3,4
14	**Addressing the psychological stress of volunteers** Low awareness and lack of ability to address the risks of adverse mental health effects and decreased psychosocial wellbeing in spontaneous and trained volunteers following response operations					T3
15	**Resource management during long-term response operations** Insufficiencies in terms of resource management (human resources, hardware, etc.) during multi-stakeholder long-term response operations					T1
16	**Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis**					T4
17	**Large scale evacuation in urban areas** Shortcomings in planning and managing large scale evacuation of population in urban areas					T4
18	**Use of virtual reality to enhance preparedness for large scale evacuation** Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise					T4
19	**Coordination in dealing with large numbers of severely burned casualties** Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level					T2
20	**Locating casualties in large forest fires** Limited ability to identify the location of injured/ trapped/ deceased casualties in large forest fires					T2
21	**Providing medical assistance to casualties** Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters' units)					T2

Legend:

Number of practitioners (the workshop participants) considering this as a capability gap **> 80%**				
Average consideration of the current capability as **"fair" to "poor"**				
Average consideration: gap has **"important consequences" to "very serious consequences"**				

Average consideration: gap is **"somewhat urgent" to "very urgent"**				

Figure 3.1: Overview of the 21 CM capability gaps assessment

This following part of this section focuses on the detailed results for each CM capability gap individually. They are organised in functional domain as explained in section 2.2.2.

The table below is a reader's guide explaining the information contained in the subsequent gap tables.

Gap x		
General description	*General description of the gap, using in some cases inputs from the analysed literature* (see 2.1.1.1 Identification of main references in the literature). References in the literature*: description and examples from the selected literature?* (see 2.1.1.1). The detailed references for each gap can be found in Annex 2 and 3.	
Description in the context of DRIVER+ Trial (X)	What is the current situation ("current capability")? *In the specific context of the Trial that has identified this specific gap (X)*	What is the capability necessary to reach adequate levels of performance? *In the specific context of the Trial that has identified this specific gap (X)*
Key inputs received during the workshop	*Summary of main comments received during the workshop (from the notes taken by the session's secretaries).*	
Associated taxonomy of CM functions tags	*Selection of CM functions associated to this gap from the taxonomy.* (18)	
Results from questionnaire		
Participants' self declared expertise:[9]		**Acknowledgement of the gap:**[10]
Assessment of the gap:[11] 		

[9] Results from the questionnaire filled in by the participants during the workshop. The respondents were asked "What is your level of knowledge regarding this gap?" an "What is your level of experience in addressing this gap?". The average grade is calculated using the following scale: "very low" (1); "medium" (3); "very high" (5).

[10] Results from the questionnaire filled in by the participants during the workshop. % of respondents ticking "yes" to the question "Do you consider this statement as a capability gap ? In your country" or "in your organisation?"

[11] Results from the questionnaire filled in by the participants during the workshop. The grade for the organisation's current ability is calculated using the following scale: "very good" (1); "fair" (3); "poor" (5); the grade for the urgency is calculated using the following scale: "not urgent" (1); "somewhat urgent" (3); "very urgent" (5); the grade for the severity is calculated using the following scale: "almost no consequences" (1); "important consequences" (3); "very serious consequences" (5).

Gap x
For each scheme the results are presented for 1) all respondents and 2) the respondents declaring a high experience regarding this gap. This choice was made because the answers from the "specialists" of such gaps are more significant, while the statistical basis of all respondents is larger (higher numbers of respondents). For some gaps, no respondents have declared a high level of experience.

Figure 3.2: explanation on how to read the information contained in the gap tables

3.1 Decision support

The group discussing the decision support related gaps during the workshop consists of experts from Poland, France, Italy, and the Netherlands. Their background are: national expert in chemical security, fire fighter senior officers, civil protection managers, environmental protection agency security officer; Police CBRNE training department chief, specialist in CBRNE impact on health (academic).

3.1.1 Gap 1 - Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the incident commander

Table 3.1: Gap 1 description and assessment

Gap 1		
General description	To enhance response operations when hazardous materials are involved, there is a need for fast and accurate assessment of the concerned territory at the pre-event and response phase (for the incident-specific attributes that cannot be anticipated at the planning phase). Detailed forecasts and models (predictive modeling capabilities) need to be produced in real time with incident-specific variables. The incident commander needs to understand both the current situation, and how it will evolve (crisis dynamic). Time is a critical factor. References in the literature: this gap is very specific and therefore not identified as such in the literature. Broader gaps about related issues such as the ability to identify cascading effects possibly impacting the response have been identified in several studies.	
Description in the context of DRIVER+ Trial(1)	What is the current situation ("current capability")? Dispersion models for chemical and radiological threats exist. However, information is usually inadequate for onsite decision making by incident commander; either the model are very simple (simple input data, short calculation time) but provide low added-value results (very generic), or they are more sophisticated but require complex input data and a long computation time.	What is the capability necessary to reach adequate levels of performance? Balance between simplistic and too sophisticated models should be found in order to provide realistic results in a relatively short time (limited amount of and accessible input data and reasonable computation time). The solution should be universal and of practical usage in different situations (areas) with a practitioner-friendly interface.
Key inputs received during the workshop	The participants generally agree that this is a gap that needs solving. However, practitioners see prevention and prediction actions (action plans for reference scenarios) as more important than rapid modelling during response. The participants indeed insist on the importance of the legal dimension of this gap (example of the Law of 390 July 2003 after the AZF accident in Toulouse, France). The incident commander needs to know 1) the worst case scenario, and 2) the most probable scenario.	

Gap 1	
	Several models can be complementary, starting with a simple rapid, to be enriched later on by another more complex model when more information is available. The reliability of a model is an issue, therefore such model needs to be validated and accepted (and well known) by users beforehand (towards models agreed at European level?). Some models are too complex and require to be used by an expert only. Interoperability with other systems, as well as the use of GIS are seen by the participants as key points.
Associated taxonomy of CM functions tags	• Develop decision support systems (2.2.4) • Coordinate and conduct research and education – (b) Develop hazard and CM studies modelling and simulation capacity (2.5.2.b) • Integrate decision support (7.3.1.2) • Integrate data collection tools (7.3.4.2)

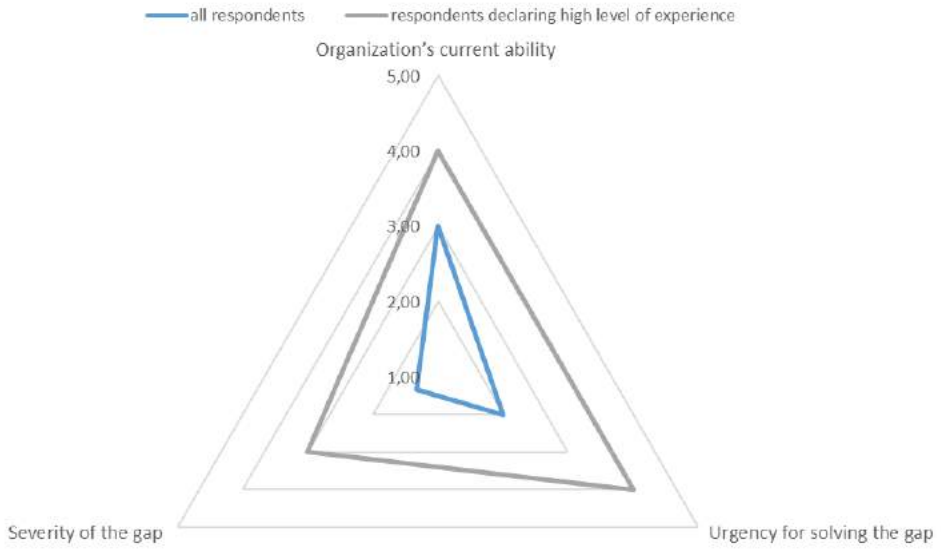
Results from questionnaire

Participants' self declared expertise:

Acknowledgement of the gap:

29%

Assessment of the gap:



3.1.2 Gap 2 - Limitations in the cross vulnerabilities (people, property, environment) assessment to optimise task prioritisation and decision making

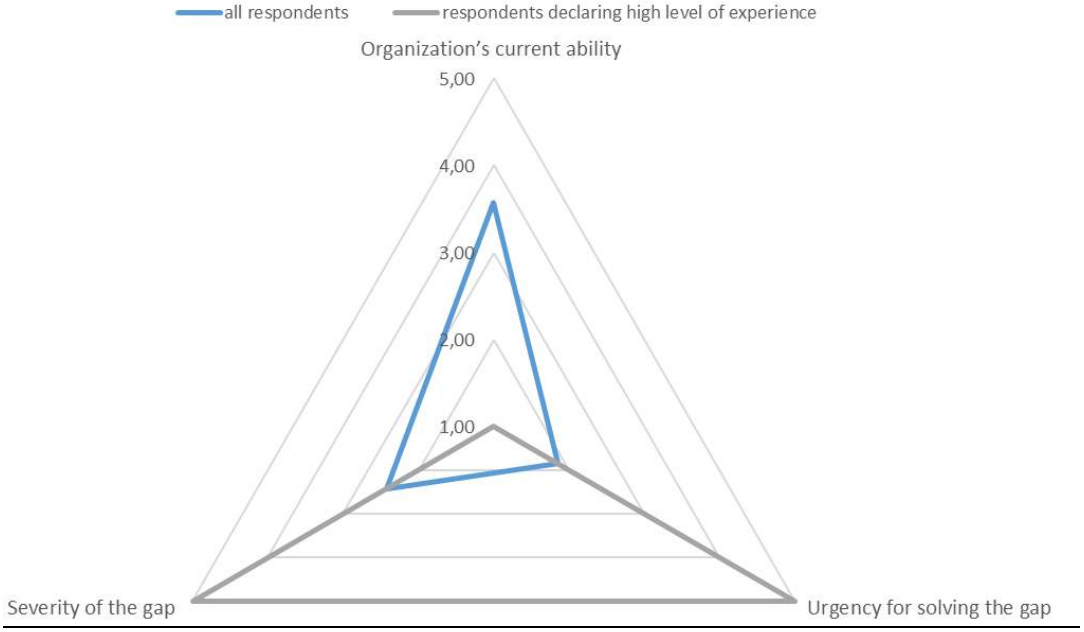
Table 3.2: Gap 2 description and assessment

<table>
<tr><th colspan="3">Gap 2</th></tr>
<tr><td>General description</td><td colspan="2">Definition of vulnerability[12]: “The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards”
It is necessary to assess the consequences of a crisis on people, property, the environment both separately, and including cascading effects across those three domains. This will help in identifying potential courses of action and assessing their probable outcomes, using modelling, and making use of lessons learnt and knowledge from past crisis.
Decision Support Systems are expected to take into account crisis dynamics, provide a assessing of the expected influences of possible response actions (intervention modelling), and enable task prioritisation.
<u>References in the literature</u>: this gap is not identified as such in the literature. Broader gaps about related issues such as the ability to identify cascading effects or decision support prompts have been identified in several studies.</td></tr>
<tr><td>Description in the context of DRIVER+ Trial(1)</td><td><u>What is the current situation (“current capability”)?</u>
Large scale crisis may affect people, property and the environment, for each of these domains, different kinds of vulnerabilities could be determined. There is no solution (procedures, models, guidelines) to identify vulnerabilities for each domain, therefore decision makers rely on intuition and experience rather than verified information. This has impact on the decisions and tasks prioritisations.</td><td><u>What is the capability necessary to reach adequate levels of performance?</u>
A solution is needed to identify and analyse different kinds of vulnerabilities for each domain to support dynamic decision making process in the response phase of the crisis management. It should provide spatial and real-time analysis of separate and combined estimated consequences for each domain and indicate extrema value (minimum and maximum) of resulting vulnerability.</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The participants share the gap and agree on the description and challenges. They use the example of Fukushima to illustrate this. They emphasise the importance of the planning phase, as well as the influence of non-technical dimensions like the relation between planners and crisis managers, and the dialogue with public authorities.
The participants not aware of existing technical solutions to solve this gap.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Assess vulnerabilities to hazards (1.2.2)
• Conduct damage and needs assessment (5.1.2)
• Maintain shared situational awareness (5.2.2)
• Conduct coordinated tasking and resource management (5.2.3)
• Integrate decision support (7.3.1.2)</td></tr>
<tr><th colspan="3">Results from questionnaire</th></tr>
<tr><td colspan="2"><u>Participants’ self declared expertise:</u></td><td><u>Acknowledgement of the gap</u>:</td></tr>
</table>

[12] UNISDR terminology available: www.unisdr.org/we/inform/terminology (consulted 19th March 2018)

Gap 2	
	**43%**

Assessment of the gap:

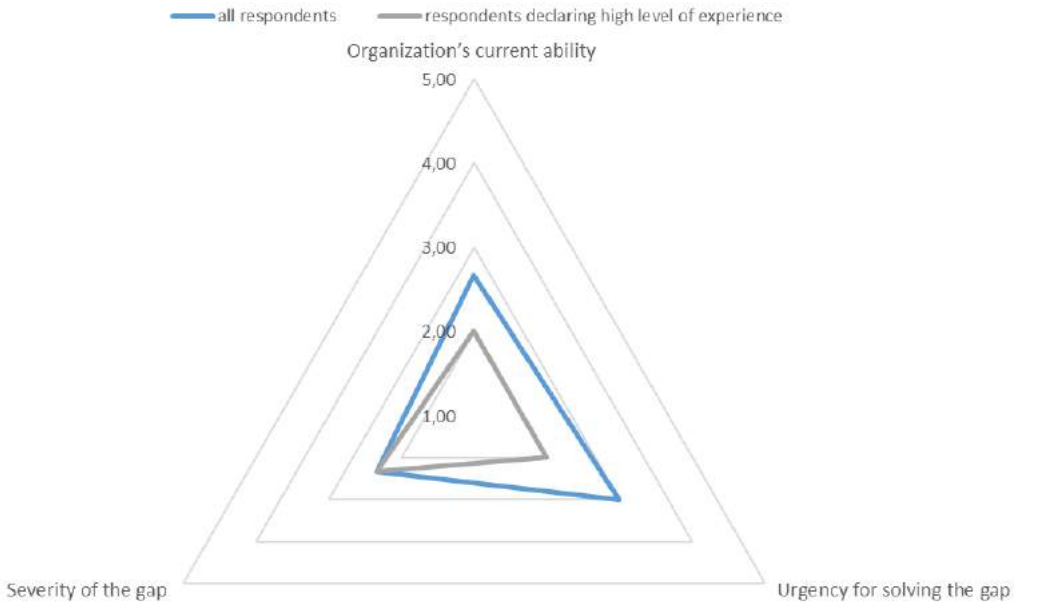


3.1.3 Gap 3 - Lack of a "Common Operational Picture" environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander

Table 3.3: Gap 3 description and assessment

Gap 3		
General description	Definition: a Common Operational Picture (COP) is a particular type of situation assessment supported by a Command and Control system which is "established and maintained by gathering, collating, synthesizing, and disseminating incident information to all appropriate parties." (21). The main challenges lay in the amount of data and therefore the selection the most relevant data for incident response; and the format of data (disparate data collection, integration and analysis). The information needs to be customised to the exact needs and discipline-specific requirements to accommodate the variety of users. Real time is crucial. The objectives of a COP are ultimately to increase situational awareness and to support real-time response decision making. References in the literature: This gap is rather well identified by most studies on crisis management capability gaps. They tend to focus on the management of large amount of data and ability to merge data with different formats.	
Description in the context of DRIVER+	*What is the current situation ("current capability")?*	*What is the capability necessary to reach adequate*

<table>
<tr><th colspan="3">Gap 3</th></tr>
<tr><td>Trial(1)</td><td>There are existing models to assess dynamics of chemical and radiological threats, providing results in different formats (qualitative descriptions, tabular data, numerical data, geospatial data, etc.). They are limited because they do not allow for the integration of all data from different models in one environment. They do not offer the possibility to compare the results obtained from different models in one place. The results are not provided in a form that is understandable and useful for incident commander, in a relatively short time.</td><td>levels of performance?
A universal tool integrating results from different models, enabling comparison in real-time, in a unique environment is seen as necessary. The outputs of such a tool should be easy and quick to interpret by incident commander (visualisation).</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The participants rather share the gap and agree on the description and the challenges, even though the situation is different from one country to the other. A netcentric working approach for situational awareness is emphasised. It is noted that incident commanders feel constrained by IT systems, and that the solution should have a strong organisational component (procedures, guidelines and experts knowing each other's). They link this gap to the need for a common understanding [see gap Gap 6 - Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations].
The question of authorisation and confidentiality of data to be shared is raised; as well as the potential vulnerability (to attack or crash) of a unique system.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Coordinate and conduct research and education – (b) Develop hazard and CM studies modelling and simulation capacity (2.5.2.b)
• Develop decision support systems (2.2.4)
• Maintain shared situational awareness (5.2.2)
• Integrate decision support (7.3.1.2)
• Integrate data collection tools (7.3.4.2)
• Monitor the affected area (8.5.1)
• Provide situational awareness, share COP (8.5.2)</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants' self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
86%</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 3


3.1.4 Gap 4 - Limits in the ability to merge and synthetize disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making

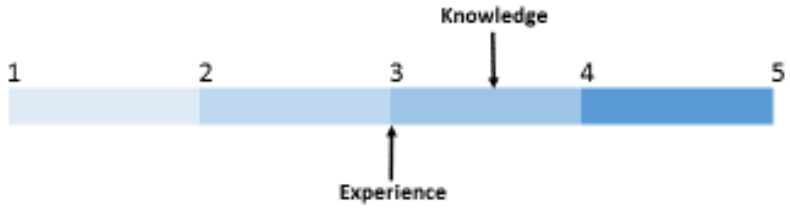
Table 3.4: Gap 4 description and assessment

Gap 4		
General description	This gap is about using different sources of raw data and turn them into actionable intelligence. This implies the ability to displaying simultaneously data from different origin first responders, but also external sources like critical infrastructure operators, local authorities, researchers. This poses challenges like the use of a unique GIS system with different formats and scales, data repository organisation, storing, access and authorisation, data update. The objectives are to increase situational awareness by a better understanding of the crisis dynamics to support real-time response decision making and allow for a better anticipation capability. References in the literature: the challenge to transform raw data is well documented in the literature, as well as the ability to re-use information from past similar events.	
Description in the context of DRIVER+ Trial(2)	*What is the current situation ("current capability")?* Different software, tools and data sets exist for incident commanders to 1) build their tactical situation map (e.g. Asphodèle for forest fire fighting); 2) understand hazard evolution like fire spreading models (those are rather used by researchers or support teams (foresters) in the post event analysis); 3) display specific critical assets (i.e. electricity network GIS layers owned	*What is the capability necessary to reach adequate levels of performance?* To support incident commander decision making, the capability to integrate in real time the above mentioned types of software, tools, data sets

Gap 4		
	by Critical Infrastructure operators); and 4) potentially similar historic events data sets (i.e. past fire contours and specific information like fire line intensity, rate of spread, amount of burnt fuel, etc. on the same area).	would be very useful to enhance decision making and support task prioritisation.
Key inputs received during the workshop	The gap is shared by the participants who also agree on a lack of willingness and a lack of resources for the integration of the different systems. They believe the solution providers are not encouraged to open their systems for integration. Data format standards are seen as a key enabling factor.	
Associated taxonomy of CM functions tags	• Coordinate and conduct research and education – (b) Develop hazard and CM studies modelling and simulation capacity (2.5.2.b) • Develop decision support systems (2.2.4) • Maintain shared situational awareness (5.2.2) • Integrate decision support (7.3.1.2) • Integrate data collection tools (7.3.4.2) • Monitor the affected area (8.5.1) • Provide situational awareness, share COP (8.5.2)	

Results from questionnaire

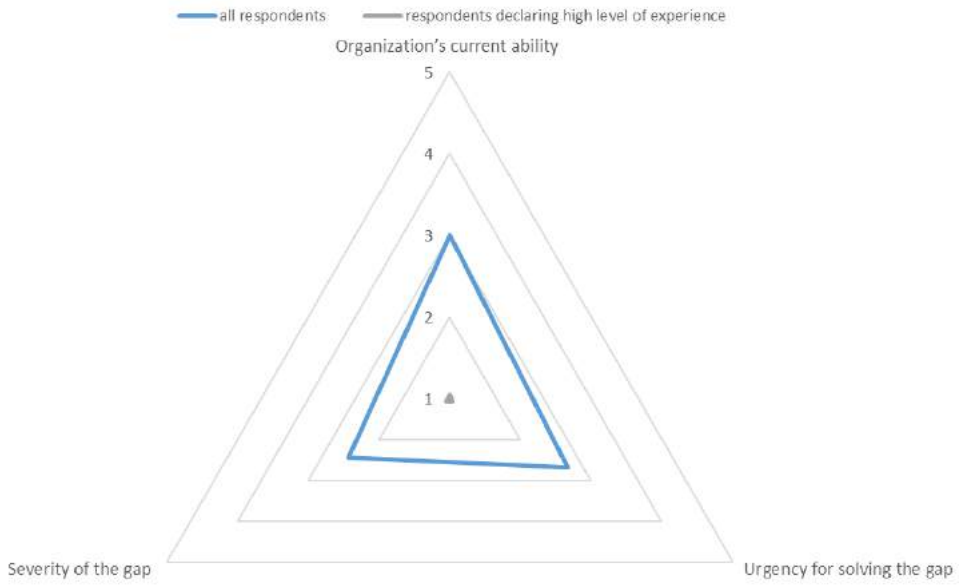
Participants' self-declared expertise:



Acknowledgement of the gap:

86 %

Assessment of the gap:



3.2 Information sharing and coordination

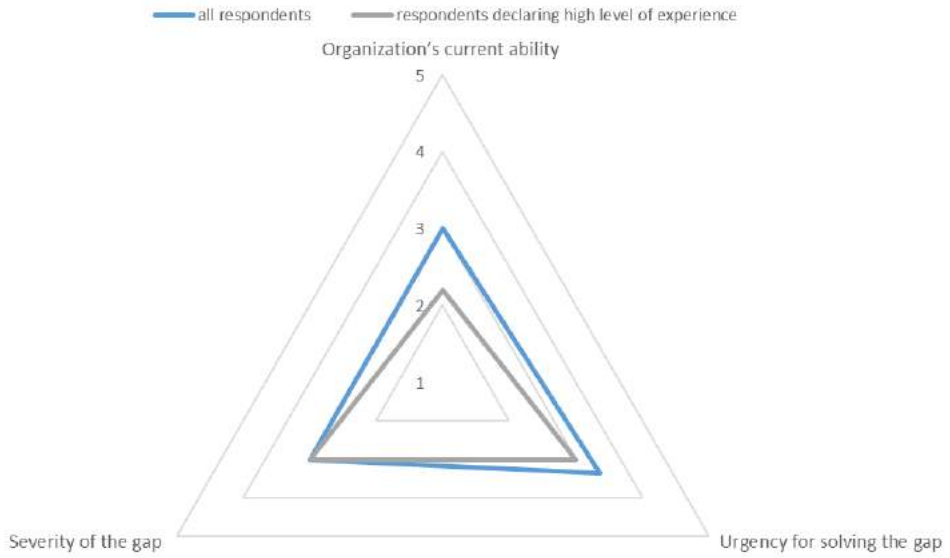
The group discussing the gaps related to information sharing comprised experts from France, the Netherlands, Germany, Sweden, Greece and Portugal. They represent a variety of responsibilities: senior fire fighter officers (notably aerial firefighting mission managers), military fire-fighters officers, civil protection training officers, Red Cross project manager, rescue team manager.

3.2.1 Gap 5 - Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)

Table 3.5: Gap 5 description and assessment

Gap 5		
General description	Interoperability is multi-dimensional; it can be legal, organisational, semantic or technical. • Technical dimension: the huge amounts of available and shared information can have adverse effects in terms of efficiency. As systems are not interoperable, there is a preference for verbal communication, and 'outdated' technologies. New systems to be developed should enable information exchange with legacy systems (as not all of them will be replaced in the near future). • Organisational and legal aspects the mandate and willingness to share such information between levels of government or agencies ("need to know" policies) remain low, with confidentiality issues laid down as a limiting factor. The relevant information to be shared needs to be defined, and training is an absolute necessity to support interoperability. References in the literature: this gap is widely documented in its different faces in the literature.	
Description in the context of DRIVER+ Trial (2, 3, 4)	*What is the current situation ("current capability")?* In France civil protection operational centres use a system called SYNERGI (including functionalities such as day-log, a repository of reference documents, a directory of the services) to share information from departmental up to zonal and national levels, and SYNAPSES for Geographic information. Other services like Police, health services, declined the possibility to use this tool. LCMS system (Netherlands) cannot support text or geodata sharing between the first responders and other actors involved in crisis management (telecom, water boards, traffic management, red cross…) in one information system. Several information exchange standards have been developed (TSO, CAPS, OASIS, EDXL, JXDM, NIEM, etc). There is a general lack of knowledge and understanding of the type of information necessary, while preventing the overflow of information The language barrier is notably problematic in	*What is the capability necessary to reach adequate levels of performance?* The capability to support inter-agency information sharing based on appropriate procedures and context-based information-sharing schemes. The willingness to collaborate is a prerequisite (political considerations, confidentiality, competition, human behaviour, lack of financing, etc.)

Gap 5		
	day book for automatic translation. There is a general tendency to use liaison officers between organisations to address this gap.	
Key inputs received during the workshop	This gap is widely shared across the participants, even if the situation differs among them. In most represented countries, there is no shared system between public organisations participating in the response. However, in the Netherlands, the gap is more about sharing of information with the second circle of actors (network operators, Red Cross organisation, etc.). The participants insist on the importance of the non-technical aspects of the gap (willingness to share information, organisational and procedural dimensions). They also highlight that this is a gap mainly for large crisis at a regional to national level. It is not as significant in the case of smaller crisis at a more local level.	
Associated taxonomy of CM functions tags	• Identify stakeholders' CCIM capabilities and procedures (7.1.1.1) • Regulate access to CM communications and information -- b. Coordinate across the state agencies, local authorities, private entities, and volunteer organisations to develop crisis communications and information management documentation and procedures (7.1.3.b) • Develop communications policy, plans and procedures (7.2.2) • Establish crisis communications capabilities (7.3.2) • Define information management procedures (7.3.4.5) • Provide communications and information support to C3 (7.5.2) • Provide situational awareness, share COP (8.5.2)	
Results from questionnaire		
Participants' self-declared expertise: 		**Acknowledgement of the gap:** **100%**
Assessment of the gap:		

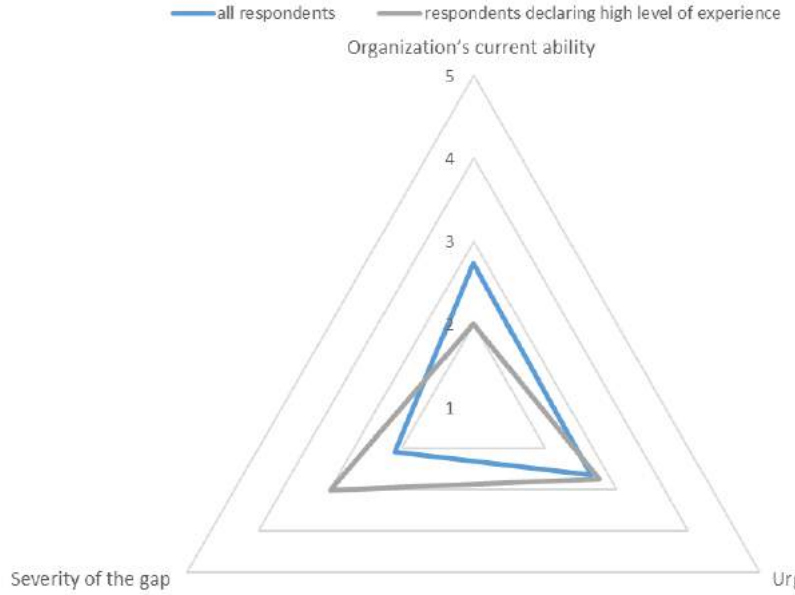
Gap 5


3.2.2 Gap 6 - Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations

Table 3.6: Gap 6 description and assessment

Gap 6		
General description	Different organisations and countries that are not collaborating in daily business may have to work together in large crisis during which a common understanding of the situation and access to the latest information is crucial. The barriers between units come from different natural languages but mainly from different terminology and taxonomy. There is ongoing work towards symbology harmonisation (INDIGO) but they are not implemented widely. Priority areas where common terminology is needed have to be identified and a standard terminology needs to be agreed in such areas. Tools and mechanisms to support the dissemination and implementation of common terminology are necessary, as well as exercises to support the harmonisation of terminology or the mutual understanding of different terminologies. References in the literature: this gap is well recognised and detailed in the literature.	
Description in the context of DRIVER+ Trial (2)	*What is the current situation ("current capability")?* In French civil protection, there is an agreed graphic representation of tactical situation and command instructions («charte graphique »), that is implemented in tools supporting tactical situation	*What is the capability necessary to reach adequate levels of performance?* The ability for a crisis manager to understand precisely any material prepared by any organisation taking part in the crisis response, and, in the other hand, the insurance, for a crisis manager that the information he shares will be fully understood. This rests on a uniform interpretation of key values as well as

<table>
<tr><th colspan="3">Gap 6</th></tr>
<tr><td></td><td>maps (Asphodèle or instance). Other organisations have no understanding of such tactical maps because there is no harmonisation between different agencies in France, let alone with foreign agencies.</td><td>icons and symbols when using situation maps and graphics, a uniform representation of emergency management information (i.e. characteristics of entities), and compatible data exchange formats (automatic exchanged between ICT systems).</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">Even though most participants agree that common understanding across organisations is a gap, the status of the gap is not the same in all countries. Some countries see specific terminologies written in the law, which is not however a guarantee that it is used widely in the field. Some countries allow for two languages framework one that is specific for exchanges within an organisation and an agreed language for sharing information across organisations. It also happens that common understanding is a gap between different hierarchical level of a same organisation.
The role of a liaison officer is perceived as essential by the participants.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Regulate access to CM communications and information -- b. Coordinate across the state agencies, local authorities, private entities, and volunteer organisations to develop crisis communications and information management documentation and procedures (7.1.3.b).
• Establish crisis communications capabilities (7.3.2).
• Set-up dissemination and information sharing (7.3.4.8).
• Establish internal coordination: Between various ministries, agencies or policy sectors (horizontal); between parent ministry and subordinate agencies/bodies in the same sector /vertical/ (8.4.1).
• Establish CM rules and standard operating procedures (2.4.4).
• Provide training for interoperability between organisations and command levels (2.5.3.4).</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants' self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
82 %</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 6


3.2.3 Gap 7 - Lack of mutual knowledge or alignment of operational needs and procedures between different organisations responding to the same crisis scenario

Table 3.7: Gap 7 description and assessment

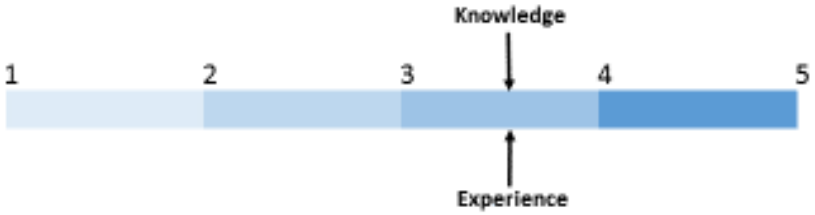
Gap 7		
General description	A preparatory knowledge and understanding of the capabilities and capacities of the organisations involved in crisis management are necessary for crisis managers, including information on assets, tasks, objectives, constraints, budget, logistics and competencies. The challenges are to find a common language for describing capabilities, as well as finding processes for keeping capability catalogues up-to-date and to share this information across organisations (confidentiality issues). OCHA has developed several systems to allow organisations to declare what capacity they have deployed in which areas (Who-What-Where directories; 3W OCHA). Such systems become de-facto standards once they reach a critical mass. Certifications already exist in specific domains: INSARAG (Search and Rescue), EMT[13] (fields hospitals), etc.	
Description in the context of DRIVER+ Trial (3)	*What is the current situation ("current capability")?* Each organisation or agency is focusing on one specific domain. The Red Cross Volunteers do not know the other agencies' procedures and strategy and the	*What is the capability necessary to reach adequate levels of performance?* A common knowledge about other's procedures and strategies and the sharing of procedures and plans is necessary to close this gap.

[13] EMT a World Health Organisation project to standardise medical units providing cross border assistance (see www.who.int/hac/global_health_cluster/fmt_guidelines_september2013.pdf- 809k)

Gap 7		
	other agencies do not know what to expect from Red Cross volunteers.	Standardisation of procedures and common training will support this process.
Key inputs received during the workshop	There is a general acknowledgement of this gap. A unified command across organisations does not necessarily imply that there is an alignment in terms of procedures. However, the gap is not exactly the same if one considers the local, regional or national levels.	
Associated taxonomy of CM functions tags	• Conduct coordinated tasking and resource management (5.2.3) • Establish C3 procedures (8.1.4) • Establish professional coordination (8.4.3) • Establish transborder coordination (8.4.4) • Provide training for interoperability between organisations and command levels (2.5.3.4)	

Results from questionnaire

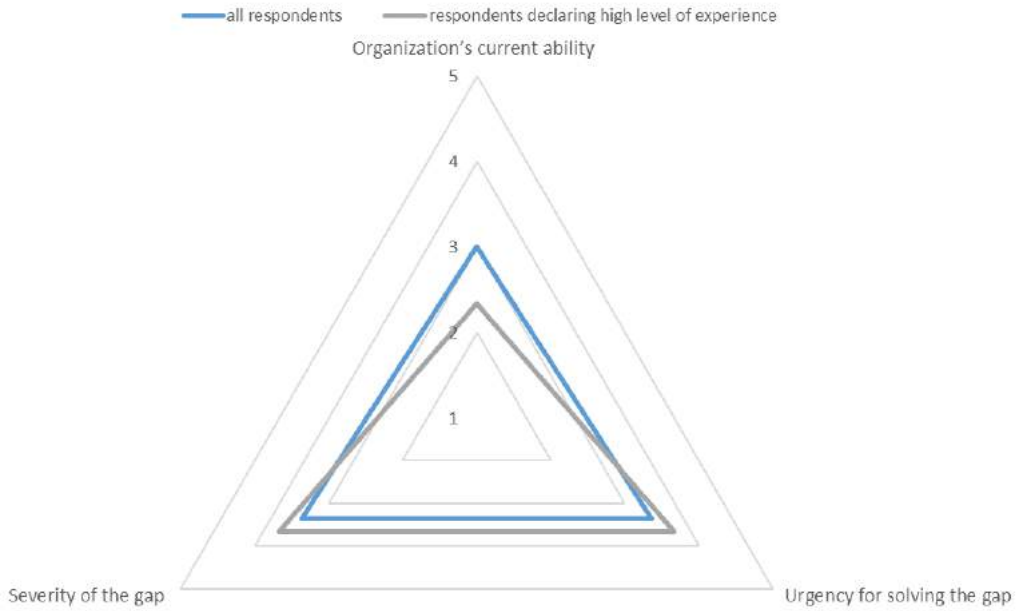
Participants' self-declared expertise:



Acknowledgement of the gap:

100 %

Assessment of the gap:

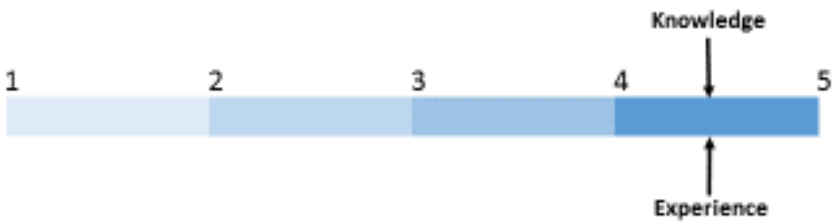
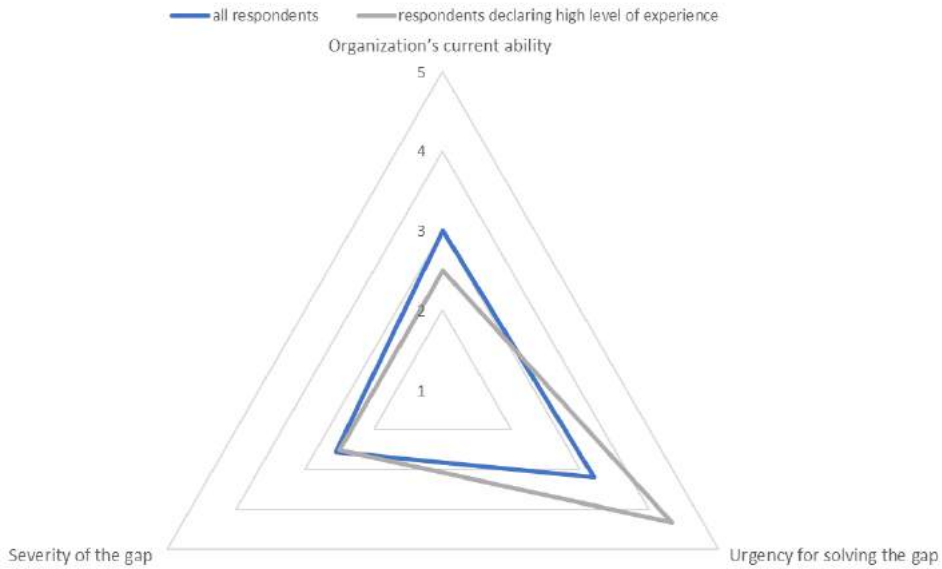


3.2.4 Gap 8 - Insufficient understanding of the overall current and planned response efforts as well current strategies across organisations during a crisis

Table 3.8: Gap 8 description and assessment

<table>
<tr><th colspan="3">Gap 8</th></tr>
<tr><td>General description</td><td colspan="2">There is insufficient situational awareness of the overall status, progress and planned efforts during relief operations both for the current situation, and to anticipate upcoming deployments (strategy).
Large-scale incident response requires a coordinated effort across multiple agencies and jurisdictions. This implies to know, in real time, the availability, location and status of all resources, and to anticipate timelines for delivery.
As agencies rely on different techniques and tools to track their resources, it might be clear what one agency has available but there is no ability to obtain a holistic picture for incident command.
References in the literature: this gap is well identified and documented in the literature.</td></tr>
<tr><td>Description in the context of DRIVER+ Trial (3)</td><td>What is the current situation ("current capability")?
Each organisation uses different databases and solutions and there is a lack of common space to share response information in-real time. The operational protocols differ, and there is no willingness to share information.</td><td>What is the capability necessary to reach adequate levels of performance?
The use of a COP, accessible to all organisations involved in the response, enabling the sharing of information regarding allocation of resources. Common training is key to support this process.</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">There is an agreement among the participants that there might not be a big gap in the case of lower scale or medium scale crisis or when it touches only one area or region. However, when the crisis escalates up to a higher level or a cross regional territory, it is clearly a gap. This issue is very much related to the question of interoperability across organisations [see Gap 5 - Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)], as well as common understanding [see Gap 6 - Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations]</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Raise awareness and anticipate (4.1.2).
• Conduct operational planning (4.2).
• Maintain shared situational awareness (5.2.2).
• Conduct coordinated tasking and resource management (5.2.3).
• Provide situational awareness, share COP (8.5.2).</td></tr>
<tr><th colspan="3">Results from questionnaire</th></tr>
<tr><td colspan="2"><u>Participants' self-declared expertise:</u></td><td><u>Acknowledgement of the gap:</u>

100 %</td></tr>
</table>

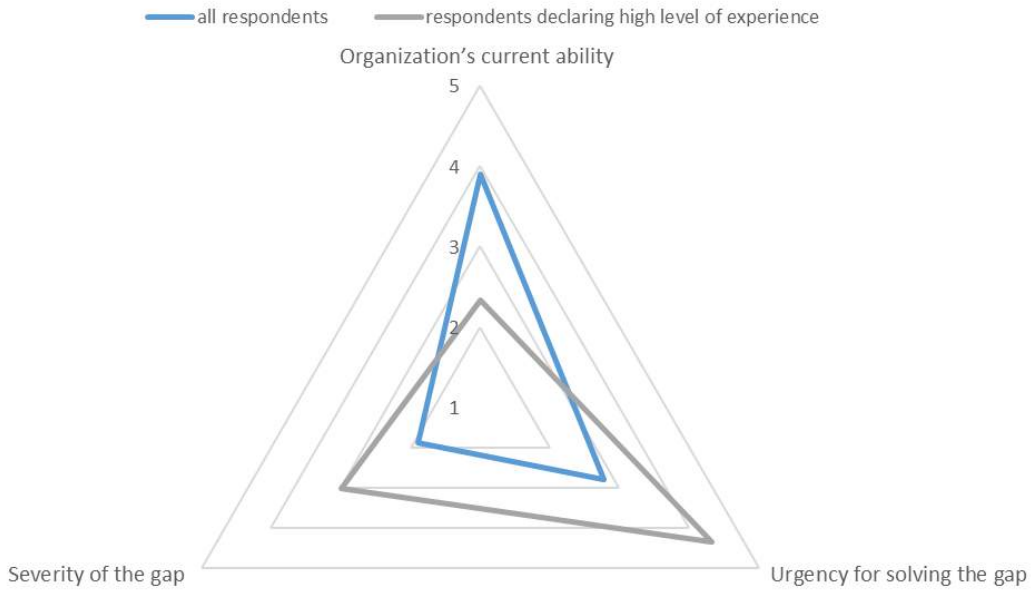
Gap 8	
	
Assessment of the gap: 	

3.2.5 Gap 9 - Lack of common doctrines and procedures supporting international cooperation in aerial firefighting

Table 3.9: Gap 9 description and assessment

Gap 9		
General description	Means are limited to fight large forest fires and new areas are getting more and more affected because of climate change (i.e. example of Sweden). Such areas are less experienced in responding to such crisis (less mature procedures, available material for suppression operations). Support from other countries is therefore key either through bilateral support or through the EU Civil Protection Mechanism, coordination by ERCC. Currently, the EU budget only finances a share of transport costs, but not the operational costs. In the future co-financing is planned to go up to 75% of operational costs. To address the remaining capacity gap notably because forest fires usually ignite and develop around the same period across large zones (i.e. Mediterranean environment), the European Commission (RescEU) plans to acquire its own fire-fighting aircraft with the operational control retained by the European Commission, that will be activated when European Civil Protection Pool is insufficient or overwhelmed.	
Description in the context of DRIVER+ Trial (2)	*What is the current situation ("current capability")?* France has declared 2 Canadair (fire-fighting) and	*What is the capability necessary to reach adequate levels of*

<table>
<tr><th colspan="3">Gap 9</th></tr>
<tr><td></td><td>1 Beech 200 (logistics and airborne reconnaissance) in the European Voluntary Pool. It is part of the Canadair Euro-Mediterranean Informal Group (FR, IT, SP, PT, GR, HR) which aims at:
Developing a flight safety network (mishap database).
Sharing national limitations, regulations and procedures: scooping area limitations, emergency procedures, main and alternate operating airports, aircrew on-duty limitations, rules of engagement, on fire procedures.
Sharing frequencies: air-to-ground, air-to-air.
Sharing standard Operating Procedures (SOPs): pre-flight briefing, flight, on-fire operations.
Organising joint training.</td><td>performance?
Further sharing of national regulations and SoPs is necessary before working towards SoPs interoperability and harmonisation. A shift from means based discussion (Canadair) towards objective based discussions is required.
Procedures for RescEU means need to be discussed and agreed.</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">This specific gap was not relevant for all participants because 1) their country is not directly affected (or not often at least) by large forest fires or 2) because their organisation does not take part in aerial firefighting operations.
Participants remind that bilateral agreement for aerial firefighting support exists at national but also at regional or local levels.
On the side of the country receiving support, it is not always clear what are the capabilities from the supporting units nor what are their needs.
Timing is the most important factor in aerial firefighting. When supporting means arrive, the fire as most often develop so largely that the suppression operations are not so effective. However, the support is very important to prevent other fire ignitions in the surrounding area.
Participants illustrated the discussion with the case of support from France and Italy to Sweden in summer 2015.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">Manage international support (5.2.5).
Establish coordination with societal, private and international organisations (8.4.2).
Manage and support International responders (8.5.8).</td></tr>
<tr><th colspan="3">Results from questionnaire</th></tr>
<tr><td colspan="2"><u>Participants' self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
78 %</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 9


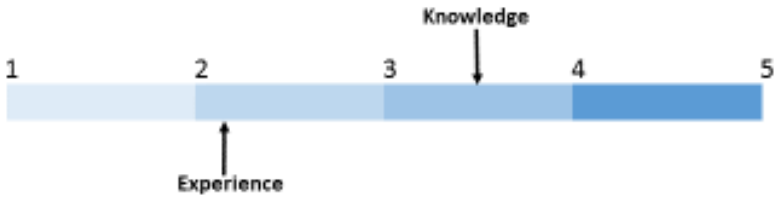
3.3 Engaging the population (warning, crowd-sourcing, crowd-tasking volunteers)

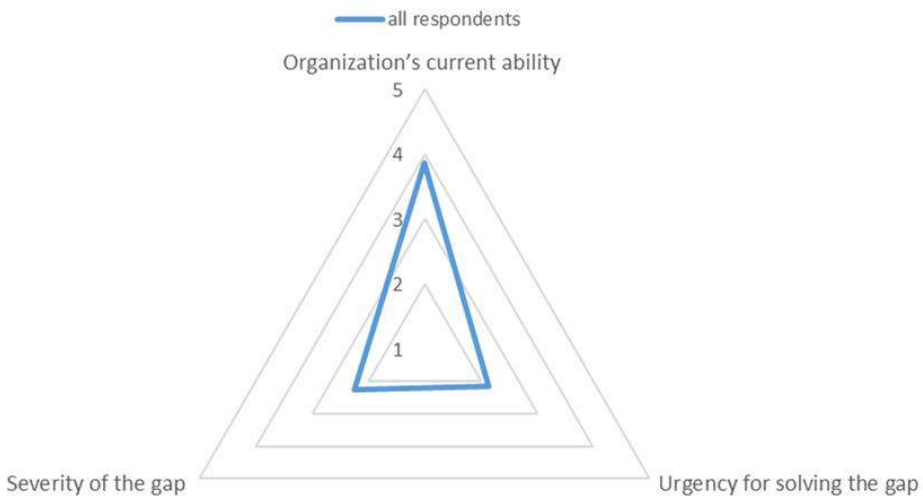
The members of the group discussing the gaps concerned with population engagement at the workshop came from France, the Netherlands, Italy, and Sweden. Their respective positions include: civil protection managers, fire fighter officers (in charge of coordination, or strategy) local authority situation assessment manager, fire brigade social media and community manager, local authority senior adviser, Red Cross program manager, Red Cross emergency planning and response officer.

3.3.1 Gap 10 - Lack of effective public warning systems with the ability to verify whether the information reached the recipient

Table 3.10: Gap 10 description and assessment

Gap 10		
General description	Early warning is critical when it comes to minimise the number of casualties and limit the consequences of the crisis (preventing cascading events). The improvement of prediction capabilities (early warning information needs to be more understandable by responders and/or public) and the improvement of the dissemination of disaster alerts, notably to reach vulnerable groups are two main aspects in this regard. The use of social media to monitor the population reaction to an alert, and to some extent check the reception of the information using sentiment analysis or reality mining can provide useful information regarding the attitude of people. References in the literature: there are gaps identified in the literature about early warning systems and the capability to alert vulnerable groups, but nothing was found regarding the verification of the reception of the message by the target audience.	
Description in the context of DRIVER+ Trial (1)	*What is the current situation ("current capability")?* The current warning	*What is the capability necessary to reach adequate levels of performance?* The desired capabilities include: • Assessment of the effectiveness of the warning (and if

<table>
<tr><th colspan="3">Gap 10</th></tr>
<tr><td></td><td>systems are based on sound sirens and mass media networks (radio, TV). Social networks or ground transmitters of mobile communication are starting to get used.</td><td>all the targeted people were reached)
• Verification of the credibility of the information source for social networks
• Reach vulnerable people (blind, deaf, elderly people) and different nationalities or cultural backgrounds
• Provide procedures and guidelines accommodating specificities for different kind of threats
• Tailoring the information to the group specificities
• Assimilating variability of (inadequate) reactions of people depending on culture and consciousness level</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The participants consider the gap is particularly important in the case of evacuations. They insist on the fact that the alerting system needs to be checked before crisis, not during, and that there is no “one-solution-fits-all”. On top of the message being delivered, the participants believe it would be great to have the capacity to check if specific vulnerable groups have received the message and if the message has been understood.
Socio-cultural differences are highlighted, for instance Sweden being a highly digitalised society, the capacity of verifying the reception of warning is more important therefore Swedish participants do not consider it as a gap. The dependence on smartphones is very high.
The question is raised regarding the liability issues of agencies in charge of checking the message reception.
Proposition to put “system” in plural form in the gap statement.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Develop integrated warning and alerting (2.2.1).
• Improve communities’ preparedness, responsiveness, learning, self-organisation, and innovation (3.4.3).
• Develop communications policy, plans and procedures (7.2.2).</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants’ self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap</u>:
86%</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 10


3.3.2 Gap 11 - Shortcomings in policy and procedures for communicating with the public during a large crisis

Table 3.11: Gap 11 description and assessment

Gap11		
General description	Communication between emergency services and civilians during a crisis is a key element to minimise the number of casualties. Crisis communication aims at 1) alerting and updating the population about an incident or threat; 2) providing advices about desirable behaviour; 3) informing on response activities to avoid interference and minimise inquiries to active responders; 4) asking for/receiving support from citizens, the bi-directional communication being reinforced by social media support. The messages have to be clear and unified among responding authorities and understandable by vulnerable groups such as disabled, elderly people, or foreigners. It is a specific challenge in cross-border situations as, across the EU, Member States there is almost no harmonisation towards alarming the population. References in the literature: The literature is widely addressing crisis communication in general.	
Description in the context of DRIVER+ Trial (4)	*What is the current situation ("current capability")?* Only very general guidelines on communication policy and procedure for large crisis are available. Communication means are based on outdated technologies and phone (issues of network robustness).	*What is the capability necessary to reach adequate levels of performance?* Policy and procedure developments should come first and be supported by solutions for two ways communication flows enabling responders to send warning and advices to citizens, and citizens to send real time information to crisis manager or accomplish simple assignments. Training of the citizens on the use of such solutions will be necessary.
Key inputs received during the workshop	Socio-cultural differences had an impact on the participant's understanding and assessment of the gap, notably with regards to differences between	

Gap11	
	Northern and Southern EU-countries. The issue of alerting related "responsibility" was mentioned by several participants. All participants though emphasised the importance of analysing past events' crisis communication (terrorist attack in Stockholm, "4 days of Nijmegen", etc.) and draw lessons learnt.
Associated taxonomy of CM functions tags	• Develop integrated warning and alerting (2.2.1). • Maintain public awareness on hazards and respective services (4.1.2.3). • Develop communications policy, plans and procedures (7.2.2). • Communicate hazard information to the public (7.5.1.3). • Deliver public information and advice (8.5.15).

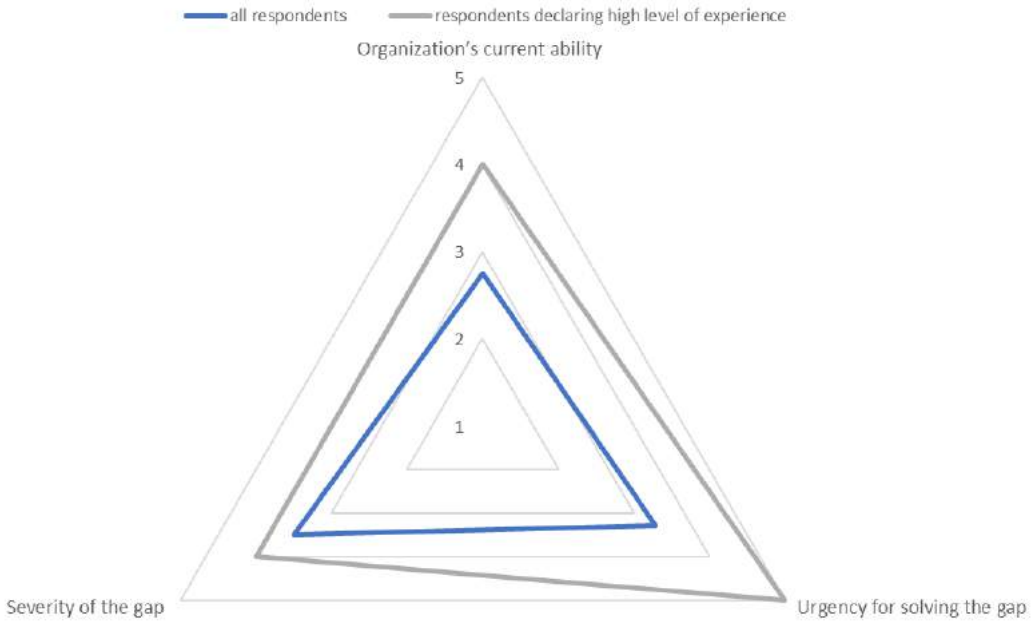
Results from questionnaire

Participants' self-declared expertise:

Acknowledgement of the gap:

63 %

Assessment of the gap:



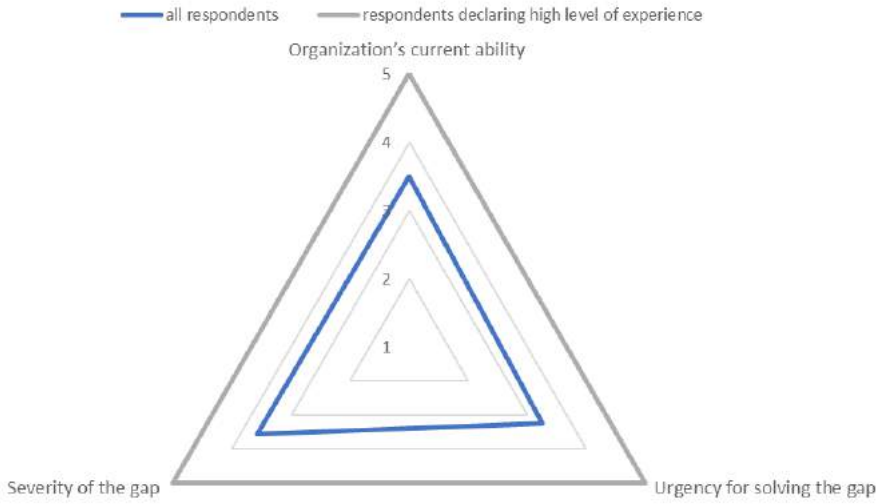
3.3.3 Gap 12 - Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations

Table 3.12: Gap 12 description and assessment

Gap 12	
General description	Social media provides opportunities to enrich situational awareness. However, there is a need to turn raw data into actionable information or intelligence by adding context, validating content and linking follow-on

<table>
<tr><th colspan="3">Gap 12</th></tr>
<tr><td></td><td colspan="2">information to provide added value.
Challenges lie with the amount of data to be treated and the integration of different formats of data and their displaying onto a unique environment.
There are also issues regarding the trustworthiness of sources and the capturing of social media posts in real time on the crisis scene (legal constraints).
<u>References in the literature</u>: this gap is widely recognised and described in the literature, often in relation with terrorist attacks types of crisis.</td></tr>
<tr><td>Description in the context of DRIVER+ Trial (2, 3)</td><td>What is the current situation (“current capability”)?
There is currently a lack of adequate software supporting the gathering, vetting for trustworthiness, organising and displaying of data from social media Crisis operational centres rely on in-house digital information managers and on expert human analysts belonging to voluntary based organisations such as VISOV (Volontaires Internationaux en Support Operationnel Virtuel) or QUIDAM.
The treatment of social media inputs is now more and more integrated into crisis management exercises (using simulated or real historic inputs).</td><td>What is the capability necessary to reach adequate levels of performance?
The desired capabilities include the ability to
filter inputs by category of user or contributor and automatically emphasis on trusted sources while filtering out the others
display posts on a GIS system with a map, categorising and clustering inputs
Generate and simulate large amounts of accurate inputs for training</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The validation and vetting of information is recognised as a gap. The link between the social media officer and the crisis manager or incident commander greatly differs between countries or organisations. The training of social media officers is one of the most important factor on which the operational units are currently working. Generation gap regarding the use of social media is seen as an important point by the participants.
The issue of “responsibility” in the operational use of such information was mentioned during the discussion.
In general, any support expected from technical solutions to close this gap is not really mentioned by the participants.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">Prepare for crowd tasking (2.3.2.6).
Provide for crowd sourcing (7.3.1.3).
Monitor media coverage (7.5.5).
Ascertain the quality of data (7.3.4.4).</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants’ self-declared expertise:</u></td><td><u>Acknowledgement of the gap:</u>

100 %</td></tr>
</table>

Gap 12	
	
Assessment of the gap: 	

3.3.4 Gap 13 - Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration

Table 3.13: Gap 13 description and assessment

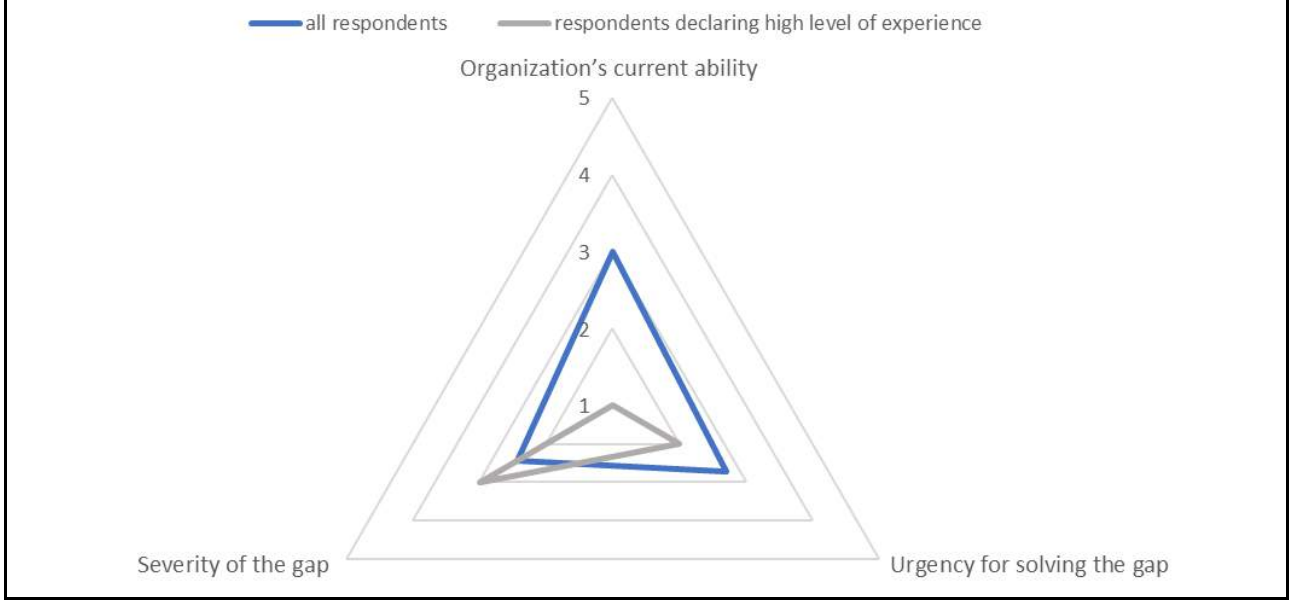
Gap 13	
General description	There are different types of volunteers with different capabilities and needs: • Spontaneous volunteer: "Individual who is not affiliated with an existing incident response organisation or voluntary organisation but who, without extensive preplanning, offers support to the response to, and recovery from, an incident"[14] • Affiliated volunteers: "These volunteers are attached to a recognised voluntary agency that have trained them for disaster response and has a mechanism in place to address their use in an emergency"[15] • "Digital volunteers": providing support on social media The main challenges regard the registration, management and communication with unaffiliated volunteers during an incident or disaster (typically done onsite during the crisis) and the limited communication and team work among unaffiliated volunteers.

[14] (ISO 22319:2017)

[15] FEMA

<table>
<tr><th colspan="3">Gap 13</th></tr>
<tr><td></td><td colspan="2">Training methods and procedures exist to coordinate and manage affiliated volunteers, but not for spontaneous volunteers (development of serious games ongoing).
References in the literature: this gap is widely recognised and well detailed in the literature.</td></tr>
<tr><td>Description in the context of DRIVER+ Trial (3, 4)</td><td>What is the current situation (“current capability”)?
Affiliated volunteers are trained, understand their roles, and work in teams, which is not the case of spontaneous volunteers. The Austrian Red Cross has developed the Team Österreich (TÖ) methodology to identify potential spontaneous volunteers before crisis through registration in a web-based database. The pre-registered volunteers can be selected according to their qualifications and alarmed immediately (via SMS and e-mail) in case of emergency. Their assignments are simple, like sorting, packing and distributing relief goods, shoveling snow, filling sand bags. TÖ is being developed in order to send information and allocate tasks using smartphones.
The Dutch Red Cross has started the project Ready2Help, inspired from TÖ.</td><td>What is the capability necessary to reach adequate levels of performance?
To make extensive use of spontaneous volunteers in large crisis, procedures need to be developed as well as solutions to monitor location and shift duration.</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The status of this gap differs across the participants’ countries notably because of the national legal framework (in some countries unaffiliated volunteers are not authorised). There is disagreement in terms of the added value brought by unaffiliated volunteers as for some participants they represent a great potential resource while for others the advantage is largely superseded by the necessary additional efforts required to manage such a resource. This gap generated particularly lively discussions and raised a lot of interest from the participants.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Manage spontaneous volunteers (5.2.4.5).
• Prepare for crowd tasking (2.3.2.6).
• Provide for crowd sourcing (7.3.1.3).
• Regulate access to CM communications and information -- b. Coordinate across the state agencies, local authorities, private entities, and volunteer organisations to develop crisis communications and information management documentation and procedures (7.1.3.b).
• Train individuals, teams and organisations (2.5.3).</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants’ self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
71 %</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 13



3.3.5 Gap 14 - Low awareness and lack of ability to address the risks of adverse mental health effects and decreased psychosocial wellbeing in spontaneous and trained volunteers following response operations

Table 3.14: Gap 14 description and assessment

Gap 14		
General description	Volunteers are more vulnerable to adverse mental health reactions and psychosocial ill-being during and following a crisis intervention than salaried staff working as crisis responders on a daily basis. Volunteers are more vulnerable because they are part of the community they serve and therefore exposed to the same losses and challenges, volunteers receive limited training, have less or most often no crisis experience and they are younger. These vulnerabilities apply even more strongly to spontaneous volunteers than affiliated volunteers. Identification with victims as a friend, low protection of personal safety, severity of exposure to gruesome events and stories during disaster work, anxiety sensitivity, and lack of post-disaster social support, unrealistic expectation of own abilities, heroic aspirations, ill-defined or poorly understood tasks and lack of perceived support from team leaders and the organisation lead are among the main contributors to increase vulnerabilities and related to greater psychopathology among volunteers post-event. References in the literature: Responders health and safety is addressed by the literature, including mental health and psychosocial issues. However, the specific case of volunteers has received very limited interest and requires significant attend from research to be understood.	
Description in the context of DRIVER+ Trial (3)	*What is the current situation ("current capability")?* Some volunteer-based crisis response organisation (notably some Red Cross National Societies) and other humanitarian	*What is the capability necessary to reach adequate levels of performance?* Awareness raising is a key issue as well as the training

Gap 14		
	organisations have policies and procedures for taking care of volunteers, but they are limited. Support material exists to compressively leads this process (caring for volunteers), but the implementation is massively lacking.	of professional staff and volunteers to support special needs of volunteers.
Key inputs received during the workshop	There was disagreement in terms of acknowledgement of this gap among the participants. However, this gap is also about the awareness of such a problem so the fact that not all participants recognise this problem might be insightful in this regard. Even though DRIVER+ is not focusing on this aspect, the panel discussed that in some cases the gap would also apply to staff who are not regularly deployed on crisis scene. Generally, this gap required more explanations. The participants recommended to sharpen the description and to focus more on management of the adverse mental health effect and psychosocial ill-being, not only on the awareness aspect. Following discussions during the workshop the gap statement as well as the description was reformulated by the partners taking into account both inputs from the workshop and state of the art research.	
Associated taxonomy of CM functions tags	• Manage organised volunteers (5.2.4.4). • Manage spontaneous volunteers (5.2.4.5). • Provide off-site health and MHPSS services (5.4.5). • Provide MHPSS (5.4.7). • Restore critical medical and MHPSS services (6.4.1).	

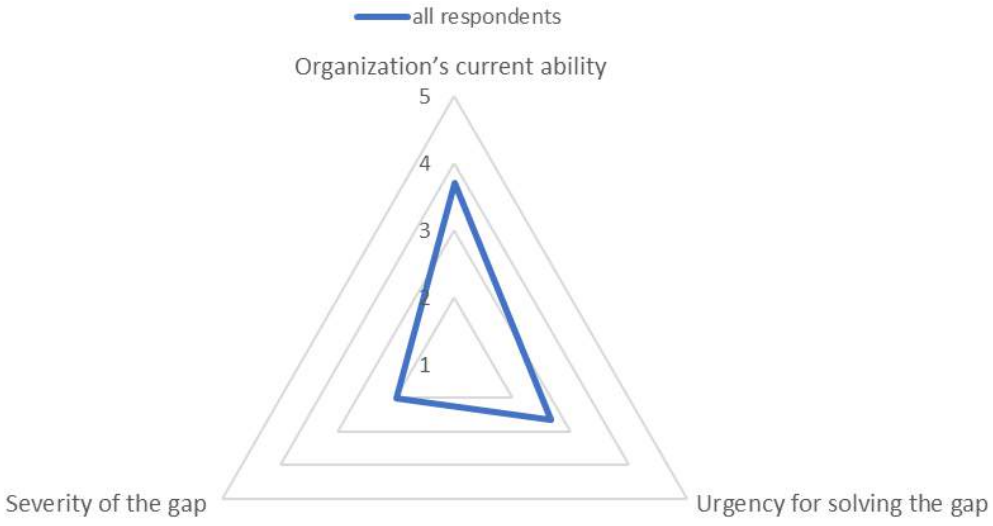
Results from questionnaire

Participants' self-declared expertise:

Acknowledgement of the gap:

57 %

Assessment of the gap:



3.4 Resource planning and logistics

The group discussing gaps in the area of resource planning and logistics include military support to civil protection manager, waterboard managers and flooding experts, local authority advisor for crisis management, fire fighter officers (including with training responsibilities), medical emergency manager, project coordinator for health, emergency physician in firefighter brigade, Red Cross project manager. The represented organisations are from The Netherlands, France, Germany and Portugal. The same group also discussed the gaps about casualty management presented in section 0.

3.4.1 Gap 15 - Insufficiencies in terms of resource management (humans resources, hardware, etc.) during multi-stakeholder long-term response operations

Table 3.15: Gap 15 description and assessment

Gap 15		
General description	Large-scale incident response requires a coordinated effort across multiple agencies and jurisdictions to know, in real time the availability, the location and status of all resources, and to anticipate timelines for delivery. Agencies rely on different techniques and tools to track their resources, therefore, even if it might be clear what one agency has available, there is no ability to obtain a holistic picture for incident command. There is a limited ability, to determine the status of request for resources, the estimated time of arrival or destination location. Data integration field is mature (available products integrating data from different operating systems, database formats and programming languages), but is not applied to the integration of public safety resource databases. References in the literature: this gap is extensively identified and detailed in the Crisis Management literature.	
Description in the context of DRIVER+ Trial (1)	What is the current situation ("current capability")? Individual agencies have solutions providing information about available resources; like the number of responders and their skills, vehicles, equipment, the geolocation of responders or vehicles, and the stocks in governmental and non-governmental agencies warehouses. There are however limits in integrating data from different participating agencies into a holistic picture of resources available for incident-specific response.	What is the capability necessary to reach adequate levels of performance? A solution which allows to integrate resource data from different participating agencies, to show geolocation of all resources on one map, to predict and calculate e.g. fuel, food, drinking water requests in long-term operations, and to transfer information and status of such requests from responders to decision-makers.
Key inputs received during the workshop	This gap is unanimously shared by the participants. They agree with the description even-though some questions about terminology are raised (definition of "large-scale", "limitations"). Connections are made with the gap related to information sharing between agencies. The geo-referencing of resources is also mentioned as being an important point.	
Associated taxonomy of CM functions tags	• Manage the system of reserves (2.2.10). • Maintain shared situational awareness (5.2.2). • Conduct coordinated tasking and resource management -- c. Pool and share resources (5.2.3.c); d. Assign resources to tasks (5.2.3.d). • Determine materiel requirements (9.2.1).	

Gap 15	
	• Create common operational framework for prioritisation (9.2.6).

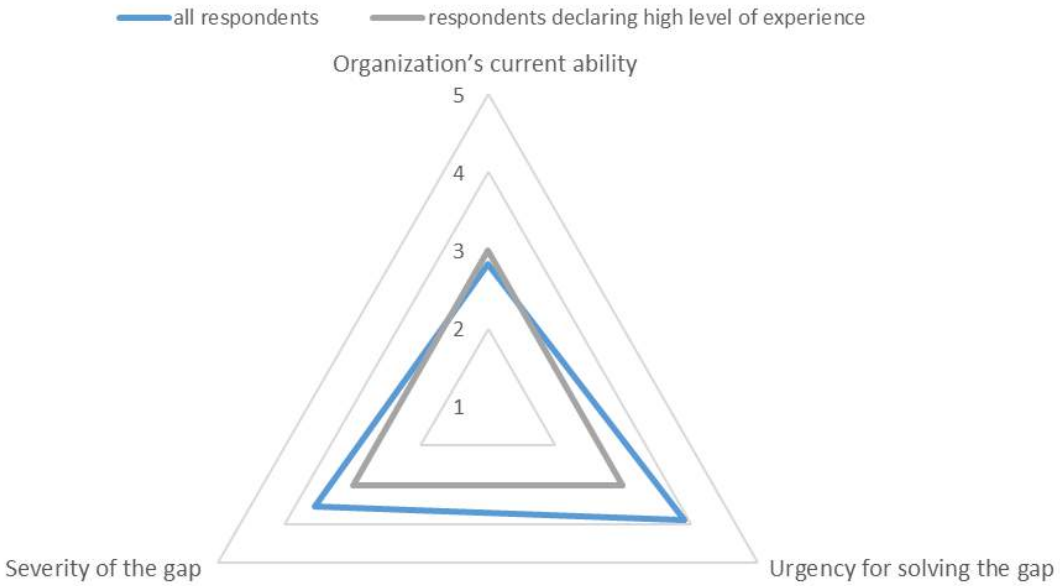
Results from questionnaire

Participants' self-declared expertise:

Acknowledgement of the gap:

100%

Assessment of the gap:

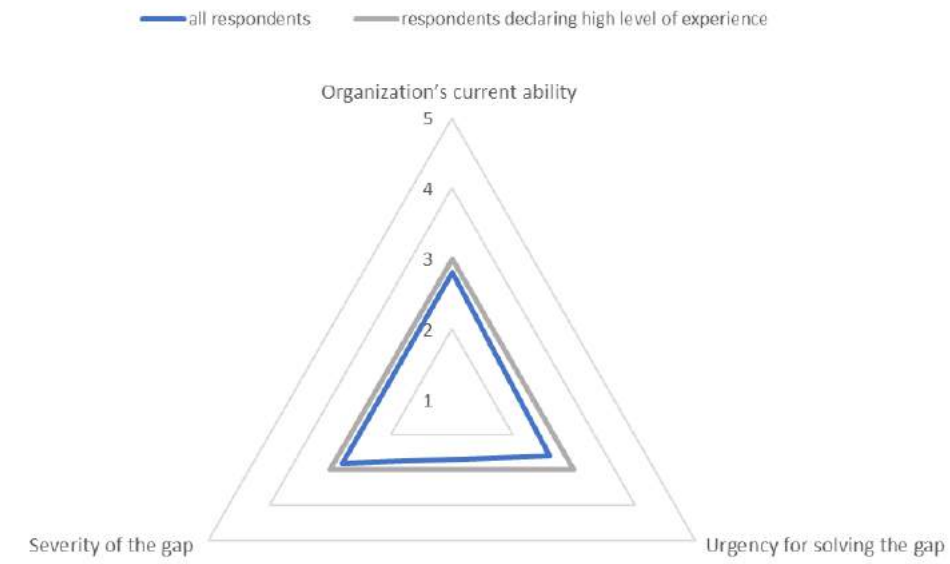


3.4.2 Gap 16 - Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis

Table 3.16: Gap 16 description and assessment

Gap 16		
General description	Unlike the planning of resources for daily incidents, planning for large scale and long term crisis is limited. Shift duration is a real constraint in such cases. Coordination across several agencies from several regions is required to overcome such limits. References in the literature: no information found in the literature under scrutiny regarding the "planning" dimension of this gap.	
Description in the context of DRIVER+ Trial (4)	*What is the current situation ("current capability")?* The Safety Region Haaglanden has no experience with combating disasters with a timespan larger than 8 hours (e.g. large floods). Rescue management procedures describe	*What is the capability necessary to reach adequate levels of performance?* A planning tool to optimise shift regulation

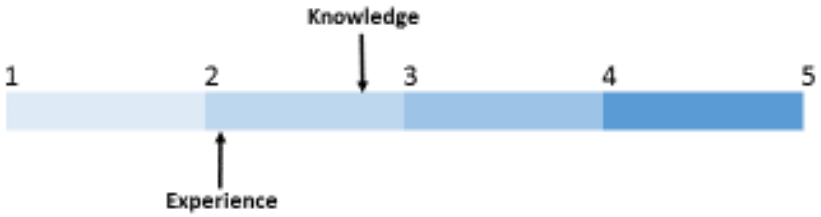
<table>
<tr><th colspan="3">Gap 16</th></tr>
<tr><td></td><td>planning for resources and coordination of response for various scenarios, but not for a large scale and long term crisis due to flooding. Sufficient equipment and qualified personnel is available, but with a 8 hours shift duration limit. Huge amount of information is available regarding qualified personnel and equipment but it is decentralised and not shared. The current solutions in use like OCC (National Operational Coordination Centre) and LCMS (Netherlands) are not appropriate for long term crisis.</td><td>of qualified personal and equipment with a timespan larger than 8 hours is necessary, accompanied by supporting procedures and linked to a centralised database integrating the databases of different Safety Regions</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The gap was rather shared even though the shift duration is completely different from one country to the other (8 to 24 hours in the organisations represented in this session), as well as the planning processes. The participants agree that the gap is particularly acute when the crisis is of a cross regional dimension requiring to plan and deploy resources from different regions.
Continuity is the central point in this gap.
A lot of discussion was dedicated to the definitions of the terms (large scale, long term) and the difference between the limitations in the planning versus the limitation in the resources.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">• Establish an integrated CM organisation - d. Establish CM HQ, supporting centres, and local command structures (2.4.1.d).
• Establish CM doctrine and train organisations and people (2.5).
• Plan across ranges and level of activities (4.2.2).
• Coordinate planning with support providers (4.2.3).</td></tr>
<tr><td colspan="3">Results from questionnaire</td></tr>
<tr><td colspan="2"><u>Participants' self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
73 %</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
</table>

Gap 16


3.4.3 Gap 17 - Shortcomings in planning and managing large scale evacuation of population in urban areas

Table 3.17: Gap 17 description and assessment

Gap 17		
General description	This gap covers two main issues: • Identifying the number, location and special needs of people to be evacuated, that is impacted by incident-specific characteristics like the time of day, day of the week, population density and land-use zoning. The current methods to estimate populations that are affected by an incident (population density and crowd-counting models) are used after crisis, and not able to provide information that is operationally relevant for response, even though advances in intelligent video surveillance systems are making it easier to estimate crowd size in real time. • Routing decision and traffic management: models to estimate congestion impacts or secondary crashes exist but rely on default general traffic assumptions (human behavior, road availability), which may differ during crisis. Incident-specific analytical tools to predict delay impacts, capacity reduction, the likelihood of secondary incidents are lacking. References in the literature: Evacuation *per se* is not identified in the literature about gaps that has been analysed. However, interesting inputs are to be found regarding the ability to ascertain the number of people in a crisis area and to attend to the needs of vulnerable groups.	
Description in the context of DRIVER+ Trial (4)	*What is the current situation ("current capability")?* SRH has no experience on evacuation on a large scale of	*What is the capability necessary to reach adequate levels of performance?*

<table>
<tr><th colspan="3">Gap 17</th></tr>
<tr><td></td><td>densely populated and built-up areas. The International Zone in The Hague (International court of justice, UN organisations, Europol, Eurojust, foreign embassies) has specific constraints.
People must be evacuated out of the affected areas and transported to shelters in safe areas using different possible means like private cars, traditional public transportation or specifically facilitated and organised means. The current solutions in use in The Hague are BRP, LCMS (Netherlands), Google Maps, Maps Me.</td><td>A solution combining
Inventory of the number of inhabitants, vulnerable groups, special buildings, animals in affected areas, and;
Routing and transport means possibilities before and during crisis (preventing traffic jam) calculating the time needed for the evacuation process of a large number of people in real-time (before and during crisis)
The mandate and willingness of municipalities to use BRP (Basisregistratie Personen / Registration of People) would facilitate the process.</td></tr>
<tr><td>Key inputs received during the workshop</td><td colspan="2">The participants agree with the gap, even if the scenario of a large evacuation (100,000 people) was difficult to conceive for them. The description of the gap mainly focuses on horizontal evacuation, whereas vertical evacuation was also mentioned as complementary by the participants.
There is a clear dependence with crisis communication related gaps. Indeed, the case of evacuation was specifically mentioned by the participants during the exchanges on these gaps.</td></tr>
<tr><td>Associated taxonomy of CM functions tags</td><td colspan="2">Plan for CM capabilities /in a likely scenario/ (2.1).
Develop options and estimate required resources (3.3.1 - in 3.3 “Develop capacity to adapt”).
Provide evacuation and shelter (5.4.3).
Upgrade the temporary sheltering (6.2.2).
Open critical transportation lines (6.2.5).
Plan, organise, and resource transportation logistics (9.3.1).
Manage evacuation camps and related services (9.5.3).</td></tr>
<tr><th colspan="3">Results from questionnaire</th></tr>
<tr><td colspan="2"><u>Participants’ self-declared expertise:</u>
 
</td><td><u>Acknowledgement of the gap:</u>
100 %</td></tr>
<tr><td colspan="3"><u>Assessment of the gap:</u></td></tr>
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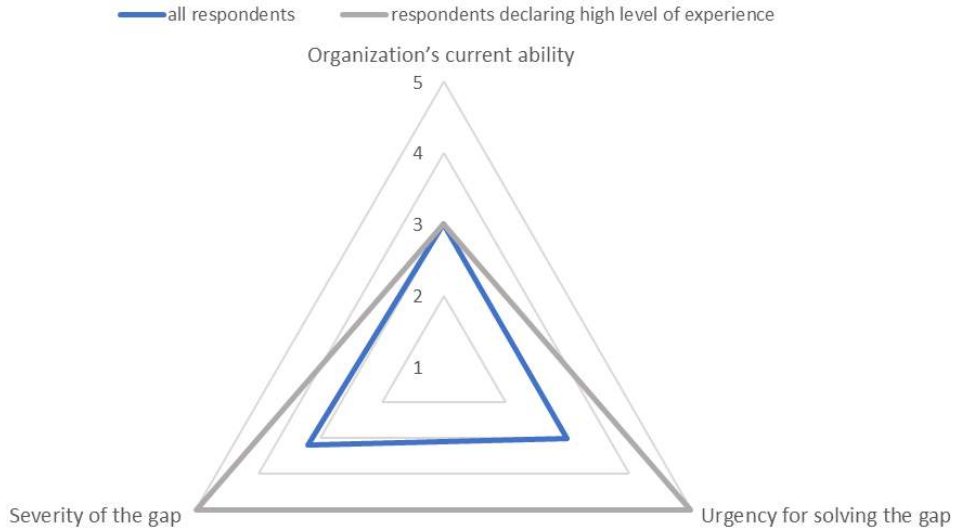
Gap 17


3.4.4 Gap 18 - Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise

Table 3.18: Gap 18 description and assessment

Gap 18		
General description	The ability to 'play the unexpected' is crucial in management training. As "boots on the ground" type exercises are costly and time consuming, the immersive experience with solutions such as augmented reality, virtual reality is important yet challenging. Modelling of real environment easily recognisable by users is necessary to support such solutions, and for large crisis scenario, such systems have to accommodate a large number of players from different agencies. Moreover, the affordability is an issue that can be limited by trying to re-use existing facilities. References in the literature: the need for more realistic exercises and the potential of virtual reality and simulation is widely recognised in the literature.	
Description in the context of DRIVER+ Trial (4)	*What is the current situation ("current capability")?* Responders from SRH are not trained and not prepared to respond to large floods events. A virtual exercise would be effective and successful if the modelled environment is recognisable by the trainees. Currently, SRH uses an XVR-simulation room, SIM-CI, 3Di, and Vasco (Virtual Studio for Security Concepts and Operations)	*What is the capability necessary to reach adequate levels of performance?* The capability to train first responders on large crisis scenario (in particular floods) supported by virtual reality based on the modelling of the municipality of The Hague (determine the appropriate scale, and solve confidentiality issues) is needed; together with its integration with flooding modelling and evacuation support tool.

Gap 18	
Key inputs received during the workshop	The participants rather agree on the gap and share the same understanding. They proposal to enlarge the gap statement which is focused on large scale evacuation to large scale disaster management in general as they believe the gap is not only for the specific case of evacuation. They mentioned the added value of combining such a simulation tool with forecast models to increase the reality of the training.
Associated taxonomy of CM functions tags	• Train individuals, teams and organisations (2.5.3), including: • Develop and conduct all-hazards training (2.5.3.1). • Conduct CM exercises (2.5.3.2). • Develop hazard-specific simulations and conduct CAX (2.5.3.3).

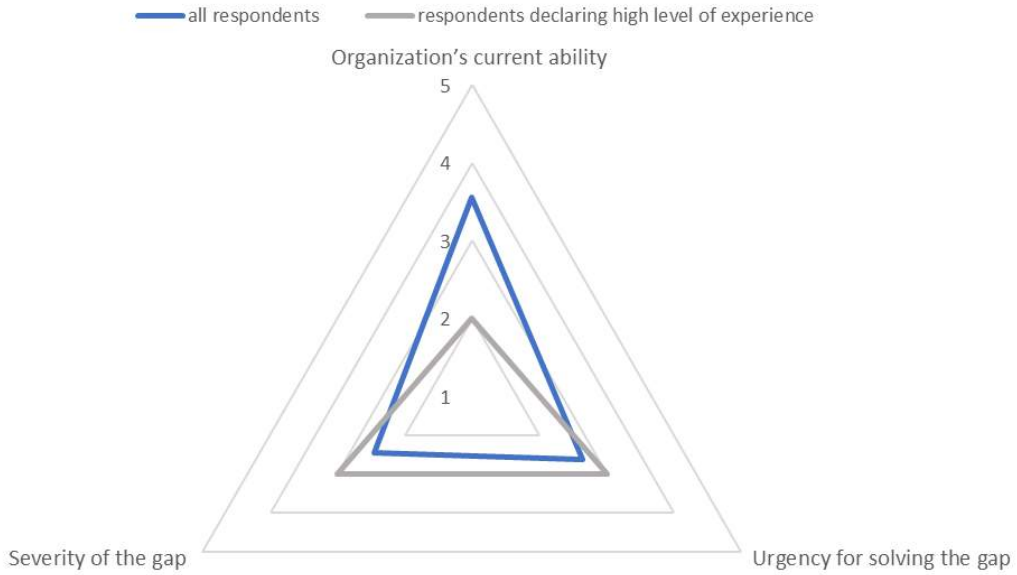
Results from questionnaire

Participants' self-declared expertise:

Acknowledgement of the gap:

91 %

Assessment of the gap:



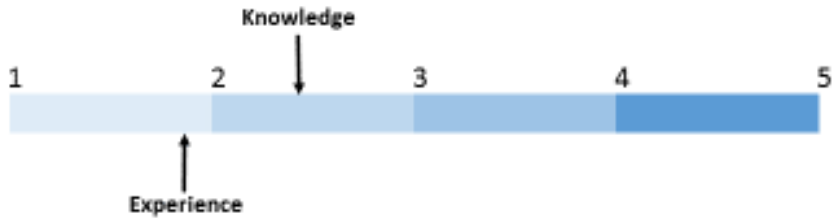
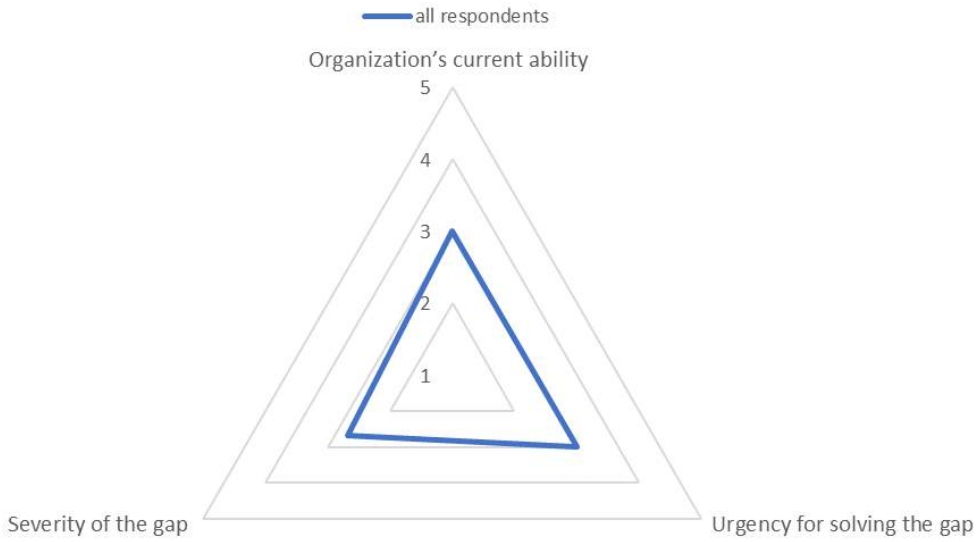
3.5 Casualty management

The gaps of this section were discussed together with (i.e. within the same group) the gaps from section 3.4 during the workshop.

3.5.1 Gap 19 - Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level

Table 3.19: Gap 19 description and assessment

Gap 19		
General description	To our best knowledge, this scenario was never encountered so far in the case of large forest fires with a large number id severely burnt casualties exceeding the capacity from one region or country. But there is a lack of preparation shall this case happen.	
Description in the context of DRIVER+ Trial (2)	*What is the current situation ("current capability")?* There is a limited availability of units able to manage victims with severe burns. The ERCC role is crucial to identify the beds available, coordinate the medevac modules and coordinate all this with the field. Today coordination is based on emails (for sending medical files) and phone calls. Timing is critical as patients may be sent to hospitals that are not necessarily optimal (in terms of future transfer needs, adequate facilities…). Sometimes across the border facilities could be the optimal choice.	*What is the capability necessary to reach adequate levels of performance?* Real-time medical information sharing (bearing specific challenges in terms of legal and confidentiality aspects) and a faster identification of available beds would make significant difference. Enhanced coordination (both procedures and technologies) should support the process.
Key inputs received during the workshop	There is a general agreement about this gap. Discussion took place about the different dimensions of this gap: capacity limits (the number of beds for severely burnt casualties), casualties transport limitations, information sharing between different agencies or countries. Participants mentioned an example where burnt casualties from an accident in a bar in the Netherlands had to be sent to hospitals also in Belgium and Germany.	
Associated taxonomy of CM functions tags	• Conduct SAR operations (5.4.1). • Provide on-site first aid (5.4.2). • Provide off-site health and MHPSS services (5.4.5). • Restore critical medical and MHPSS services (6.4.1). • Direct additional national and international medical support (9.4.3).	
Results from questionnaire		
Participants' self-declared expertise:		**Acknowledgement of the gap:** **57 %**

Gap 19	
	
Assessment of the gap: 	

3.5.2 Gap 20 - Limited ability to identify the location of injured/trapped/deceased casualties in large forest fires

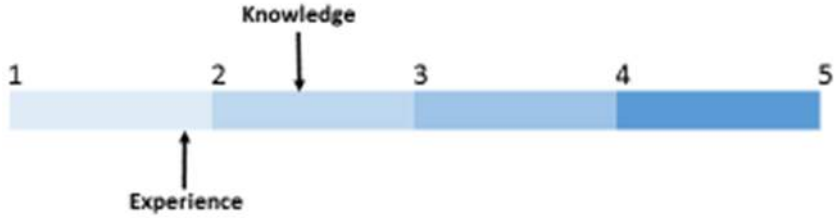
Table 3.20: Gap 20 description and assessment

Gap 20		
General description	Large crisis such as forest fires may touch a large territory, increasing the difficulty to locate casualties. Real time Location of potential casualties is particularly important for fast kinetics hazards such as forest fires. Most often, forest fires happen in low density area (inhabitants, traffic), but also affect wildland-urban interface. Typical technologies for location of casualties like thermal imaging or canine search may not be used in the case of forest fires. Cell-phone based technology seems to be most useful (either using specific apps or signals from cell-phones) in this context, but are not functioning if there is no cellular coverage; References in the literature: The ability to locate casualties on a crisis scene is recognised and documented, but not in the specific case of forest fires.	
Description in the context of DRIVER+ Trial (2)	*What is the current situation ("current capability")?* Several "112 type" mobile applications have been developed to locate casualties. Most of them are used in "normal" conditions, but have not been tested in large crisis situation. MDA has developed an app with automatic geolocation, and the possibility to send pictures and videos (with a geo tag). It is also possible to send a	*What is the capability necessary to reach adequate levels of performance?* Awareness need to be raised as the solutions are only

Gap 20		
	link from the system to the persons who do not have the app installed. The information is directly integrated into the C4I system. Valabre has also developed the Mobile App Forest fire prevention – to save time for alerts (quicker phone call, better localisation, exchange of data). It provides an interactive map, with information on the risk level, on the authorisation to access some parts of the territory, and advice to people confronted with forest fire. It is based on GPS and specific positioning system (DFCI grid), send alerts to rescue services, enabling the sharing of pictures. The main targets are tourists and hikers, but also local inhabitants and forest fire fighting people.	effective if high number of people is equipped. Call centres are most of the time not able to receive real time information from smart phones and the interfacing with the command post in the field is not implemented yet.
Key inputs received during the workshop	There is common understanding within the group about this gap. Participants describe the solutions in use and agree that there is no "one solution fits all" and that more resilient communication networks are needed.	
Associated taxonomy of CM functions tags	• Survey or/and investigate the affected area (5.1.1.1). • Conduct damage and needs assessment -- a. Collect human and sensor data from the field and from airborne platforms (5.1.2.a). • (Design and) Integrate data collection tools (7.3.4.2). • Provide for crowd sourcing (7.3.1.3).	

Results from questionnaire

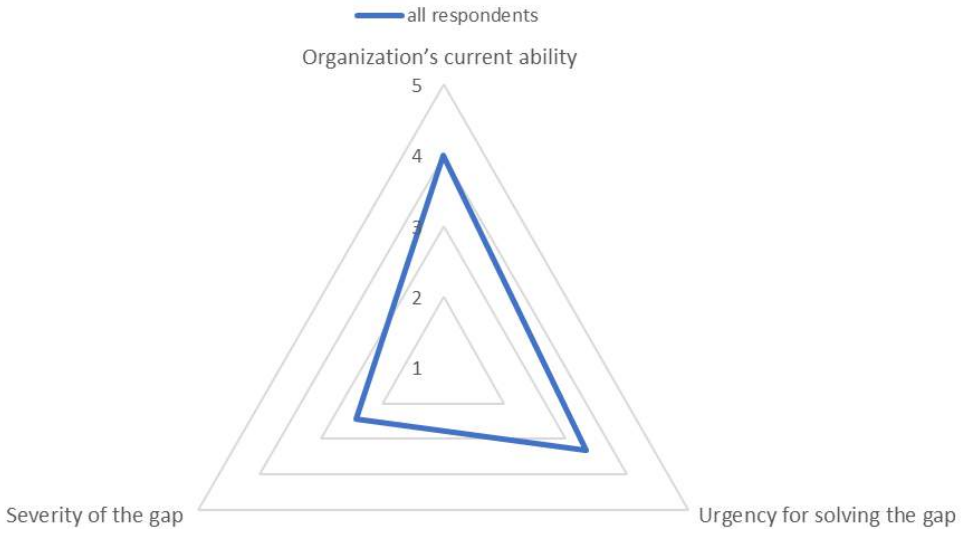
Participants' self-declared expertise:



Acknowledgement of the gap:

71 %

Assessment of the gap:



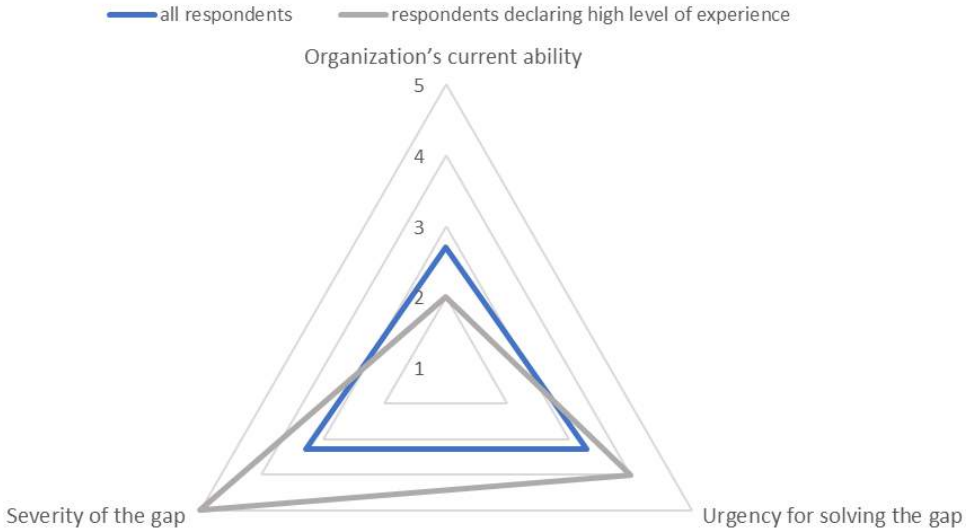
3.5.3 Gap 21 - Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters units)

Table 3.21: Gap 21 description and assessment

Gap 21		
General description	There are different doctrines and different organisations of the Emergency Medical Services across countries in terms of responsibilities (firefighting and EMS are provided by the same organisation in some countries, by different organisations in others) and accessibility of the crisis scene (« red zone »). The fast kinetics of forest fires with situations evolving rapidly may put emergency medical services at risk while severely burnt casualties require urgent medical aid. References in the literature: the literature provides elements in terms of geolocation of first responders on a crisis scene, but nothing specifically for forest fires.	
Description in the context of DRIVER+ Trial (2)	*What is the current situation ("current capability")?* Recent events created a dilemma on whether the EMS personnel should stay in the "safe area" with the patients brought to them, or wait for the scene to be declared "safe" and be allowed to enter the crisis zone. (NB. EMS is not provided by fire-fighters units) Large "Carmel fires" ambulance personnel was brought very close to the fire front with 44 casualties, with fire fighters to protect them, but post-incident review analysed it as bad decision: lack of proper risk assessment and planning over-estimated capacity to really "protect the ambulance crews"	*What is the capability necessary to reach adequate levels of performance?* The gap is not only technical but also organisational and procedures related. Expected capability needed include: A better assessment of the safety of the scene A better coordination between fire-fighting and EMS personnel Novel patient and/or personnel transportation solutions
Key inputs received during the workshop	The organisation and responsibility for EMS tremendously varies across countries and even across regions of a same country. Participants explain how they manage the patients care and evacuation from the crisis arena. The participants believe that this gap is not only in the case of forest fires but can also happen in other fast kinetic kinds of events like flash floods.	
Associated taxonomy of CM functions tags	• Conduct SAR operations (5.4.1). • Provide on-site first aid (5.4.2). • Provide off-site health and MHPSS services -- a. Deploy field hospitals (5.4.5.a); b. Provide transportation to regular hospitals 5.4.5.b). • Provide transportation of responders and supplies (9.3.2).	
Results from questionnaire		
Participants' self-declared expertise:		**Acknowledgement of the gap:** **57 %**

Gap 21

Assessment of the gap:



This section 3 with the 21 CM capability gaps information sheets including both the gaps description and their assessment, constitute the basis on which the future DRIVER+ activities (presented in the section 4 below) will be built and develop.

4. Crisis Management Capability Gaps in future DRIVER+ activities

This section introduces how the Crisis Management capability gaps presented in this report will serve as a basis for future activities of the DRIVER+ project.

4.1 Gaps, CM functions and solutions

In the context of the Trial Guidance Methodology (22), the identification of the gaps and of the Trial context are pre-conditions of the preparedness phase: “The first phase, the preparation phase, consists of the iterative and co-creative DRIVER+ six-step approach. The process starts with the identification of the specific Trial context and relevant CM gaps. The Trial context is mainly determined by the interested Trial owner (platform provider) supported by the related Trial committee including End User Coordinator, a Test-bed Methodology Coordinator, a Test-bed infrastructure Coordinator, a Solution Coordinator and an Evaluation Support representative. The validated DRIVER+ CM gaps are reflected in context of the Trial owner setup in order to identify and prioritize relevant gaps for the involved actors in their operational context (professional and geographic). Both inputs are major perquisites of the first step dealing with the identification of specific Trial objectives” (22).

In consequence, the identified Crisis Management gaps have an impact on the evaluation of solutions’ utility prior to and during a Trial. At this phase of the project, however, research teams worked in parallel on the identification of Crisis Management gaps and, in particular for Trial 1, the design of Trials, the preliminary review and the selection of solutions. Starting with Trial 2, as the timing constraints did not make it possible before, the gaps are now presented in the call for solutions. Given this, the research team decided to use the Taxonomy of Crisis management functions, designed within the project, (18) to provide a transparent linking of crisis management gaps, through Trial scenarios, to solutions.

Both gaps and solutions were classified in functional categories by the research team with account of the underlying concepts and structure of the Taxonomy of CM functions. Annex 9 of this report presents the relation of each gap to functions, sub-functions, and tasks of the taxonomy, and details the rationale why a function is considered as relevant to each of the respective gaps.

To provide an example, first the Taxonomy will be presented succinctly. It includes 10 functional areas divided in three overarching groups – “preparatory,” “operational,” and “common.” Each gap has been related to between three to seven crisis management functions. Since often gaps address preparatory issues, operational activities and common issues (i.e. crisis communications, information management, command, control and coordination, logistics, and security), the relevant functions may be in two or even three of the groups.

For example, Gap #17 “Shortcomings in planning and managing large scale evacuation of population in urban areas” was considered relevant by the research team to functional area “Capability development”, and the capability planning for likely scenarios in particular. Since the gap refers to large scale evacuation—a scenario of low likelihood, but still considered plausible—it has been related to a function in the “Strategic adaptiveness” functional area, calling for developing possible courses of action and estimating required resources for less likely, yet plausible Crisis Management scenarios, identified by rigorous foresight.

Understandably, the gap relates to the provision of evacuation and shelter in response operations and upgrading temporary sheltering and opening and maintaining critical transportation lines during recovery operations. Finally, the gap relates to functions in the common functional areas of logistics, i.e. “Plan, organise, and resource transportation logistics,” and the “Security management” functional area, in this case the function “Manage evacuation camps and related services.”

Hence, the relation between a gap and crisis management functions in the taxonomy is “one-to-many,” and thus the rigorous analysis of gaps and their classification by the taxonomy’s functions provides better opportunities for stakeholders to find information of their particular interest.

For the specific purposes of the research within Task 922.1, presented in this report, the classification of gaps, identified by Trial owners, in functional categories prior to the Gaps Workshop allowed to understand better commonalities, structure them in thematic groups and organise respectively the discussions during the Workshop.

In future research within and beyond DRIVER+, with the growing numbers and amount of information on scenarios, gaps, solutions and other related information, the use of taxonomy of functions will facilitate the classification and the search for most relevant information by a variety of stakeholders as illustrated in Figure 4.1 below. The descriptions in Annex 9 of this report may serve as examples in the classification of other crisis management gaps, identified in the future.

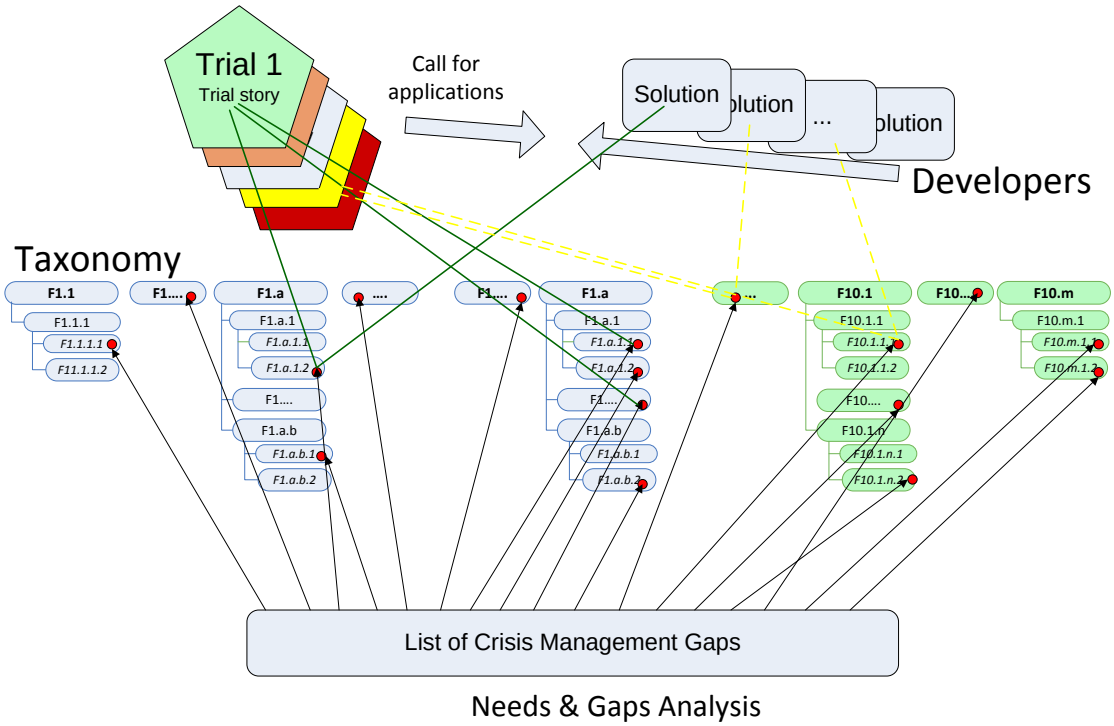


Figure 4.1: Linking gaps to solutions through CM functions

Figure 4.2 below presents graphically the functionalities of the gaps, addressed by each of the four Trials. It may be used, *iter alia*, to identify areas of common interest and facilitate the learning process as the DRIVER+ project proceeds through the series of Trials.

To have a deeper understanding of the two figures presented below, the reader can refer to the overall Taxonomy of Crisis Management functions presented in a dedicated DRIVER+ report (18).

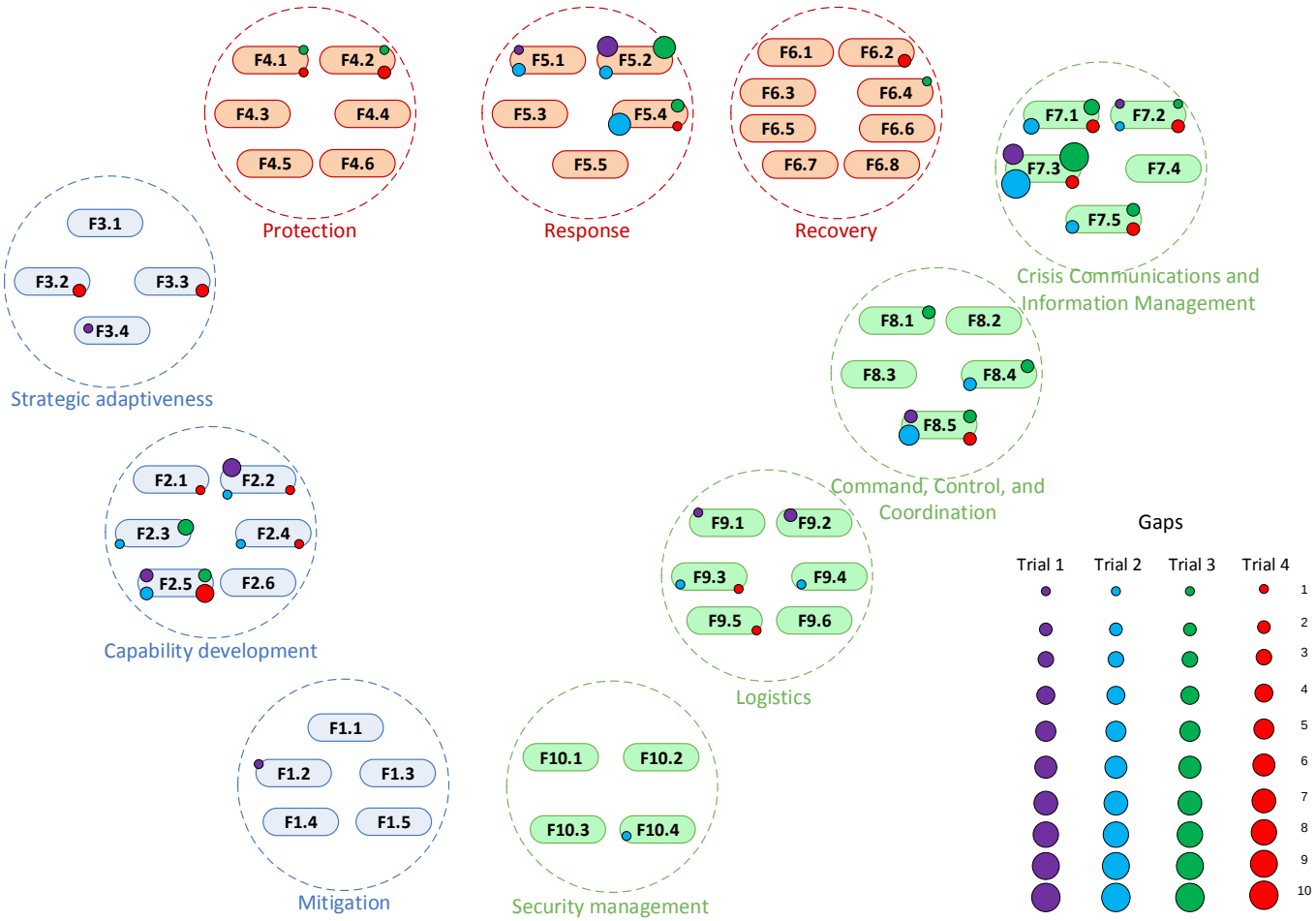


Figure 4.2: Mapping gaps addressed by each Trial to the taxonomy of CM functions

The figure below (Figure 4.3) presents a mapping of the functionalities of gaps, addressed by Trial 1, as well as the functionalities of solutions from the consortium's partners, on the taxonomy of CM functions. It visualises the correspondence between gaps and solutions and facilitates the search for additional, i.e. external solutions. For detailed information, the list of CM functions can be found in the Taxonomy of Crisis Management functions presented in a dedicated DRIVER+ report (18).

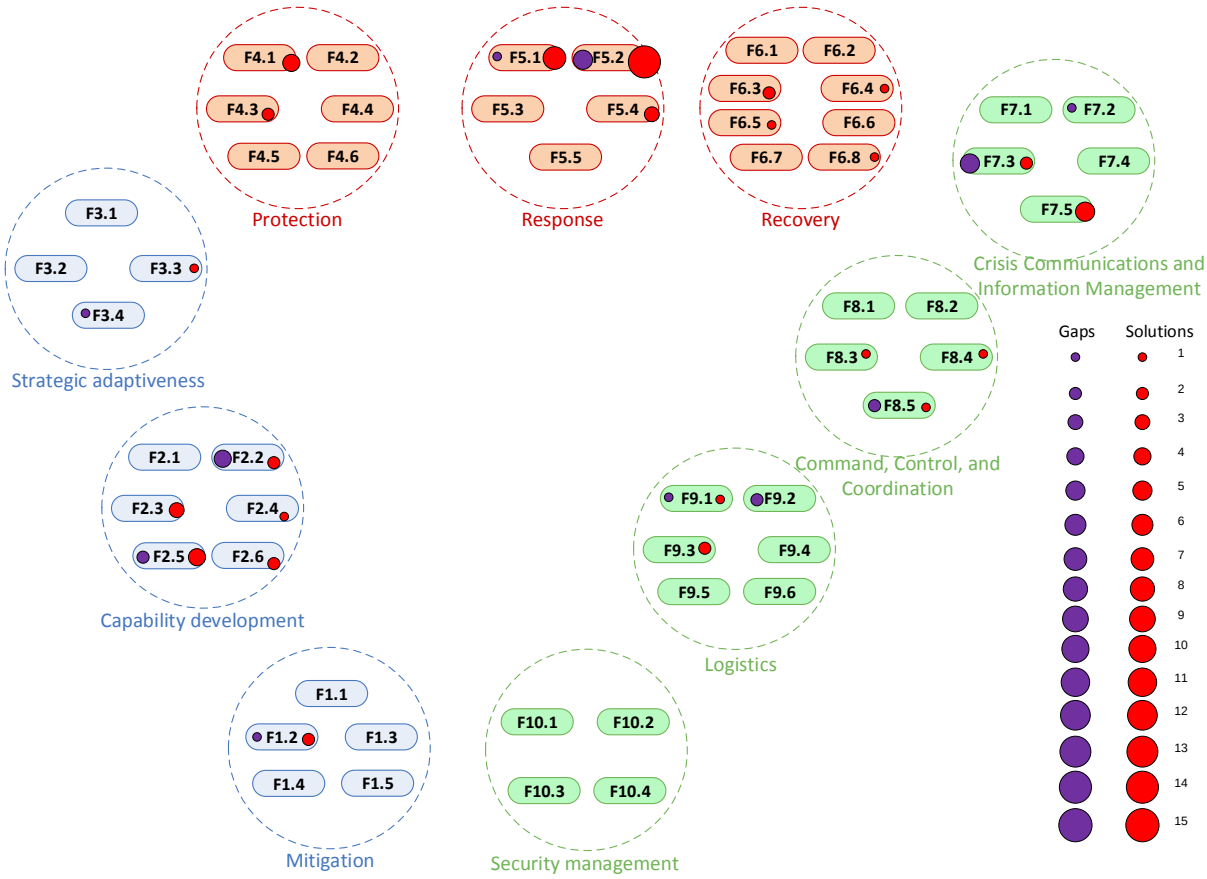


Figure 4.3: Mapping the gaps addressed in Trial 1 and consortium internal solutions to the taxonomy of CM functions

4.2 Gaps assessment and DRIVER+ Trials

Trials conducted during DRIVER+ project are focused on practical validation of selected sets of solutions in environment close to reality. This approach provides the opportunity to contribute to the Crisis Management system in EU by addressing the capability gaps that were identified by various experienced practitioners. To correctly orient the Trials, the gap selection process was carried out with the participation of representatives of stakeholders of each Trial and SP94 leader – Space Research Centre PAS.

During the Gap Assessment Workshop, the participating experts were asked to identify solutions and tools, that had been actively used in their work environments and were relevant in the scope of each gap. The resulting list of so called legacy solutions (see Annex 8) will be further used by Trial owners as potential source of information for the Call of Application formulation and the process of invitation of solutions. Furthermore, the awareness of solutions functioning in a particular legacy system (consisting of those legacy solutions) might be useful during formulation of evaluation approaches and metrics – as a point of reference to progressive assessment of solutions used in Trials.

The set of validated gaps, being the result of the UGAW, will be prioritised by the Trial Committees taking into account the Trial's scope and the needs of the end-users involved in a Trial. The gaps identified as the most important for the Trial will represent the basis for the research questions, which should be formulated before the Trial and answered during the Trial.

The gaps selected by the Trial Committees are the foundation for the formulation of the Call for Applications which initiates the solution selection process for a specific Trial. The key solution selection criterion is the capability of a solution to bridge a specific gap. In order to test the selected solutions, the Trial scenario will be gap-oriented, so that the practitioners participating in a Trial will have the opportunity to use the selected solutions in the context of specific gaps. The solution assessment process conducted during Trials will be carried out taking into account their ability to cover the relevant gaps.

Therefore the results of the gaps assessment process will affect the preparation phase which consists of 6 steps of the iterative Trial Guidance Methodology (22):

- Identification of Trial objectives in CM dimension;
- Construction of the scenario that will pivot around the most important gaps;
- Selecting a set of solution desiring to bridge the gaps;
- Formulation of research questions by pairing selected solutions with practical tasks;
- Formulation of data collection plan together with evaluation approaches and metrics by challenging the solutions with scenario tailored for them.

4.3 Supporting the project's end-user driven approach

DRIVER+ follows an open and inclusive approach and invests significant efforts for involving external stakeholders in the project's activities through concrete external cooperation actions. Realising external cooperation with relevant stakeholders will ensure high quality, relevance and appropriateness of the DRIVER+ Trials and other project activities, and it is considered to be one of the critical success factors for the project.

The UGAW was the first DRIVER+ key event where the participation of externals was essential. Crisis Management (CM) Practitioners, being end-users of potentially identified innovative solutions, were invited to identify, review and prioritise gaps existing today in the area of CM. The input obtained through this workshop is of utmost importance to DRIVER+ as it helps to align with and to follow-up on relevant policies, challenges, gaps and community needs faced within the wide spectrum of thematic CM areas.

The process for involving external stakeholders in the workshop, which ran over two days (i.e. 16th and 17th January 2018), followed the general process established by the dedicated work package WP912 'Platforms for external cooperation' and outlined in D912.11.

4.3.1 Identifying and reaching-out to external stakeholders

A large number of practitioners suitable to participate in the UGAW were identified mainly by the Trial owners, as well as by the practitioners, which are partners in the DRIVER+ consortium. Initial contact was established early on in the preparation for the workshop, informing about the event informally and gathering expressions of interest.

An extensive list of suggested invitees was put together, detailing in addition to the basic details of name and organisation represented also the potential participant's expertise, which Trial this person would be relevant for and who should invite him/her. Eventually the most relevant ones were selected and formally invited to the workshop.

4.3.2 Identification of opportunities for external cooperation

The UGAW and the need for involvement of external stakeholders is described in the DRIVER+ DoW, and in Task '922.1 Updated Gaps Assessment'. As mentioned in the task description the goal of the workshop was to allow validation of the gaps identified through initial desktop research conducted, in order to provide an updated and consolidated view on the current and future gaps in CM.

The concrete set of activities and the approach on how to involve the external practitioners was developed by Valabre, as the workshop organiser and Task 922.1 leader. The event was designed in such a way that it would allow for maximum output, while at the same time being an interesting and valuable activity for the external participants.

4.3.3 Invitations to external stakeholders

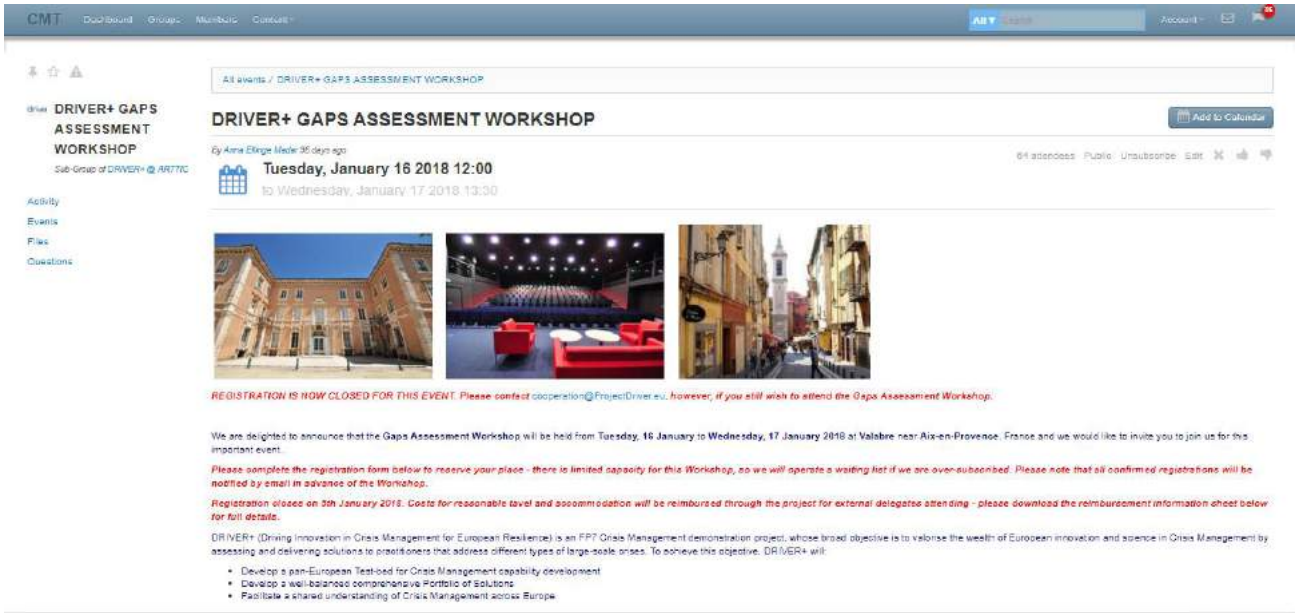
As WP912 leader and holding the role of External Cooperation Manager, ARTTIC is responsible for coordinating all communication with external stakeholders participating in DRIVER+. Therefore, as well as regarding the context of the UGAW, ARTTIC ensured liaison activities and coordinated the communication process between the project and the project external participants. A formal invitation letter was drafted, as well as a detailed logistics pack with the necessary practical information relating to the dates of the workshop, the venue, agenda/programme and accommodation options.

The invitations were in most cases sent by the partner who had suggested and initiated contact with the external participant, the rationale behind this was that being approached by an already established contact was likely to positively affect the decision of whether to participate or not. The process and material used was however identical, in order to ensure that each invitee received the exact same information. Any invitees that were interested, but could not attend for some reason, were also invited to be involved in the review process after the workshop. The outcome of this review is presented in section 2.4.3 of this document.

4.3.4 Administrative and financial support for external cooperation

An online registration site was set up for the project, which also served as a centralised point for information. ARTTIC prepared a customised registration form gathering all information needed from the participants, such as their interest and field of expertise, as well as preferences regarding which activities to participate in. All workshop information was made available on the site, which also had a feature for asking questions to the organisation team.

From the site a list of registered participants and their selected preferences was extracted regularly during the organisation, in order to adapt the administration and preparation of the event in accordance with the number of participants and their needs specified.



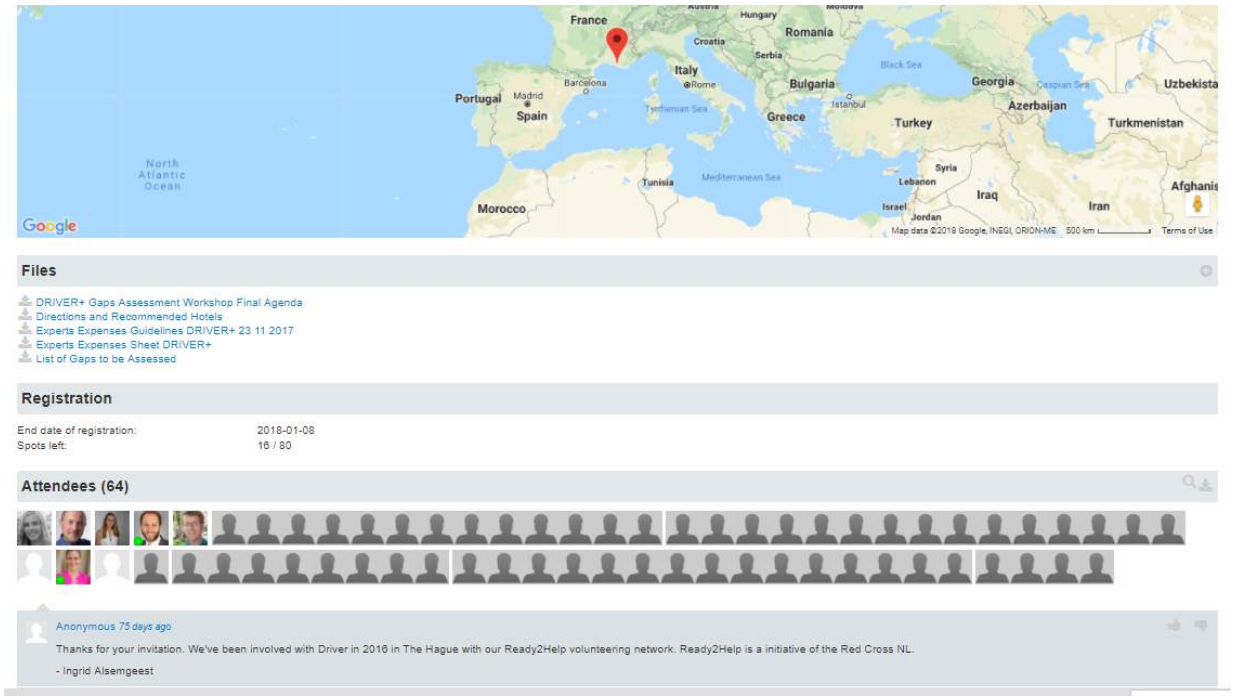


Figure 4.4: Screen shots of workshop registration site

The responsibility of ARTTIC for the involvement of external stakeholders in DRIVER+ also includes the financial management of such involvement. In DRIVER+, an amount of 622,221€ has been planned within the budget of ARTTIC to be used to include project external experts, solution providers and practitioners. A detailed procedure has been set up for dealing with the reimbursement of expenses (eligibility criteria for costs, maximum amounts, support/justification needed), and each external stakeholder who participates to a DRIVER+ activity and bears costs from this participation, which are directly related to this participation, receives the necessary files and guidelines for completing a claim for reimbursement.

All participants in the UGAW therefore received detailed guidelines regarding the potential reimbursement of costs, see Annex 10 – Reimbursement form & guidelines, and requests for reimbursement could be submitted immediately after the event. An expense reimbursement form must be completed and all receipts, train tickets and boarding passes, must be included with the form.

Whenever information is collected from project external participants during an activity, a consent form must be signed. By signing the consent form the external stakeholder approves that his/her input may be used in the project for further development, as well as possibly included in project deliverables, reports and other material. The consent forms used in DRIVER+ also include the mention of photography and filming of the events, which the participants should be aware of and approve. The consent form used for the UGAW can be found in Annex 11 – Informed Consent Form.

4.3.5 Feedback and evaluation of external cooperation actions

As already mentioned in section 2.4.2.1, the UGAW was attended by 38 project external participants from a variety of organisations and countries. With this being the first major DRIVER+ event involving external stakeholders the number of participants was well living up to, or even exceeding the expectations. More importantly the profiles of the participants were deemed very relevant and suitable for the workshop activities, and the discussions and input provided were of a high quality and of utmost value for the project.

The DRIVER+ project evaluates implemented external cooperation actions by a feedback questionnaire that each stakeholder attending a DRIVER+ activity is asked to complete (e.g. UGAW, Workshop '0', Policy-Research Dialogue Roundtable, I4CM events, DRIVER+ Trials, Final Demo, Final Conference etc.). The aim is to have 75% filled in questionnaires returned and to reach a level of 75% of the stakeholders that provided feedback being satisfied with their involvement in DRIVER+ (e.g. participation was of added value for their profession).

With the UGAW being the first major event involving external participants a first such online evaluation questionnaire was distributed a few weeks after the event to obtain feedback regarding the experience of the project external workshop participants. The questionnaire included seven questions, five indicating grades of satisfaction and two asking for individual feedback. The questions concerned both the contents and the organisation of the workshop. The form could be submitted either anonymously or by indicating name and organisation represented.

By the time of the deadline for completing the questionnaire 28 participants had completed the form, which is 74% of the participants, so very close to the targeted 75% completion. The feedback received was overall positive with an average of 74% satisfaction indicated, highest of second highest score, for the five questions and where grading of satisfaction was indicated. The lowest grade (Poor/None at all/Not clear at all) was not indicated at all for any question, and the second lowest grade (Below average/Not so clear/A little) was indicated only in a few cases. Some participants indicated that they felt they had not received sufficient background information regarding the contents of the workshop prior to the event. It was indicated that sharing information about the gaps in advance may have been beneficial for more focused and coherent discussions in site. This point is well noted and will be taken into account for future events. The complete questionnaire with answers can be found in Annex 12 – Results of the UGAW evaluation survey.

5. Conclusion

DRIVER+ has drawn a list of CM gaps in the functional domains of decision support; information sharing, situational awareness and coordination; engaging the population (warning, crowdsourcing, crowd-tasking, volunteers); resources planning and logistics; and casualty management.

These 21 gaps are described both generally and in the specific context of the envisioned Trials, as requested by the Trial guidance methodology, "the validated DRIVER+ CM gaps are reflected in context of the Trial owner setup in order to identify and prioritize relevant gaps for the involved actors in their operational context (professional and geographic)." (22). They have been searched for in the literature, to enrich their description, but also to check if they were already identified in other contexts by other practitioners. In addition, these gaps have been discussed on several occasions with practitioners external to the consortium (workshop participants, external review) to ensure their relevance to other end-users in Europe.

This report provides material for the DRIVER+ partners to develop the design of the upcoming Trials. Indeed, within the DRIVER+ methodology, the identification of the gaps are pre-conditions of the Trial preparation. In addition, this material can be used to support the identification of topical issues to feed the agenda of the next DRIVER+ events (e.g. I4CM events).

The results presented in this document can also be used beyond the project's context both in terms of methodological dimension and CM gaps related content. This work indeed intends to offer a comprehensive description of the developed and applied methodology, which makes it possible to duplicate and apply the approach in other initiatives, or at least to get some guidance throughout the process.

In addition to the explanation on the followed methodology, this report offers also a valuable and up to date collection of material on CM capability gaps. Although the list of 21 gaps is not meant to be exhaustive, it nonetheless reflects topical issues and priorities for the CM community involved in DRIVER+, and is thus insightful for readers beyond the project consortium coming from the CM community, academia, industry, or other, that are willing to better understand the constraints and limits currently faced by the actors involved in the field of Crisis Management.

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Annexes

Annex 1 – DRIVER+ Terminology

In order to have a common understanding within the DRIVER+ project and beyond and to ensure the use of a common language in all project deliverables and communications, a terminology is developed by making reference to main sources, such as ISO standards and UNISDR. This terminology is presented online as part of the Portfolio of Solutions and it will be continuously reviewed and updated[16]. The terminology is applied throughout the documents produced by DRIVER+. Each deliverable includes an annex as provided hereunder, which holds an extract from the comprehensive terminology containing the relevant DRIVER+ terms for this respective document.

Table A1: DRIVER+ Terminology

Terminology	Definition	Comment
Affiliated volunteer	Individual who is affiliated with an existing incident response organisation or voluntary organisation but who, without extensive preplanning, offers support to the response to, and recovery from, an incident	Derived from ISO 22319:2017(en) Security and resilience — Community resilience — Guidelines for planning the involvement of spontaneous volunteers 3.1
Command & control	Activities of target oriented decision-making, situation assessment, planning, implementing decisions and controlling the effects of implementation on the incident (disaster).	ISO 22320
Capability	The means to accomplish one or more tasks under specific conditions	Definition from Project Responder 5
Crisis	Situation with high level of uncertainty that disrupts the core activities and/or credibility of an organisation and requires urgent action	ISO22300 (2015) 2
Crisis management	Holistic management process that identifies potential impacts that threaten an organisation and provides a framework for building resilience, with the capability for an effective response that safeguards the interests of the organisation's key interested parties, reputation, brand and value-creating activities, as well as effectively restoring operational capabilities. Note 1 to entry: Crisis management also involves the management of preparedness, mitigation response, and continuity or recovery in the event of an incident, as well as management of the overall programme through training, rehearsals and reviews to ensure the preparedness, response and continuity plans stay current and up-to-date.	ISO22300 (DRAFT 2017) 8

[16] Until the Portfolio of Solutions is operational, the terminology is presented in the DRIVER+ Project Handbook and access can be requested by third parties by contacting coordination@projectdriver.eu.

Terminology	Definition	Comment
End-user	Individual person who ultimately benefits from the outcomes of the system	ISO/IEC 25010:2011(en) In DRIVER+, also referred to as 'Practitioners'
Gap	Gaps between the existing capabilities of responders and what was actually needed for effective and timely response	Project Responder 5
Interoperability	The ability of diverse systems and organisations to work together, i.e. to interoperate.	ISO 22397
Need	Prerequisite identified as necessary to achieve an intended outcome, implied or stated	ISO/TR 21245-1:2016(en) Railway applications — Rail project planning process — Part 1: Stakeholders and their needs/interests, 3.6
Organisation	Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives	ISO22300 (2015) 5 [Note 2: DRAFT 2017, p 19)
Preparedness	The knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current disasters.	UNISDR: Terminology on Disaster Risk Reduction: A Technical Review. August 2015, p24
Response	Actions taken during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.	UNISDR: Terminology on Disaster Risk Reduction: A Technical Review. August 2015, p27
Trial	An activity for systematically finding and testing valuable solutions for current and emerging needs in such a way that practitioners can do this in a pragmatic yet systematic way.	

Annex 2 – List of gaps available from the literature

First Responders - Identifying capability gaps and corresponding technology requirements in the EU, European Commission DG HOME, January 2017

Table A2: List of gaps available from the literature

REF	Type of gap	Capability domain	Gaps for Europe
A1	technical	Situational Awareness	Limitations in early warning capabilities
A2			Lack of understanding disaster dynamics
A3			Lack of situation awareness on response efforts
A4		Command, Control and Coordination	Barriers in exchanging information / interoperability
A5			Lack of cooperation with third parties
A6			Shortcomings in volunteer management
A7		Responder Health, Safety and Performance	Problems in operating at incidents with hazardous materials
A8			Sub-optimal information exchange with deployed first responders
A9		Logistics and Resource management	Insufficient assessment of demand and needs
A10		Communication with Society	Shortcomings in crisis communication
A11			Shortcomings in risk communication
A12		Evaluation	Strategic evaluation and performance assessment missing
A13		Communications	Communication problems in harsh conditions
A14		Training and Exercise	Need for more realistic exercises
A15		Not classified by capability domain because of lower priority	Need for forensic technologies to analyse civilian drone attacks
A16			Need for remotely stopping vehicles
A17			Need for better arrangements of evacuation and shelter
A18			Need for tools to support triage improvement at mass casualty incidents
A19			Need for tools to improve supply and restoration of basic infrastructures
A20			Coordination at and resilience against cyber incidents
A21			Need for equipment that can be used in case of interrupted power supply in disaster areas
A22			Lack of security in ICT systems of first responder organisations

REF	Type of gap	Capability domain	Gaps for Europe
A23			Need to identify and planning for vulnerable populations
A24			Coordination problems in situations with multiple airspace users (or robots)
A25			Lack of tools to find people who are trapped (e.g. in collapsed buildings, covered by snow)
A26			Insufficiencies in identification of crowds
A27	Quantitative (limited budget)	Not classified by capability domain because listed in the inventory of capability gaps in Europe but outside the scope of the study	Lack of materiel to deal with large-scale disaster situations
A28			Lack of trained personnel to deal with large-scale disaster situations
A29	Legal and political gaps		Legal barriers for e.g. medical assistance in cross-border situations, or barriers due privacy aspects
A30			Cross-border assistance in case of some non-EU neighbours
A31	Organisational gaps		Lack of agreed procedures with military organisations
A32			Ad hoc approach in tasking and resource management
A33			Need for increased involvement of hospitals in disaster management planning
A34	Lack of harmonization		Lack of harmonised language and terminology (taxonomy, symbology)
A35			Lack of harmonisation in risk assessment
A36			Lack of a systematic planning process capacity planning and mapping
A37			A systematic and coherent way of describing capabilities, assets and capacities is missing
A38			Different approaches in triage among emergency medical services
A39			Need for (inter)national shared victim identification system (different systems are in use)
A40			Differences in skills and competences between Member States
A41	Co-ordination issues		The lack of international cooperation and one European coordination centre is very problematic. Cross-border cooperation often works well, because the first responders on both sides know each other. However, it is especially challenging to coordinate missions if a disaster affects more than one Member State and first responders from not affected country need to be involved.
A42			Sub-optimal approach to fight forest-fires at European level
A43			Coordination of navigation of different unmanned systems (e.g. helicopters and drones) in the same area is problematic; therefore, operation concepts should be adjusted

Project Responder 5, Final Report, Homeland Security Studies and Analysis Institute, August 2017

REF	CAPABILITY DOMAINS	CAPABILITY NEEDS
B1	Situational Awareness	The ability to access, integrate, share and display images and video pertinent to the incident scene for the on-scene responder and incident command
B2		The ability to geolocate responders on the incident scene (indoors and outdoors), including latitude, longitude and altitude or depth
B3		The ability to detect and identify threats and hazards on the incident scene
B4		The ability to generate maps for indoor and outdoor locations integrating incident data with existing GIS data
B5		The ability to merge and synthesize disparate data sources in real time (e.g., known hazards, building blueprints and ownership records) to support situational awareness
B6		The ability to identify cascading effects of the incident that impact the response and the surrounding community
B7		The ability to obtain and maintain a birds-eye view of the incident scene
B8	Communications and Information Sharing	The ability to effectively communicate in the presence of loud ambient noise
B9		The ability to coordinate dispatch functions from multiple jurisdictions and agencies during response operations
B10		The ability to facilitate the management of communications channels and frequencies among multiple disciplines
B11		The ability to share incident-related information among agencies and disciplines during response operation
B12	Command, Control and Coordination	The ability to provide decision support templates and prompts during incident operations
B13		The ability to electronically document and track command decisions, actions and assignments during response operations
B14		The ability to quickly establish unified command among jurisdictions and agencies
B15	Responder Health and Safety	The ability to provide enhanced protection from threats without donning specialized garments or compromising comfort and maneuverability
B16		The ability to provide individually appropriate mental health services following incident response
B17		The ability for responders to ascertain exposure type and level
B18		The ability to monitor the physiological signs of emergency responders
B19	Logistics and Resource Management	The ability to integrate resource data from participating agencies for a holistic picture of resources available on scene for incident-specific response
B20		The ability to identify resource needs for rescue and shelter of citizens with access and functional needs

REF	CAPABILITY DOMAINS	CAPABILITY NEEDS
B21		The ability to geolocate non-personnel resources within the incident response area
B22		The ability to digitally request resources from the field and track disposition of request, resource status and location
B23		The ability to verify the credentials of all on-scene responders
B24		The ability to centrally manage incident-specific logistics information
B25		The ability to account for and manage on-duty, off-duty and self-reporting personnel in real time (including check-in and staging direction)
B26	Casualty Management	The ability to estimate or ascertain the number of persons in affected areas at the time of an incident
B27		The ability to identify the location of injured, trapped and deceased casualties on the incident scene
B28		The ability to track the status of known and potential casualties from site through reunification
B29		The ability to manage and track large numbers of fatalities through all phases of response
B30	Training and Exercise	The ability to conduct multi-modal, multi-agency and multi-jurisdictional training and exercises across a wide spectrum of incidents
B31		The ability to maintain proficiency in disaster management training for all responders regardless of rank
B32	Risk Assessment and Planning	The ability to accurately identify local and regional threats and risks and model potential consequences
B33		The ability to evaluate how evolving manmade incidents or natural disasters (e.g., civil unrest, active shooters and responder targeting) might impact an individual jurisdiction
B34	Intelligence and Investigation	The ability to capture, process, integrate and manage raw and digital information related to incident response, operations or an investigation
B35		The ability to create actionable intelligence based on data and information from multiple sources
B36		The ability to monitor social media and other non-traditional intelligence sources for warnings and indications of planned activities or violence
B37		The ability to isolate and extract critical information from social media feeds and electronic communications (e.g., texts) of individuals on-scene during response operations

Capability Gap Analysis Synopsis, The International Forum to Advance First Responder Innovation, Homeland Security Science and Technology, January 2017

REF	Capability gap
C 1	The ability to know the location of responders and their proximity to risks and hazards in real time
C 2	The ability to detect, monitor and analyse passive and active threats and hazards at incident scenes in real time
C 3	The ability to rapidly identify hazardous agents and contaminants
C 4	The ability to incorporate information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into incident command operations

DRIVER PROJECT, D41.21 – Vision on Response 2025, February 2016

REF	CAPABILITY GAP
D1	Crisis communication
D2	Tools for tasking and resource management
D3	Volunteer management
D4	Early warning capabilities
D5	Understanding specific crisis dynamics
D6	Understanding the relief effort as a whole
D7	Demand and needs assessment
D8	Inter-agency information sharing
D9	Retention and warehousing of information
D10	Acquisition of information from external sources
D11	Efficient ways to gather data from first responders
D12	Responder communications in remote areas
D13	Provision of energy to responder activities in disaster areas
D14	Harmonisation of capacity building
D15	Harmonisation of language and terminology

Annex 3 – Results of the matching process between DRIVER+ initial list of gaps and the lists derived from the literature in Annex 2

Table A3: DRIVER+ gaps vs literature

N°	**DRIVER+ gap statement**	**Ref A**	**Ref B**	**Ref C**	**Ref D**
1	Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualization of obtained results in a form that can be used directly by the incident commander	A7	B6, B32	C2	
2	Limitations in the cross vulnerabilities (people, property, environment) assessment to optimize task prioritization and decision making	A2	B6, B12, B32,		D5
3	Lack of a "Common Operational Picture" environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander		B5, B34		D5
4	Limits in the ability to merge and synthetize disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making		B5, B6, B34, B35		D10
5	Shortcomings in the ability to exchange crisis-related information among agencies and organizations (also related to as interoperability)	A2, A4	B11		D8, D9
6	Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations	A34, A37			D15
7	Lack of mutual knowledge or alignment of operational needs and procedures between different organizations responding to the same crisis scenario				D7, D9, D14
8	Insufficient understanding of the overall current and planned response efforts as well as current strategies across organizations during a crisis	A3	B9, B19		D6, D7
9	Lack of common doctrines and procedures supporting international cooperation in aerial firefighting				
10	Lack of effective public warning systems with the ability to verify whether the information reached the recipient	A1, A10	B20, B26, B27, B28		D4
11	Shortcomings in policy and procedures for communicating with the public during a large crisis	A10			D1

N°	DRIVER+ gap statement	Ref A	Ref B	Ref C	Ref D
12	Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations	A10	B35, B36, B37	C4	D10
13	Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration	A6			D3
14	Lack of awareness of the psychological stress of spontaneous and trained volunteers following response operations		B16		
15	Insufficiencies in terms of resource management (human resources, hardware, etc.) during multi-stakeholder long-term response operations	A9, A32	B19, B21, B22, B24		D2
16	Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis				D2
17	Shortcomings in planning and managing large scale evacuation of population in urban areas	A23	B6, B20, B26		
18	Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise	A14	B30		
19	Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level		B28		
20	Limited ability to identify the location of injured/trapped/deceased casualties in large forest fires		B26, B27		
21	Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters units)		B18	C1	

Annex 4 – Agenda of the Updated Gaps Assessment validation Workshop

Gaps Assessment Workshop

Final Agenda

16-17 January, 2018 - Entente Valabre, Aix en Provence

TUESDAY 16 JANUARY 2018

11:30	***Bus pick–up*** *[Hôtel Saint Christophe, 2 Avenue Victor Hugo, 13100 Aix-en-Provence]*	
12:00-13:00	*Optional Lunch*	*Valabre Restaurant*
13:15-13:45	*Coffee & Registration*	*CESIR Theatre*
13:45-14:00	**Welcome and Overview of DRIVER+** Valabre official – to be confirmed Peter Petiet, DRIVER+ Project Director, TNO Marcel van Berlo, DRIVER+ Technical Coordinator, TNO	CESIR Theatre
14:00-14:10	**Objective of the workshop and approach to gaps analysis** Alice Clémenceau, Entente Valabre *DRIVER+ approach on Crisis Management gaps*	CESIR Theatre
14:10-14:20	**Q & A**	CESIR Theatre
14:20-15:00	**Summary of the gaps assessment**	CESIR Theatre
14:20	Trial 1: SGSP, Poland	
14:30	Trial 2: Valabre, France	
14:40	Trial 3: Austrian Red Cross, Austria	
14:50	Trial 4: The Hague municipality or Security Region, The Netherlands	
	For each Trial, explanation and presentation of the related gaps	
15:00-15:10	**Presentation of the methodology to validate gaps in parallel sessions** Alice Clémenceau, Entente Valabre *Organisation of the parallel sessions and the common methodology*	CESIR Theatre
Move to the Château Building for parallel workshop sessions		
15:15-18:30	**Parallel sessions ♯1: Gaps Validation**	Château Building
(including	A - Decision Support (room Sainte Victoire)	

coffee break)	B - Information sharing, situational awareness and coordination (room Sainte Baume) C - Engaging the population (warnings, crowd sourcing, crowd tasking, volunteers) (room Esterel) D - Resources planning and logistics, casualty management (room Alpilles) *Validation of a first set of gaps*	
19:00	***Social Dinner***	***Valabre Restaurant***
21:00	*Bus transfer **[Aix en Provence, Hôtel Saint Christophe]***	

WEDNESDAY 17 JANUARY 2018

07:50	***Bus pick–up** [Hôtel Saint Christophe, 2 Avenue Victor Hugo, 13100 Aix-en-Provence]*	
08:20	***Welcome Coffee***	***Château Building***
08:30-11:00 *(including coffee break)*	**Parallel sessions ♯2: Gaps Validation** A - Decision Support (room Sainte Victoire) B - Information sharing, situational awareness and coordination (room Sainte Baume) C - Engaging the population (warnings, crowd sourcing, crowd tasking, volunteers) (room Esterel) D - Resources planning and logistics, casualty management (room Alpilles) *Validation of a second set of gaps, preparation of feedback to plenary*	Château Building

Moving to the CESIR Theatre for plenary session

11:10-12:10 11:10 11:15 11:30 11:45	**Output from the workshop parallel sessions** A - Decision Support B - Information sharing, situational awareness and coordination C - Engaging the population (warnings, crowd sourcing, crowd tasking, volunteers) D - Resources planning and logistics, casualty management *Each parallel session to summarise the output of discussion to the plenary*	CESIR Theatre
12:00-12:30	**Wrap up and closure** Alice Clémenceau, Entente Valabre	CESIR Theatre
12:30-13:30	***Optional Lunch***	***Valabre Restaurant***
14:00	*Bus transfer **[1st stop: Aix en Provence Gare Routière** (where the shuttle to Aix-en-Provence TGV train station and Marseille airport is departing), **Final stop: Hôtel Saint Christophe]***	

Annex 5 – List of organizations represented at the gaps assessment validation workshop, beyond the DRIVER+ consortium

Country	Organisations
DE	Nordrhein-Westfalen Feuerwehr
	Johanniter-Unfall-Hilfe e.V
	Hamburg Fire and Rescue Service
EU	ERCC
FR	Conseil Régional Provence Alpes Côtes d'Azur (Regional Council PACA)
	ENSOSP (French academy for fire rescue and civil protection officers)
	Prefecture de la zone de défense et de sécurité sud (South Zone Interministerial Defense and Security Headquarter)
	SDIS 06 (departmental fire-fighter unit)
	SDIS13 (departmental fire-fighter unit)
	SDIS 30 (departmental fire-fighter unit)
	SDMIS 69 (departmental fire-fighter unit)
	DREAL PACA (French regional authority of the Ministry of Environment)
	Centre national civil et militaire de formation et d'entraînement NRBC-E (CBRNE National Training Center)
	SAFE cluster
	BMPM (Marseille military fire brigade)
GR	Hellenic Rescue Team
IT	Government Administration Genova, Liguria
	Universita' Cattolica del Sacro Cuore
	Italian Red Cross
	Plinius study center university of Naples
NL	The Netherlands Institute for Safety NIFV
	Ministery of Defence Netherlands
	Safety Region Haaglanden Ambulance and medical emergency services
	Safety Region Haaglanden, Fire Brigade
	Hoogheemraadschap Noord Holand Noorderkwartier Waterboard
	Hoogheemraadschap van Delfland
	City of The Hague
	The Netherlands Red Cross

Country	Organisations
	Veiligheidsregio Hollands Midden
	IFV
PL	IndusTrial Chemistry Research Institute
PT	Escola Nacional de Bombeiros
	Autoridade Nacional de Proteçao Civil (ANPC)
SE	MSB - Swedish Civil Contingencies Agency
	Brandkåren Attunda

Annex 6 – Questionnaire collected during the Updated Gaps Assessment validation Workshop

DRIVER+ Gaps Assessment Workshop

[17 January, 2018 - Entente Valabre, Aix en Provence, France]

Capability gaps validation questionnaire (session A #1)

Name: ……

Organisation: ……

Position: ……..

Country: ……..

For the next several capability gaps discussed during the workshop, please answer the following questions.

Gap n°1. Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the Incident Commander.

Do you consider this statement as a capability gap ?

In your country ☐ Yes ☐ No

Within your organisation ☐ Yes ☐ No

What is your level of knowledge regarding this gap?

☐very low ☐medium ☐very high

What is your level of experience in addressing this gap?

☐very low ☐medium ☐very high

What is your organisation's current ability regarding this gap?

☐ poor ☐ fair ☐ very good

What is the urgency for solving this gap?

☐extremely urgent ☐somewhat urgent ☐ not urgent

What is the severity of the gap on the fulfilment of your Crisis Management Functions?

☐ almost no consequences

☐ important consequences

☐ very serious consequences

What are your expectations from DRIVER+ future work concerning this particular gap?

☐ no specific expectations

☐ to understand the gap better

☐ a limited contribution in closing the gap

☐ a substantial contribution in closing the gap

If you think this gap is interdependent with another listed gap (complete list available in your folder), please express which one:

Gap N°….

"……
……"

Please provide any additional free comment on this gap in the box below:

Annex 7 – Overall results from the questionnaires

Results from the questionnaire filled in by the participants during the workshop.

- For column “acknowledgement”: % of respondents ticking "yes" to the question “Do you consider this statement as a capability gap? In your country” or “in your organisation?”
- For column “current capability”: The grade is calculated using the following scale: “very good” (1); “fair” (3); “poor” (5)
- For column “severity”: the grade is calculated using the following scale: “almost no consequences” (1); “important consequences” (3); “very serious consequences” (5)
- For column “urgency”: the grade is calculated using the following scale: “not urgent” (1); “somewhat urgent” (3); “very urgent” (5)

The column indicated in dark yellow indicate an average grade of all respondents equal or above 3.

N°	Gap statement	Acknowledgement	Current capability	Severity	Urgency
Gaps - Decision support (all respondents)					
1.	Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the incident commander	29%	3	2	1.33
2.	Limitations in the cross vulnerabilities (people, property, environment) assessment to optimise task prioritisation and decision making	43%	3.57	1.86	2.43
3.	Lack of a “Common Operational Picture” environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander	86%	2.67	3	2.33
4.	Limits in the ability to merge and synthetise disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making	86%	3	2.67	2.43
Gaps - Information sharing and coordination (all respondents)					
5.	Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)	100%	3	3.36	3

6.	Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations	82%	2.73	2.64	2.09
7.	Lack of mutual knowledge or alignment of operational needs and procedures between different organisations responding to the same crisis scenario	100%	3	3.36	3.36
8.	Insufficient understanding of the overall current and planned response efforts as well current strategies across organisations during a crisis	100%	3	3.2	2.55
9.	Lack of common doctrines and procedures supporting international cooperation in aerial firefighting	78%	3.89	2.78	1.89
Gaps - Engaging the population (all respondents)					
10.	Lack of effective public warning systems with the ability to verify whether the information reached the recipient	86%	3.86	2.14	2.25
11.	Shortcomings in policy and procedures for communicating with the public during a large crisis	63%	2.75	3.29	3.5
12.	Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations	100%	3.5	3.25	3.57
13.	Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration	71%	3	2.71	2.43
14.	Low awareness and lack of ability to address the risks of adverse mental health effects and decreased psychosocial wellbeing in spontaneous and trained volunteers following response operations	57%	3.7	2.67	2
Gaps - Resource planning, logistics (all respondents)					

15.	Insufficiencies in terms of resource management (humans resources, hardware, etc.) during multi-stakeholder long-term response operations	100%	2.82	3.91	3.55
16.	Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis	73%	2.8	2.6	2.8
17.	Shortcomings in planning and managing large scale evacuation of population in urban areas	100%	3	3	3.2
18.	Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise	91%	3.55	2.64	2.45
Gaps - Casualty management (all respondents)					
19.	Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level	57%	3	3	2.67
20.	Limited ability to identify the location of injured/trapped/deceased casualties in large forest fires	71%	4	3.33	2.43
21.	Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters units)	57%	2.71	3.29	3.29

Annex 8 – Solutions, initiatives and research projects mentioned by the workshop participants

Table A4: Solutions, initiatives and research projects

Gap	**Solution or procedure**	**Research project**

1	• Citygis Dispersion model for toxic gas, https://www.citygis.nl/ (in Dutch)
	• LCMS (Dutch) preparation module – situational awareness between more sectors
	• Live-op - tablet for local management vehicles
	  • http://www.firebrary.com/en/ - Firebrary, The electronic data dictionary for the Dutch service (in English)
	  • EFFECT - model
	  • ALOHA CAMEO – simple model, used broadly in Poland and France for airborne hazmat only, not water-based
		• Sector project, www.fp7-sector.eu (inactive): Common Information Space; Leonardo and e-geos plus LCMS plus flooding data

2		• EU CIRCLE – Pan-European framework for strengthening critical infrastructure resilience to climate change (H2020 Project) http://www.eu-circle.eu/ • SNOWBALL (FP7 project) https://snowball-project.eu/ • FORTRESS (Foresight Tools for Responding to cascading effects in a crisis), www.fortress-project.eu • SMART RESILIENCE as alternative to predictive models – Tool for categorisation of factors affecting resilience (H2020) http://smartresilience.eu-vri.eu
3	• Firebrary – term database for fire and crisis management • VocBench • GEMNET – European database for terms related to the INSPIRE Framework	• REACHOUT (DG ECHO project) • CRISMA - Modelling crisis management for improved action and preparedness (FP7 project), www.crismaproject.eu • CRISYS (FP7 project), 2011-2012 inactive website • DISASTER - integrative and modular ontology for establishing a common knowledge structure between all the first responders involved in an emergency (FP7 project) http://www.treelogic.com/en/DISASTER.html
4	• SGORS GR - 112	
5	• LCMS (the Netherlands)	• CONCORDE - Coordination Mechanisms For Medical Emergency Response (FP7) (mentioned by Greek participant) http://www.concorde-project.eu/

6	Examples: • Guidelines for the user teams issued by the UN. These are not a legal framework but it brings every part of the system together. • The common language used in Health/Medicine during an earthquake in China (collaborative work between medicine practitioners from different countries to develop common icons and symbols.)	• SAY-SO (H2020) – Standardisation of situational awareness systems (mentioned by German participant) http://www.sayso-project.eu/
7	• Catalogue for Civil Military Collaboration (the Netherlands) • Medical Response to Major Incident (MRMI) course, developed in Sweden for the government. It is based on the maxim system for huge simulation for mass casualty. All the players work with the system which shows them the difference between collaborative or isolated work. People get an overall picture of the situation, how to manage it, the implication of the actions, the passage of the information, etc.	• BEAWARE - Enhancing decision support and management services in extreme weather climate events (H2020) (mentioned by Greek participant) http://beaware-project.eu/
8		• BEAWARE - Enhancing decision support and management services in extreme weather climate events (H2020) (mentioned by Greek participant) http://beaware-project.eu/
9		
10	• WhatsApp • Re-training already existing structures to emergency response teams – eg Red Cross RFL (restoring family links – one of the oldest services provided by the RCRC movement globally)	• I-REACT (H2020) http://www.i-react.eu/
11	• Waze • Cameras in London linked to computer systems and linked to virtual borders. Computers monitor camera feeds to eg identify a person crossing train track and send out alert. Arranged by the Metropolitan system. Biometric CTV system used in subway. Geo-fencing.	
12	• 112 “where are U “ App (silent call, geolocation) • My MDA App • HOT – Humanitarian Open street map Team • USHAIDI (crowd sourcing) • Crowdmapping • Dutch Red Cross (“510 project”)	
13		
14		
15	• Solution deployed by Thales NL on the start of the Tour de France from Utrecht in 2015 • COSETEC (geolocation) • Key Locker (Delfland – TU Delft)	

	• ASIGN (Adaptive system for image communication in global networks • UNOSAT • LIVEMAPs	
16		
17	• www.sosflooding.com (TU Delft) • Digital Flooding Models (Nelen & Schuurmans consultants)	
18	• NATO wargames for crisis management? • XVR on-scene • Informatierotonde 3D-Delta • Simulation tool flooding Delfland-HHNK	• IGNIS (DG ECHO project)
19		
20	• www.findmespot.eu: It is a small tool, size of a mobile phone. It has too buttons only, quite simple, works using the satellite phone. It sends GPS coordinates and it works as long as it has battery.	

Annex 9 – Gaps and related CM functions

This annex links each of the 21 gaps to functions (sub-functions, tasks) from the Taxonomy of Crisis Management Functions (18), along with the rationale why a certain function has been selected as relevant. The number in parentheses after each function is its number in the hierarchical taxonomic structure presented in D934.10 (18). This numbering will not be preserved in future versions of the taxonomy as it will be amended during and beyond the DRIVER+ project.

5.1.1 A. DECISION SUPPORT

Table A5: Decision support gaps

Gap # 1	Modelling and visualisation of chemical and radiological threats' dynamics
Short description	Limitations in the ability to model real-time (response phase) or pre-event (preparedness phase) dynamics of the chemical and radiological threat and visualisation of obtained results in a form that can be used directly by the incident commander
Related to function Rationale	Develop decision support systems (2.2.4) Incident commanders need timely, detailed and reliable status information and forecasts on the spread of chemical and radiological hazards and their impact
Related to function Rationale	Coordinate and conduct research and education (2.5.2) It is necessary to develop adequate hazards' modelling and simulation capacity
Related to function Rationale	Integrate decision support (7.3.1.2) The output--status and forecasts--of the spread of radiological and chemical hazards and their impact needs to be incorporated in decision support system(s) and visualised in a way adequate to incident commanders.
Related to function Rationale	Integrate data collection tools (7.3.4.2) During response, near real time feed of actual data is needed to allow for proper assessment of threats and reliable forecasts

Gap # 2	Assessment of cross vulnerabilities
Short description	Limitations in the cross vulnerabilities (people, property, environment) assessment to optimise task prioritisation and decision making
Related to function Rationale	Assess vulnerabilities to hazards (1.2.2) Assessment of vulnerabilities needs to account for cross domain interdependencies and potential cascading effects
Related to function Rationale	Conduct damage and needs assessment (5.1.2) The assessment of needs requires model- and data-based prediction of impact across domains
Related to function Rationale	Maintain shared situational awareness (5.2.2) Information on cross vulnerabilities and their actual and potential impact is needed to develop and sustain COP
Related to function Rationale	Conduct coordinated tasking and resource management (5.2.3) The understanding of cross vulnerabilities and their impact affords better definition, prioritisation and assignment of tasks and respective allocation of limited resources

Gap # 2	Assessment of cross vulnerabilities
Related to function Rationale	Integrate decision support (7.3.1.2) The assessment of cross vulnerabilities and their impact is integrated into decision support system(s)

Gap # 3	Adequate COP environment
Short description	Lack of a "Common Operational Picture" environment to integrate data sources and calculation results from different models crucial for decision making process from the perspective of the incident commander
Related to function Rationale	Coordinate and conduct research and education (2.5.2.b) A modelling and simulation capacity is needed to understand fully data flows, bottlenecks, and interoperability issues.
Related to function Rationale	Develop decision support systems (2.2.4) Decision support systems are needed to integrate outputs of variety of models and deliver information of crucial importance to the incident commander.
Related to function Rationale	Maintain shared situational awareness (5.2.2) The integration of information from various sources is key for maintaining situational awareness.
Related to function Rationale	Integrate decision support (7.3.1.2) Adequate integration of data from various sources and models' output is needed to provide decision support to incident commander.
Related to function Rationale	Integrate data collection tools (7.3.4.2) Data collection tools need to be integrated in a common data and information management architecture.
Related to function Rationale	Monitor the affected area (8.5.1) Data from various sources is used to monitor comprehensively the affected area.
Related to function Rationale	Provide situational awareness, share COP (8.5.2) The integration of data from various sources and models contributes to COP situational awareness.

Gap # 4	Real-time data and information fusion to support incident commander decision making
Short description	Limits in the ability to merge and synthesise disparate data sources and models in real time (historic events, spreading models, tactical situation, critical assets map, etc) to support incident commander decision making
Related to function Rationale	Coordinate and conduct research and education (2.5.2.b) There is a need to develop capacity to model and simulate data flows, interfaces and the integration of various models and tools.
Related to function Rationale	Develop decision support systems (2.2.4) Decision support systems are needed to integrate data from various sources and formats and outputs of variety of models and deliver support to the decision of the incident commander.
Related to function	Maintain shared situational awareness (5.2.2)

Gap # 4	Real-time data and information fusion to support incident commander decision making
Rationale	Capability to fuse historical data, models' outputs and real-time data feeds in various formats allows enhanced situational awareness.
Related to function Rationale	Integrate decision support (7.3.1.2) Adequate integration of data from various sources and models' output has the potential to enhance decision support to incident commander.
Related to function Rationale	Integrate data collection tools (7.3.4.2) Data collection tools need to be integrated in a common data and information management architecture to assure interoperability.
Related to function Rationale	Monitor the affected area (8.5.1) Data from various sources is used to monitor comprehensively the affected area; it enhances situational awareness and facilitates decision support.
Related to function Rationale	Provide situational awareness, share COP (8.5.2) The fusion of historical, real-time data and outputs of validated models, coming in various formats, potentially enhances situational awareness.

5.1.2 B. INFORMATION SHARING, SITUATIONAL AWARENESS, AND COORDINATION

Table A6: Information sharing, situational awareness and coordination gaps

Gap # 5	Exchanging crisis-related information among agencies and organisations
Short description	Shortcomings in the ability to exchange crisis-related information among agencies and organisations (also related to as interoperability)
Related to function Rationale	Identify stakeholders' CCIM capabilities and procedures (7.1.1.1) Crisis Communications and Information Management (CCIM) capabilities and procedures of stakeholders need to be understood so that interoperability issues are identified in a timely manner.
Related to function Rationale	Regulate access to CM communications and information (7.1.3.b) Coordination across state agencies, local authorities, private entities, and volunteer organisations is needed in developing crisis communications and information management documentation and procedures.
Related to function Rationale	Develop communications policy, plans and procedures (7.2.2) Consultation and coordination among stakeholders in the development of communications policy, plans and procedures will facilitate the exchange of crisis relevant information prior to and during a crisis.
Related to function Rationale	Establish crisis communications capabilities (7.3.2) Early identification of information exchange requirements will guide the development of communications capabilities and interfaces and thus facilitate interoperability.
Related to function Rationale	Define information management procedures (7.3.4.5) Coordination among stakeholders in defining procedures for information management will facilitate the exchange of crisis related information.
Related to function Rationale	Provide communications and information support to C3 (7.5.2) The provision of communications and information support by certain organisations (e.g. professional responders) to other stakeholders (e.g. local authorities, private actors, volunteers) will facilitate interoperability.

Gap # 5	Exchanging crisis-related information among agencies and organisations
Related to function Rationale	Provide situational awareness, share COP (8.5.2) The efficient exchange of crisis related information among organisations will contribute to situational awareness.

Gap # 6	Common understanding of the information exchanged in response operations
Short description	Limits in the ability to ensure a common understanding of the information exchanged (terminology, symbology) by all crisis managers involved in the response operations
Related to function Rationale	Regulate access to CM communications and information (7.1.3.b) Consultation and coordination across state agencies, local authorities, private entities, and volunteer organisations in develop crisis communications and information management documentation and procedures will promote adequate access to information (e.g. on a need to know basis) and commonality in terminology, symbology and, hence, understanding of a crisis situation.
Related to function Rationale	Establish crisis communications capabilities (7.3.2) Requirements towards crisis communications capabilities, coordinated among stakeholders, need to seek commonality or harmonisation of terminology, symbols, representation of crisis management information, and data exchange formats.
Related to function Rationale	Set-up dissemination and information sharing (7.3.4.8) Established principles of information sharing need to promote standardised, common or harmonised terminology, symbology, formats and representation of crisis management information.
Related to function Rationale	Establish internal coordination (8.4.1) Standards, common or harmonised terms, symbols, formats and representations need to be established in internal--horizontal and vertical--coordination.
Related to function Rationale	Establish CM rules and standard operating procedures (2.4.4) Standards, common or harmonised terms, symbols, formats and representations need to be followed in the establishment of crisis management rules and standard operating procedures.
Related to function Rationale	Provide training for interoperability between organisations and command levels (2.5.3.4) Commonality or harmonisation of training standards and modes will promote common understanding of the information exchanged in crisis operations.

Gap # 7	Understanding CM capabilities of participating organisations
Short description	Lack of mutual knowledge or alignment of operational needs and procedures between different organisations responding to the same crisis scenario
Related to function Rationale	Conduct coordinated tasking and resource management (5.2.3) In response operations, participating organisations benefit from coordinated tasking and resource management, e.g. in defining, prioritising and assigning tasks, exchanging information, pooling and sharing resources.

Gap # 7	Understanding CM capabilities of participating organisations
Related to function Rationale	Establish C3 procedures (8.1.4) Established C3 procedures need to envision exchange of information on capabilities and procedures of organisations responding to the same scenario.
Related to function Rationale	Establish C3 information systems (8.1.3) Information systems supporting C3 need to envision exchange of information on capabilities and procedures among organisations, participating in the same crisis management scenario.
Related to function Rationale	Establish professional coordination (8.4.3) Templates for exchange of information among participating organisations need to cover their capabilities and procedures.
Related to function Rationale	Establish transborder coordination (8.4.4) In establishing transborder coordination, participating organisations need to exchange information of their capabilities and procedures.
Related to function Rationale	Provide training for interoperability between organisations and command levels (2.5.3.4) Training standards, courses and exercises need to incorporate exchange of information of the capabilities and procedures of participating organisations.

Gap # 8	Shared awareness of status and planned efforts in CM operations
Short description	Insufficient understanding of the overall current and planned response efforts as well current strategies across organisations during a crisis
Related to function Rationale	Raise awareness and anticipate (4.1.2) Systematic monitoring and data collection during 'protection' need to cover information on status of resources and planned efforts and share it, thus increasing awareness of participating organisations.
Related to function Rationale	Conduct operational planning (4.2) Coordinated operations planning takes into account committed organisational resources, their status, and likely courses of action.
Related to function Rationale	Maintain shared situational awareness (5.2.2) Shared situational awareness is maintained by collecting information from variety of sources, including information of own resources and intended actions, developing and sustaining a Common Operational Picture (COP), and disseminating COP.
Related to function Rationale	Conduct coordinated tasking and resource management (5.2.3) Coordinated tasking and resource management assumes availability of information and shared understanding of the status of resources, committed by each participating organisation, and its intended course of action (or 'strategy').
Related to function Rationale	Provide situational awareness, share COP (8.5.2) To achieve situational awareness, participating organisations share information on the resources they have or intend to commit to the crisis management operation, and the ways in which these resources will be used.

Gap # 9	International cooperation in aerial firefighting
Short description	Lack of common doctrines and procedures supporting international cooperation in aerial firefighting
Related to function Rationale	Manage international support (5.2.5) Common procedures are needed to request international support, allocate limited aerial firefighting assets, establish transportation routes, storage facilities, and a mechanism for international financial support.
Related to function Rationale	Establish coordination with societal, private and international organisations (8.4.2) Established mechanisms for coordination with international partners will facilitate the management of limited aerial firefighting assets.
Related to function Rationale	Manage and support International responders (8.5.8) The use of foreign and international, public and private, aerial firefighting assets is facilitated by established procedures for management and provision of support.

5.1.3 ENGAGING THE POPULATION (WARNING, CROWD SOURCING, CROWD TASKING, VOLUNTEERS)

Table A7: Engaging the population gaps

Gap # 10	Public warning with feedback
Short description	Lack of effective public warning systems with the ability to verify whether the information reached the recipient
Related to function Rationale	Develop integrated warning and alerting (2.2.1) Variety of communications channels and media need to be used to reach vulnerable groups of the population and monitor reactions.
Related to function Rationale	Improve communities' preparedness, responsiveness, learning, self-organisation, and innovation (3.4.3) Communities' preparedness will contribute to the spread of warnings and alerts, in particular to vulnerable groups, and the awareness of their reaction.
Related to function Rationale	Develop communications policy, plans and procedures (7.2.2) Effective communications policy, plans and procedures will support participating organisations, e.g. by defining each actor's communications and information management responsibilities and authority, clarifying the target audience, developing implementation packages (audience, information, channels, tools, timeframe), monitoring, obtaining institutional and public feedback.

Gap # 11	Communicating with the public during a large crisis
Short description	Shortcomings in policy and procedures for communicating with the public during a large crisis
Related to function Rationale	Develop integrated warning and alerting (2.2.1) A warning and alerting system with a messaging capability will allow to inform the population at the onset of a crisis and to continue to provide alerts and advice during a crisis management operation.

Gap # 11	Communicating with the public during a large crisis
Related to function Rationale	Maintain public awareness on hazards and respective services (4.1.2.3) Alerts and advice will serve to maintain public awareness on hazards, availability of respective services, and the means by which they can be accessed.
Related to function Rationale	Develop communications policy, plans and procedures (7.2.2) Established communications policy, plans and procedures need to incorporate ways to continuously provide alerts and advice to various groups of the population and provide contact points for their information requests.
Related to function Rationale	Communicate hazard information to the public (7.5.1.3) The population has to be informed on the evolution of the hazard and its expected impact.
Related to function Rationale	Deliver public information and advice (8.5.15) Public information, guidance, instructions and advice need to be delivered continuously.

Gap # 12	Incorporating information from multiple and non-traditional sources
Short description	Insufficiency in the ability to incorporate accurate and verified information from multiple and non-traditional sources (e.g. crowdsourcing and social media) into response operations
Related to function Rationale	Prepare for crowd tasking (2.3.2.6) Established channels for communication with the public will allow to task people to provide needed information.
Related to function Rationale	Provide for crowd sourcing (7.3.1.3) Advanced crisis communications and information management networks create opportunities for application of relevant modes of crowd sourcing, as well as dissemination of the information on such opportunities.
Related to function Rationale	Monitor media coverage (7.5.5) Monitoring of media coverage will provide facts and contextual information on the impact of the emergency, progress in disaster response made by the CM agencies, recommendations to the population, etc.
Related to function Rationale	Ascertain the quality of data (7.3.4.4) Information from media and social networks, as well as directly communicated information by people (e.g. who are on the scene) needs to be verified to assure quality.

Gap # 13	Managing spontaneous volunteers
Short description	Insufficiencies in the management of spontaneous volunteers on the crisis scene in terms of location, tasking, capabilities, and shift duration
Related to function Rationale	Manage spontaneous volunteers (5.2.4.5) Communicate with, assess the abilities, task, track the location and engagement (e.g. shift duration) of spontaneous volunteers during a crisis.
Related to function Rationale	Establish organisation for spontaneous volunteers (2.3.2.5) Establish organisation needed to identify and register spontaneous volunteers

Gap # 13	Managing spontaneous volunteers
	and to assign them to teams and coordinators; assure that an adequate legal basis is in place.
Related to function Rationale	Prepare for crowd tasking (2.3.2.6) Define responsibilities and procedures for tasking spontaneous volunteers, offering their support to response and recovery operations, and 'digital volunteers' willing to provide support on social media.
Related to function Rationale	Provide for crowd sourcing (7.3.1.3) The support of unaffiliated and 'digital' volunteers will be facilitated when opportunities for application of relevant modes of crowd sourcing are established and the information on such opportunities is widely disseminated.
Related to function Rationale	Regulate access to CM communications and information (7.1.3.b) Crisis communications and information management documentation and procedures need to provide opportunities to receive information from and manage spontaneous volunteers.
Related to function Rationale	Train individuals, teams and organisations (2.5.3) Professional responders, teams and organisations need to be trained to manage spontaneous volunteers.

Gap # 14	Addressing the psychological stress of volunteers
Short description	Low awareness and lack of ability to address the risks of adverse mental health effects and decreased psychosocial wellbeing in spontaneous and trained volunteers following response operations
Related to function Rationale	Manage organised volunteers (5.2.4.4) The management of organised volunteers needs to provide for understanding and dealing with stress experienced by organised volunteers.
Related to function Rationale	Manage spontaneous volunteers (5.2.4.5) The management of spontaneous volunteers needs to provide for understanding and dealing with stress experienced by spontaneous volunteers.
Related to function Rationale	Provide off-site health and MHPSS services (5.4.5) The provided off-site health care and MHPSS services need to include psychological and psychosocial care for organised and spontaneous volunteers.
Related to function Rationale	Provide MHPSS (5.4.7) Crisis medical, psychological and psychosocial services need to account for the need to assess and treat stress experienced by volunteers.
Related to function Rationale	Restore critical medical and MHPSS services (6.4.1) Critical medical and MHPSS services to be restored during recovery operations include provision of comprehensive stress management, MHPSS and substance abuse services and programmes.

5.1.4 D. RESOURCE PLANNING, LOGISTICS AND CASUALTY MANAGEMENT

Table A8: Resource planning, logistics and casualty management gaps

Gap # 15	Resource management during long-term response operations
Short description	Insufficiencies in terms of resource management (human resources, hardware, etc.) during multi-stakeholder long-term response operations
Related to function Rationale	Manage the system of reserves (2.2.10) Establishing and maintaining a of emergency and crisis reserves and stockpiles will facilitate the performance of long-term operations.
Related to function Rationale	Maintain shared situational awareness (5.2.2) Shared situational awareness will provide advance notice of resource needs of multiple stakeholders.
Related to function Rationale	Conduct coordinated tasking and resource management (5.2.3) Coordinated tasking and resource management will provide opportunities for pooling and sharing resources and more efficient allocation of resources to tasks.
Related to function Rationale	Determine materiel requirements (9.2.1) Early and proper determination of materiel requirements per plausible crisis scenarios will facilitate adequate resourcing of professional and volunteer organisations.
Related to function Rationale	Provide end-to-end visibility of resources (9.1.3) A better awareness of status of requests and resource location will increase the efficiency and transparency in the use of resources.
Related to function Rationale	Create common operational framework for prioritisation (9.2.6) Increased transparency, combined with a common operational framework for prioritisation, will increase the efficiency in the use of key assets.

Gap # 16	Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis
Short description	Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis
Related to function Rationale	Establish an integrated CM organisation (2.4.1.d) Establish an integrated crisis management organisation with a centralised HQ, supporting centres and local command structures will provide for better awareness and allocation of limited assets to priority tasks and, if considered necessary, augmentation of the command, control, and coordination structures.
Related to function Rationale	Establish CM doctrine and train organisations and people (2.5) The crisis management doctrine and training need to elaborate requirements and principles of response to rare, high intensity and long-term crises.
Related to function Rationale	Explore the implications of alternative futures (3.2.3) The exploration the implications of alternative crisis management futures, identified by rigorous foresight, will facilitate awareness and anticipation of highly demanding crises, e.g. by conducting exercises (table top, academia) and simulations in alternative futures' scenarios.

Gap # 16	Limitations in the planning of resources (qualified personnel and equipment) for response during large scale and long term cross-border crisis
Related to function Rationale	Plan across ranges and level of activities (4.2.2) Plans for crisis management operations need to account for the full range of activities at every level of command and management and establishing cross border coordination.
Related to function Rationale	Coordinate planning with support providers (4.2.3) Operational planning, and plans, need to be coordinated with military and other (e.g. private, international) providers of support.

Gap # 17	Large scale evacuation in urban areas
Short description	Shortcomings in planning and managing large scale evacuation of population in urban areas
Related to function Rationale	Plan for CM capabilities /in a likely scenario/ (2.1) A rigorous capabilities-oriented planning process, including likely scenarios, allows to identify gaps and options in meeting any requirement.
Related to function Rationale	Develop options and estimate required resources (3.3.1) For a less likely, yet plausible crisis management scenarios, identified by rigorous foresight, one needs to develop possible courses of action and estimate respective required resources.
Related to function Rationale	Provide evacuation and shelter (5.4.3) Evacuation and shelter, along with other core services, need to be provided within and outside the affected area.
Related to function Rationale	Upgrade the temporary sheltering (6.2.2) During recovery operations, additional resources may be mobilised to upgrade temporary sheltering.
Related to function Rationale	Open critical transportation lines (6.2.5) Large scale evacuation requires that critical transportation lines are opened and maintained, and their use is managed to meet priority requirements.
Related to function Rationale	Plan, organise, and resource transportation logistics (9.3.1) Transportation logistics needs to be adequately planned, organised, and resourced to provide for any foreseen crisis response and recovery operations.
Related to function Rationale	Manage evacuation camps and related services (9.5.3) Temporary deployable accommodation camps and other evacuation facilities need to be established and operated within and outside the affected area, with provision of core related services.

Gap # 18	Use of virtual reality to enhance preparedness for large scale evacuation
Short description	Shortcomings in the use of virtual reality to enhance preparedness of first responders in case of large scale evacuation, as a support for training and exercise
Related to function Rationale	Develop and conduct all-hazards training (2.5.3.1) Develop and conducting all-hazards training needs to include large scale

Gap # 18	Use of virtual reality to enhance preparedness for large scale evacuation
	evacuation training for national, regional, and local authorities, thus contributing to their crisis management capacity.
Related to function Rationale	Conduct CM exercises (2.5.3.2) Exercises of sufficient intensity are conducted to challenge the crisis management system.
Related to function Rationale	Develop hazard-specific simulations and conduct CAX (2.5.3.3) Hazard-specific simulations and computer and simulations assisted exercises, utilising virtual reality, contribute to reaching an adequate capacity to conduct large scale evacuation.
Related to function Rationale	Explore the implications of alternative futures (3.2.13 Virtual reality will enhance the capacity to explore the implications of alternative crisis management futures, identified via rigorous foresight, e.g. involving large scale evacuation, by conducting exercises and simulations.
Related to function Rationale	Develop options and estimate required resources (3.3.1) For a less likely, yet plausible crisis management scenarios, identified by rigorous foresight, e.g. involving large scale evacuation, one needs to develop possible courses of action and estimate respective required resources. Both estimates and awareness may be enhanced by implementation of virtual reality.

Gap # 19	Coordination in dealing with large numbers of severely burned casualties
Short description	Lack of efficient coordination mechanism to overcome the limited capacity to deal with large numbers of severely burned casualties at member state level
Related to function Rationale	Conduct SAR operations (5.4.1) Search and rescue operations are used to find missing people, rescue victims of forest fires, provide first aid, and move them to safe areas.
Related to function Rationale	Provide on-site first aid (5.4.2) On-site first treatment service needs to be provided to severely burned people.
Related to function Rationale	Provide off-site health and MHPSS services (5.4.5) On-site treatment of severely burned people can be provided by deployed field hospitals or by transporting them to regular hospitals.
Related to function Rationale	Direct additional national and international medical support (9.4.3) Additional national and international medical support for dealing with severely burned people is accepted and coordinated.

Gap # 20	Locating casualties in large forest fires
Short description	Limited ability to identify the location of injured/ trapped/ deceased casualties in large forest fires
Related to function Rationale	Survey or/and investigate the affected area (5.1.1.1) Inter-agency surveillance and investigation of an area affected by a large forest fire need to be enhanced by a capacity to identify and locate casualties.
Related to function	Conduct damage and needs assessment (5.1.2.a)

Gap # 20	Locating casualties in large forest fires
Rationale	Human and sensor data from the field and from airborne platforms will facilitate the identification and location of casualties in large forest fires.
Related to function Rationale	Integrate data collection tools (7.3.4.2) Novel data collection tools, integrated to the crisis communications and information management system, may allow to identify and locate casualties in large forest fires.
Related to function Rationale	Provide for crowd sourcing (7.3.1.3) Standing opportunities for crowd sourcing will facilitate communications by people trapped or injured by a large forest fire.

Gap # 21	Providing medical assistance to casualties
Short description	Barriers in capability to provide medical assistance to casualties either by transporting them to a safe place or bringing emergency medical service to the scene (when medical care is not provided by firefighters' units)
Related to function Rationale	Conduct SAR operations (5.4.1) Search and rescue operations coordinate activities to find missing people, rescue victims, and provide first aid.
Related to function Rationale	Provide on-site first aid (5.4.2) On-site first treatment service is provided by emergency medical services (EMS) personnel brought to the scene.
Related to function Rationale	Provide off-site health and MHPSS services (5.4.5.a&b) Off-site treatment is provided when casualties are transported to a deployed field hospital or a regular hospital.
Related to function Rationale	Provide transportation of responders and supplies (9.3.2) Transportation of EMS personnel, medicine and medical materials needs to be provided to and within the affected area.
Related to function Rationale	C3 SAR and first responders' operations (8.5.6) A better coordination between firefighting and emergency medical services (EMS) personnel, participating in search and rescue and other response operations, is needed.
Related to function Rationale	Ensure safe and secure CM environment (10.4.2) A safer and more secure environment needs to established for emergency medical services (EMS) personnel.

Annex 10 – Reimbursement form & guidelines

EXPERT EXPENSES GUIDELINES

DRIVER+ Project Team: cooperation@driverproject.eu

5.1.5 Expenses will be covered upon the following conditions:

Travel will be reimbursed for the most direct and economical mode of travel available.

Plane/train: If no price is indicated on the ticket, the invoice must also be enclosed. Travel will be reimbursed if originals of the ticket and boarding passes are provided. Plain/train tickets exceeding €300 will require prior approval by ARTTIC SAS. Local airport transfer and airport/train station parking may be reimbursed.

Local transport: You are kindly asked to use public transportation in case it is available transport. For local transport expenses, all justifications and receipts must be added to the reimbursement form.

Accommodation: In general, you will be reimbursed up to a maximum of €110 per night including breakfast or €100 per night without. Exceptions can be made when staying in particularly expensive cities, such as Paris and Brussels. A maximum of 2 nights will be reimbursed for a 1-day event, a maximum of 3 nights will be reimbursed for a 2-day event, and so on.

Meals: Standard meals will be reimbursed. Food and beverage expenses should not exceed €30/meal.

5.1.6 Supporting documents:

- Only costs for which a receipt can be presented (originals of tickets, receipts, invoices, vouchers, etc.) will be eligible for reimbursement.
- Originals of transport tickets + invoices or vouchers must be provided. They must clearly indicate the amount paid and the full itinerary (showing departure/arrival dates and times).

5.1.7 Process implemented:

Only fully completed and signed Expense Sheets will be considered by ARTTIC SAS, including:

- Bank account details (bank name, address, account number, SWIFT & IBAN)
- Expert and Project Team signatures

5.1.8 Items not eligible for reimbursement:

The following are some examples of items NOT eligible for reimbursement:

- Registration fees, costs of health, life and luggage insurance
- Cancellation insurance
- Telephone calls
- Indirect costs such as per diem, daily allowance, etc.

If the completed Expense Sheet is not submitted within 90 days after the event, it is considered that no claim for payment or for reimbursement of expenses will be requested by the participant.

Other arrangements may be considered in exceptional cases, and are subject to prior approval by ARTTIC SAS.

5.1.9 Reimbursement:

- Reimbursement is made by bank transfer only.
- If the beneficiary is in the Euro zone, expenses are reimbursed in Euro unless otherwise mentioned in the expense sheet.
- Only the following 3 currencies of reimbursement are possible: EUR, GBP or USD
- Reimbursement will be made the 15th or 30th of the month of reception of the original and validated expense sheet by the Accounting Department.

Expert expenses sheet

For any information or claim, please send an email to : expertexpensessheet@eurtd.com
Please find attached the Expert expenses guidelines

Expert name :		**Document date :**	
Expert first name :		**Project :**	
Expert personal adress :		**Project mail address :**	
Organisation :		**Meeting title :**	
Expert mail :		**Meeting location :**	
Total invoice :	**0 EUR**	**Meeting dates :**	

Currency for reimbursement (€ default) : EUR, GBP or USD	EUR

EXPENSES DETAILS

Date	Description of the expense	Type of purchase	Amount paid	Currency of payment	Conversion rate to the currency of reimbursement	Amount in currency of reimbursement
						0
						0
						0
						0
						0
						0
						0
Total						**0**

Please provide a printed bank details form *or* Fill in the table below

Bank name	
Bank address	
Account Holder	
SWIFT/ BIC	
IBAN	
Account number (UK)	
Sort code (UK)	
Code ABA/ Rounting number (USA)	

	Beneficiary :	**ARTTIC project team :**
NAMES • DATES • SIGNATURES		Name:
	Date:	Date:
	Signature:	Signature:

Annex 11 – Informed Consent Form

INFORMED CONSENT FORM

This informed consent statement relates to research conducted within the FP7-funded DRIVER+ *Driving Innovation in Crisis Management for European Resilience*. The activity for which informed consent is being sought is described in the following.

General information about the research project, in which you are participating

Current and future challenges due to increasingly severe consequences of natural disasters and terrorist threats require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management. DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is a FP7 Crisis Management demonstration project aiming at improving the way capability development and innovation management is tackled. DRIVER+ has three main objectives:

1. Develop a pan-European Test-bed for Crisis Management capability development:
   - Develop a common guidance methodology and tool (supporting trials and the gathering of lessons learned
   - Develop an infrastructure to create relevant environments, for enabling the trialing of new solutions and to explore and share CM capabilities
   - Run trials in order to assess the value of solutions addressing specific needs using guidance and infrastructure
   - Ensure the sustainability of the pan-European Test-bed
2. Develop a well-balanced comprehensive Portfolio of Crisis Management Solutions:
   - Facilitate the usage of the portfolio of solutions
   - Ensure the sustainability of the portfolio of tools
3. Facilitate a shared understanding of Crisis Management across Europe:
   - Establish a common background

Description of Research

The research, under the lead of Alice Clémenceau, VALABRE, focuses on **Crisis Management Capability Gaps Assessment** and is embedded in the DRIVER+ project.

In order to provide a European answer to the challenges that Crisis Management is facing today and will face tomorrow, the involvement of as many concerned Crisis Management practitioners as possible is essential. This is notably crucial when it comes to better understanding the Crisis Management capability gaps, representing the "difference between a current capability and the capability considered necessary for the adequate performance of one or more disaster management tasks. Capability gaps [...] are not restricted to only technical areas.[1]"

The informed consent of participants is being sought for the workshop on Gaps Assessment held in Valabre on the 16th and 17th of January 2018.

[1] First Responders - Identifying capability gaps and corresponding technology requirements in the EU, ECORYS and TNO for European Commission DG HOME, January 2017

This project has received funding from the European Union's 7th Framework Programme for Research, Technological Development and Demonstration under Grant Agreement (GA) N° #607798

The data collected during the workshop comprises:

- Notes to be taken by project partners during the discussions;
- Questionnaire to be filled in by the participants at the end of the discussions;
- Pictures taken during the workshop (to illustrate the deliverable presenting the outcome of the workshop).

Selection of participants and treatment of data

Around 40 people will participate in the workshop. They were invited and selected by the project partners based on their expertise related to the crisis management capability gaps listed by the project's partners.

The participants will be asked to react to the crisis management capability gaps listed by the project partners and share their own knowledge and experience in confronting those gaps.

This information will be clustered and used to make general recommendations for further project activities to enrich the project's description of such gaps and to validate their relevance. Also, the collected information will guide the design of the subsequent four DRIVER+ trials.

Data will be anonymised (no names will appear in the deliverable).

The original data will be stored in Valabre for the duration of the project and deleted at the end of the project. It will be processed and analysed by Valabre, which is responsible for it. Access will be granted to project partners on a need to know basis.

Your participation

Your participation is integral to the project and will contribute to the quality and novelty of research on crisis management and resilience. Participation in the project means that you will be asked to take part in the workshop discussions. Participation in the workshop is entirely voluntary. You will not have to share information that you consider private. Your participation in the project can be withdrawn at any time without further notice. In that case your data will be deleted instantly. We point out that the complete withdrawal of your data may not be possible after the point in time that the data has been anonymised, clustered or generalised (by March 2018).

The research commenced in September 2017 and comes to an end at the latest in April 2020.

Alice Clémenceau will publish the results in such a way that individual views and arguments can never identify participants. The limited personal information gathered will be treated confidentially and Alice Clémenceau will duly respect this.

The deliverable will be shared with you once published.
If you allow VALABRE to use your data in the project, please express your consent in written form by signing below (paper version to be provided at the meeting venue, during registration).

Your name in block letters:

Participant's Date & Signature:

If you have any questions please do not hesitate to contact *(ALICE CLEMENCEAU)*. Should you have any complaints about the way the research is carried out, you can contact *(CNIL- Commission Nationale de l'Informatique et des Libertés)*.

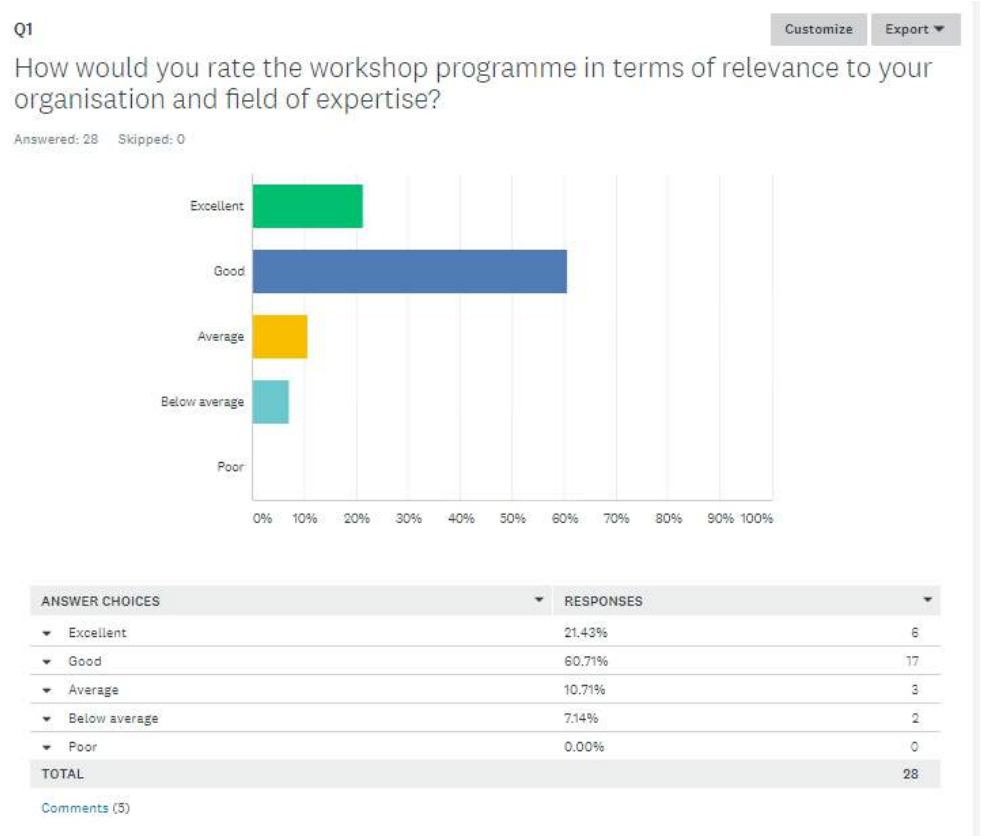
Kind regards,

Alice Clémenceau (a.clemenceau@valabre.com)

Annex 12 – Results of the Updated Gaps Assessment validation Workshop evaluation survey

This annex presents the results of the survey sent to all participants in the workshop, and completed by 74% of the contacted persons.

Figure A1: Questionnaire results



ANSWER CHOICES	RESPONSES	
Excellent	21.43%	6
Good	60.71%	17
Average	10.71%	3
Below average	7.14%	2
Poor	0.00%	0
TOTAL		28

Comments (5)

Showing 5 responses

To large "wide range" of organizations
3/1/2018 10:47 AM — View respondent's answers

sending the detailed proposals of the needs and gabs beforehand would have been better
2/28/2018 6:35 PM — View respondent's answers

Session C - Engaging the population was really relevant
2/27/2018 6:10 PM — View respondent's answers

Topics covered relevant to project
2/26/2018 1:50 PM — View respondent's answers

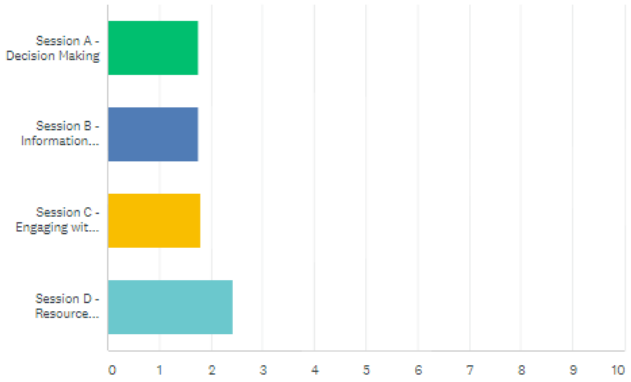
The workshop was very general and i was investing gabs and needs that were not relevant for my field of expertise
2/21/2018 10:06 AM — View respondent's answers

Q2

Customize Export

Please rate the parallel session(s) you participated in

Answered: 28 Skipped: 0



	EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	POOR	TOTAL	WEIGHTED AVERAGE
Session A - Decision Making	25.00% 2	75.00% 6	0.00% 0	0.00% 0	0.00% 0	8	1.75
Session B - Information Sharing, Situational Awareness and Coordination	25.00% 2	75.00% 6	0.00% 0	0.00% 0	0.00% 0	8	1.75
Session C - Engaging with the Population (warning, crowd sourcing, crowd tasking, volunteers)	40.00% 2	40.00% 2	20.00% 1	0.00% 0	0.00% 0	5	1.80
Session D - Resource Planning, Logistics and Casualty Management	0.00% 0	58.33% 7	41.67% 5	0.00% 0	0.00% 0	12	2.42

Comments (5)

Showing 5 responses

sending the detailed proposals of the needs and gabs beforehand would have been better

2/28/2018 6:35 PM View respondent's answers

all along the discussion the sessions sufaced a lot of interesting issues

2/27/2018 6:10 PM View respondent's answers

Would prefer more people to be encouraged to participate in discussions

2/26/2018 1:50 PM View respondent's answers

The participants did not have a coherent frame of reference available for their discussions, this lead to the circumstance that discussions were not always particularly focused. Sharing detailed background information upfront could have to clarify conceptual questions prior to the workshop, making the discussion more focused and fruitful. Furthermore did the different case/gaps discussed lack a coherent approach, this lead some confusion in the group and time being spent trying to establish a shared understanding of the scope of the gap.

2/21/2018 4:47 PM View respondent's answers

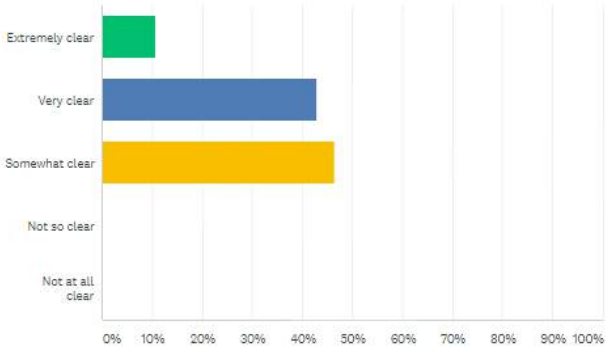
I didn't choose that session so I'm afraid that my contribution wasn't so interesting

Q3

Customize Export

After attending this workshop, would you say that your understanding of the different gaps discussed is

Answered: 28 Skipped: 0



ANSWER CHOICES	RESPONSES	
Extremely clear	10.71%	3
Very clear	42.86%	12
Somewhat clear	46.43%	13
Not so clear	0.00%	0
Not at all clear	0.00%	0
TOTAL		28

Comments (5)

Showing 5 responses

a lot of time was needed to clarify what was meant by certain languages by language and culture differences

2/28/2018 6:35 PM View respondent's answers

different countries' point of views were clearly presented

2/27/2018 6:10 PM View respondent's answers

some gaps were not recognized in the group

2/21/2018 9:09 PM View respondent's answers

I´m not sure if the workshop enabled me personally to gain a better understanding if the gaps discussed are universal and shared across Europe, but it clearly contributed to reflecting on them and exchanging experiences with professionals from other countries.

2/21/2018 4:47 PM View respondent's answers

Didn´t agree on all gaps described

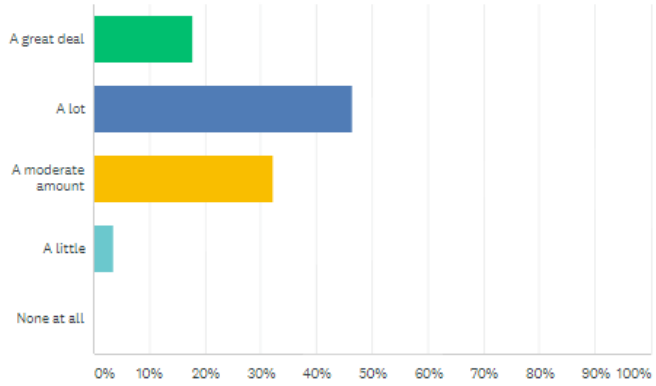
2/21/2018 10:41 AM View respondent's answers

Q4

Customize Export

Do you feel that you were able to contribute to the discussions and that your input was taken into account?

Answered: 28 Skipped: 0



ANSWER CHOICES	RESPONSES	
A great deal	17.86%	5
A lot	46.43%	13
A moderate amount	32.14%	9
A little	3.57%	1
None at all	0.00%	0
TOTAL		28

Comments (2)

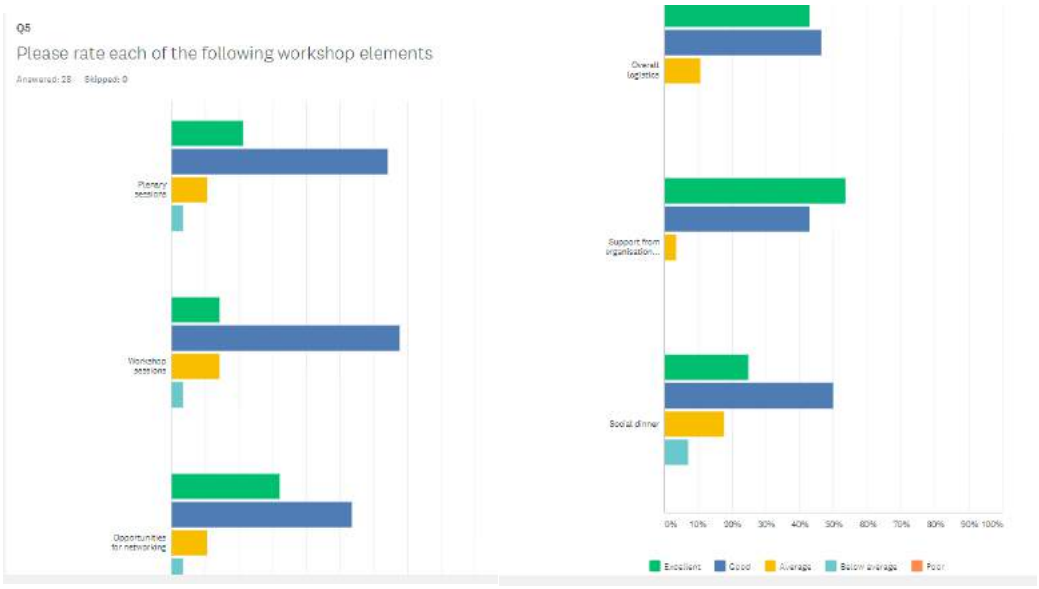
Showing 2 responses

Asked not to contribute as had a note taking role

2/26/2018 1:50 PM View respondent's answers

Yes, i was able to contribute even though the group did not cover my main field of expertise. All inputs were taken into account appropriately.

2/21/2018 4:47 PM View respondent's answers



	EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	POOR	TOTAL
Plenary sessions	21.43% 6	64.29% 18	10.71% 3	3.57% 1	0.00% 0	28
Workshop sessions	14.29% 4	67.86% 19	14.29% 4	3.57% 1	0.00% 0	28
Opportunities for networking	32.14% 9	53.57% 15	10.71% 3	3.57% 1	0.00% 0	28
Overall logistics	42.86% 12	46.43% 13	10.71% 3	0.00% 0	0.00% 0	28
Support from organisation team	53.57% 15	42.86% 12	3.57% 1	0.00% 0	0.00% 0	28
Social dinner	25.00% 7	50.00% 14	17.86% 5	7.14% 2	0.00% 0	28

Showing 3 responses

No participation to the social dinner

2/27/2018 11:09 AM View respondent's answers

Block off seats at rear to encourage people to sit together at front - better for photos!

2/26/2018 1:50 PM View respondent's answers

transfer from airport to location and back would be nice

2/21/2018 2:22 PM View respondent's answers

Q6

Export

Would you have suggestions for future cooperation between your organisation and the project?

Answered: 16 Skipped: 12

Showing **16** responses

no, see my remarks above

2/28/2018 6:35 PM View respondent's answers

I offer my cooperation as an observer or evaluator for experiments and/or exercises in the framework of the project.

2/28/2018 12:54 PM View respondent's answers

Regione Liguria is directly leading the public information issues about natural disaster. I will try to engage the staff that is providing official statements

2/27/2018 6:10 PM View respondent's answers

None

2/27/2018 11:09 AM View respondent's answers

Keep up the good work.

2/26/2018 3:56 PM View respondent's answers

Hard to answer, as working in project.

2/26/2018 1:50 PM View respondent's answers

It should be put more attention to assure that group are not monopolise by a nation.

2/26/2018 12:18 PM View respondent's answers

make a link with JRC and DG ECHO, work very closely and support civil protection mechanism could help as living lab - improve netword of crisis center and improve long exchange of experts in regional crisis center (2 years with turn)

2/26/2018 12:15 PM View respondent's answers

New products can always be tested in our region.

2/26/2018 11:03 AM View respondent's answers

No

2/26/2018 10:59 AM View respondent's answers

My organization would like to participate in the observation and evaluation of the exercises that will be carried out, especially in the exercise on forest fires.

2/23/2018 8:24 PM View respondent's answers

Hamburg Fire and Rescue Service has a staff of more than 2600 professional and 2600 voluntary fire fighters. As we have a large number of experts working on different topics (hazards, prevention, preparedness, communication, management,...), please ask us for participation / contribution in the further project activities.

2/23/2018 4:11 PM View respondent's answers

no

2/23/2018 12:23 PM View respondent's answers

maybe if you select some important gaps and one or two gaps are relevant for the Red Cross, we can contribute again.

2/21/2018 9:09 PM View respondent's answers

2/21/2018 9:09 PM View respondent's answers

-

2/21/2018 10:41 AM View respondent's answers

Participation in other workshops and in the pilots

2/21/2018 10:03 AM View respondent's answers

Q7 Export

The project communications team would include a couple of quotes in the next newsletter from delegates who have attended this conference. If you would like to contribute to this, please let us have your thoughts below

Answered: 9 Skipped: 19

Showing 9 responses

it is interesant and useful to hear and learn from other organizations in other countries

2/28/2018 6:35 PM View respondent's answers

I greatly appreciated the opportunity to exchange experiences, especially in the fields of situational awareness tools and international cooperation in coping with major disasters.

2/28/2018 12:54 PM View respondent's answers

I have had the possibility to heard about different successfull procedures in better engage citizens on natural disasters alerts

2/27/2018 6:10 PM View respondent's answers

https://www.youtube.com/watch?v=mBRN8B-LhwE https://prezi.com/npnlamb5jwi6/emizds-sud-crisisemergency-tools/

2/26/2018 12:15 PM View respondent's answers

-

2/26/2018 10:59 AM View respondent's answers

2/26/2018 10:59 AM View respondent's answers

In this workshop participants were driven to a better understanding of the different gaps which are common in Europe in terms of emergency response.

2/23/2018 8:24 PM View respondent's answers

The conference matched very well into the wide portfolio of topics like "disaster management", "civil protection", "prevention and preparedness" etc., topics we are dealing with in our daily work or imaginable disasters we might be confronted with in the future. The conference offered an excellent possibility to enrich everyone's personal network and knowledge. Every participant knows the defined gaps and a large number of contact partners from different countries. Hopefully the Driver+ project will assist to close or minimize these gaps in an international context with international partners.

2/23/2018 4:11 PM View respondent's answers

-

2/21/2018 10:41 AM View respondent's answers

.

2/21/2018 10:03 AM View respondent's answers

Annex 13 – Template for collecting qualitative data during the focus groups (UGAW)

Expectations from secretaries during the workshop parallel sessions: this document was shared with all DRIVER+ partners observing the group discussions to guide them in terms of behaviour during the discussions, and data collection priorities.

BEFORE WORKSHOP

- Read the material provided for your session (word document + PPT presentation)
- Get familiar with the template for secretaries

DURING WORKSHOP

Role in the session:

- The objective of the secretaries is to collect qualitative information;
- Secretaries DO NOT participate in the discussions of gaps (except for the Trial partners i.e, A. Bralewski in session D, S. Suddle and A. Mangiavillano in session C, Thomas Seltsam in session B, Martha in session C);
- However, they are expected to support the moderator duering the preparation of the restitution to the plenary;
- Secretaries of each session shall coordinate between themselves to choose which 3 external participants (s)he will focus on.

For of your participants interventions, focus on:

- main ideas, no need to write down all very specific details;
- the elements that are key added value for the gap understanding and description;
- disagreement(s) expressed;
- innovative and fresh ideas, not heard before or already presented in the material provided.

About group dynamics, for each gap discussion, try to determine if:

- Participants understand the material that is presented;
- Participants understand each other or not;
- Participants share a common agreement or not.

About transversal aspects, try to identify if:

- Participants mention interdependencies between gaps by themselves;
- Participants express any expectations from DRIVER+.

AFTER WORKSHOP

- Review and clear the notes to make it easily understandable and treatable by Task leader;
- Together with your notes, provide 10 lines to task leader about your general impression of the session's discussion (with a few days' distance)
- Send back the notes to task leader in electronic way by Friday 26th January 2018.

Gap n°			
External participant (Name organisation)			
CURRENT SITUATION [20 minutes]			
Do you observe/experience the same gap?			
Agreement on description? Changes proposed?			
If gap not shared: current capability explained (solutions, procedures, etc)			
TOWARDS CLOSING THE GAP [20 minutes]			
If gap is shared: what are the needs mentioned to close this gap?			
Promising solutions mentioned?			
What type of further R&D required ?			
Transversal aspects (to be completed at the end of the gap discussion)			

Did the gap generated lively discussions or little interest from the participants?

Have interdependencies with other gaps been mentioned by participants ?

Was there an atmosphere of common understanding between the participants or where there misunderstandings and a lot of explanations needed?

Is this gap rather shared by participants or did they express diverging opinions?

Did the participants expressed specific expectations from DRIVER+ during this gap discussion?

Annex 14 – Results from the review of the workshop results – scoring of the gaps assessment

Table A9: Workshop results

Gap Number	1	2	3	4	5	6	7	8	9	10
	5	4	5	4	5	4	5	5	4	
	5	5	5	5	5	5	5	5	5	5
	4	4	5	5	5	5	5	5	5	4
Total Score	14	13	15	14	15	14	15	15	14	9
Mean Score	**4,7**	**4,3**	**5,0**	**4,7**	**5,0**	**4,7**	**5,0**	**5,0**	**4,7**	**4,5**

Gap Number	11	12	13	14	15	16	17	18	19	20	21
	5	5	5	5	5	5	5	5	5	5	5
	5	5	5	5	5	5	5	5	5	5	5
	5	5	5	5	5	4	4	5	5	4	5
Total Score	15	15	15	15	15	14	14	15	15	14	15
Mean Score	**5,0**	**5,0**	**5,0**	**5,0**	**5,0**	**4,7**	**4,7**	**5,0**	**5,0**	**4,7**	**5,0**

Gaps scored on Likert Scale				
1 = Strongly disagree	2 = Somewhat disagree	3 = Neither agree nor disagree	4 = Somewhat agree	5 = Strongly agree

Annex 15 – List of organisations contacted to review the workshop results

Table A10: External reviewers

External reviewers	
Country	Practitioner Organization / Affiliation
France	Safe-Cluster
Germany	Haw Hamburg
Israel	Israeli Police
France	French National authorities for coordination of fire fighting / Direction Générale de la Sécurité Civile et de la Gestion des Crises & Bureau des Moyens aériens
France	ENSOSP (National academy for fire fighters officers)
Romania	Romanian Red Cross
Germany	Bavarian/German Red Cross

Table A11: Advisory Board members

Advisory Board Members	
Country	Organization / Affiliation
Bulgaria	National Civil Protection Service
Norway	TIEMS
Netherlands	The Hague Centre for Strategic Studies
UK	Cambridge University Hospitals