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D3.1 Screening of market/close to market solutions

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DIREKTION Project

The number and severity of disasters are increasing in Europe, due to climate change, ageing of industrial facilities and infrastructures, geo-political instability, poor knowledge management for critical activities and the vulnerability of the population exposed (density, age, migration...). To face these challenges, firefighters, rescuers, emergency medical responders and civil protection staff, have to implement effective and affordable solutions to support their operations. The DIREKTION project will establish and implement mechanisms and procedures to enhance knowledge sharing by directing the development of innovative technologies answering the needs of practitioners and policymakers. The steering role of international organisations (CTIF, FEU) and end-users will guarantee useful and practical results.

The project starts with the deployment of tools assessing the relevance and interoperability of innovative technologies developed by EU Horizon projects. A structured analysis of needs and gaps and the screening of potential solutions will then be undertaken. The procedures will use the outcomes of projects like FIRE-IN, DRIVER+ / CMINE, MEDEA, the pilot for the Network of European Hubs for Civil Protection and Crisis Management and will follow the taxonomy of the EU security market study to ensure a structured use of results. Based on the capability-driven evaluations and a detailed analysis of the opportunities and constraints for the uptake of innovative solutions, DIREKTION will establish priorities for future research programming and capacity building. Moreover, the project will further establish networking and dissemination opportunities of interest for the DRS community in close collaboration with existing communities of users. They will involve industry, SMEs & start-ups, research organizations and practitioners, at EU and national levels. DIREKTION will strengthen current practice and future research and innovation planning in disaster resilience.



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2	01/10/2024	Structure and Initial Inputs (Table of Contents, Methodology)
3	22/10/2024	Second Version of the Document (Suppliers' Section)
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Executive Summary

The DIREKTION project has a multifaceted purpose in the attempt to increase disaster resilience across the EU, including the identification of capability gaps and challenges as expressed by the actual players in disaster management, first responders, the screening for solutions, either technological or procedural, which will further assist first responders in their operations, and the mapping of opportunities for the uptake of such solutions while concurrently mitigating restraints.

The current Deliverable tries to bridge the gap between the supply side, i.e., solutions providers such as SMEs, Industry and Research Institutions, and the demand side, i.e., the end users of these products, mainly the first responders. The Deliverable presents the outcomes of the first iteration of solution screening and assessment. It targets on commercial off-the-shelf (COTS) or close to the market solutions, with the aim to examine the extent, to which these solutions address the existing first responder gaps, identified in the work of Task 2.1 “Identification and prioritization of existing gaps”. Although other items, e.g., standards, operational procedures, guidelines and publications, can be considered as solutions, apart from technological innovations, the focus will be on the latter mainly due to the fact, that the first cycle of the project and of WP 3 “Assessment and validation of current and expected state of the art” specifically target technologies of TRL ≥ 8 .

The work in D3.1 describes the methodology for the composition of a panel of experts, comprising of representatives from first responders’ organisations within the Consortium of DIREKTION, the interaction with technical providers and the assessment of solutions, both from the suppliers side and the end users side, utilising the “Solution Assessment Tool” developed under the framework of WP1, with the ultimate goal to define the level of coverage of capability gaps by the technological domain and provide feedback to WP2 for the second iteration of the project.

The result of the assessment carried out in D3.1 is the identification of capability gaps which are not well addressed by solutions and need to be further considered during the second cycle of the project and of WP2.

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List of acronyms

<i>Acronym</i>	<i>Definition</i>
<i>AI</i>	Artificial Intelligence
<i>AUTRC</i>	Austrian Red Cross
<i>CAFO</i>	Czech Association of Fire Officers
<i>CERIS</i>	Community for European Research and Innovation for Security
<i>CG(s)</i>	Capability Gap(s)
<i>CI(s)</i>	Critical Infrastructure (s)
<i>CORDIS</i>	Community Research and Development Information Service
<i>COTS</i>	Commercial off the Shelf
<i>CTIF</i>	Comité Technique International de prevention et d'extinction de Feu / International Association of Fire Services
<i>DRS</i>	Disaster Resilient Societies
<i>DX.Y</i>	Deliverable X.Y
<i>DoA</i>	Description of the Action
<i>DRS</i>	<i>Disaster Resilient Societies</i>
<i>ENB</i>	Escola Nacional de Bombeiros
<i>EU</i>	<i>The European Union</i>
<i>FEU</i>	Federation of European Fire Officers
<i>FPD</i>	Flame Photometric Detection
<i>GDPR</i>	General Data Protection Regulation
<i>IFAFRI</i>	International Forum to Advance First Responder Innovation
<i>IMS</i>	Ion Mobility Spectroscopy
<i>R&D</i>	Research and Development
<i>SME</i>	Small Medium Enterprise
<i>SoTA</i>	State of the Art
<i>SOP(s)</i>	Standard Operating Procedure(s)
<i>TRL</i>	Technology Readiness Level
<i>TX.Y</i>	Task X.Y
<i>WPX</i>	Work Package X

1 Introduction

Although technology progresses at a very fast pace and solutions are becoming ever more innovative, thus improving stakeholders' capabilities, challenges still remain and pose significant difficulties in first responders' operations and for disaster management as a whole. These challenges emerge from a variety of factors as highlighted by the work carried out during the third and final cycle of the FIRE-IN project. Factors, acting as constraints to the uptake of solutions and thus preserving capability gaps, include, inter alia, market isolation and fragmentation, practitioners' conservatism to adopt new solutions, lack of adequate training in the use of new technologies as well as procurement and bureaucratic processes that hinder solution adoption (Tsaloukidis I., 2022).

The DIREKTION project, following a methodology, which is similar to its precursor project, the FIRE-IN, is designed on the basis of three iterations, each beginning with the definition of capability gaps and challenges from the end users' perspective, moving on to the screening of solutions and concluding with the assessment of the level that the identified solutions address the aforementioned gaps. Both the solution screening and assessment are procedures which take place in the context of WP3 "Assessment and validation of current and expected state of the art". The following schema presents the loop between the WPs and the processes within them.

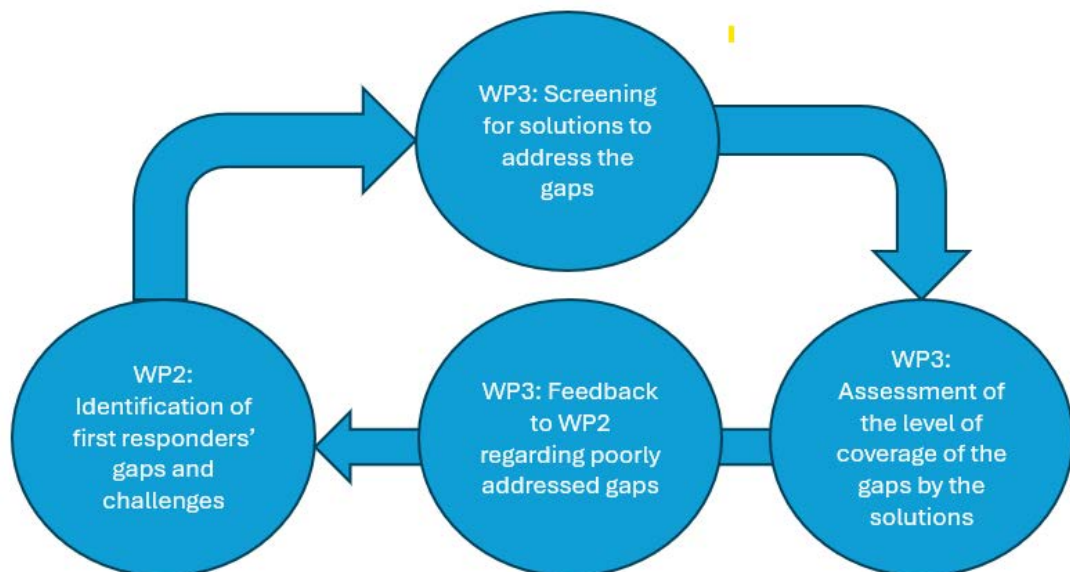


Figure 1: The sequence between WP2 and WP3, repeated in three distinct iterations.

As shown above, the first step in the cycle is the identification of capability gaps. For the first iteration of the project the focus is on existing gaps. As part of T2.1 "Identification and prioritization of existing gaps" desk research was conducted including the results of previous projects, research papers and reports. In addition, the results were correlated with the outcomes of large disaster management stakeholders' meetings, such as the Disaster Risk Management Knowledge Centre Annual Seminar and the annual meeting of the Department of Homeland Security and are also in alignment with the ten major gaps identified by the International Forum to Advance First Responder Innovation (IFAFRI). Finally, the identified results were validated through workshops with the participation not only of DIREKTION partners but also of external first responders (Juliane Schlierkamp, 2024). The outcome of the desk research and the interaction with relevant stakeholders was the development of a list of 30 capability gaps (CGs), all of which have been prioritised according to the

participating end users' point of view. The list of gaps and the respective prioritisation are depicted in the following table.

Table 1: The list of CGs and their prioritisation, Source: Deliverable D2.1 "Description of existing gaps (1st cycle)"

Topic	Capability Gap	Additional Assessment
Casualty Management	The ability to extract critically-injured persons from a crowd.	/
Command, Control & Coordination	The ability to identify roles and capabilities of different agencies and stakeholders in the emergency.	High priority
	The ability to promote quick adaptation to changes in scenario through situation assessment and decision-making structures.	Priority
	The ability to share key information to facilitate synchronized actions and to maintain initiative on a changing scenario.	High priority
	The ability to incorporate information from multiple and nontraditional sources into incident command operations.	Priority
	The ability to increase cooperation and coordination between agencies and jurisdictions when they are competing for scarce resources.	Priority
Communications & Information Sharing	The ability to boost the public information function: Develop a specific communication strategy to maintain credibility, including social media.	/
	The ability to build a shared understanding concerning scenario and strategy across responders to synchronize simultaneous decision making. Manage complex information focusing on the multiple levels of decision-making.	Priority
	The ability to standardize fluxes of information and decision-making between private, civil and military environments, reducing bureaucracy.	Priority
	The ability to standardize symbology and tools to raise public awareness.	Priority
	The ability to standardize the shared information between the call center and the command post.	Priority
Intelligence & Investigation	The ability to compile and validate dynamic data flows. Focus on having a big-picture view, on a timely verification of too-much information, on distinguishing noise from useful information, and identifying targets and representations of key information.	Priority
	The ability to access and quality-check data, and have data in a harmonized, structured, compatible and exchangeable format.	Priority

	The ability to visualize through real-time indoor system for low visibility fire environments.	Priority
Logistics & Resource Management	The ability to establish standards for roles, capabilities, competencies and processes for a multiagency framework, and the mechanisms to certify them. nowadays under similar names there are different capabilities, competencies and processes.	Priority
	The ability to set up legal framework for cross-border help, emergency support, victim transportation, recognition of qualifications, ...	Priority
	The ability to maintain communications (voice and data) between units inside and outside of facilities (e.g., shopping malls, office/school buildings, subways).	Priority
	The ability to provide responders with sufficient technology/connectivity to work remotely as needed	
	The ability to use unmanned tools to transport equipment on the field.	/
Responders Health & Safety	The ability to organize sustain safe operations.	/
	The ability to locate responders anytime, anywhere and know how long they can sustain efforts.	/
Situational Awareness	The ability to integrate data by tools from multiagencies/multi sources.	/
	The ability to make operational decisions based on building an understanding of the emergency and its evolution.	/
Technology & Innovation	The ability to detect, localize, alert and record hands-free presence of life through walls.	Priority
	The ability to receive updated information and data in real time for on scene responders(e.g., optimal navigation routes, situational awareness data) without relying on push-to-talk communications.	Priority
	The ability to accurately geolocate responders (in three dimensions) inside of an enclosed/semi-enclosed structure (e.g., commercial facilities, public buildings).	Priority
	The ability to know the location of responders and their proximity to risks and hazards in real time.	Priority
Training & exercise	The ability to educate kids and young ones.	/
	The ability to train crews and commanders in decision-making and communication in uncertain, dynamic, unexpected scenarios, adapting tempos and synchronizing activities with other agents. facilitate the improvement of existing doctrine.	/

	The ability to widen the focus of learning, involving situation awareness at all levels, and specially prevention and self-protection. focus on rapid recognition of the scenario; on anticipation of behavior of the fire/water/chemical/radiation; on anticipation of opportunities and risks.	/
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WP3 and, specifically, T3.1 initiates the screening for 25 solutions i.e., commercial technological innovations or close to the market products (TRL \geq 8) with the aim to examine to what extent these challenges can be addressed by the existing solutions. The methodology approached can be divided into four distinct steps:

- Step 1: The interaction with technological suppliers. This interaction includes communication with SMEs, industrial enterprises, consortia of different related projects and research centres.
- Step 2: Establishment of communication with the providers. The term “establishment”, refers to the confirmation of interest from suppliers to take part in the solution assessment process. This confirmation is followed by the distribution of the Solution Assessment Tool to the suppliers, which is the core outcome of Task 1.1 “Screening and Assessment Methodological Framework” and Task 1.2 “Development of DIREKTION Tools”, and finally its completion by their side.
- Step 3: Assessment of the level of coverage of CGs by the solutions. A panel of experts, comprising of first responders’ organisations of the DIREKTION Consortium is being developed. The role of this panel is to receive the, already completed by the suppliers, solution assessment tools and define the actual level of coverage of CGs by the proposed solutions.
- Step 4: Provision of feedback to WP2 and, specifically to T2.2, regarding the CGs, which are either poorly addressed or even not addressed at all by the solutions screened in T3.1.

These four steps close the loop of the first cycle of the project and at the same time initiate the second iteration. It has to be noted that the results regarding the level at which each CG is addressed, is based on the 25 screened solutions, a threshold defined in the context of DIREKTION. However, the actual number of solutions can in fact be quite higher and thus, a CG seemingly less covered in the framework of DIREKTION, might be fully addressed in reality.

The structure of D3.1 rests upon four pillars:

- The description of the methodology followed, from the solution screening to the outcomes of the assessment by the expert panel (Chapter 2),
- Presentation of assessment results, based on the assessment conducted by solution providers (Chapter 3),
- Analysis of the overall assessment outcomes taking into consideration the inputs received from the panel of experts (Chapter 4) and
- The provision of feedback to WP2 regarding those gaps which are less addressed and initiation of the second iteration (Chapter 5).

2 Methodology for the Implementation of the Solution Screening and Assessment

In this chapter, the methodology followed for the establishment of communication with technological providers and the screening of solutions, which will be correlated with and assessed against the CGs, identified in WP2, is described. Two different procedures were carried out in parallel, one being the identification of suppliers and the solution screening, and the other being the formation of the expert panel, who will assess the solutions from their perspective and provide input for the second round of the project.

2.1 Identification of technological suppliers

For a holistic approach and a twofold assessment of solutions, a balance between the two separate domains, the providers' and the users' domain, had to be kept. On one hand, the strategy for the screening of solutions and the establishment of communication with suppliers had to be developed, whereas, on the other hand the formation of the expert panel and the coordination among its members had to be organised.

The prerequisite for the solution screening is the identification of suppliers i.e., technological providers coming from the private sector, research institutes as well as Consortia of EU research projects. The aim, according to the Description of Actions for T3.1, is, for the first cycle, to screen 25 solutions deriving from a respective number of projects.

Task 3.1 leader and participants utilised four tools for the identification of relevant research projects, whereas included also projects, in which they participate:

1. The CORDIS platform
2. The Innovation Radar platform
3. The IFAFRI R&D repository
4. Projects identified by the "Projects to Policy Seminar 2024" of CERIS

The following table presents the projects identified under the sources, as well as projects, in which T3.1 partners participate:

Table 2: Projects screened in the context of T3.1, their framework programme and relevant links.

Platforms and Events	Project Name	Framework Programme	Project Site
Innovation Radar	iREACT	H2020	http://project.i-react.eu/
	Impressive	H2020	https://impressive-project.eu/
	5G ERA	H2020	https://5g-era.eu/
	ODIN	H2020	https://odin-h2020.eu/
	Gen6	CIP ICT-PSP	http://gen6.eu/home
	WALK-MAN	FP7	https://walk-man.eu/

	5G ASP	H2020	https://www.5gasp.eu/
CORDIS	DeeperSense	H2020	https://www.deepersense.eu/www/
	FOODSAFETY4EU	H2020	https://foodsafety4.eu/about/project/
	FIRE PARADOX	FP6	https://pavion.com/resource/pavions-approach-in-a-world-facing-wildfire-challenges/
IFAFRI R&D repository	CURSOR	H2020	https://www.cursor-project.eu/
	DEFERM	BMBF	https://www.hahn-schickard.de/en/projects/projects/deferem
Projects to Policy Seminar 2024 - CERIS	AGILE	HEU	https://www.project-agile.eu/
	B-Prepared	HEU	https://b-prepared-project.com/
	CHIMERA	HEU	https://project-chimera.eu/
	GOBEYOND	HEU	https://gobeyond-project.eu/
	MEDEWSA	HEU	https://www.medewsa.eu/
	RESILIAGE	HEU	https://resiliage.eu/
	STBERNARD	HEU	https://stbernard.eu/
	SYNERGISE	HEU	https://www.synergise-project.eu/
	TeamUp	HEU	https://teamup-project.eu/
T3.1 partners' projects	PANTHEON	HEU	https://pantheon-project.eu/
	TEMA	HEU	https://tema-project.eu/
	SILVANUS	H2020	https://silvanus-project.eu/
	EO4EU	HEU	https://www.eo4eu.eu/

As already mentioned, the TRL of these project outcomes has to be above 8 for the first cycle of the project. However, on most occasions, innovations deriving from research projects rarely reach the aforementioned TRL. Of course, this assumption does not apply to all identified projects, as there have been some that developed quite mature technological solutions. Specifically, projects screened through the Innovation Radar have all produced market ready solutions.

Considering the possibility of not receiving an answer to initial invitation to these projects, it was decided to also reach out to SMEs, industrial enterprises and also research centres, that develop hardware, software and services relevant to disaster management. Moreover, in order to tackle the TRL potential problem with regards to research projects, the focus was shifted, from the core outcomes of the projects themselves, to solutions that are provided by individual technical partners of the respective Consortia. A total of 125 sources of potential solutions were screened. The following statistical figures present the number of solution providers per provider type as well as per country of origin, indicating that a large part of the EU is covered.

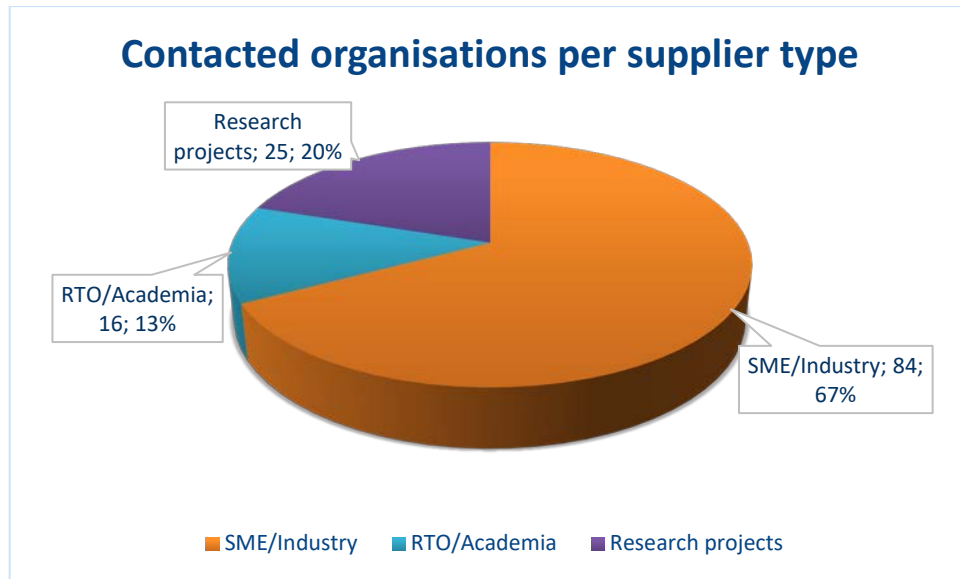


Figure 2: Number and percentage of contacts based on the type of supplier

It is apparent that out of the 125 contacted organisations, 100 derive from the private sector, something which does not come as a surprise, as SMEs and industrial enterprises are the main source of market-ready or close to market solutions. Nevertheless, organisations, which have been contacted and have confirmed their interest in participating in the solution assessment procedure and that are also partners in the Consortia of the aforementioned projects, are included in the “Research projects” category and not in the “SME/Industry” category.

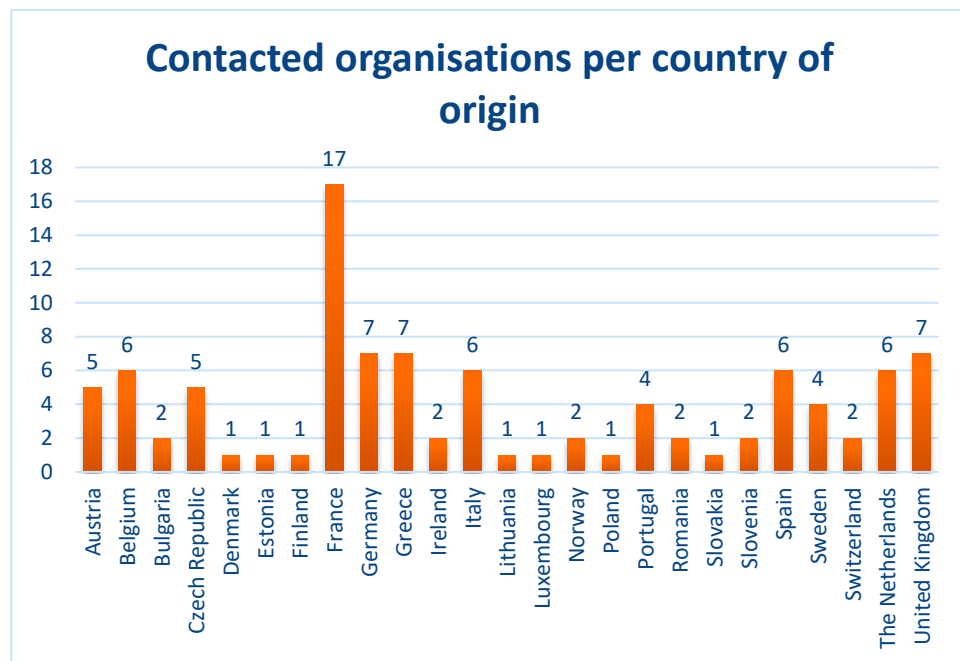


Figure 3: Number of suppliers per country of origin.

Geographical coverage is greatly considered, with the contacted suppliers stemming from 21 Member States and three cooperating States i.e., Norway, Switzerland and the UK.

2.2 Interaction with suppliers

As a first step for the establishment of communication with the potential suppliers a letter was circulated with the aim to familiarise themselves with the concept of the project and its objectives and understand what is

needed by their side. The invitation includes a brief summary of the current situation with regard to the uptake of solutions by the end users and difficulties emerging from the market fragmentation, the deficient implementation of project results in real life operations and the lack of centralised information repositories relevant to R&D initiatives. Moreover, the goal of DIREKTION is explained, which focuses on bridging the gap between the two ends of the thread, i.e., the demand and the supply side. This bridging can be achieved by bringing at the same table both sides, presenting on one hand the capability gaps identified in WP2 of the project, and introducing, on the other, technological innovations developed by interested suppliers. Therefore, what is asked by the technological providers, regardless of whether they come from the private sector or from national and EU projects, is to confirm their interest to participate in this procedure and introduce their innovative solutions to the DIREKTION project. In addition, they are informed that they can apply for the DIREKTION Awards procedure, in which the most innovative solutions will be awarded with a cash prize of 10,000 €, a process which will be initiated in January 2025. Thus, the interaction between DIREKTION and suppliers is a win-win, with the project and especially WP3 achieving its objectives and the suppliers gaining more visibility in the end user world and also claiming the aforementioned prize. The official invitation is included in Annex 1.

The second step was to ensure their engagement and establish a stable communication with them. A second email was disseminated, this time only to confirmed organisations, with information regarding what is expected from their side. These inputs included an in-depth analysis of the iterations of the project. Providers were informed about the 30 CGs identified in WP2 and also the Solution Assessment Tool, developed in WP1, which will be utilised both by the suppliers as well as by the end users. Technological providers were also offered the capability to propose several solutions as long the latter satisfy the prerequisite of a high TRL. The list of CGs and the Solution Assessment Tool (Juliane Schlierkamp, 2024) accompanied by the User Guide, which provides thorough instructions on how to complete it (Eileen Murphy Maguire, 2024), were attached with the aim the providers to become convenient with the use of the tool. It is essential to note, that the term “assessment” does not target the solution itself. In fact, already commercial solutions have most probably been tested, demonstrated and evaluated before reaching the market. What is crucial, for the assessment conducted within the boundaries of DIREKTION, is to identify the CG(s) addressed by a solution, according to its supplier, and, at a later stage, to evaluate the extent, to which the selected CG(s) is actually covered. However, this responsibility lies at the hands of the expert panel and not at the suppliers. Finally, the suppliers were given the opportunity to present the solutions to the expert panel through short videos or presentations, therefore increasing their outreach.

Online meetings with the participation of the Solution Assessment Tool developer, were proposed to elaborate on the use of the Tool and resolve any issues that arose from the suppliers when completing their part of the excel. However, apart from some written clarifications, it was deduced that the Tool is easy to use and no e-meetings were needed.

2.3 Formation of the expert panel and interaction with suppliers

Simultaneously with the interaction with suppliers, a second procedure was under development, which is related to the formation of the panel of experts, who will assess the solutions, once all excel tools are gathered from the suppliers. In accordance with the DIREKTION DoA specifications/requirements, following internal communication within the WP3 partners and the consensus of the members of the monthly DIREKTION consortium meeting, it was decided that the selection of the independent experts will be made through calls for experts from CTIF, FEU and other end users of the consortium. Gender and geographical balance should be ensured in the selection of experts with expertise in the solution area. Representation of all end-user levels with operational expertise was essential, with a focus on avoiding conflicts of interest. Each of the above-mentioned organisations was asked to nominate at least two representatives, with one organisation having one vote. The aim of this decision was to ensure availability and participation in the subsequent series of

workshops that followed. In addition, to ensure gender balance, one male and one female were requested. The table below lists the organisations and participants in the expert panel.

Table 3: Expert panel composition

DIREKTION Expert Panel	
CTIF	Zisoula Ntasiou
	Tore Eriksson
FEU	Zoltan Hozbor
	Dermot Brannigan
CAFO	Petr Ošlejšek
	Martin Nekula
ENB	José Luís Silva
	Sónia Moutinho
AUTRC	Thomas Seltsam
	Sandra Nestlinger

A series of online Workshops were scheduled and held with the participation of the above experts following the completion of the excel tool by the suppliers in frame of consensus, aiming at the assessment of the solutions. The initial meeting took place on the 30th of September 2024. A brief introduction was made by KEMEA, the WP3 leader, outlining the objectives of the WP and of T3.1 and emphasising on the crucial role that the panel plays for the assessment and the overall conclusion of the process. In addition, the Solution Assessment Tool was presented and also disseminated with the aim the participants familiarise themselves with the tool and be more comfortable to use it during the following meetings. Moreover, the experts were informed that during the assessment meetings, the suppliers are offered the capability to shortly present their proposed solutions and also interact with the experts for the finalisation of all the aspects of the Tool.

According to the solutions received by the contacted suppliers, it was initially deduced that three consecutive meetings would suffice for the completion of the solution assessment by the panellists, organised on the 14th, 24th and 25th of October 2024. However, the consideration of at least three additional meetings in between was imperative, as the assessment procedure was found quite challenging and time consuming.

3 Solution Assessment Results from the Suppliers' Side

As described in the methodology (Section 2), the first part of the assessment starts with the feedback received from the supplier of the under-examination solution. Each provider, once contacted and confirmed his/her participation in the process, received the Solution Assessment Tool, along with a user's guide document for better and easier understanding and navigation through the various sections of the excel sheet. Moreover, suppliers received a project information sheet with clarifications regarding the scope and expected outcomes from the research, conducted in the context of DIREKTION, as well as a consent form for their confirmation that data, deriving from their side will be used within this Deliverable. This section provides a short description regarding the parts of the tool to be completed by the suppliers as well as graphic representations of the results from the received solution assessments.

3.1 Short description of the "Supply" and "Solution Uptake" tabs of the Solution Assessment Tool

Although the Solution Assessment Tool is thoroughly analysed in the Deliverable 1.2 "Tools for analysis and screening of solutions" it is deemed wise to provide a short overview for an independent reader, who is willing to better understand the process and the tool used for this assessment, without necessarily tracing back the previous deliverables of DIREKTION.

The excel tool consists of five different tabs, the "Introduction", "Demand CG1", "Demand CG2", "Supply" and "Solution Uptake" tabs. The "Introduction" tab provides a brief overview of the tool and some initial guidance for the user on how to use the tool. "Demand CG1" and "Demand CG2" are addressed solely to the **end users**, whereas the "Supply" tab apparently refers to the **supplier**. On the contrary, the "Solution Uptake" tab **has to be collaboratively completed by both sides** as there are questions addressing the **providers** and questions addressing the **first responders**. Each tab includes specific guidelines for its completion.

In this section, results stemming from the assessments conducted by the providers are presented. Although it is not entirely up to them to assess the level of coverage of the CGs, suppliers provide crucial feedback, as they are the ones who indicate which gaps are more relevant, whereas they give information exclusively related to the solutions they propose.

In the "Supply" tab, the provider initially inserts general information about the solution he/she proposes and classifies the solution per functionality. Moreover, the supplier selects the **Disaster Risk Phase** and **Task**, that the solution addresses. For each of the aforementioned cells, a plethora of selections is predefined, however the supplier has the capability to include further details if needed. A very important part of this step is the **identification** of the **capability topic** and especially of the **capability gap**, as this is the basis, on which the **solution** will be **assessed** by the **end users** at a later stage. As mentioned in the Methodology (Section 2), the Solution provider can select **up to two CGs**. **This does not necessarily mean that a solution cannot address even more CGs**, however, it was decided to limit this selection to a **maximum of two gaps**, mainly for reasons of objectivity. Each of the two CGs is automatically filled in the respective cells of the "Demand CG1" and "Demand CG2" tabs.

The next step is the **assessment** of the **readiness of the solution** against specific aspects i.e., technology, security, manufacturing, integration, commercialisation, societal, legal, privacy and ethical aspects (for more information see, [MulitRATE](#)). For the first iteration of the project, all solutions **have to reach or exceed level 8 "System complete and qualified"**, in the **TRL scale**, regardless of the maturity of the solution with regards to the other characteristics.

Finally, the supplier answers a series of questions related to innovation needs and the willingness to supply. For each question, pre-defined answers have been included by the developer of the tool, however the supplier always has the capability to comment and give further explanations and clarifications.

Finally, the **“Solution Uptake”** tab is partly completed by the **supplier**. A set of questions with regards to innovation needs is developed with the aim to create a dialogue between the supply and demand sides. In addition, the supplier has to answer a series of questions related to the tactics for scaling up, with similar questions addressing the expert panel, for a simultaneous assessment of both perspectives.

3.2 Results from the Suppliers’ Assessments

Although a large number of suppliers was reached out, participation was low. Out of the 125 contacts, 13 suppliers responded with 16 solutions, as three organisations proposed two solutions. Moreover, from these 16 solutions only eight cover the pre-requirement of a very high TRL (≥ 8), although this was clearly stated in the communication between DIREKTION and solution providers. However, lower TRL solutions will be used for assessment during the second and the third iterations of the project. This chapter depicts some significant results stemming from the suppliers’ assessment regardless of the TRL. However, the focus on the following sections, will be on the high TRL solutions, which were also assessed by the expert panel.

The following table presents the organisations that provided feedback, the solutions they proposed as well as the respective TRL of these solutions.

Table 4: TRL of solutions proposed by providers who participate in the process

Solution provider	Proposed Solution	Current TRL of the solution	Link to the supplier’s site
OMIKRON	FireMap	7-8	https://omikron-sa.gr/en/
OPTIMAL DEFENCE	CBRN Management System	6	https://www.optimaldefence.com/
	BIOVORTEX	8	
EMSC	LastQuake	9	https://emsc-csem.org/
IANUS	SERVE	4	https://ianus-technologies.com/
	MAESTRO	6	
CATALINK	PATROLIoT	5	https://catalink.eu/
HYDS	Argos	9	https://www.hyds.es/
ARASTELLE	Tether Solution for microdrones	8	https://www.arastelle.com/
DFKI	KRIS robot	6	https://www.dfki.de/en/web
ITTI	C-SHIELD	8	https://www.itti.com.pl/en/home/
	PROCEED	9	
GEOMATYS	Digital Twin able to cross in situ EO data	6	https://www.geomatys.com/en/home/

GEMSOTEC	INA Intervention Platform	9	https://www.gemsotec.com/
NELEN SCHUURMANS	Flood simulation software	8	https://nelen-schuurmans.nl/en/home/
DEEPBLUE	ENGAGE project serious game	7	https://dblue.it/en/

A crucial aspect to be examined through this first assessment, is the **identification** of the **capability groups** and specifically of the **capability gaps**, that the suppliers selected as the most fitting for the solutions they propose. As already presented in Table 1, the WP2 has identified 30 CGs, which are clustered in nine topics. The following figures present values and percentages of solutions that address the aforementioned capability topics and gaps.

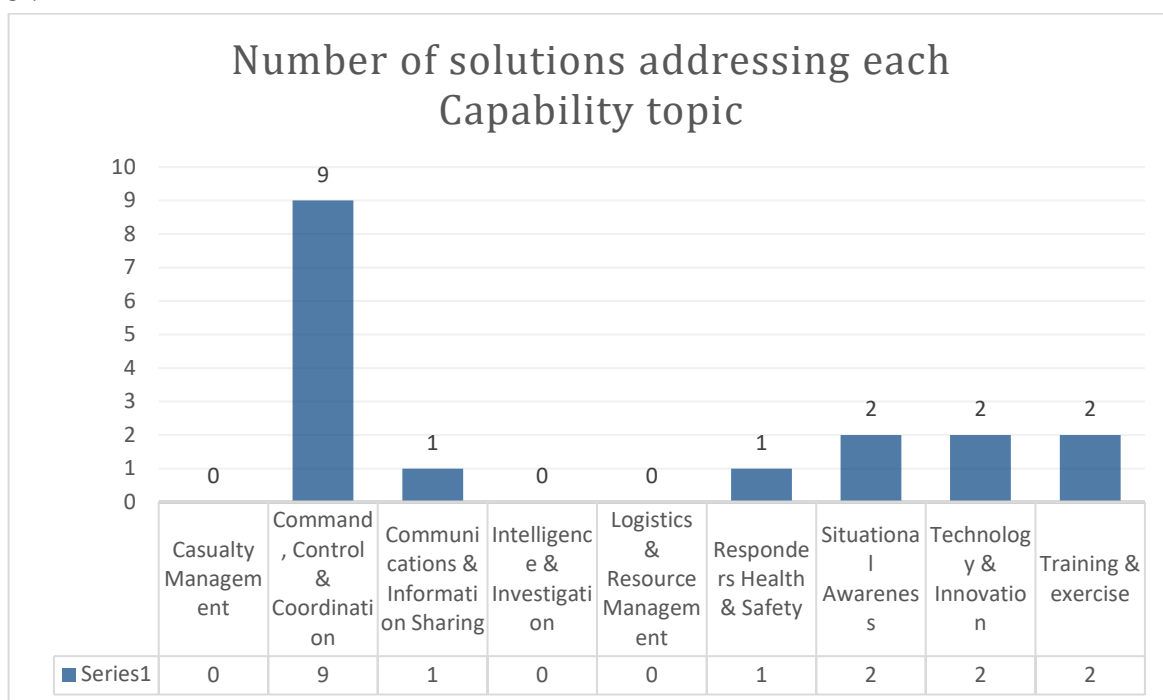


Figure 4: Number of solutions per Capability Topic

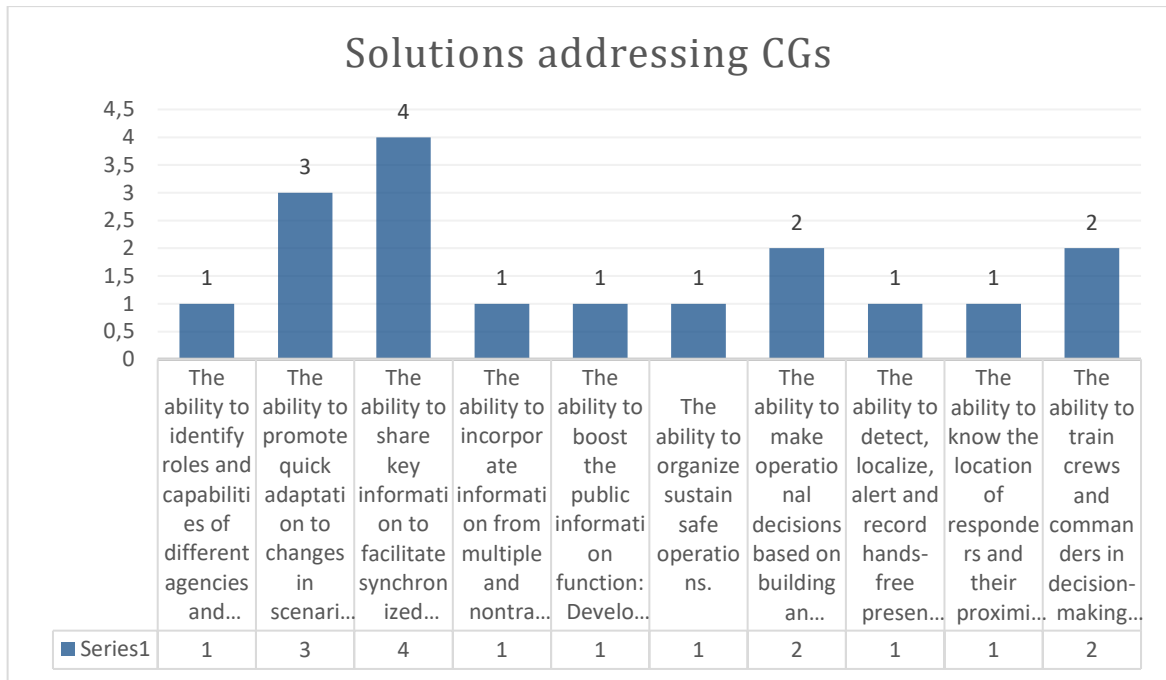


Figure 5: Number of solutions per CG.

The above figure depicts only those gaps, that were covered by at least one solution. It is apparent that only ten CGs were addressed by the solutions, regardless of the TRL, however, considering the low suppliers' participation, these numbers cannot reflect the actual level of coverage of these Capability Gaps, as in reality, each gap might be covered by a large variety of solutions. Moreover, it is interesting to examine, which CGs have been addressed by the high TRL solutions, which are the core focus of the first cycle of the project. As presented in the following figure, eight (8) out of thirty (30) CGs have been covered by market ready or close to the market solutions.

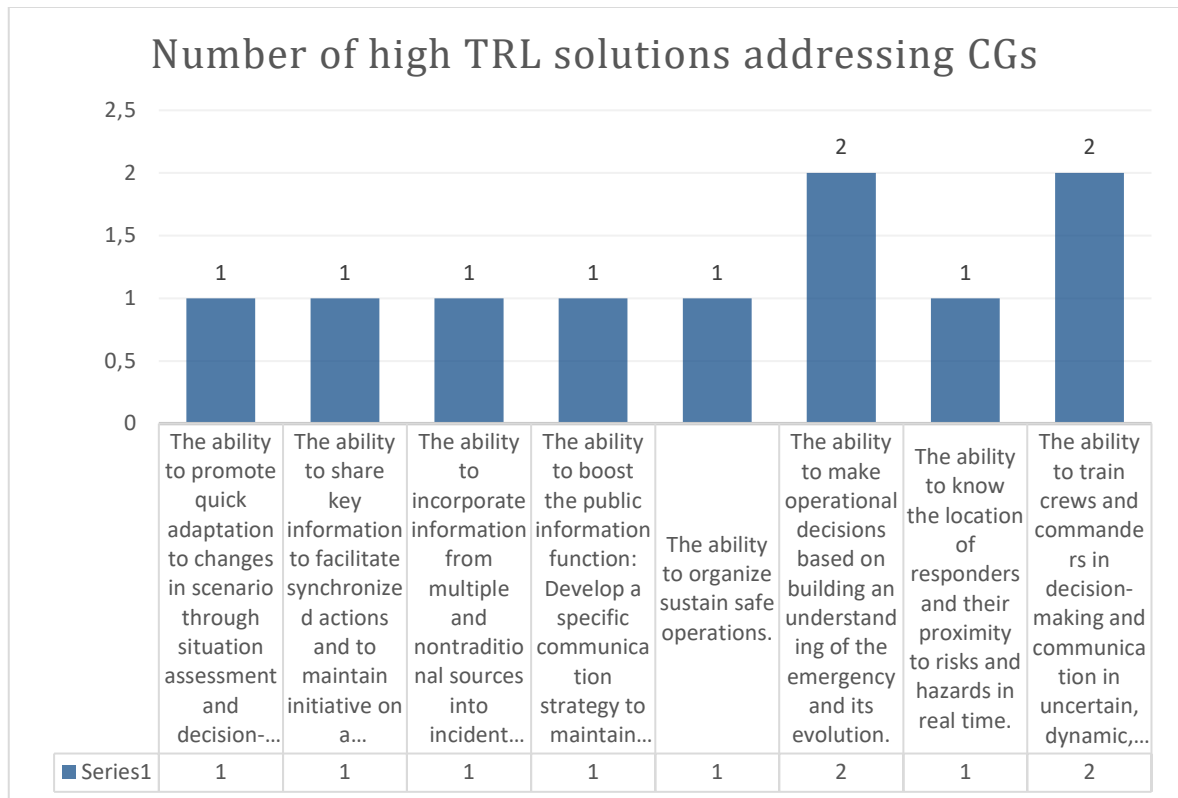


Figure 6: High TRL solutions per CG.

Another important aspect is to identify which phases of the disaster management cycle, i.e., prevention, preparedness, response and recovery, are mostly addressed by the solutions. Two graphs have been developed, one representing the level of coverage of the four phases by the entirety of solutions, and one representing the coverage only by high TRL solutions.

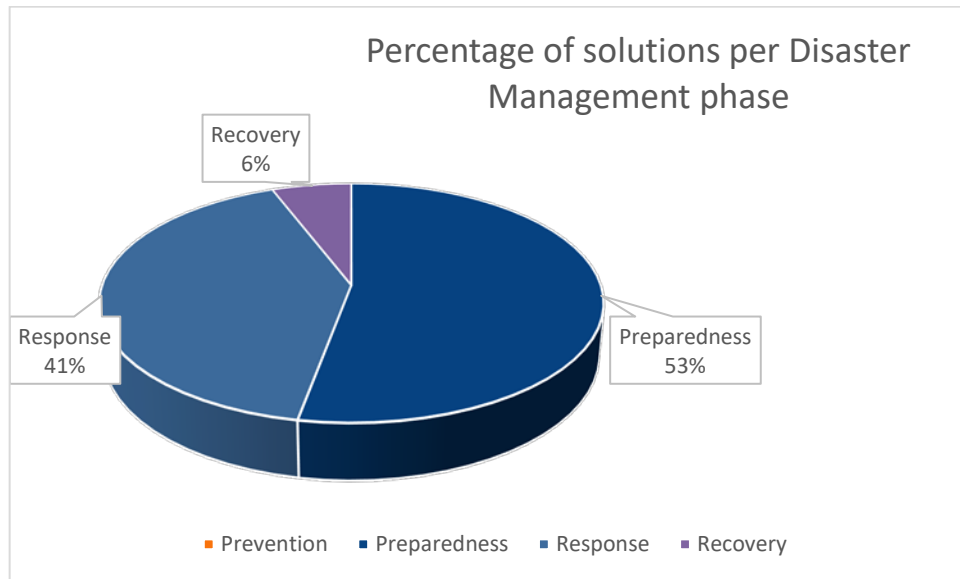


Figure 7: Solutions addressing the 4 phases of the Disaster Management Cycle.

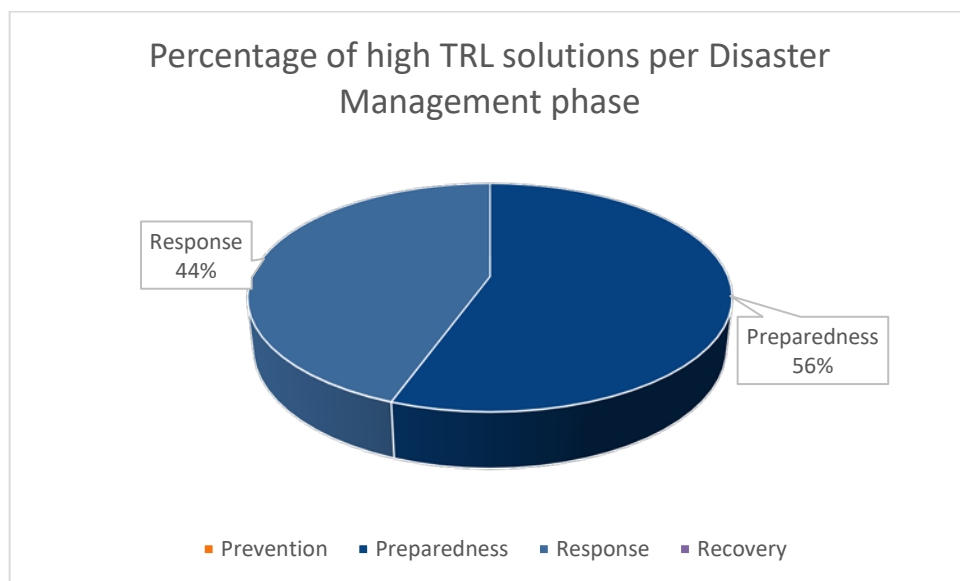


Figure 8: High TRL Solutions addressing the 4 phases of the Disaster Management Cycle.

Indeed, the vast majority of solutions, regardless of TRL address the preparedness and response phases, while prevention (mitigation) and recovery (adaptation) are not covered at all. This is not surprising, since the occurrence of crises, especially when it comes to natural disasters, cannot be prevented by the existing technological means. Nevertheless, SotA technologies can greatly assist in the preparedness of both the first responders and of the general population, as well as in response operations. However, considering the low responsiveness of solution providers in this first cycle, the results and values depicted in this Deliverable, are outcomes of the current research endeavour and might not fully reflect the reality, in which solutions might exist also for the phases of prevention and recovery.

Finally, the solutions were classified according to the different functionalities they support. A variety of such functionalities has been included by the Solution Assessment Tool developer e.g., personal and other equipment for prevention, response and recovery, data, information and intelligence gathering management and exploitation, monitoring and surveillance of environments and activities, security of information systems,

networks and hardware, physical access control (of locations, goods etc.), identification and authentication of persons, assets and goods, detection of goods, substances, assets, people and incidents, positioning and localisation, tracking and tracing, mobility and deployability, investigation and forensics, decontamination and neutralization, secure and public communication, data/information exchange, training and exercises. The aforementioned inventory of functionalities derives from the EU civil security taxonomy developed by the European Commission (European Commission, n.d.). In the following figure, the number of solutions addressing the aforementioned functionalities is presented, whereas a specific chart has been developed specifically for the high TRL solutions.

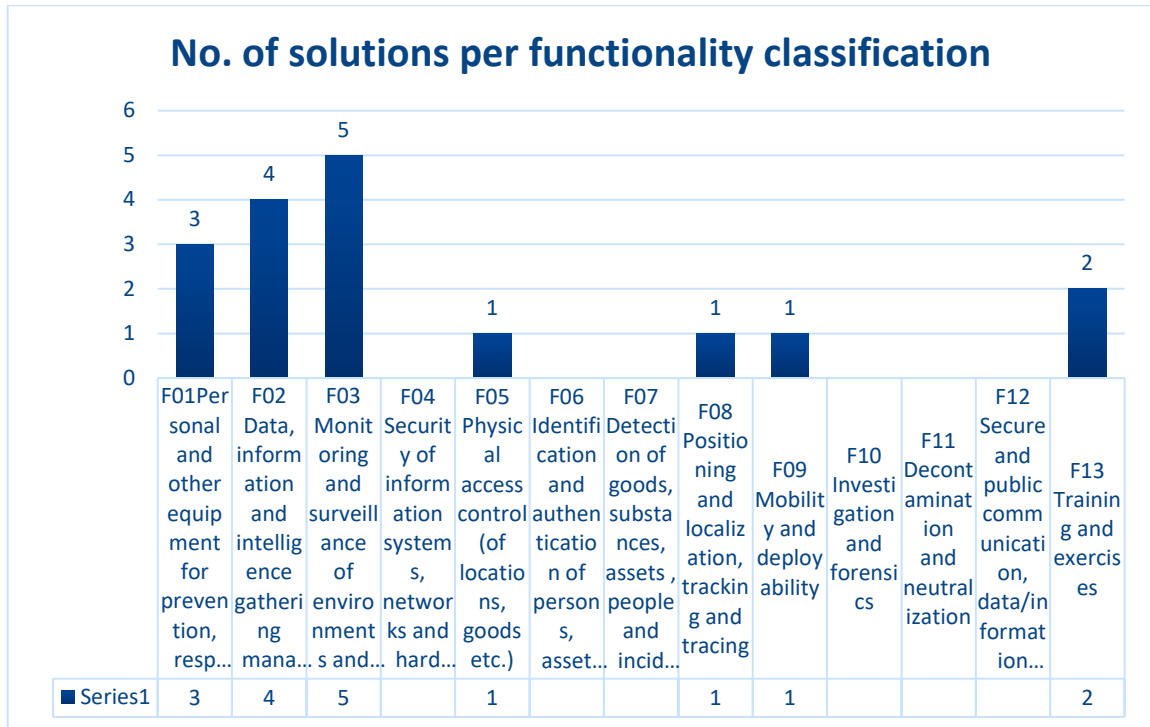


Figure 9: Solutions per functionality.

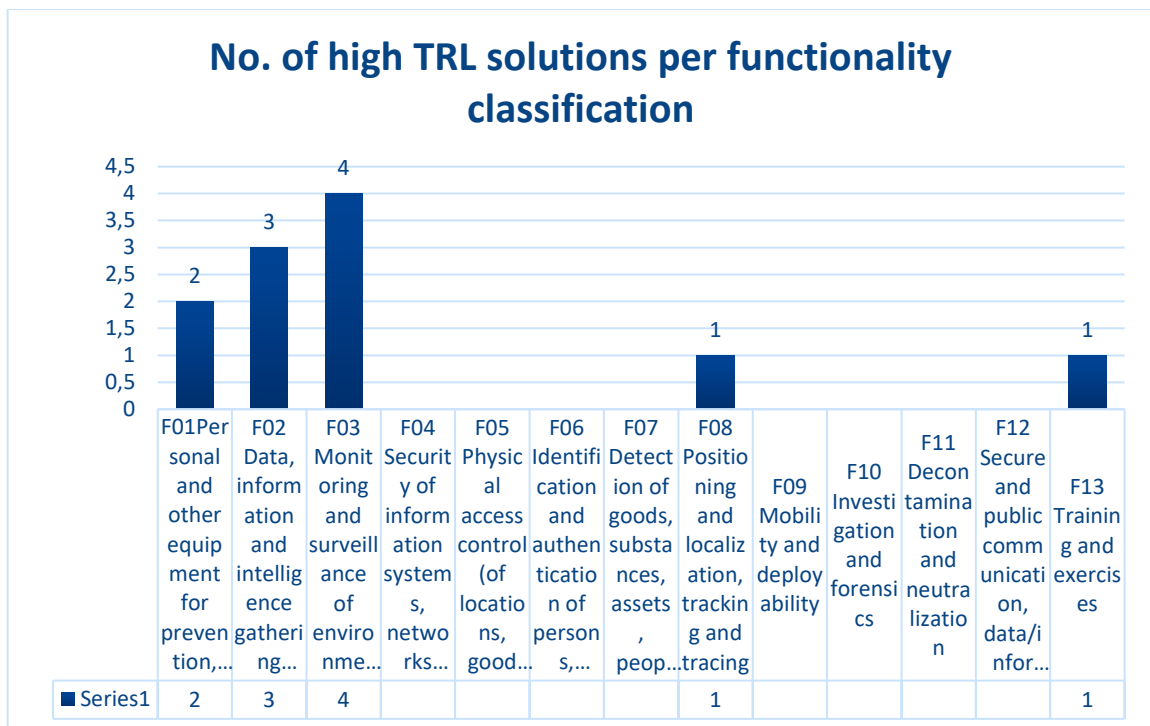


Figure 10: High TRL per functionality.

Although the total number of solutions is small, some trends are already visible with regard to the functionalities that are of interest for technological developers. It is apparent that the majority of solutions screened during the first cycle of the project are mainly related to surveillance and monitoring systems, data and information processing and personal protective equipment. A smaller number is relevant to training applications.

In conclusion, the first part of the assessment of solutions can already provide some significant results for WP2 and the second iteration, even before proceeding to the step of assessment from the experts, especially when it comes to the level of coverage of capability topics and gaps, which is the most important outcome of this assessment. As already mentioned, and especially for commercially available or close to the market solutions, the testing, assessment and validation has been already performed outside of the DIREKTION framework. What is important, at this stage, and for the project in general, is to see to what extent the identified CGs are covered and therefore, the above charts provide quite significant feedback.

4 Expert Panel Solution Assessment

This chapter is dedicated to the assessment of the high TRL solutions, conducted by the expert panel of the DIREKTION project. As depicted in Table 4, eight solutions from seven suppliers have been screened. These solutions were assessed during a series of workshops, which took place between the 30th of September and the 25th of October.

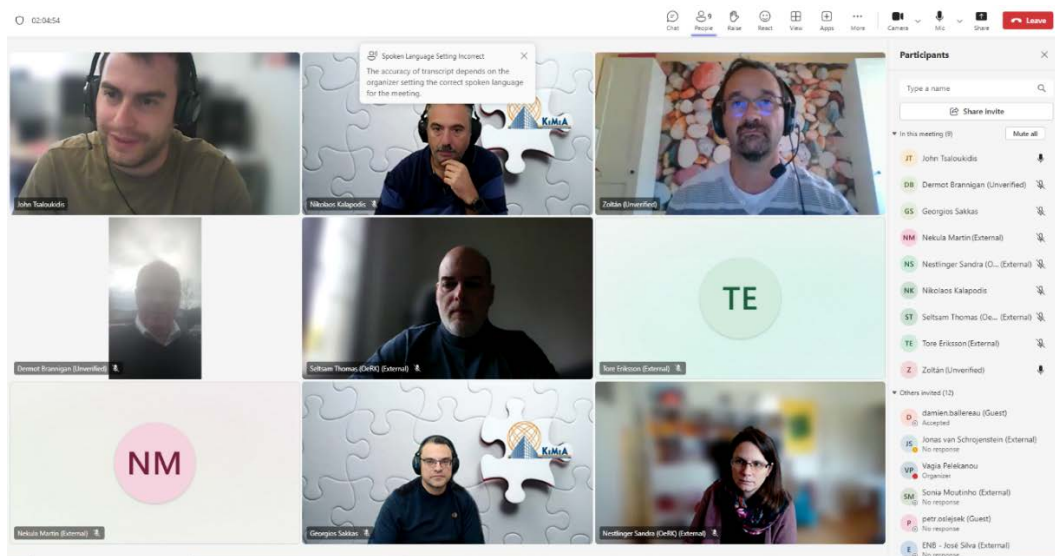


Figure 11: Screenshot taken during one of the workshops, with the participation of both the suppliers and the expert panel. The screenshot was taken after consensus with the participants.

In each workshop, two to three solutions were assessed, whereas in some cases, solution providers attended in order to provide information and present the under-examination solutions. The experts were handed the results from the suppliers' assessments prior to the workshops, in order to have an overview of the solutions and the suppliers' perspective. Moreover, presentations and informative material, received by the suppliers, were shared with the experts to ensure a clear understanding of the solutions and their characteristics and functionalities.

The key findings for each assessment, accompanied by a short description of the solution by the supplier, are presented in the following subchapters. The visualisation of the results is based on the participating experts' opinions against the **level of coverage** of the selected capability gap, the **compatibility** with existing technologies and Standard Operational Procedures (SOPs) used by first responders' organisations, the expected **impact**, the use of the solutions will potentially have, and the **compliance** of the solutions in terms of the following aspects:

- (Cyber)Security,
- Interoperability,
- AI act,
- Community engagement,
- GDPR,
- Fundamental rights,
- Sustainable Development Goals,
- National crisis management priorities,
- Sector specific standards,
- Sector laws and regulations

This part of the assessment is also collaboratively conducted with suppliers, as they are most capable of providing this level of detail. For each of the three basic parameters of the assessment, graphs are automatically created based on the answers the expert panel provides, to specific sets of questions. For each specific question it was imperative to reach a consensus among the experts before submitting an answer. It is important to note at this point that the values depicted in the graphs do not represent the number of participants in the workshop, but rather the numbers of positive / negative / neutral answers in the respective questions. Details regarding the compliance readiness aspects are included in the D1.2 (Eileen Murphy Maguire, 2024). The actual results from the Solution Assessment Tool are included in Annex 2. For those solutions that will be assessed in future cycles, only the results of the suppliers are included.

4.1 Solution Assessment: C-SHIELD / ITTI

C-SHIELD is a TRL 8 solution provided to the DIREKTION project by the Polish private company ITTI. The C-SHIELD system is an advanced chemical threat detection solution that integrates heterogeneous sensor nodes using technologies such as Ion Mobility Spectroscopy (IMS) and Flame Photometric Detection (FPD) to enhance situational awareness and reduce false alarms. It features a microcontroller-based device that processes and fuses data from commercial chemical detection instruments, providing substance classification, identification with probability scores, and concentration estimation, making it highly valuable for first responders in securing public spaces.

The solution can detect nerve, blister, blood and choking agents, toxic industrial contaminants as well as other nontraditional agents. The solution gives the end users the capability to acquire information on the identity of the substance and its concentration level. The innovation it brings, in contrast to other commercial CBRN systems, is the processing of heterogeneous sensor signals, the limitation of false alarms through software algorithms, the identification of the substance class and identity as well as high interoperability and modularity through easy extension with additional third-party modules. The solution was developed under the framework of the H2020 SECURIT project (H2020 SECURIT Project, n.d.).

According to the provider, this solution addresses the “Situational Awareness” Capability Topic and the “The ability to make operational decisions based on building an understanding of the emergency and its evolution.” CG. In addition, it is related to the Preparedness phase of the Disaster Management Cycle and is related to the “Personal & other equipment for prevention, response and recovery.” functionality.

The AUTRC and CAFO assessed the solution on behalf of the expert panel. The following figures present the results of the assessment regarding the current capability and capability gap, compliance of the solution, compatibility and impact of the solution.

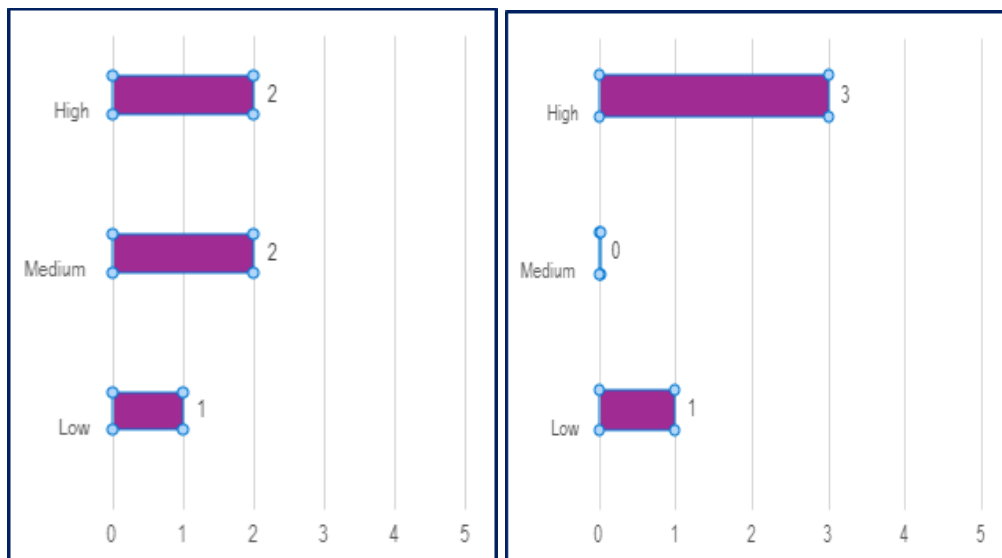


Figure 12: Assessment of the level of coverage of the capability (left) and capability gap (right) by the C-SHIELD solution.

As deduced by the above charts, the majority of the experts agree that the solution addresses the capability at a medium to high extent, with the same also applying to the level of coverage of the capability gap.

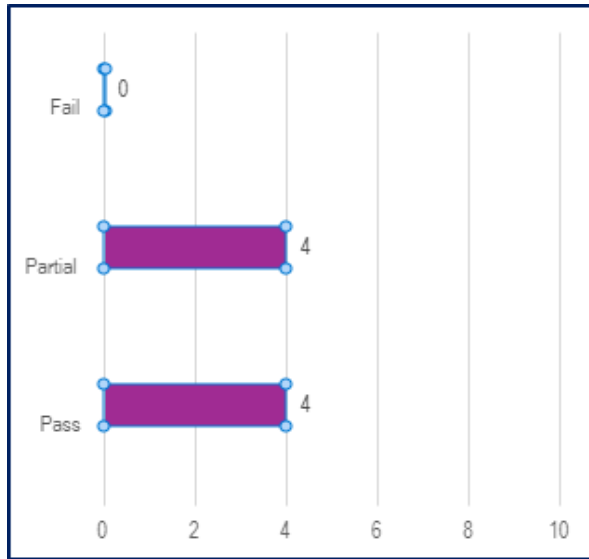


Figure 13: Compliance readiness of the C-SHIELD solution.

The majority of the answers related to the level of compliance of the solution, prove that it satisfies, to a significant level the aforementioned requirements.

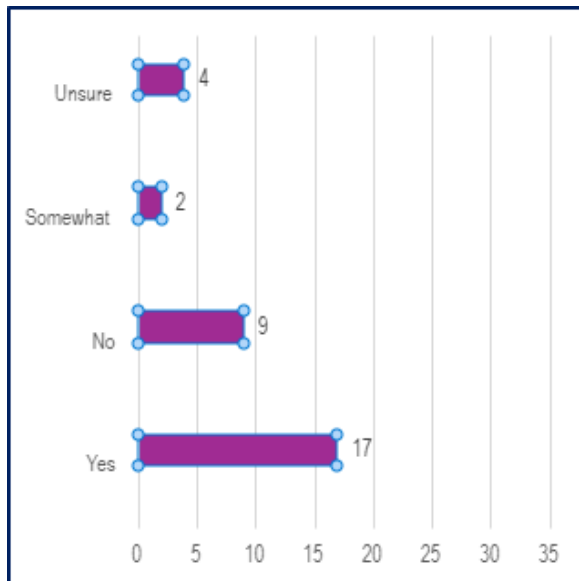


Figure 14: Expert panel answers with regards to whether C-SHIELD could be compatible with current technologies used and have a positive impact.

Finally, the level of compatibility with current solutions and operational procedures implemented by first responders' organisations, as well as the impact the use of the solution could have, are assessed by the expert panel. According to their opinion, which is also based on the solution description and presentation, the solution presents a high level of compatibility, in terms of interoperability with other systems and/or procedures and its use would have a positive impact. However, due to the lack of the capability for a live demonstration of the solution, there are aspects of which the experts are unsure e.g., ease of use, extensive maintenance requirement or compatibility with existing SOPs, especially given the fact that the solution is not used by the organisations comprising the expert panel.

4.2 Solution Assessment: PROCEED / ITTI

PROCEED is the second solution in the series provided by ITTI. This is a TRL 9 solution and it actually consists of two sets of tools, the PROCEED Laboratory and the PROCEED Serious Gaming.

Regarding the PROCEED Laboratory, it is a web-based analytical application for exercising crisis management and response. It provides a software for developing a simulation environment that contains various objects such as buildings, vehicles, assets etc. Each object is assigned cause-effect rules of behaviour. The lab employs simulations to generate cascading effects and visualise consequences of initial incidents. Moreover, it supports crisis management teams and decision makers e.g., the fire service, the police or emergency medical services, providing them the opportunity to identify areas at risk and threatened Critical infrastructures (CIs), assess the impact of the threat on these, and also recognise interdependencies among them.

On the other hand, the PROCEED Serious Gaming is a computer platform that enhances situational awareness and trains decision makers in simulated situations through role playing. Games can be created and run on the platform with visualisation on a map and can be utilised as a tool for what-if analysis. Moreover, by observing the dynamically changing simulated scenario, the system can make decisions influencing the course of the story and challenging decision makers / players to adapt their behaviour.

The solution addresses the “Training and Exercise” capability topic and CG “The ability to train crews and commanders in decision-making and communication in uncertain, dynamic, unexpected scenarios, adapting tempos and synchronizing activities with other agents. Facilitate the improvement of existing doctrine”. The Preparedness phase of the disaster management cycle is the most appropriate, whereas “Training and exercises” is the functionality supported by the PROCEED set of solutions.

The solution was assessed by the AUTRC and CAFO. According to the expert panel assessment the solution addresses the capability topic and gap to a medium extent, with answers varying from “Low” to “High” but concentrating mainly on “Medium”.

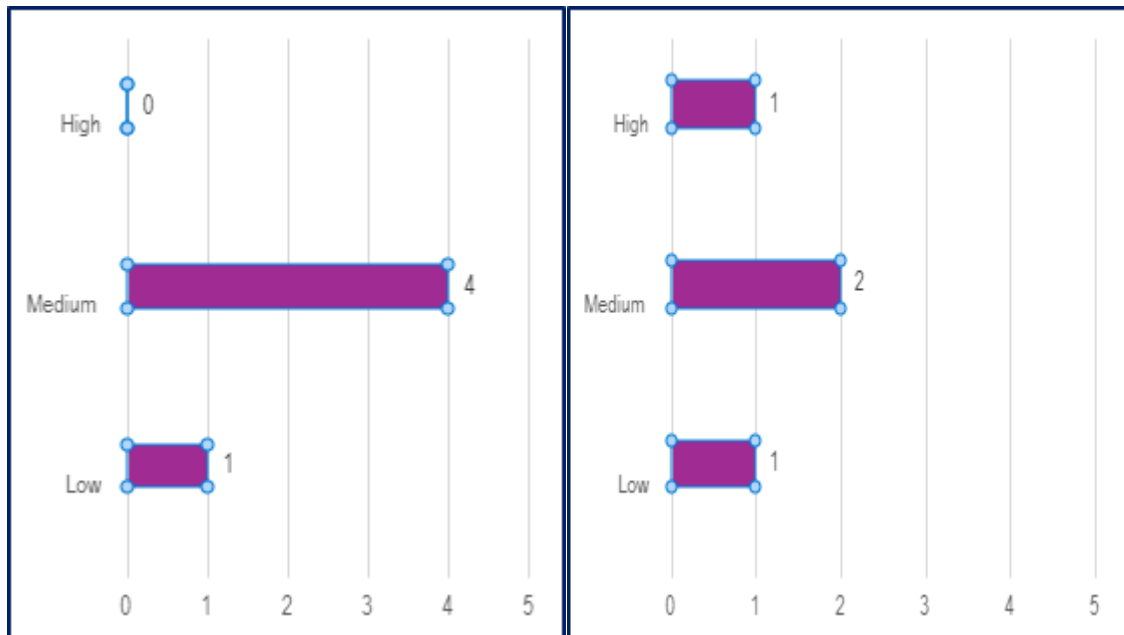


Figure 15: Level of coverage of the capability (left) and the capability gap (right) by the PROCEED solution

When it comes to the compliance readiness, the solution seems to adequately cover the requirements, according to the experts’ and the supplier’s answers, as depicted in the following chart.

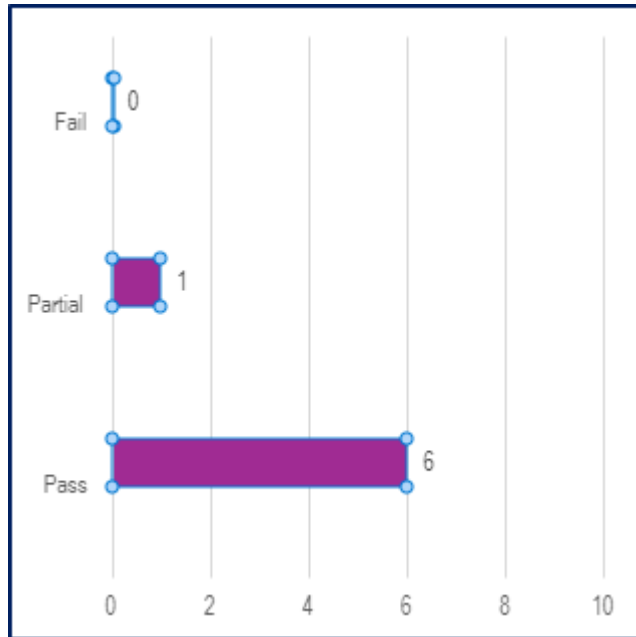


Figure 16: Compliance readiness of the PROCeed solution.

Finally, answers vary regarding the potential compatibility with systems already used by the experts of the panel and impact stemming from the use of the solution. Moreover, there is a high number of neutral answers (“Unsure” and “Somewhat”), something that is not surprising and is related to the lack of a real demonstration of the solution. This constraint is horizontal for all the solutions assessed by the expert panel, as all assessments depend entirely on the informative material provided on the suppliers or by presentations made during the workshops.

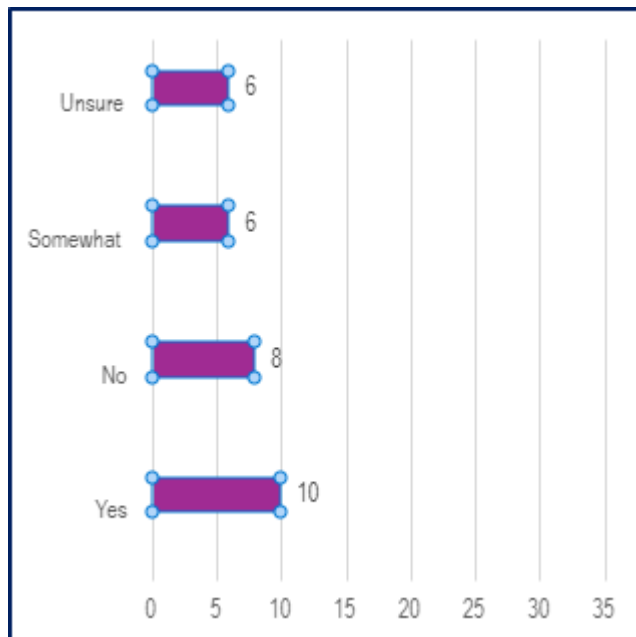


Figure 17: Expert panel answers with regards to whether PROCeed could be Compatible and have a positive Impact.

4.3 Solution Assessment: INA Intervention Platform / GEMSOTEC

The INA intervention Platform is a solution provided by the smart solutions and applications produced by GEMSOTEC enterprise. The platform is a TRL 9 solution that can be used by emergency responders as it provides all relevant information and data increasing situational awareness and communication. This includes information on the specific situation and documents information. All information and GIS data are centralized in the intervention channel and can be viewed on the built-in open-source map. Moreover, INA streamlines all communication between the different stakeholders during the intervention. Visual information can be easily shared, annotations can be made on the map, and messages can be sent. This eliminates unnecessary communication through phone or radio.

The interactive map depicts GIS data such as the location of resources, routes to the incident site as well as weather information. Procedures, digital intervention plans and hazardous substances documents are easy to consult in INA, allowing relevant information to be found quickly. Depending on certain parameters, relevant information is automatically displayed or added, such as GIS layers on the map or documents in the intervention channel. Past interventions can still be consulted 24 hours after closure and are then automatically archived. The platform consists of several modules e.g., a dispatch module, an incident command module as well as routing and navigation modules.

Following the assessment by the supplier, the platform addresses the “Command, Control and Coordination” capability topic and the CG “The ability to share key information to facilitate synchronized actions and to maintain initiative in a changing scenario.”. Moreover, the solution addresses the response phase of the cycle and is related to the “Data, information & intelligence gathering management and exploitation” functionality.

The solution was assessed by the AUTRC and CAFO. The expert panel assessment depicts a significant level of coverage of the capability topic, however this is not the case with regards to the CG, where “Medium” answers prevailed, as shown in the following figures.

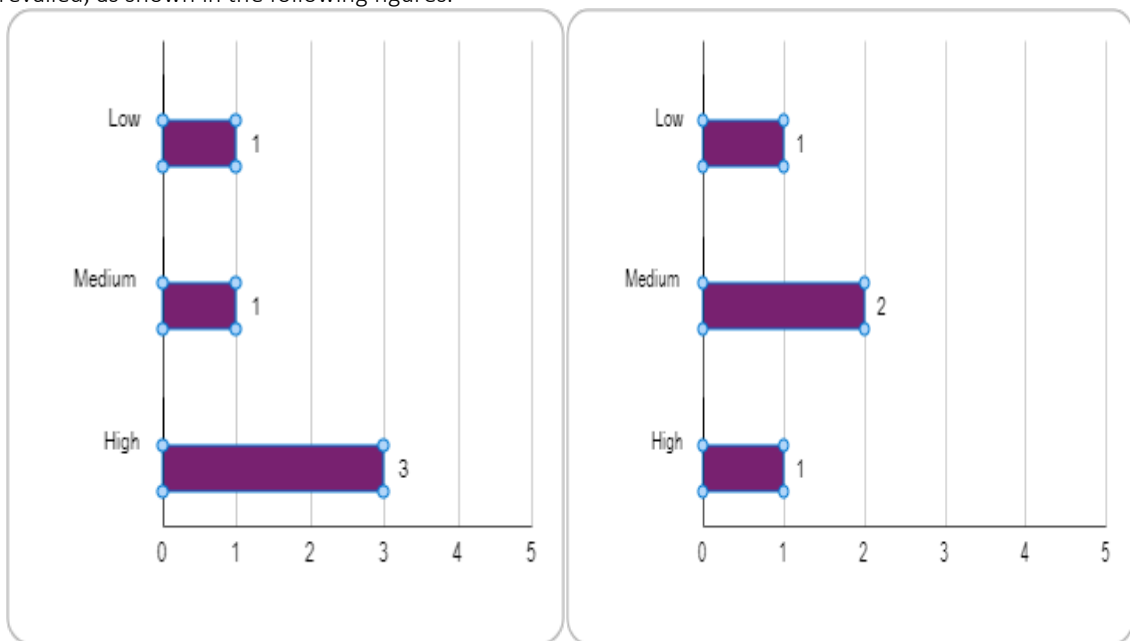


Figure 18: Level of coverage of the capability (left) and the capability gap (right) by the INA Intervention Platform

On the other hand, compliance readiness received only positive answers, taking into consideration also the supplier’s feedback.

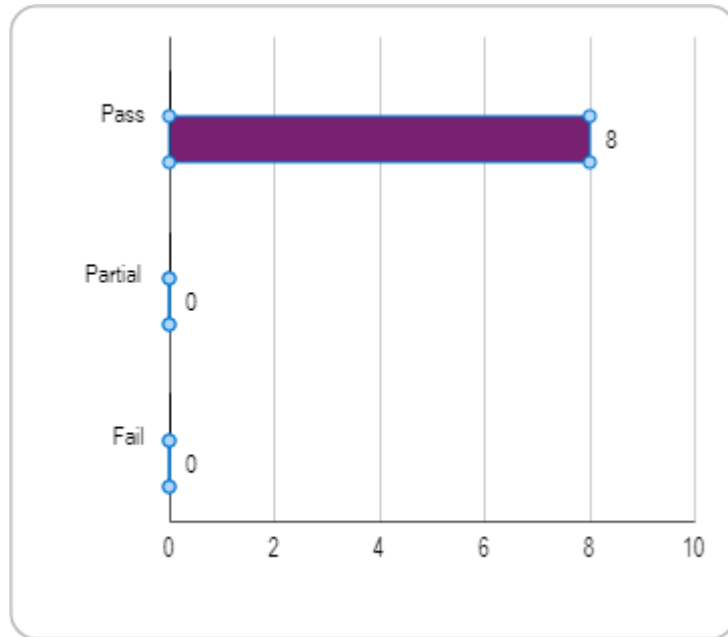


Figure 19: Compliance readiness of the INA Intervention Platform.

However, similarly to the previous solutions, the Impact and Compatibility, with currently used systems and implemented operational strategies, is characterised by different answers, further strengthening the assumption, made already from the very first assessed solution, that if the first responders have never used the solution, they cannot be sure whether or not the solution covers all the questions, that need to be addressed, so that the solution can be characterised by high compatibility and impact. The following figure is typical of this challenge.

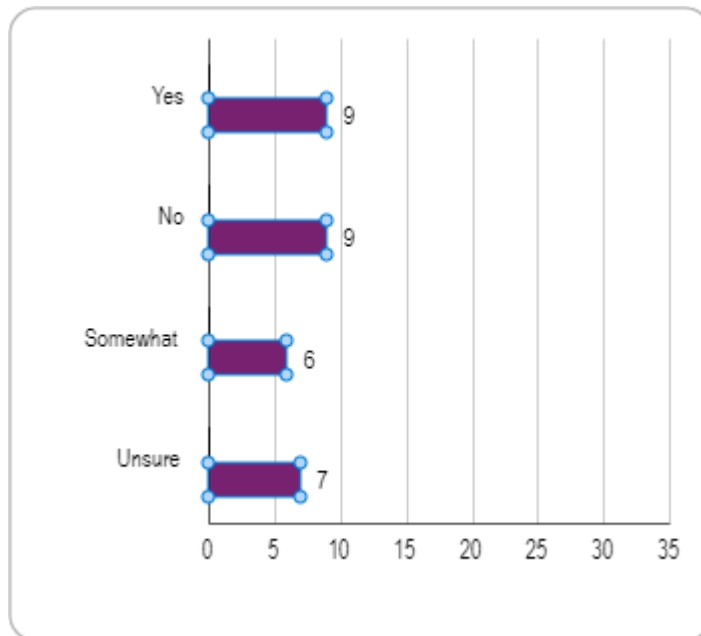


Figure 20: Expert panel answers with regards to whether the INA platform could be Compatible and have a positive Impact.

4.4 Solution Assessment: LastQuake / EMSC

LastQuake is a system provided by the European-Mediterranean Seismological Centre, EMSC and is a TRL 9 solution. The system is related to the detection of earthquakes, receiving information from the public. The information it provides is related to earthquakes that have been felt by the community, utilising crowdsourcing technology.

LastQuake is a multi-component information system that provides real-time information about earthquakes and their effects on a global scale. It includes websites, a social media bot (Twitter, Mastodon, Telegram) and a smartphone app for a combined number of visits of 10M/month. Data from 110 seismic networks are collated to provide the most complete real-time earthquake catalogue. LastQuake is the only existing system that focuses only on felt earthquakes, the only ones that matter to the public, emergency services and society as a whole.

Therefore, the solution targets the “Communications and Information Sharing” capability and the CG “The ability to boost the public information function: Develop a specific communication strategy to maintain credibility, including social media.”, whereas is related to the response phase and supports the “Data, information & intelligence gathering management and exploitation., F03: Monitoring and surveillance of environments and activities.” Functionality.

The solution was assessed by the AUTRC, CAFO and also Michel Bour from SAFE Cluster, who, although not a member of the panel, took part in the procedure as an experienced firefighter. According to the expert panel, both the capability and the capability gap are covered at a medium extent, as depicted in the following figures. However, although the graphs depict a mainly medium coverage of the CG, it is noteworthy that LastQuake is a solution already operational since many years and accepted by the DRS community.

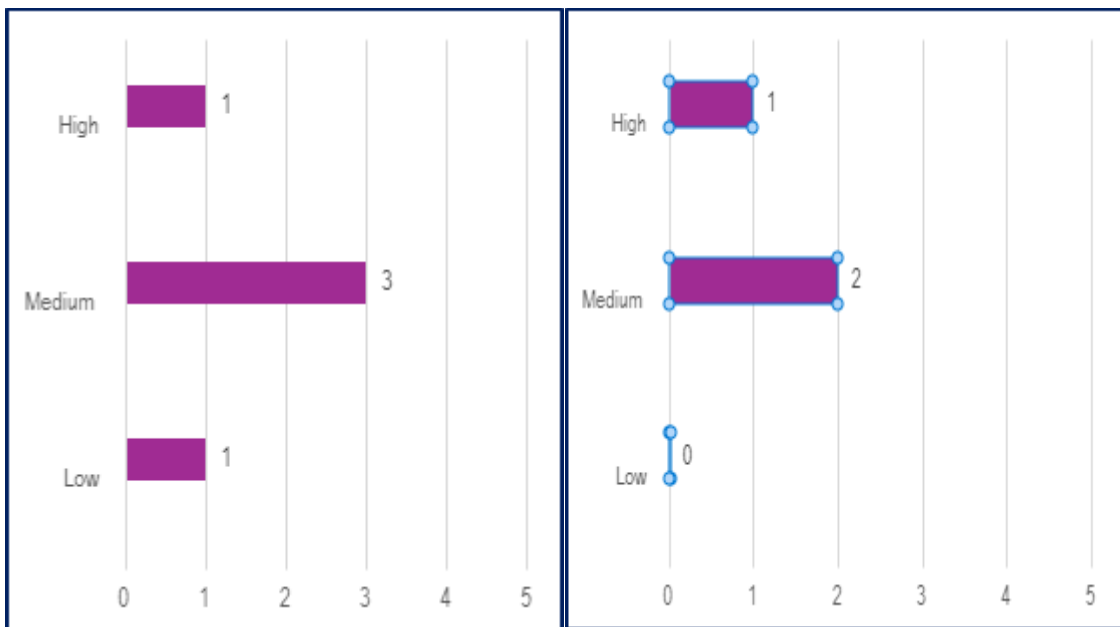


Figure 21: Level of coverage of the capability (left) and the capability gap (right) by the LastQuake solution.

On the other hand, the aspects related to the compliance readiness of the solution are fully covered.

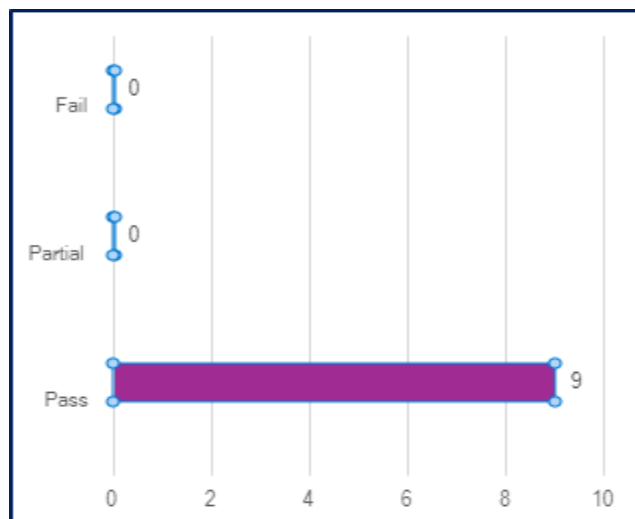


Figure 22: Compliance readiness of the LastQuake solution.

Compatibility and Impact are again split with positive, negative and also neutral answers, something already discussed in the previous assessments and pinpointed in the workshops. LastQuake is no exception and answers follow a similar logic as presented in the chart below. However, this system is operational and, on the internet, therefore the answers indicate that the experts do not have experience with this specific solution.

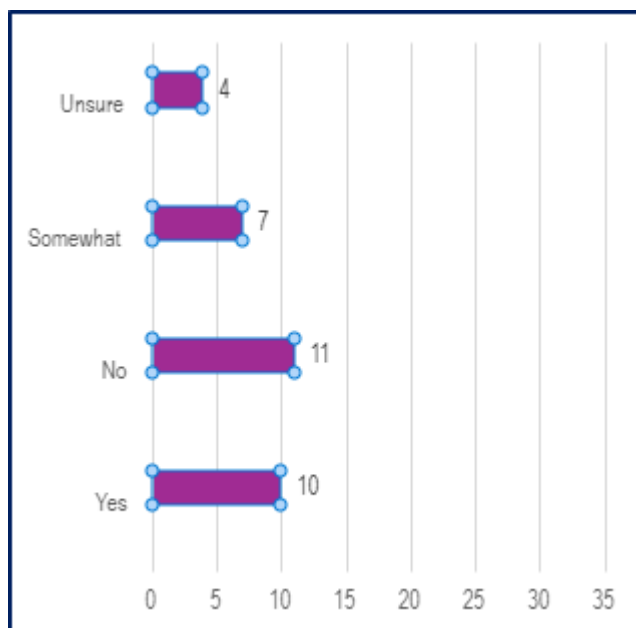


Figure 23: Expert panel answers with regards to whether LastQuake could be Compatible and have a positive Impact.

4.5 Solution Assessment: ARGOS /HYDS

The ARGOS is a TRL 9 solution provided by the Hydrometeorological Innovative Solutions company, HYDS. The solution is developed in the context of the H2020 ANYWHERE research project (H2020 ANYWHERE Project, n.d.). The system incorporates the processes required in order to prepare for and respond to weather related hazards by harmonizing data, warnings and protocols in an integrated solution.

Argos has been designed from the ground up to seamlessly integrate any source of information useful for operative management. Moreover, these new sources can define new rules for the warning decision flow. Its architecture follows a modular approach, boosts a collaborative approach fostering proactive management and allowing for the inclusion of even more data from sensors and external products and warnings (ARGOS, n.d.).

The supplier has indicated the “Command, Control and Coordination” capability topic and the CG “The ability to incorporate information from multiple and nontraditional sources into incident command operations.”. However, the supplier has commented that the solution can also address the “Communications and Information Sharing”, “Situational awareness” and “Intelligence and Investigation” topics as well. The solution itself is related to the preparedness phase and is relevant to the “Monitoring and surveillance of environments and activities” Functionality.

The solution was assessed by the AUTRC, CAFO and FEU. Proceeding to the assessment from the end users’ perspective, the solution, although it addresses the capability to a medium to high extent, does not cover the gap accordingly, with mainly “medium” and “low” answers. However, the issue of uncertainty due to lack of experience with the solution was raised again. In fact, the solution might very well address the CG, however the expert panel could not be aware of it. The answers are presented in the following figures.

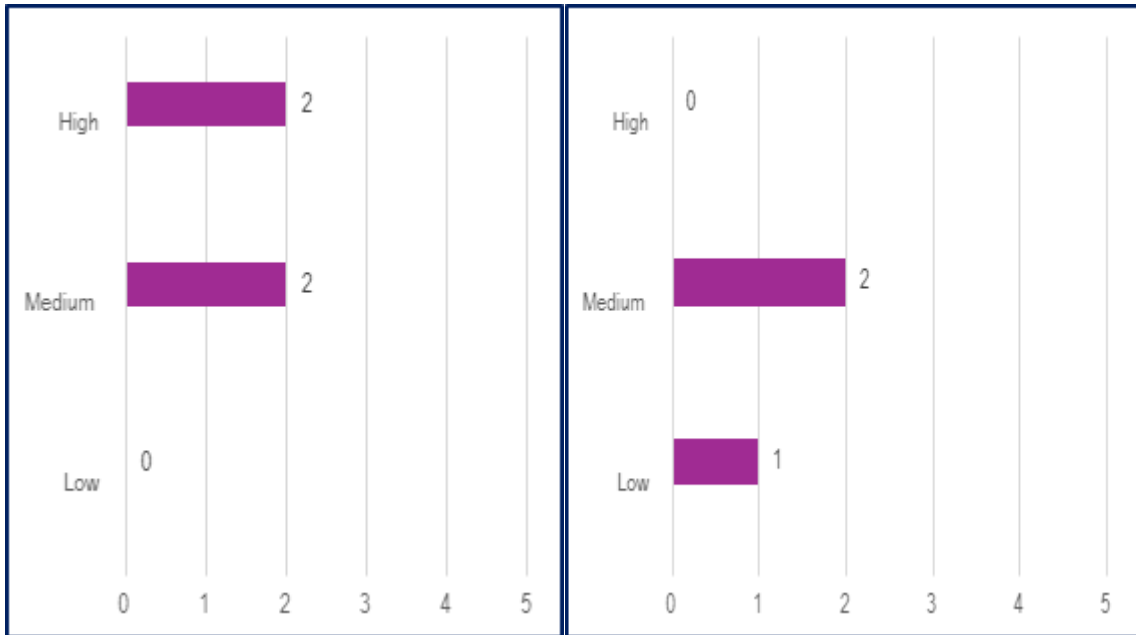


Figure 24: Level of coverage of the capability (left) and the capability gap (right) by the ARGOS solution

Compliance readiness is clustered into “Partial” and “Pass” answers. The reason is that the solution was found to be as “not applicable” with regards to the AI Act, Fundamental Rights, Sustainable Development Goals, Sector specific standards, laws and regulations aspects.

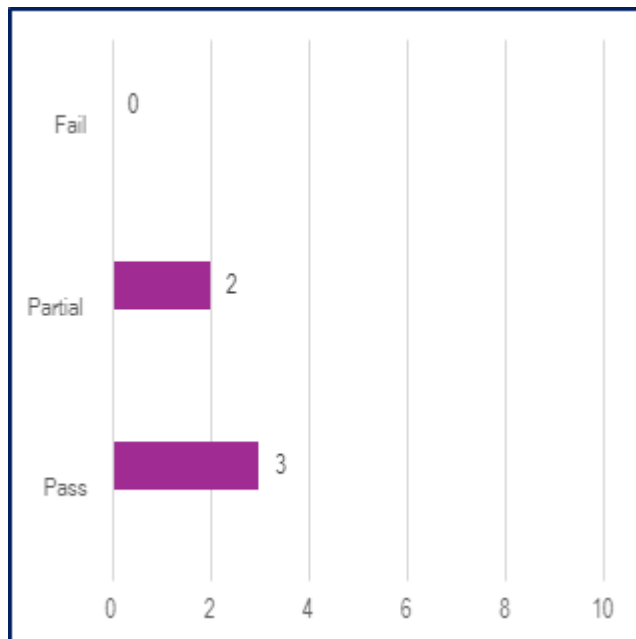


Figure 25: Compliance readiness of the ARGOS solution.

Compatibility and Impact again present a high level of uncertainty due to the reasons explained in the previous sections. Positive, as well as negative and neutral answers were provided.

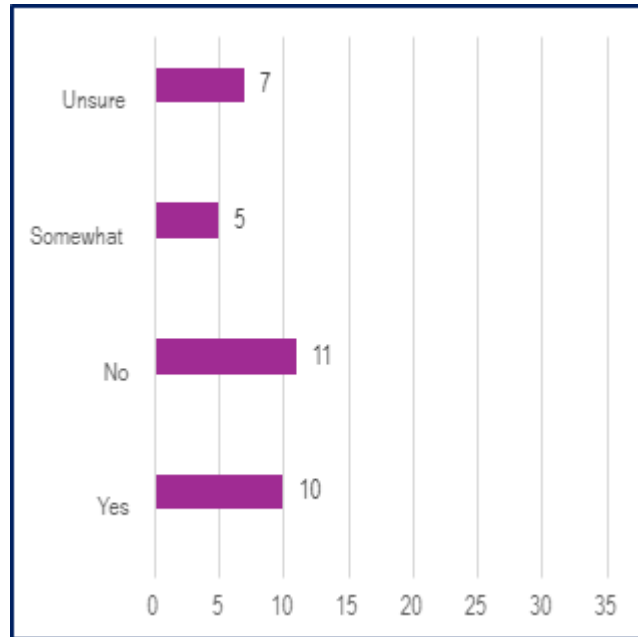


Figure 26: Expert panel answers with regards to whether ARGOS could be Compatible and have a positive Impact.

4.6 Solution Assessment: Tether Solution for Microdrones / ARASTELLE

The Tether solution for microdrones was proposed by the ARASTELLE company and is at TRL 8. The solution enables to convert existing microdrones, used by the First Responders units (Mavic, parrot, etc.) into a tether flight mode for persistent observation capabilities. The solution is compact, rugged, easy to use and autonomous with embedded energy allowing it to deploy at any location.

The solution is energy efficient, as it integrates two high performance batteries offering up to four hours of flight. Moreover, the system can be connected to external sources as well for unlimited power, whereas it also provides instant adaptability, quickly switching from free flight to tether mode. The system is interoperable and compatible with various types of drones such as MAVIC 2 and 3.

According to its developer, the solution addresses the response phase of the cycle, covers the “Situational Awareness” capability topic and the “The ability to make operational decisions based on building an understanding of the emergency and its evolution.” CG. Moreover, it supports the “Monitoring and surveillance of environments and activities.” Functionality.

The solution was assessed by CAFO, FEU, CTIF and AUTRC. According to the assessment by the aforementioned experts, the solution addresses, to a high extent, both the capability topic and the CG as shown in the following figures.

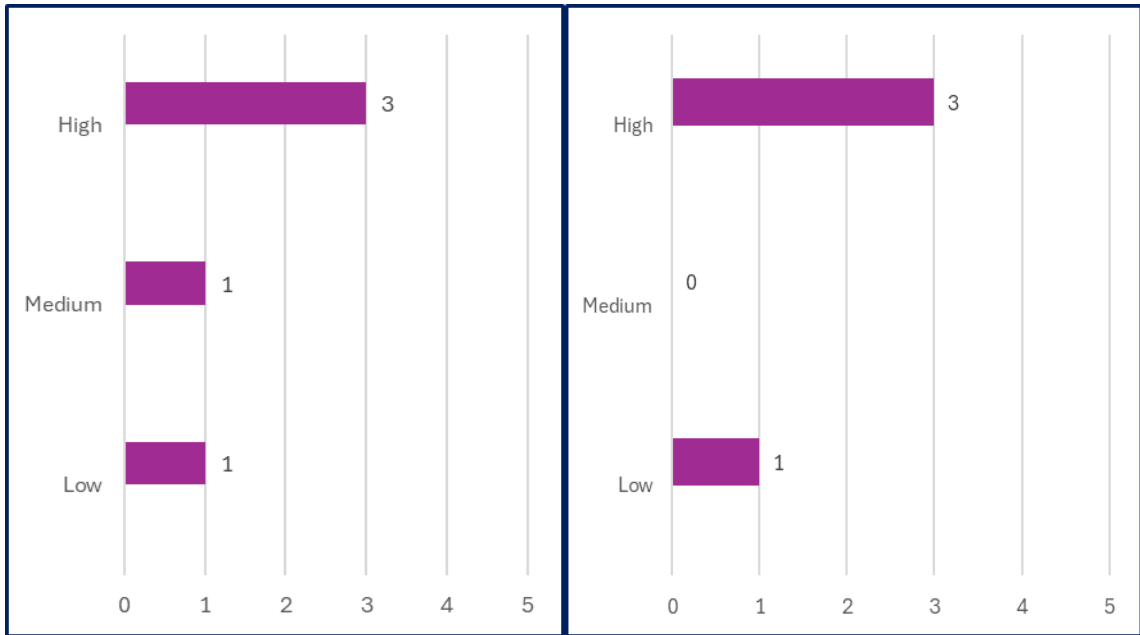


Figure 27: Level of coverage of the capability (left) and the capability gap (right) by the Tether solution for microdrones.

Regarding the compliance readiness of the solution, according also to the supplier's perspective, it covers all the required prerequisites.

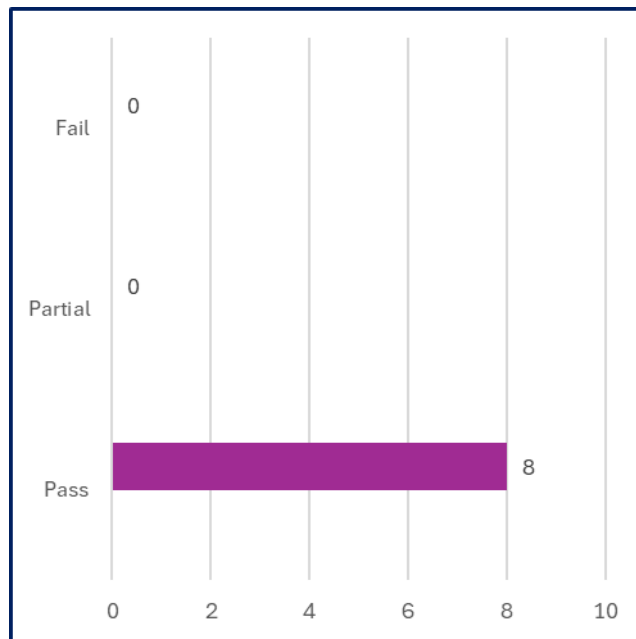


Figure 28: Compliance readiness of the Tether solution for microdrones.

Finally, although the answers regarding the Compatibility with existing systems / procedures and Impact aspects are split, the solution mainly received positive answers, as deduced by the following chart.

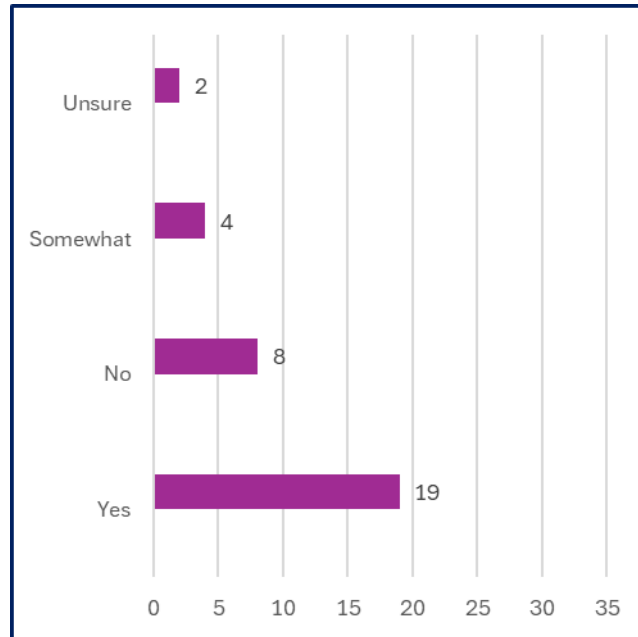


Figure 29: Expert panel answers with regards to whether the Tether solution for microdrones could be Compatible and have a positive Impact.

4.7 Solution Assessment: 3Di Water Management / Nelen Schuurmans

The 3Di Water Management solution is developed by the company Nelen Schuurmans and has a TRL 8. Flood simulation software can accurately predict the development of a flood event. Indicators such as the spreading pattern and occurring flow velocities near critical infrastructure can be extracted to determine what action needs to be taken in a certain situation. The software offers live, on-the-fly optioneering, e.g., placement of flood barriers. It also offers post processing capabilities that help in the training and assessment, e.g., flood risk buildings, which buildings are or going to be affected by the flood and damage estimations, how much economic damage can be expected from the flood. Moreover, it is a significantly useful solution when there are alternative options for flood mitigation to take damage estimates into account when making a decision.

In addition, 3Di is an online interactive simulation environment, designed to be used with stakeholders to create a common understanding of a flood event and to decide on measures to mitigate the potential impact. Interoperability is also high, as open API allows for integration and interaction with other models used within first responders' organisations e.g., Digital Twins and Flood Early Warning Systems.

The solution addresses the "Command, Control and Coordination" topic, the "The ability to promote quick adaptation to changes in scenario through situation assessment and decision-making structures." CG and the preparedness phase. Moreover, it supports data, information and intelligence gathering management and exploitation.

The solution has been assessed by CAFO, FEU, CTIF and AUTRC. Both the capability topic and gap are highly addressed by the solution.

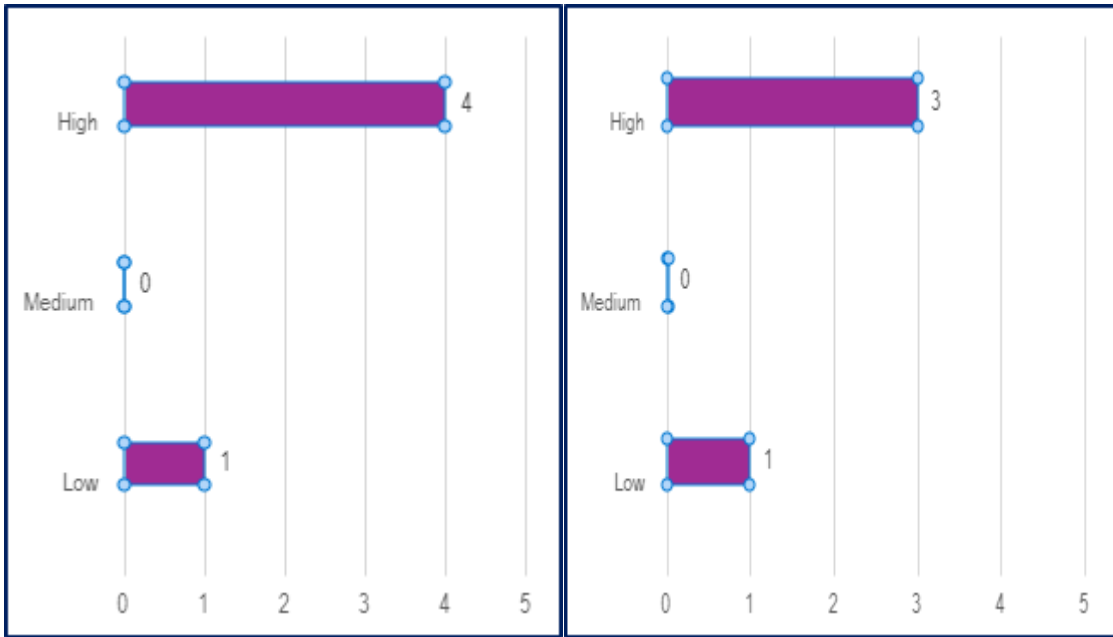


Figure 30: Level of coverage of the capability (left) and the capability gap (right) by the 3Di water management solution.

Moving on to the compliance readiness, the solution seems to address all the relevant fields, with the “pass” answer prevailing. In the following graph the level of compliance of the solution is depicted.

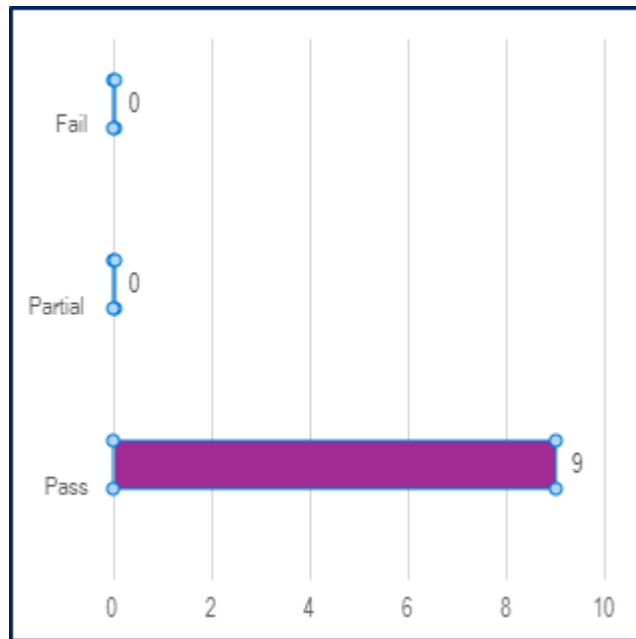


Figure 31: Compliance readiness of the 3Di water management solution.

Finally, with regards to the Compatibility with existing systems and SOPs and the Impact of the solution, mostly positive answers were received, although some aspects remain unclear, such as cost-benefit balance or the processing of personal data during the use of the solution. The following graph depicts the respective answers from the expert panel.

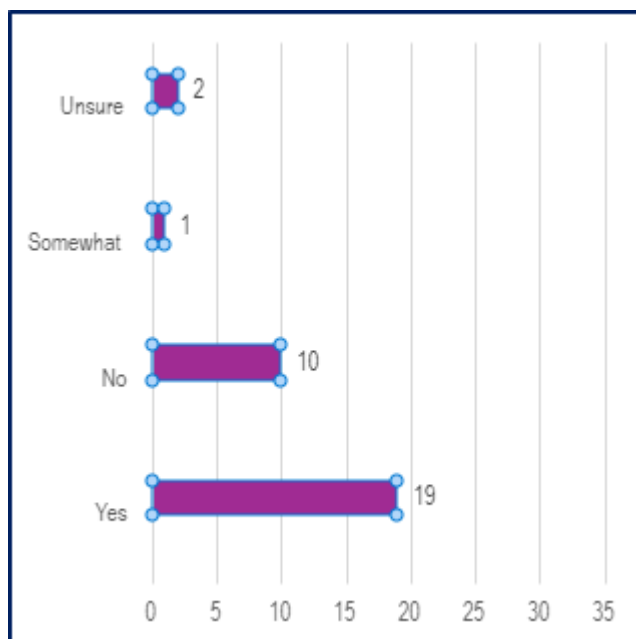


Figure 32: Expert panel answers with regards to whether the 3Di water management solution for microdrones could be Compatible and have a positive Impact.

4.8 Solution Assessment: FireMap / OMIKRON

The FireMap is a solution proposed by OMIKRON. It is a TRL 8 solution, with a current development and addition of new features and functionalities, based on AI technologies. It is important to mention that the AI technologies are developed under the framework of the H2020 STAIRWAI project (STAIRWAI to AI, n.d.). The solution is designed to assess longitudinal wildfire risk maps in specific regions, while it incorporates these maps and provides recommendations regarding the most cost-effective placement of sensors in the field. Moreover, with the integration of AI technology, the most ideal locations of sensors are identified, thus enabling maximisation of efficiency and coverage. In fact, the overall system consists of two parts, the automated tool that generates wildfire hazard maps and the AI-based solution for the intelligent placement of sensors on the field, currently at the stage of development. Overall, the aim of the solution is to reduce by 45% the cost of installations, a percentage that is expected to be increased with the integration of artificial intelligence.

The solution provider indicated the “Technology and Innovation” topic as well as the “The ability to know the location of responders and their proximity to risks and hazards in real time.” CG. The solution addresses the preparedness phase and is closely related to the “Positioning and localization, tracking and tracing” functionality.

The solution was assessed by ENB, CAFO and FEU. Both the capability topic and gap are addressed, with answers split between “Medium” to “High” as depicted in the figures below.

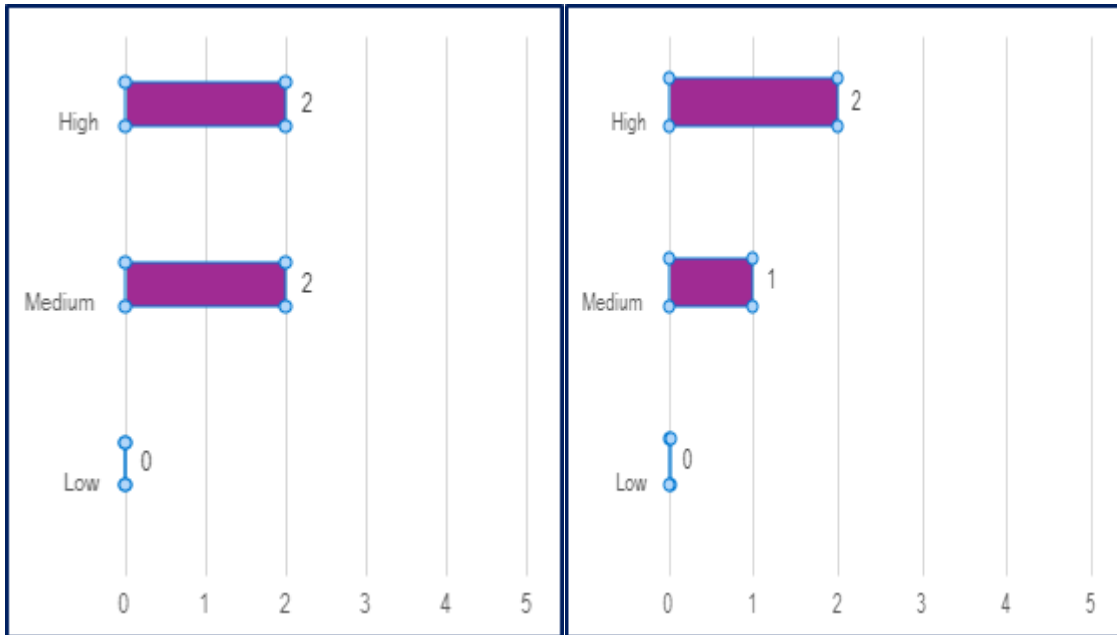


Figure 33: Level of coverage of the capability (left) and the capability gap (right) by the FireMap solution.

Compliance readiness again presents positive results, with the majority of aspects, examined at this stage, addressed by the solution. The following figure presents the results of the compliance readiness assessment.

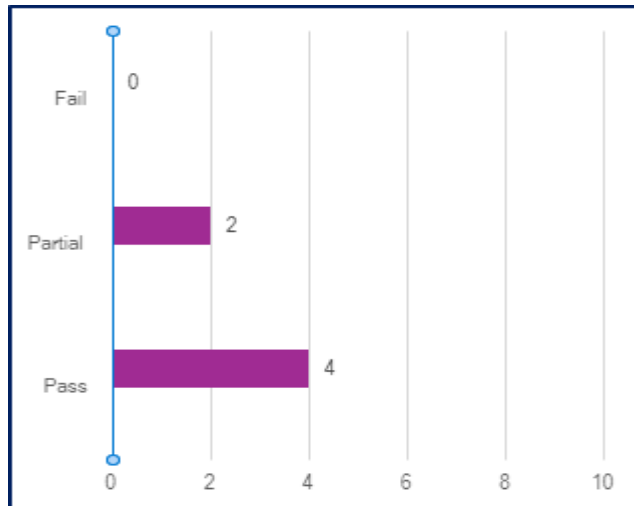


Figure 34: Compliance readiness of the FireMap solution.

Finally, with regards to the Compatibility of the solution with existing systems and processes and the potential Impact its use might have, answers are split, with the majority selecting the “Unsure” option. The lack of live demos was highlighted once more, as first responders need firsthand experience with the proposed technology.

Taking into account the assessment results from the above solutions, even if the numbers are lower than expected, crucial conclusions and results emerge, which need to be seriously considered, not only for the second and third iteration of the project, but also for the overall safety and security domain, which engages both ends of the thread, the suppliers and the first responders. The outcomes of the first cycle are presented in the following section.

5 Conclusions

The Conclusions section is clustered in two main subchapters, i.e., outcomes and considerations from the first cycle of DIREKTION, to be considered for the future, as well as outcomes related to the overall safety and security domain.

5.1 Outcomes from the First Iteration of Solution Assessment

The analysis of the solutions indicates several gaps as well as some trends to be taken into account.

Starting with the overall methodology the project follows, a first consideration is related to the award process of WP5. The inclusion of the award process has significantly increased the interest of the various suppliers that have been contacted. However, this increased interest does not necessarily mean that the solutions collected during the first cycle were sufficient. On the other hand, it has raised the profile of the DIREKTION project.

In general, larger companies and industries seem to show a lack of interest in providing technological solutions, probably due to their established customer base and their R&I agendas. On the contrary, smaller companies tend to engage in projects such as DIREKTION, as these initiatives offer them opportunities to present and disseminate their solutions, expand their network and attract potential customers.

In order to optimise the identification of capability gaps, it seems desirable to restructure them into a more concise format, for example, similar to that of IFAFRI (10 categories), a topic that has also been raised in Recommendation #3 of the EU Security Market Study about the shortening of the functional areas (European Commission Directorate-General for Migration and Home Affairs, 2022). Broader categories are likely to be more appropriate for the DIREKTION project and for first responders in general. Highly specific gaps may not attract much interest from solution providers, as these can often be integrated as specialised tools within larger solutions, particularly in the area of software production. Conversely, for hardware or materials, specific gaps may be really advantageous and considered as assets. However, it is important to recognise that highly specific gaps may not be attractive to the market, as they may not generate significant revenue potential for the private sector.

For the first time, it was observed that vendors may not be necessarily familiar with the concept of the TRL, creating challenges when attempting to classify their products accordingly. In addition, a given solution may include multiple tools, each of which may have a different TRL within the broader context of the solution. It is expected that vendors may introduce a new functionality into a given solution over time. However, there appears to be confusion over the application of TRLs, particularly in distinguishing between the TRL of the overall solution and that of its individual features. This issue is not always easy to resolve and will need to be addressed on a case-by-case basis.

Challenges and how to overcome the challenges:

- **Need for more solutions;** The initial hypothesis of mediocre responsiveness was confirmed, as from the 125 invitations only 13 providers confirmed their participation. As a result, this procedure will remain open, even after the termination of the first cycle of the project, till the threshold of 25 high TRL solutions is reached. In order to increase the diversity of solutions, it is expected that broadening the focus to include lower TRL will result in a greater number of solutions, thus providing a comprehensive overview of general trends in the next cycles.
- **Usage of broader Capability Gap (CG) categories;** The use of broader categories or clusters of CGs for the second cycle will facilitate a more organised approach. Larger categories can be used effectively to streamline the evaluation process.

- **Suppliers demonstrations;** Technological providers should be encouraged to provide demonstrations of their solutions, such as videos or live presentations. This practice would greatly benefit the expert panel by providing a clearer insight into the solutions being evaluated.
- **Improvements to the DIREKTION tool;** Improvements to the DIREKTION tool are needed to optimise its functionality and usability.
- **Detailed information from suppliers;** It is important to request more detailed information from the suppliers with regards to their solutions. The development of a template for suppliers could facilitate this process and ensure consistency in the information provided.
- **Challenges to expert consensus;** The current design of the tool allows for use by a single individual/organisation, which makes it difficult to reach consensus, or lack thereof, among experts. The experts come from different countries, organisations, processes, cultures and needs and achieving consensus can be challenging. Therefore, improvements are needed to ensure a more objective outcome that takes into account the different perspectives of the experts.
- **Expand the panel of experts;** The Expert Panel should be expanded to include a broader range of experts, ideally covering all topics related to DRS. This expansion would improve the organisation of the expert panel workshops and ensure that each solution is evaluated by at least three experts, thereby increasing the robustness of the evaluations.

Focusing on the assessment workshops, positive aspects are highlighted in terms of capabilities and compliance readiness, there are some horizontal considerations regarding all the assessed solutions, which are thoroughly presented.

The following positive trends have been highlighted during the workshops and solution assessments:

1. **Capability Gap Coverage:** What can be deduced from the assessment process is that capability topics and gaps are addressed, at least in a satisfying manner, by the eight high TRL solutions examined in this cycle. There also seems to be a general agreement by the experts that the solutions would increase their efficiency and effectiveness in their operations. However, a higher number of solutions are required in order to deliver safe assumptions, something that will be feasible during the second and third cycle.
2. **Compliance readiness:** There is a strong indication that the solutions meet the compliance requirements, with many positive responses regarding their readiness to meet required standards.
3. **Professional confidence:** There is a general consensus among experts that the solutions could have a positive impact if implemented effectively and could be compatible with the solutions and operational procedures already in place within the organisations. However, uncertainties have been expressed at this point, giving a pass to the following considerations that need to be seriously taken into account for the second and third iteration.

The above considerations mainly emphasise on the following aspects:

1. **Uncertainty due to lack of demonstration:** A recurring theme, emerged during the workshops, is the uncertainty regarding ease of use, maintenance requirements and most importantly compatibility with existing systems, primarily due to the lack of live demonstrations of solutions. Although, as already stated above, the majority of the members of the expert panel strongly believe that the solutions are most probably characterised by high compatibility and would have a strong positive impact, the lack of live demonstrations and also the fact that they have not used the solution before in real life operations, raise some question marks when it comes to objectively assessing the level of compatibility and impact. This also explains the fact why many solutions received mixed responses, including neutral and negative feedback and reflecting a lack of first-hand experience among experts.
2. **Capability Gap Coverage:** Despite the low number of high TRL solutions, a significant number of identified CGs is addressed. However, concerns have been raised regarding the extent, to which the effectiveness and efficiency of the selected capabilities are significantly increased by the proposed solutions. From the first responders' perspective, the assessment of the solutions, in relation to the capability gaps has several implications, such as:

- 2.1 **Partial Fulfillment of Needs:** The solutions generally address to a good extent capability topics and CGs, however, an opinion worth mentioning is that while the solutions may provide some benefits, they might not completely meet the specific needs or requirements of practitioners.
- 2.2 **Need for Further Evaluation:** The mixed responses regarding compatibility and impact suggest that first responders should conduct further evaluations or seek additional information before fully accepting any solution. This could involve requesting live demonstrations or even solution trials to better understand how the solutions would perform in real-life scenarios.
- 2.3 **Training and Support Requirements:** Given the uncertainties about ease of use and maintenance, end users may need to invest in training and support to ensure that they can effectively utilise the solutions. This is particularly important in the case which the solutions are not widely used within their organisations.
- 2.4 **Potential for Adaptation:** The feedback indicates that while the solutions may not fully address all capability gaps, there is potential for adaptation or customisation. End users might need to work with solution providers to tailor the solutions to better fit their specific operational needs.

5.2 Trends and Innovations, emerging from the First Iteration of DIREKTION, to be widely considered in the DRS Domain

The Research and Innovation (R&I) in the DRS domain should focus on creating user-friendly, adaptable, and compatible with existing systems and processes solutions that effectively address practitioners' capability gaps, while fostering collaboration and continuous improvement. This approach will help to ensure that new technologies are effective, widely accepted and integrated into existing systems. More specifically:

1. Focus on Practical Demonstrations:

Trend: An emphasis on live demonstrations and pilot programmes for new solutions should be given. This will help first responders gain firsthand experience and confidence in the solutions' effectiveness.

Innovation: Development of simulation environments or sandbox testing where users can interact with solutions in a controlled setting before full implementation.

2. End-User-Centric Design:

Trend: Future research will likely prioritise user experience, ensuring that solutions are intuitive, easy to use and fit the needs of the end users. This includes gathering feedback from end users during the design phase.

Innovation: Incorporating user feedback loops into the development process, leads to more tailored solutions that meet specific operational needs, not only at local or regional level, but at the EU level.

3. Enhanced Compatibility and Integration:

Trend: Solutions that are compatible and interoperable with existing systems and standard operating procedures are necessary. This will reduce the friction of adopting new technologies.

Innovation: Development of modular solutions that can easily integrate with various platforms and technologies, allowing for seamless transitions and upgrades.

4. Addressing Capability Gaps:

Trend: Research increasingly focuses on identifying and addressing capability gaps highlighted by expert assessments, particularly in key categories. This will involve a more targeted approach to developing solutions.

Innovation: Creation of adaptive solutions that can evolve based on user feedback and changing operational requirements, ensuring they remain relevant and effective.

5. Interdisciplinary Collaboration:

Trend: There is a growing trend towards collaboration between different fields, such as technology, emergency management and social sciences, to create holistic solutions.

Innovation: Establishment of partnerships between academia, industry, and first responders to foster innovation that addresses complex challenges from multiple perspectives.

6. Regulatory Compliance, Ethical and Standardisation Considerations:

Trend: As compliance with standards and regulations becomes increasingly important, research focuses on ensuring that solutions meet legal and ethical requirements and standards as well.

Innovation: Development of frameworks and tools that help organisations assess compliance and ethical implications of new technologies, particularly in areas such as AI and data privacy. Collaboration among stakeholders for the development of widely accepted standards.

7. Continuous Improvement and Iteration:

Trend: There is a shift towards a continuous improvement of models, where solutions are regularly updated also based on a user centric design.

Innovation: Implementation of agile methodologies in solution development, allowing for rapid iterations and enhancements based on real-world feedback.

8. Data-Driven Decision Making:

Trend: Decision-making processes based on data analytics to support organisations better understand their needs and the effectiveness of solutions.

Innovation: Development of advanced analytics tools that provide insights into solution performance, first responder engagement, and areas for improvement.

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Annexes

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Annex 1: Invitation for Solution Providers to Participate in DIREKTION



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Athens, September 09, 2024

Subject: Invitation to act as a solution provider to the DIREKTION project

Dear Sir/Madam,

We are reaching out to you with an exciting opportunity to be at the forefront of innovation in the areas of Disaster Resilience and Emergency Management sectors. As you are likely aware, the successful implementation of research outcomes in these fields often faces challenges due to limited engagement from practitioners. This is primarily because many practitioners find it challenging to engage in research efforts due to their busy schedules. Additionally, the lack of a centralized repository of information has led to fragmented insights from various R&D initiatives across Europe, hindering the sharing of best practices, lessons learned and existing solutions. Our goal is to empower practitioners in positioning themselves in the innovation ecosystem related to disaster resilience.

In light of these challenges, we are proud to introduce the DIREKTION project (<https://www.fire-in.eu/>), which aims to support and strengthening the thriving community of practitioners that the precursor project FIRE-IN cultivated. Our goal is to identify and harmonize operational capability needs and gaps through a collaborative and demand-driven approach to future research and standardization programs. By fostering knowledge sharing, DIREKTION seeks to empower the DRS community with access to valuable insights and innovative solutions (TRL9 in the initial phase).

We warmly invite you to become a solution provider for this groundbreaking initiative. Your expertise and contributions are vital for identifying existing solutions and defining research priorities that will shape the future of our field. Your participation will be instrumental during our workshops, meetings, and online surveys, where we will collectively explore innovative solutions and share best practices.

We look forward to your active participation and to working together to enhance the capabilities of DRS community. **In case you are interested in participating in this large DRS community, please answer back to us by responding to the above email contacts until the 16th September 2024 for further instructions.**

In addition to the above, we would like to announce to you that all innovators in the field of Disaster Resilience Solutions (DRS) can participate in the upcoming DIREKTION Awards for which an open call will be launched in January 2025 ([AWARDS | DIREKTION \(fire-in.eu\)](https://www.fire-in.eu/)). This prestigious initiative aims to recognize and support the top 10 groundbreaking solutions, providing them with the opportunity to gain visibility at the European level. Each selected innovation (10 in total) will receive a cash prize of €10,000 and the chance to present their work at international events. We encourage you to follow closely the activities of DIREKTION and submit your innovative solutions.

Thank you for considering this opportunity to create a significant impact.

Yours sincerely,

On behalf of the KEMEA team and DIREKTION consortium

Dr. Nikolaos Kalapodis



Annex 2: Solution Assessment Results

Solution Assessment Results: C-SHIELD / ITTI

STEP 0. PREPARATION: CAPABILITY GAP ASSESSMENT										
NAME(S)	ASSESSMENT OBJECTIVES			CAPABILITY (GAP) DESCRIPTION			DRM HAZARD	CAPABILITY		
DIREKION Consortium	To assess the C-SHIELD solution provided by ITTI			The ability to make operational decisions based on building an understanding of the emergency and its evolution.			All hazard	DR PHASE	CAPABILITY GROUP	
Assessment contributor(s)								Prepare - Respond	Prepare - Monitoring	
STEP 1. CAPABILITY GAP ASSESSMENT										
CURRENT CAPABILITY	RESPONSE	COMMENTS	CAPABILITY GAP	RESPONSE	COMMENTS	CHALLENGE(S) TO ADDRESSING THE GAP	FUNCTIONALITIES REQUIRED TO ADDRESS THE GAP			
What is the impact of this capability on your ability to prevent your selected hazard type?	Low		What is the likelihood that addressing the gap will improve your ability to prevent the selected hazard type?	Low			F03: Monitoring and surveillance of environments and activities... F06: Mobility and deployability... F11: Decontamination and neutralisation... F13: Training and exercises.			
What is the impact of this capability on your ability to respond to your selected hazard?	High		What is the likelihood that addressing the gap will improve your ability to respond to the selected hazard type?	High						
What is the level of the physical and mental safety of operational personnel working on...	High		What is the likelihood that addressing the gap will improve the physical and mental safety of personnel?	High						
How effective is the current capability?	Medium		What is the impact of the capability gap on your ability to deliver your core mandate?	High		Technological improvements, Procedures/processes, Improved interoperability				
How efficient is the current capability?	Medium		Severity of the Capability Gap	High						
Impact of Capability	High									
<p>Performance of Capability Medium</p> <p>If Other, please include details here.</p> <p>If Other, please include details here.</p> <p>This tool should be completed by the SOLUTION USER (S). The tool incorporates two assessments, capability gap assessment and solution assessment. The assessment steps can be combined according to the level of analysis you wish to carry out. Guidance on Solution Assessment is provided below.</p> <p>Under Step 0 (Preparation) use the free text box to identify the solution owner(s) and contributor(s). Next, summarize the assessment objectives, followed by a description of the solution (what it does and how it does it) you wish to assess. Then select from the dropdown lists the hazard type, disaster resilience phase and capability group most associated with the solution.</p> <p>Under Step 1 (Solution Screening) use the dropdown lists provided to screen the solution by innovation maturity, and compliance with policy priorities and sector relevant laws, standards and best practices. Supporting actions are recommended based on your selection.</p> <p>Under Step 2 (Solution Compatibility & Impact Assessment) use the dropdown lists provided to assess the compatibility of the solution by user needs, operational needs, and organisational needs, and expected impact of the solution.</p> <p>PLEASE BE CAREFUL TO SELECT ONLY ONE OPTION WHEN RESPONDING.</p>										
STEP 0. PREPARATION: SOLUTION ASSESSMENT										
NAME(S)	ASSESSMENT OBJECTIVES			SOLUTION DESCRIPTION			CAPABILITY PROMISED	DRM HAZARD	CAPABILITY	
DIREKION Consortium	To assess the C-SHIELD solution provided by ITTI			The C-SHIELD system is an advanced chemical threat detection solution that integrates heterogeneous sensor nodes using technologies like ion mobility spectrometry (IMS) and flame photometric detection			Situational Awareness	HAZARD	DR PHASE	CAPABILITY GROUP
Assessment contributor(s)							The ability to make operational decisions based on building an understanding of the emergency and its evolution.	All hazard	Prepare - Respond	Prepare - Monitoring
STEP 1. SOLUTION SCREENING										
1. INNOVATION MATURITY					2. COMPLIANCE READINESS					
(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations	
Partial	Pass	Pass	Not Applicable	Pass	Not Applicable	Pass	Partial	Partial	Partial	
Pause assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Pause assessment	Pause assessment	Pause assessment	
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT										
USER NEEDS	RESPONSE	OPERATIONAL NEEDS	RESPONSE	ORGANISATIONAL NEEDS	RESPONSE	EXPECTED IMPACT	RESPONSE			
Is the solution easy to use?	Unsure	Is the solution likely to require extensive (re-)training?	No	Is the solution likely to have a positive cost-benefit balance?	Yes	Will the solution be applied in the context of human healthcare?	Yes			
Does the solution likely to perform adequately under duress? Including robustness and reliability.	Yes	Is the solution likely to require excessive maintenance & support?	Unsure	Does the solution seem feasible? Including, technologically, economically, legally, operationally, and scheduling.	Yes	Does the solution involve the processing of personal data?	No			
Is the solution likely to be accepted by users?	Yes	Is the solution likely to be compatible with your operating methods/SoP?	Unsure	Is the solution likely to be compatible with your organisational culture?	Unsure	Is the solution likely to have a negative impact on the rights & freedoms of individuals and groups? E.g. privacy, dignity, autonomy.	No			
Is the solution likely to support user understandability?	Yes	Is the solution interoperable?	Yes	Is the solution likely to be compatible with your organisational mandate?	Yes	Is the solution likely to have a negative impact in terms of social justice and equality?	No			
Is the solution likely to support user explainability?	Yes	Is the solution likely to be adaptable and transferable across your operating scenarios?	Somewhat	Is the solution likely to be compatible with the priorities of CM governance?	Yes	Is the solution likely to have a negative impact on the well-being of individuals or groups?	No			
Is the solution likely to improve user efficiencies?	Yes	Is the solution likely to support responder health and safety?	Yes	Would using the solution support your reputation amongst the public?	Not Applicable	Is the solution likely to increase the vulnerability of individuals or groups?	No			
Is the solution likely to improve user effectiveness?	Yes	Is the solution likely to reach the intended target population?	Yes	Would using the solution help to improve community relations?	Not Applicable	Is the solution likely to pose a potential safety risks?	No			
Is the solution likely to provide added knowledge?	Yes	Is the solution likely to offer improved operational efficiencies?	Yes			Is the solution likely to have a negative impact on the environment?	No			
Is the solution likely to consistently produce positive interventions and/or results?	Somewhat	Is the solution likely to offer improved operational effectiveness?	Yes			Is there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?	No			
VISUALISATION OF ASSESSMENT										
CAPABILITY GAP ASSESSMENT			COMPLIANCE READINESS			COMPATIBILITY & IMPACT				
<p>CURRENT CAPABILITY</p> <p>Low 1</p> <p>Medium 2</p> <p>High 2</p> <p>Impact of Capability: High</p> <p>Performance of Capability: Medium</p>	<p>CAPABILITY GAP</p> <p>Low 3</p> <p>Medium 0</p> <p>High 3</p> <p>Gap Severity: Low</p>	<p>High 3</p> <p>Medium 0</p> <p>Low 1</p>	<p>Pass 14</p> <p>Partial 4</p> <p>Fail 0</p>	<p>Yes 17</p> <p>No 9</p> <p>Somewhat 2</p> <p>Unsure 4</p>	<p>Unsure 8</p> <p>No 0</p> <p>Somewhat 12</p> <p>Yes 12</p>					
POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO ADOPT										
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO ADOPT	RESPONSE	COMMENTS					
Have you identified a pressing need and are you willing to act on it?	Yes		Do you think this solution is relevant to your operational and/or organisational mandate?							
Based on its current stage of development, can the solution easily satisfy this need?	Somewhat		Do you think this solution is effective for your capability needs?							
With further developments, could the solution easily satisfy this need?	Yes		Do you think this solution will have positive social and ethical impacts?							
Can you easily access relevant solution providers to communicate your needs?	Somewhat	Depends on the country.	Do you think this solution has strong innovation potential?							
Do you need procurement support to successfully adopt this solution?	Somewhat		Do you foresee others being interested in this solution?							
Are your needs well addressed through EU research programming efforts?	Somewhat		Do you think this solution should be adopted for regular use in your organisation?							
Are your needs well addressed through national level research programming efforts?	Somewhat		Do you think this solution should be widely used in crisis management in 5-10 years?							
Are your needs well addressed through private research efforts?	Somewhat									

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
The C-SHIELD system is an advanced chemical threat detection solution that integrates heterogeneous sensor nodes using technologies like ion mobility spectroscopy (IMS) and flame photometric detection (FPD) to enhance situational awareness and reduce false alarms. It features a microcontroller-based device that processes and fuses data from commercial chemical detection instruments, providing substance classification, identification with probability scores, and concentration estimation, making it highly valuable for first responders in securing public spaces.		Situational Awareness			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Prepare	Monitoring	Detection
01: Personal & other equipment for prevention, response and recover		The ability to make operational decisions based on building an under			By being either implemented on the scene of, e.g., public gathering beforehand or employed following any chemical threat occurrence, the C-SHIELD system can help in both the prepare and response stages.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
System complete and qualified 8	Initial operational security 9	Capability to produce systems, subsystems or components in a production representative environment 7	Test and demonstration in an operational environment 8	Produce development and market alignment 5	Society knows the solution and awareness of their benefits increases 6	Characterised legal, ethical, and privacy interactions: the different ethical and privacy considerations have been characterised 3	
The product developed in the C-SHIELD project was showcased during an official system demonstration in the training test field for Polish firefighters in Nowy Dwor Mazowiecki.	Security based on protocol	The system is designed to be tailored and enhanced to meet the unique requirements of clients.	The system's open architecture facilitates additional integration with a range of Command & Control applications or Battle Management Systems.	The system is presently available to specialized companies and first responders seeking the solution.	The relevant community of experts and first responders in the CBRN domain is informed about the solution and expresses interest in it.	There are none personal data	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY	RESPONSE	COMMENTS		
Does the customer group have a pressing need and are they willing to act on it?	Yes	In light of recent crises and attacks worldwide, the detection and mitigation of CBRN threats has become an urgent concern for numerous organizations. The product is market ready (TRL8).	Do you think this solution is feasible?	Yes	The C-SHIELD solution, featuring updated and innovative data synchronization software, is feasible.		
Do you have a market ready offering that can easily satisfy this need?	Yes	Customization to address the specific requirements of each customer is feasible and relevant.	Have you identified potential opportunities and barriers related to solution development?	Somewhat	Opportunities: growing demand for CBRN products, growing client market, state-of-the-art solution and technology Barriers: marketing, reaching target audience, growing production market, components shortages		
Do you have an in-development offering that can easily satisfy this need?	Yes	While we have extensive access to interested entities and communities, any opportunities for dissemination would be beneficial.	Do you think you have sufficient flexibility to meet customer needs?	Yes	Being an SME and a fully commercial entity, we are ready to face any possible needs and have the ability to customize the solution to meet the unique requirements of the client.		
Can you easily access/communicate with the customer base to promote your solution?	Yes	While we have explored various opportunities and initiated initial agreements, additional assistance in refining and commercializing the product would be beneficial.	Are you comfortable taking risks related to new product/solution development?	Yes	Any reasonable risks are acceptable.		
Do you need commercialisation support to successfully bring the solution to market?	Somewhat	Customized solutions derived from the C-SHIELD product have been implemented and utilized in multiple EU R&D projects.	Have you analysed the market - is your solution novel and competitive?	Somewhat	The selected markets have been analysed, but many others require to be investigated.		
Do you expect this solution to progress to market through EU research programming efforts?	Yes	Identifying national-level initiatives that could facilitate the advancement of the product to market presents a challenge. Also, our objective is the worldwide market.	Are you confident in your ability to advertise the product?	Yes	We can use both professional and commercial ways of advertising the product (e.g., conferences, meetings, social media, internet).		
Do you expect this solution to progress to market through national level research programming efforts?	Somewhat	ITTI engages in numerous thematic conferences and meetings, showcasing our solutions to potentially interested entities and communities.					
Do you expect this solution to progress to market through private research efforts?	Yes						

Solution Assessment Results: PROCeed / ITTI

STEP 0. PREPARATION: SOLUTION ASSESSMENT										
NAMES(S)	ASSESSMENT OBJECTIVES			SOLUTION DESCRIPTION		CAPABILITY PROMISED		DRM HAZARD	DR PHASE	CAPABILITY
DIREKTION Consortium				Integrated environment for decision making analysis and training consisting of: serious gaming, "what-if" analysis tool and dedicated games and models		Training and Exercise		HAZARD		CAPABILITY GROUP
AUTRC, CAFO	To assess the PROCeed solution provided by ITTI					The ability to train crews and commanders in decision making and communication in uncertain, dynamic,		All hazard	Prepare	Prepare - Preparedness sup
STEP 1. SOLUTION SCREENING										
1. INNOVATION MATURITY					2. COMPLIANCE READINESS					
	(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations
	Pass	Not Applicable	Not Applicable	Not Applicable	Pass	Pass	Pass	Pass	Pass	Partial
	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Pause assessment
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT										
USER NEEDS	RESPONSE	OPERATIONAL NEEDS		RESPONSE	ORGANISATIONAL NEEDS		RESPONSE	EXPECTED IMPACT		RESPONSE
Is the solution easy to use?	Unsure	Is the solution likely to require extensive (re-)training?		No	Is the solution likely to have a positive cost-benefit balance?		Not Applicable	Will the solution be applied in the context of human healthcare?		Somewhat
Does the solution likely to perform adequately under duress? Including robustness and reliability.	Not Applicable	Is the solution likely to require excessive maintenance & support?		No	Does the solution seem feasible? Including, technologically, economically, legally, operationally, and scheduling.		Yes	Does the solution involve the processing of personal data?		Somewhat
Is the solution likely to be accepted by users?	Yes	Is the solution likely to be compatible with your operating methods/SoP?		Unsure	Is the solution likely to be compatible with your organisational culture?		Unsure	Is the solution likely to have a negative impact on the rights & freedoms of individuals and groups? E.g. privacy, dignity, autonomy, No		No
Is the solution likely to support user understandability?	Yes	Is the solution interoperable?		Yes	Is the solution likely to be compatible with your organisational mandate?		Yes	Is the solution likely to have a negative impact in terms of social justice and equality?		No
Is the solution likely to support user explainability?	Yes	Is the solution likely to be adaptable and transferable across your operating scenarios?		Unsure	Is the solution likely to be compatible with the priorities of CM governance?		Yes	Is the solution likely to have a negative impact on the well-being of individuals or groups?		No
Is the solution likely to improve user efficiencies?	Somewhat	Is the solution likely to support responder health and safety?		Yes	Would using the solution support your reputation amongst the public?		Not Applicable	Is the solution likely to increase the vulnerability of individuals or groups?		Unsure
Is the solution likely to improve user effectiveness?	Somewhat	Is the solution likely to reach the intended target population?		Yes	Would using the solution help to improve community relations?		Not Applicable	Is the solution likely to pose a potential safety risks?		No
Is the solution likely to provide added knowledge?	Yes	Is the solution likely to offer improved operational efficiencies?		Somewhat				Is the solution likely to have a negative impact on the environment?		No
Is the solution likely to consistently produce positive interventions and/or results?	Unsure	Is the solution likely to offer improved operational effectiveness?		Somewhat				Is there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?		No
VISUALISATION OF ASSESSMENT										
CAPABILITY GAP ASSESSMENT			COMPLIANCE READINESS				COMPATIBILITY & IMPACT			
CURRENT CAPABILITY Low 1 Medium 4 High 0 Impact of Capability Performance of Capability Medium Medium		CAPABILITY GAP Low 1 Medium 2 High 1 Gap Severity Low Medium Low		Pass 6 Partial 1 Fail 0		Yes 10 No 8 Somewhat 6 Unsure 6				
POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO ADOPT										
INNOVATION NEEDS	RESPONSE	COMMENTS			WILLINGNESS TO ADOPT	RESPONSE	COMMENTS			
Have you identified a pressing need and are you willing to act on it?	Yes				Do you think this solution is relevant to your operational and/or organisational mandate?	Yes				
Based on its current stage of development, can the solution easily satisfy this need?	Somewhat				Do you think this solution is effective for your capability needs?	Somewhat				
With further developments, could the solution easily satisfy this need?	Yes				Do you think this solution will have positive social and ethical impacts?	Not Applicable				
Can you easily access relevant solution providers to communicate your needs?	Somewhat	depends on the country. The market is restricted and it is not so easy to find the supplier.			Do you think this solution has strong innovation potential?	Yes				
Do you need procurement support to successfully adopt this solution?	Somewhat				Do you foresee others being interested in this solution?	Yes				
Are your needs well addressed through EU research programming efforts?	Somewhat				Do you think this solution should be adopted for regular use in your organisation?	Somewhat				
Are your needs well addressed through national level research programming efforts?	Somewhat				Do you think this solution could be widely used in crisis management in 5-10 years?	Yes				
Are your needs well addressed through private research efforts?	Not Applicable									

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
Integrated environment for decision making analysis and training consisting of: serious gaming, "what-if" analysis tool and dedicated games and models		Training and Exercise			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Prepare	Preparedness support	Personnel management
F13: Training and exercises.		The ability to train crews and commanders in decision-making and communication in uncertain, dynamic, unexpected scenarios, adapting tempos and synchronizing activities with other agents. Facilitate the improvement of existing doctrine.			FREE TEXT BOX If the capability provided is not phase specific, please include details of the capability supported here.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
Actual system proven in operational environment 9	Well-established/reliable security 10	Capability to produce systems, subsystems or components in a production representative environment 7	Validation of integrating component functions in a laboratory environment 4	Full launch and license revenue 9	A limited group of the society knows the solution or similar initiatives 3	Ethical tensions addressed via ethics-by-design: the system's legal, ethical, and privacy considerations have been designed to be compatible with each other. Ethics tensions have been addressed. This means improving one aspect does not negatively impact another aspect 2	
Solution is based on PROCEED engine which is used by the end-users for over 10 years; occasionally encountered bugs are immediately fixed.	User authentication and autorisation based on password. Role assignment mechanism established. Secret key for game session setup access protection.	Dedicated situation models and decision games should be prepared for specific cases.	PROCEED engine could be yet integrated with "what-if" analysis tool for comprehensive platform incl. experimentation.	A solution based on PROCEED serious gaming was offered since 2014 commercially to the universities, civil protection faculties. Now ca. 20 universities used it.	The solution was advertised only to the closed groups of higher education teachers.	The assessment concerns the platform and existing games. These issues should be reconsidered while each new game is developed.	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY	RESPONSE	COMMENTS		
Does the customer group have a pressing need and are they willing to act on it?	Yes	Serious gaming is an attractive and efficient way of training the decision making. All current customers like the solution.	Do you think this solution is feasible?	Yes	The solution of integration between PROCEED Serious Gaming engine and PROCEED Laboratory (for "what-if" analysis) is feasible, as well as extension of games and models library.		
Do you have a market ready offering that can easily satisfy this need?	Yes	The crisis management decision games used by Polish universities may be used by other training centres in Europe. Situation models of flood in the Netherlands, Greece, etc. may be used for training by experimenting, too.	Have you identified potential opportunities and barriers related to solution development?	Somewhat	Opportunities: low operational costs; importance of human competences in critical situations. Barriers: the games are bound to the specific geographical situations and local decision-making regulations (each country demands different content).		
Do you have an in-development offering that can easily satisfy this need?	Yes	New decision games for PROCEED engine may be prepared as soon as the specific needs are identified.	Do you think you have sufficient flexibility to meet customer needs?	Yes	Being an SME and fully commercial entity we are ready to face any possible needs.		
Can you easily access/communicate with the customer base to promote your solution?	Somewhat	Only to Polish Universities.	Are you comfortable taking risks related to new product/solution development?	Yes	Any reasonable risks are acceptable.		
Do you need commercialisation support to successfully bring the solution to market?	Somewhat	The specific needs for such kind of solutions are being sought, as well as financial assets to expand the thematic scope.	Have you analysed the market - is your solution novel and competitive?	Somewhat	The selected markets have been analysed, but many others required to be investigated.		
Do you expect this solution to progress to market through EU research programming efforts?	Yes	Adapted solutions based on the PROCEED components are offered in R&D project proposals.	Are you confident in your ability to advertise the product?	Yes	Any commercial advertising the solution may be used, if efficient.		
Do you expect this solution to progress to market through national level research programming efforts?	Somewhat	It is difficult to find national level initiatives that could lead to progress to market					
Do you expect this solution to progress to market through private research efforts?	Somewhat	There are trials to cover other thematic domains with models/games, as well as to address the market abroad.					

Solution Assessment Results: INA Intervention Platform / GEMSOTEC

STEP 0. PREPARATION: CAPABILITY GAP ASSESSMENT									
NAME(S)	ASSESSMENT OBJECTIVES			CAPABILITY (GAP) DESCRIPTION			DRM HAZARD	CAPABILITY	
DIREKTION Consortium	To assess the INA platform solution provided by GEMSOTEC			The ability to share key information to facilitate synchronized actions and to maintain initiative on a changing scenario.			HAZARD All hazard	DR PHASE Respond	CAPABILITY GROUP Respond - Response Support
STEP 1. CAPABILITY GAP ASSESSMENT									
CURRENT CAPABILITY	RESPONSE	COMMENTS	CAPABILITY GAP	RESPONSE	COMMENTS	CHALLENGE(S) TO ADDRESSING THE GAP	FUNCTIONALITIES REQUIRED TO ADDRESS THE GAP		
What is the impact of this capability on your ability to prevent your selected hazard type?	Low		What is the likelihood that addressing the gap will improve your ability to prevent the selected hazard type?	Low			F02: Data, information & intelligence gathering management and exploitation, F03: Monitoring and surveillance of environments and activities, F04: Security of information systems, networks and hardware, F07: Detection of goods, substances, assets and people and incidents, F08: Positioning and localisation, tracking and tracing.		
What is the impact of this capability on your ability to respond to your selected hazard?	High		What is the likelihood that addressing the gap will improve the physical and mental safety of personnel?	High					
What is the level of the physical and mental safety of operational personnel working on?	Medium		What is the likelihood that addressing the gap will improve the physical and mental safety of personnel?	Medium		Procedures/processes, Technological improvements, Improved interoperability, Policy improvements			
How effective is the current capability?	High		What is the impact of the capability gap on your ability to deliver your core mandate?	Medium					
How efficient is the current capability?	High		Severity of the Capability Gap: High						
Impact of Capability	High						If F14: Other, please include details here.		
Performance of Capability	High						If F14: Other, please include details here.		
<p>- This tool should be completed by the solution user(s). The tool incorporates two assessments, capability gap assessment and solution assessment. The assessment steps can be combined according to the level of analysis you wish to carry out. Guidance on Solution Assessment is provided below.</p> <p>- Under Step 0 (Preparation) use the free text box to identify the solution owner(s) and contributors(s). Next, summarise the assessment objectives, followed by a description of the solution (what it does and how it does it) you wish to assess. Then select from the dropdown lists the hazard type, disaster resilience phase and capability group most associated with the solution.</p> <p>- Under Step 1 (Solution Screening) use the dropdown lists provided to screen the solution by innovation maturity, and compliance with policy priorities and sector relevant laws, standards and best practices. Supporting actions are recommended based on your selection.</p> <p>- Under Step 2 (Solution Compatibility & Impact Assessment) use the dropdown lists provided to assess the compatibility of the solution by user needs, operational needs, and organisational needs, and expected impact of the solution.</p> <p>PLEASE BE CAREFUL TO SELECT ONLY ONE OPTION WHEN RESPONDING.</p>									
STEP 0. PREPARATION: SOLUTION ASSESSMENT									
NAME(S)	ASSESSMENT OBJECTIVES			SOLUTION DESCRIPTION			DRM HAZARD	CAPABILITY	
DIREKTION Consortium	To assess the INA platform solution provided by GEMSOTEC			INA Intervention Platform			HAZARD All hazard	DR PHASE Respond	CAPABILITY GROUP Respond - Response Support
AUTRC, CAFO									
STEP 1. SOLUTION SCREENING									
1. INNOVATION MATURITY					2. COMPLIANCE READINESS				
(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations
Pass	Pass	Pass	Pass	Pass	Not Applicable	Not Applicable	Pass	Pass	Pass
#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT									
USER NEEDS	RESPONSE	OPERATIONAL NEEDS		RESPONSE	ORGANISATIONAL NEEDS		RESPONSE	EXPECTED IMPACT	
Is the solution easy to use?	Yes	Is the solution likely to require extensive (re-)training?	No	Is the solution likely to have a positive cost-benefit balance?	Unsure	Will the solution be applied in the context of human healthcare?	Yes		
Does the solution likely to perform adequately under duress? (including robustness and reliability).	Not Applicable	Is the solution likely to require excessive maintenance & support?	No	Does the solution seem feasible? (including, technologically, economically, legally, operability, and scheduling.	Yes	Does the solution involve the processing of personal data?	Somewhat		
Is the solution likely to be accepted by users?	Yes	Is the solution likely to be compatible with your operating methods/SoP?	Somewhat	Is the solution likely to be compatible with your organisational culture?	Somewhat	Is the solution likely to have a negative impact on the rights & freedoms of individuals and groups? (E.g. privacy, dignity, autonomy, justice and equality?)	No		
Is the solution likely to support user understandability?	Yes	Is the solution interoperable?	Yes	Is the solution likely to be compatible with the priorities of CM governance?	Somewhat	Is the solution likely to increase the vulnerability of individuals or groups?	No		
Is the solution likely to support user explainability?	Yes	Is the solution likely to be adaptable and transferable across your operating scenarios?	Somewhat	Would using the solution support your reputation amongst the public?	Not Applicable	Is the solution likely to pose a potential safety risks?	No		
Is the solution likely to improve user efficiencies?	Unsure	Is the solution likely to support responder health and safety?	Somewhat	Would using the solution help to improve community relations?	Not Applicable	Is the solution likely to have a negative impact on the environment? (Are there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?)	No		
Is the solution likely to improve user effectiveness?	Unsure	Is the solution likely to reach the intended target population?	Yes						
Is the solution likely to provide added knowledge?	Unsure	Is the solution likely to offer improved operational efficiencies?	Unsure						
Is the solution likely to consistently produce positive interventions and/or results?	Unsure	Is the solution likely to offer improved operational effectiveness?	Unsure						
VISUALISATION OF ASSESSMENT									
CAPABILITY GAP ASSESSMENT		ABILITY GAP		COMPLIANCE READINESS		COMPATIBILITY & IMPACT			
Low 1	1	Low 1	1	Pass 8	8	Yes 9	9		
Medium 2	2	Medium 2	2	Partial 6	6	No 6	6		
High 3	3	High 3	3	Fail 0	0	Somewhat 7	7		
Impact of Capability	High	Severity	Low	Partial	6	Unsure	7		
Performance of Capability	High			Fail	0				
POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO ADOPT									
INNOVATION NEEDS	RESPONSE	COMMENTS			WILLINGNESS TO ADOPT		RESPONSE	COMMENTS	
Have you identified a pressing need and are you willing to act on it?	Yes				Do you think this solution is relevant to your operational and/or organisational mandate?	Yes			
Based on its current stage of development, can the solution easily satisfy this need?	Somewhat				Do you think this solution is effective for your capability needs?	Somewhat			
With further developments, could the solution easily satisfy this need?	Yes				Do you think this solution will have positive social and ethical impacts?	Not Applicable			
Can you easily access relevant solution providers to communicate your needs?	Somewhat	depends on the country. The market is restricted and it is not so easy to find the supplier			Do you think this solution has strong innovation potential?	No			
Do you need procurement support to successfully adopt this solution?	Somewhat				Do you foresee others being interested in this solution?	Somewhat			
Are your needs well addressed through EU research programming efforts?	Somewhat				Do you think this solution should be adopted for regular use in your organisation?	No			
Are your needs well addressed through national level research programming efforts?	Somewhat				Do you think this solution could be widely used in crisis management (in 5-10 years)?	Unsure			
Are your needs well addressed through private research efforts?	Not Applicable								

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
INA Intervention Platform		Command, Control, and Coordination			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Respond	Response Support	Situation assessment
ata, information & intelligence gathering management and expl		The ability to share key information to facilitate synchronized actions			FREE TEXT BOX If the capability provided is not phase specific, please include details of the capability supported here.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
Actual system proven in operational environment 9	Sequential security demonstration 6	Low rate production demonstrated. Capability in place to begin full rate production 9	Proven system integration through successful mission operations capabilities 9	Full launch and license revenue 9	Society knows the solution and awareness of their benefits increases 6	Characterised legal, ethical, and privacy interactions: the interactions between different ethical and privacy considerations have been characterised 3	
Comments	Comments	Now operational in Bel	Now operational in Bel	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY	RESPONSE	COMMENTS		
Does the customer group have a pressing need and are they willing to act on it?	Yes		Do you think this solution is feasible?	Yes			
Do you have a market ready offering that can easily satisfy this need?	Yes		Have you identified potential opportunities and barriers related to solution development?	Yes			
Do you have an in-development offering that can easily satisfy this need?	Yes		Do you think you have sufficient flexibility to meet customer needs?	Yes			
Can you easily access/communicate with the customer base to promote your solution?	Somewhat		Are you comfortable taking risks related to new product/solution development?	Yes			
Do you need commercialisation support to successfully bring the solution to market?	Yes		Have you analysed the market - is your solution novel and competitive?	Somewhat			
Do you expect this solution to progress to market through EU research programming efforts?	Yes		Are you confident in your ability to advertise the product?	Yes			
Do you expect this solution to progress to market through national level research programming efforts?	Yes						
Do you expect this solution to progress to market through private research efforts?	Yes						

Solution Assessment Results: LastQuake / EMSC

STEP 0. PREPARATION: SOLUTION ASSESSMENT											
NAMES(S)		ASSESSMENT OBJECTIVES		SOLUTION DESCRIPTION		CAPABILITY PROMISED		DRM HAZARD		CAPABILITY	
DIREKTION Consortium				LastQuake is a multi-component information and crowdsourcing system that provides real-time information about earthquakes and their effects on a global scale. It includes websites, a social media bot		Communications and Information Sharing The ability to boost the public information function: Develop a specific communication strategy to		HAZARD Natural		DR PHASE Respond Respond - Communicate to	
AUTRC, Michel Bour, CAFO		To assess the LastQuake solution provided by the EMSC organisation									
STEP 1. SOLUTION SCREENING											
1. INNOVATION MATURITY						2. COMPLIANCE READINESS					
	(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations	
	Pass	Not Applicable Proceed with assessment	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT											
USER NEEDS		RESPONSE		OPERATIONAL NEEDS		RESPONSE		ORGANISATIONAL NEEDS		RESPONSE	
Is the solution easy to use? Does the solution likely to perform adequately under duress? Including robustness and reliability.		Yes		Is the solution likely to require extensive (re-)training? Is the solution likely to require excessive maintenance & support?		No		Is the solution likely to have a positive cost-benefit balance? Does the solution seem feasible? Including, technologically, economically, legally, operationally, and scheduling.		Unsure	
Is the solution likely to be accepted by users?		Yes		Is the solution likely to be compatible with your operating methods/SoP?		Unsure		Is the solution likely to be compatible with your organisational culture? Is the solution likely to be compatible with your organisational mandate?		Unsure	
Is the solution likely to support user understandability?		Yes		Is the solution interoperable? Is the solution likely to be adaptable and transferable across your operating scenarios?		Unsure		Is the solution likely to be compatible with the priorities of CM governance? Would using the solution support your reputation amongst the public?		Yes	
Is the solution likely to improve user efficiencies?		Yes		Is the solution likely to support responder health and safety?		No		Would using the solution help to improve community relations?		Not Applicable	
Is the solution likely to improve user effectiveness?		Yes		Is the solution likely to reach the intended target population?		Yes		Would using the solution help to improve community relations?		Somewhat	
Is the solution likely to provide added knowledge? Is the solution likely to consistently produce positive interventions and/or results?		Somewhat		Is the solution likely to offer improved operational efficiencies? Is the solution likely to offer improved operational effectiveness?		Somewhat				Is the solution likely to have a negative impact on the environment? Is there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?	
		Somewhat				Somewhat				No	
VISUALISATION OF ASSESSMENT											
CAPABILITY GAP ASSESSMENT				COMPLIANCE READINESS				COMPATIBILITY & IMPACT			
CURRENT CAPABILITY		CAPABILITY GAP		CAPABILITY GAP		CAPABILITY GAP		CAPABILITY GAP		CAPABILITY GAP	
Low	1	Low	0	Low	0	Pass	9	Yes	10	Unsure	4
Medium	3	Medium	2	Medium	2	Partial	0	No	11	No	11
High	1	High	1	High	1	Fail	0	Somewhat	7	Yes	10
Impact of Capability Performance of Capability	High	Gap Severity	Not Applicable	Gap Severity	Not Applicable	Partial	0	Unsure	7	Somewhat	7
	Medium					Pass	9	No	11	Yes	10
	Low					Fail	0	Yes	10		

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
LastQuake is a multi-component information and crowdsourcing system that provides real-time information about earthquakes and		Communications and Information Sharing			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Respond	Communicate to society	Crisis communication
gathering management and exploitation., F03: Monitoring and surveil		The ability to boost the public information function: Develop a specif			FREE TEXT BOX If the capability provided is not phase specific, please include details of the capability supported here.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
Actual system proven in operational environment 9 5	Simple security validation		Test and demonstration in an operational environment 8		Society knows the solution and awareness of their benefits increases 6	Ethical tensions addressed via ethics-by-design: the system's legal, ethical, and privacy considerations have been designed to be compatible with each other. Ethics tensions have been	
Comments	Comments	Comments	Comments	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS		RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY		RESPONSE	COMMENTS
Does the customer group have a pressing need and are they willing to act on it?		Not Applicable	ice has been operationnal for more than	Do you think this solution is feasible?		Yes	ice has been operationnal for more than
Do you have a market ready offering that can easily satisfy this need?		Not Applicable		Have you identified potential opportunities and barriers related to solution development?		No	
Do you have an in-development offering that can easily satisfy this need?		Not Applicable		Do you think you have sufficient flexibility to meet customer needs?		Somewhat	
Can you easily access/communicate with the customer base to promote your solution?		Yes		Are you comfortable taking risks related to new product/solution development?		Somewhat	
Do you need commercialisation support to successfully bring the solution to market?		Somewhat		Have you analysed the market - is your solution novel and competitive?		Not Applicab	
Do you expect this solution to progress to market through EU research programming efforts?		Somewhat		Are you confidant in your ability to advertise the product?		Yes	
Do you expect this solution to progress to market through national level research programming efforts?		Somewhat					
Do you expect this solution to progress to market through private research efforts?		Somewhat					

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
Argos incorporates all the processes required to manage weather-induced hazards, harmonising data, products, warnings, impact and protocols in one integrated solution. Argos has been designed from ground up to seamlessly integrate any source of information useful for your operative management. What's more, these new sources can define new rules of your warning decision flow.		Command, Control, and Coordination			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Prepare	Monitoring	Alert
F03: Monitoring and surveillance of environments and activities.		The ability to incorporate information from multiple and nontraditional			Argos can contribute to the "Communications & Information sharing", "Situational awareness" and to the "Intelligence & Investigation" too. I miss a category of "Early warning" in which Argos would fit well		
		Early Warning					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
Actual system proven in operational environment 9 5	Simple security validation	Low rate production demonstrated. Capability in place to begin full rate production 9	Proven system integration through successful mission operations capabilities 9	Full launch and license revenue 9	Society is using the solution and it is supported by stakeholders and the public 9	identified legal, ethical, and privacy issues: ethical and privacy considerations raised by the system have been identified and anticipated 4	
Comments	Comments	Comments	Comments	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS		RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY		RESPONSE	COMMENTS
Does the customer group have a pressing need and are they willing to act on it?		Yes	Civil Protection and 112 Emergency centers do have the need	Do you think this solution is feasible?		Yes	
Do you have a market ready offering that can easily satisfy this need?		No, Yes	Yes	Have you identified potential opportunities and barriers related to solution development?		Yes	
Do you have an in-development offering that can easily satisfy this need?		Yes		Do you think you have sufficient flexibility to meet customer needs?		Yes	
Can you easily access/communicate with the customer base to promote your solution?		Somewhat	We only have contacts in Spain. Limited acces to abroad customers	Are you comfortable taking risks related to new product/solution development?		Yes	
Do you need commercialisation support to successfully bring the solution to market?		Yes	In particular beyond Spain	Have you analysed the market - is your solution novel and competitive?		Yes	Mainly in Spain, Portugal, Slovakia. Other EU countries no so analized
Do you expect this solution to progress to market through EU research programming efforts?		Somewhat		Are you confident in your ability to advertise the product?		Somewhat	
Do you expect this solution to progress to market through national level research programming efforts?		Somewhat					
Do you expect this solution to progress to market through private research efforts?		Somewhat					



Solution Assessment Results: Tether Solution for Microdrones / ARASTELLE

STEP 0. PREPARATION: CAPABILITY GAP ASSESSMENT										
NAME(S)	ASSESSMENT OBJECTIVES			CAPABILITY (GAP) DESCRIPTION			DRM HAZARD	CAPABILITY		
DIREKION Consortium	To assess the Tether Solution for microdrones			The ability to make operational decisions based on building an understanding of the emergency and its evolution.			HAZARD All hazard	DR PHASE Respond	CAPABILITY GROUP Respond - Rescue operations	
STEP 1. CAPABILITY GAP ASSESSMENT										
CURRENT CAPABILITY	RESPONSE	COMMENTS	CAPABILITY GAP	RESPONSE	COMMENTS	CHALLENGE(S) TO ADDRESSING THE GAP	FUNCTIONALITIES REQUIRED TO ADDRESS THE GAP			
What is the impact of this capability on your ability to prevent your selected hazard type? What is the impact of this capability on your ability to respond to your selected hazard? What is the level of the physical and mental safety of operational personnel working on?	Low High Medium	Medium to High	What is the likelihood that addressing the gap will improve your ability to prevent the selected hazard type? What is the likelihood that addressing the gap will improve your ability to respond to the selected hazard type? What is the likelihood that addressing the gap will improve the physical and mental safety of personnel? What is the impact of the capability gap on your ability to deliver your core mandate?	Low High High		Technological improvements	F07: Detection of goods, substances, assets and people and incidents.			
How effective is the current capability?	High			High						
How efficient is the current capability?	High			High						
Impact of Capability	High		Severity of the Capability Gap	High						
Performance of Capability	High					Interoperability, Procedures-processes	F02, F07, F09, F12, F13			
<p>- This tool should be completed by the solution user(s). The tool incorporates two assessments, capability gap assessment and solution assessment. The assessment steps can be combined according to the level of analysis you wish to carry out. Guidance on Solution Assessment is provided below.</p> <p>- Under Step 0 (Preparation) use the free text box to identify the solution owner(s) and contributors(s). Next, summarise the assessment objectives, followed by a description of the solution (what it does and how it does it) you wish to assess. Then select from the dropdown lists the hazard type, disaster resilience phase and capability group most associated with the solution.</p> <p>- Under Step 1 (Solution Screening) use the dropdown lists provided to screen the solution by innovation maturity, and compliance with policy priorities and sector relevant laws, standards and best practices. Supporting actions are recommended based on your selection.</p> <p>- Under Step 2 (Solution Compatibility & Impact Assessment) use the dropdown lists provided to assess the compatibility of the solution by user needs, operational needs, and organisational needs, and expected impact of the solution.</p> <p>PLEASE BE CAREFUL TO SELECT ONLY ONE OPTION WHEN RESPONDING.</p>										
STEP 0. PREPARATION: SOLUTION ASSESSMENT										
NAME(S)	ASSESSMENT OBJECTIVES			SOLUTION DESCRIPTION			CAPABILITY PROMISED	DRM HAZARD	DR PHASE	CAPABILITY GROUP
DIREKION Consortium	To assess the Tether Solution for microdrones			Tether solution for microdrones. Our solution enable to convert existing microdrones in used by the First Responders units (Mavic, parrot, etc) into a tether flight mode for persistent observation			Situational Awareness The ability to make operational decisions based on building an understanding of the emergency and its	HAZARD All hazard	DR PHASE Respond	CAPABILITY GROUP Respond - Rescue operation
STEP 1. SOLUTION SCREENING										
1. INNOVATION MATURITY		2. COMPLIANCE READINESS								
(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations	
Pass	Pass	Not Applicable	Pass	Pass	Pass	Not Applicable	Pass	Pass	Pass	
Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT										
USER NEEDS	RESPONSE	OPERATIONAL NEEDS		RESPONSE	ORGANISATIONAL NEEDS		RESPONSE	EXPECTED IMPACT		
Is the solution easy to use? Does the solution likely to perform adequately under duress? Including robustness and reliability.	Somewhat	Is the solution likely to require extensive (re-)training?		Yes	Is the solution likely to have a positive cost-benefit balance? Does the solution seem feasible? (Including, technologically, economically, legally, operationally, and scheduling, Is the solution likely to be compatible with your organisational culture?)		Yes	Will the solution be applied in the context of human healthcare? Does the solution involve the processing of personal data? Is the solution likely to have a negative impact on the rights & freedoms of individuals and groups? (e.g. privacy, dignity, autonomy, justice and equality?)		
Is the solution likely to be accepted by users?	Yes	Is the solution likely to be compatible with your operating methods/SOP?		Yes	Is the solution likely to be compatible with the priorities of CM governance? Would using the solution support your reputation amongst the public?		Yes	Is the solution likely to have a negative impact on the well-being of individuals or groups? Is the solution likely to increase the vulnerability of individuals or groups?		
Is the solution likely to support user understandability?	Yes	Is the solution interoperable?		Yes	Would using the solution help to improve community relations?		Not Applicable	Is the solution likely to pose a potential safety risks?		
Is the solution likely to support user explainability?	Yes	Is the solution likely to be adaptable and transferable across your operating scenarios?		Yes				Is the solution likely to have a negative impact on the environment? Is there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?		
Is the solution likely to improve user efficiencies?	Yes	Is the solution likely to support responder health and safety?		Yes				No		
Is the solution likely to improve user effectiveness?	Yes	Is the solution likely to reach the intended target population?		Yes				No		
Is the solution likely to provide added knowledge? Is the solution likely to consistently produce positive interventions and/or results?	Somewhat Yes	Is the solution likely to offer improved operational efficiencies?		Yes				No No		
Is the solution likely to offer improved operational effectiveness?	Yes	Is the solution likely to offer improved operational effectiveness?		Yes				No		
VISUALISATION OF ASSESSMENT										
CAPABILITY GAP ASSESSMENT			COMPLIANCE READINESS			COMPATIBILITY & IMPACT				
CURRENT CAPABILITY Low 1 Medium 1 High 3 Impact of Capability High Performance of Capability High		CAPABILITY GAP Low 1 Medium 0 High 3 Gap Severity Low		COMPLIANCE READINESS Pass 8 Partial 0 Fail 0		COMPATIBILITY & IMPACT Yes 19 No 8 Somewhat 4 Unsure 2				
POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO ADOPT										
INNOVATION NEEDS			WILLINGNESS TO ADOPT							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO ADOPT	RESPONSE	COMMENTS					
Have you identified a pressing need and are you willing to act on it? Based on its current stage of development, can the solution easily satisfy this need? With further developments, could the solution easily satisfy this need?	Yes Yes Yes		Do you think this solution is relevant to your operational and/or organisational mandate? Do you think this solution is effective for your capability needs? Do you think this solution will have positive social and ethical impacts?	Yes Somewhat Not Applicable						
Can you easily access relevant solution providers to communicate your needs? Do you need procurement support to successfully adopt this solution? Are your needs well addressed through EU research programming efforts? Are your needs well addressed through national level research programming efforts? Are your needs well addressed through private research efforts?	Somewhat Somewhat Somewhat Somewhat Yes	Depends on the country. Depends on the country.	Do you think this solution has strong innovation potential? Do you foresee others being interested in this solution? Do you think this solution should be adopted for regular use in your organisation? Do you think this solution could be widely used in crisis management in 5-10 years?	Yes Yes Yes Yes						

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
Tether solution for microdrones. Our solution enable to convert existing microdrones in used by the		Situational Awareness			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Respond	Rescue operations	Security and law enforcement
F03: Monitoring and surveillance of environments and activities.		The ability to make operational decisions based on building an under			FREE TEXT BOX If the capability provided is not phase specific, please include details of the capability supported here.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
System complete and qualified 8	Initial operational security 9	Pilot line capability demonstrated. Ready to begin low rate production 8	Prototype integration demonstration in an operational high-fidelity environment 7	Commercialisation strategy and market introduction 8	Society is using the solution and it is supported by stakeholders and the public 9	identified legal, ethical, and privacy issues: ethical and privacy considerations raised by the system have been identified and anticipated 4	
Comments	Comments	Comments	Comments	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY	RESPONSE	COMMENTS		
Does the customer group have a pressing need and are they willing to act on it?	Yes	Feedbacks from First Responders met is very positive. Needs is expressed and	Do you think this solution is feasible?	Yes	Absolutely		
Do you have a market ready offering that can easily satisfy this need?	Yes	Yes, product ready	Have you identified potential opportunities and barriers related to solution development?	Yes	Yes		
Do you have an in-development offering that can easily satisfy this need?	Not Applicable	R&D roadmap exist of course	Do you think you have sufficient flexibility to meet customer needs?	Yes	Absolutely		
Can you easily access/communicate with the customer base to promote your solution?	Somewhat	First Responders market is composed of many small/large units. It's a challenge	Are you comfortable taking risks related to new product/solution development?	Yes	Absolutely		
Do you need commercialisation support to successfully bring the solution to market?	Yes	Yes always	Have you analysed the market - is your solution novel and competitive?	Yes	Innovative, new features, matching market needs		
Do you expect this solution to progress to market through EU research programming efforts?	Unsure	yes but we would like to better understand the help we can get	Are you confident in your ability to advertise the product?	Yes	Yes - support always welcome		
Do you expect this solution to progress to market through national level research programming efforts?	Unsure	yes but we would like to better understand the help we can get					
Do you expect this solution to progress to market through private research efforts?	Unsure	yes but we would like to better understand the help we can get					

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
Flood simulation software to accurately predict the development of a flood event. Indicators such as the spreading pattern and occurring		Command, Control, and Coordination			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Prepare the spreading of water during extreme rainfall or the breaching of coast	Preparedness support	Cooperation establishment
Data, information & intelligence gathering management and exploitation		The ability to promote quick adaptation to changes in scenario through			protection can be animated for different flooding scenarios. The accurate provision of this information is crucial to determine what roads are accessible and what buildings are at risk of flooding hence where personnel should be deployed.		
If F14: Other, please include details here.		If Other, please include details here.					
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
System complete and qualified 8	Well-established/reliable security 10	Low rate production demonstrated. Capability in place to begin full rate production 9	Test and demonstration in an operational environment 8	Technical and commercial validation 7	Society knows the solution and awareness of their benefits increases 6	Control over legal, ethical, and privacy issues: the system has implemented control mechanisms for accountability and has passed standard benchmarks and obtained certification, if applicable	
Comments	Comments	Comments	Comments	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY		RESPONSE	COMMENTS	
Does the customer group have a pressing need and are they willing to act on it?	Somewhat	With increasing heavy rainfall events, the need for governments to be able to	Do you think this solution is feasible?		Yes	It is proven to be used in real-time operations during flood events hence	
Do you have a market ready offering that can easily satisfy this need?	Yes	System is deployed within multiple organisations within the Netherlands	Have you identified potential opportunities and barriers related to solution development?		Yes	Opportunities in the form of response teams needing the training to respond at	
Do you have an in-development offering that can easily satisfy this need?	Yes	The product is easily applicable and adjustable to local needs	Do you think you have sufficient flexibility to meet customer needs?		Yes	We have a team of IT specialists and water managers working together to	
Can you easily access/communicate with the customer base to promote your solution?	Unsure	Our online means of communication are well-established yet no on-ground	Are you comfortable taking risks related to new product/solution development?		Yes	We are always looking for new and innovative ways to improve our products	
Do you need commercialisation support to successfully bring the solution to market?	Yes	Our own marketing is well-established but we are actively looking for	Have you analysed the market - is your solution novel and competitive?		Yes	The product is well-established in the Dutch context where the main feedback	
Do you expect this solution to progress to market through EU research programming efforts?	Yes	The product has been successfully deployed in different context and is an	Are you confident in your ability to advertise the product?		Somewhat	We are already actively advertising our product nationally. We are currently	
Do you expect this solution to progress to market through national level research programming efforts?	Somewhat	Within the Netherlands the national level research has proven the solution to					
Do you expect this solution to progress to market through private research efforts?	Somewhat	We are actively engaged in private partne					



Solution Assessment Results: FireMap / OMIKRON

STEP 0. PREPARATION: CAPABILITY GAP ASSESSMENT										
NAME(S)	ASSESSMENT OBJECTIVES	CAPABILITY (GAP) DESCRIPTION		DRM HAZARD	CAPABILITY					
DIREKION CONSORTIUM		The ability to know the location of responders and their proximity to risks and hazards in real time.		HAZARD	DR PHASE	CAPABILITY GROUP				
ENB, CAFO, FEU	Assessment of the first 4 solutions received during the process.			Natural	Prepare	Prepare - Monitoring, Prepare - Preparedness				
STEP 1. CAPABILITY GAP ASSESSMENT										
CURRENT CAPABILITY	RESPONSE	COMMENTS	CAPABILITY GAP	RESPONSE	COMMENTS	CHALLENGE(S) TO ADDRESS THE GAP				
What is the impact of this capability on your ability to prevent your selected hazard type?	High		What is the likelihood that addressing the gap will improve your ability to prevent the selected hazard type?	High		Improved interoperability, implementation/integration				
What is the impact of this capability on your ability to respond to your selected hazard?	High		What is the likelihood that addressing the gap will improve your ability to respond to the selected hazard type?	High						
What is the level of the physical and mental safety of operational personnel working on?	Not Applicable		What is the likelihood that addressing the gap will improve the physical and mental safety of personnel?	Not Applicable						
How effective is the current capability?	Medium		What is the impact of the capability gap on your ability to deliver your core mandate?	Medium						
How efficient is the current capability?	Medium		Severity of the Capability Gap		High					
Impact of Capability	High									
Performance of Capability	Low									
<p>- This tool should be completed by the solution user(s). The tool incorporates two assessments, capability gap assessment and solution assessment. The assessment steps can be combined according to the level of analysis you wish to carry out. Guidance on Solution Assessment is provided below.</p> <p>- Under Step 0 (Preparation) use the free text box to identify the solution owner(s) and contributors(s). Next, summarise the assessment objectives, followed by a description of the solution (what it does and how it does it) you wish to assess. Then select from the dropdown lists the hazard type, disaster resilience phase and capability group most associated with the solution.</p> <p>- Under Step 1 (Solution Screening) use the dropdown lists provided to screen the solution by innovation maturity, and compliance with policy priorities and sector relevant laws, standards and best practices. Supporting actions are recommended based on your selection.</p> <p>- Under Step 2 (Solution Compatibility & Impact Assessment) use the dropdown lists provided to assess the compatibility of the solution by user needs, operational needs, and organisational needs, and expected impact of the solution.</p> <p>PLEASE BE CAREFUL TO SELECT ONLY ONE OPTION WHEN RESPONDING.</p>										
STEP 0. PREPARATION: SOLUTION ASSESSMENT										
DIREKION CONSORTIUM	ASSESSMENT OBJECTIVES	CAPABILITY (GAP) DESCRIPTION		HAZARD	DR PHASE	CAPABILITY GROUP				
John Tsakoukidis, Eileen Murphy, Nikolas Kalapodis, Georgios Sakkas, Vagia Pelekanou, Sonia Mouratou, Nikola Martin, Zoltan Hozbor	Assessment of the first 4 solutions received during the process.	Technology and Innovation		HAZARD	DR PHASE	CAPABILITY GROUP				
<p>strategically place sensors based on the state wildfire hazard map. By analyzing data such as fuelbed types, slope, aspect, social criteria, the application identifies the most critical areas requiring monitoring. This ensures that resources are positioned effectively for early detection and efficient response to potential</p>										
<p>The ability to know the location of responders and their proximity to risks and hazards in real time.</p>										
<p>Natural</p>										
<p>Prepare</p>										
<p>Prepare - Monitoring, Prepare - Preparedness</p>										
STEP 1. SOLUTION SCREENING										
1. INNOVATION MATURITY			2. COMPLIANCE READINESS							
Solution Ready	(Cyber) Security	Interoperability	AI Act	Community Engagement	GDPR	Fundamental Rights	Sustainable Development Goals	National level crisis management priorities	Sector specific standards	Sector specific laws & regulations
Partial	Not Applicable	Not Applicable	Not Applicable	Partial	Pass	Not Applicable	Pass	Pass	Not Applicable	
Pause assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Pause assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	Proceed with assessment	
STEP 2. SOLUTION COMPATIBILITY & IMPACT ASSESSMENT										
USER NEEDS	RESPONSE	OPERATIONAL NEEDS	RESPONSE	ORGANISATIONAL NEEDS	RESPONSE	EXPECTED IMPACT	RESPONSE			
Is the solution easy to use?	Unsure	Is the solution likely to require extensive (re-)training?	No	Is the solution likely to have a positive cost-benefit balance?	Unsure	Will the solution be applied in the context of human healthcare?	No			
Does the solution likely to perform adequately under duress? (including robustness and reliability).	Unsure	Is the solution likely to require excessive maintenance & support?	Somewhat	Does the solution seem feasible? (including, technologically, economically, legally, operability, and scheduling).	Yes	Does the solution involve the processing of personal data?	Unsure			
Is the solution likely to be accepted by users?	Yes	Is the solution likely to be compatible with your operating methods/SOP?	Unsure	Is the solution likely to be compatible with your organisational culture?	Unsure	Is the solution likely to have a negative impact on the rights & freedoms of individuals and groups? (e.g. privacy, dignity, autonomy).	Unsure			
Is the solution likely to support user understandability?	Unsure	Is the solution interoperable?	Unsure	Is the solution likely to be compatible with your organisational mandate?	Yes	Is the solution likely to have a negative impact in terms of social justice and equality?	No			
Is the solution likely to support user explainability?	Unsure	Is the solution likely to be adaptable and transferable across your operating scenarios?	Unsure	Is the solution likely to be compatible with the priorities of CM governance?	Unsure	Is the solution likely to have a negative impact on the well-being of individuals or groups?	No			
Is the solution likely to improve user efficiencies?	Yes	Is the solution likely to support responder health and safety?	Somewhat	Would using the solution support your reputation amongst the public?	Unsure	Is the solution likely to increase the vulnerability of individuals or groups?	No			
Is the solution likely to improve user effectiveness?	Yes	Is the solution likely to reach the intended target population?	Somewhat	Would using the solution help to improve community relations?	No	Is the solution likely to pose a potential safety risks?	No			
Is the solution likely to provide added knowledge?	Yes	Is the solution likely to offer improved operational efficiencies?	Yes			Is the solution likely to have a negative impact on the environment?	No			
Is the solution likely to consistently produce positive interventions and/or results?	Yes	Is the solution likely to offer improved operational effectiveness?	Yes			Is there SIGNIFICANT uncertainty regarding the legal, ethical, and societal impacts from the use of the solution?	No			
VISUALISATION OF ASSESSMENT										
CAPABILITY GAP ASSESSMENT		COMPLIANCE READINESS		COMPATIBILITY & IMPACT						
<p>CURRENT CAPABILITY</p> <p>Low 0</p> <p>Medium 2</p> <p>High 2</p>	<p>CAPABILITY GAP</p> <p>Low 0</p> <p>Medium 1</p> <p>High 2</p>	<p>Pass 4</p> <p>Partial 2</p> <p>Fail 0</p>	<p>Yes 0</p> <p>No 0</p> <p>Somewhat 3</p> <p>Unsure 13</p>	<p>Unsure 13</p> <p>Partial 3</p> <p>Pass 0</p> <p>Yes 0</p>						
Impact of Capability Performance of Capability Low	Gap Severity High									
POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO ADOPT										
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO ADOPT	RESPONSE	COMMENTS					
Have you identified a pressing need and are you willing to act on it?	Yes		Do you think this solution is relevant to your operational and/or organisational mandate?							
Based on its current stage of development, can the solution easily satisfy this need?	Somewhat		Do you think this solution is effective for your capability needs?							
With further developments, could the solution easily satisfy this need?	Yes		Do you think this solution will have positive social and ethical impacts?							
Can you easily access relevant solution providers to communicate your needs?	Somewhat		Do you think this solution has strong innovation potential?							
Do you need procurement support to successfully adopt this solution?	Somewhat		Do you foresee others being interested in this solution?							
Are your needs well addressed through EU research programming efforts?	Yes		Do you think this solution should be adopted for regular use in your organisation?							
Are your needs well addressed through national level research programming efforts?		Depends on the country.	Do you think this solution could be widely used in crisis management in 5-10 years?							
Are your needs well addressed through private research efforts?										

STEP 0. PREPARATION							
SOLUTION DETAILS		CAPABILITY TOPIC			CAPABILITY SUPPORTED		
Our solution addresses advanced AI algorithms to strategically place sensors based on the static wildfire hazard map. By analyzing data such as fuelbed types, slope, aspect, social criteria, the application identifies the most critical areas requiring monitoring. This ensures that resources are positioned effectively for early detection and efficient response to potential wildfires.		Technology and Innovation			DR Phase	Capability Group	Task
SOLUTION CLASSIFICATION BY FUNCTIONALITY		CAPABILITY GAP			Prepare	Monitoring, Preparedness	
F08: Positioning and localisation, tracking and tracing.		The ability to know the location of responders and their proximity to risks and hazards in real time.			FREE TEXT BOX		
If F14: Other, please include details here.		If Other, please include details here.			If the capability provided is not phase specific, please include details of the capability supported here.		
STEP 1. SOLUTION READINESS ASSESSMENT							
TECHNOLOGY RL	SECURITY RL	MANUFACTURING RL	INTEGRATION RL	COMMERCIALISATION RL	SOCIETAL RL	LEGAL, PRIVACY & ETHICAL RL	
Experimental proof of concept 3	Security concept development 2	Manufacturing concepts identified 2	The detailed integration design has been defined to include all interface details 3	Technology application and market validation 3	A limited group of the society knows the solution or similar initiatives 3	Control over legal, ethical, and privacy issues: the system has implemented control mechanisms for accountability and has passed standard benchmarks and obtained certification, if applicable	
Comments	Comments	Comments	Comments	Comments	Comments	Comments	
STEP2. POST ASSESSMENT REFLECTION: INNOVATION NEEDS & WILLINGNESS TO SUPPLY							
INNOVATION NEEDS	RESPONSE	COMMENTS	WILLINGNESS TO SUPPLY	RESPONSE	COMMENTS		
Does the customer group have a pressing need and are they willing to act on it?	Yes		Do you think this solution is feasible?	Yes			
Do you have a market ready offering that can easily satisfy this need?	Yes	The solution was tested in several pilot cases and was proved efficient	Have you identified potential opportunities and barriers related to solution development?	Yes			
Do you have an in-development offering that can easily satisfy this need?	Yes	AI algorithms are being improved to be even more robust	Do you think you have sufficient flexibility to meet customer needs?	Yes			
Can you easily access/communicate with the customer base to promote your solution?	Yes		Are you comfortable taking risks related to new product/solution development?	Yes			
Do you need commercialisation support to successfully bring the solution to market?	Yes		Have you analysed the market - is your solution novel and competitive?	Yes			
Do you expect this solution to progress to market through EU research programming efforts?	Yes		Are you confident in your ability to advertise the product?	Yes			
Do you expect this solution to progress to market through national level research programming efforts?	Yes						
Do you expect this solution to progress to market through private research efforts?	Yes						