

# DIREKTION Assessment and Screening Framework (DASF)

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EXECUTIVE REPORT

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## Executive summary

DIREKTION is dedicated to enhancing disaster resilience by bringing together first responders, researchers, and industry experts. By increasing knowledge sharing and supporting innovative technology development processes for emergency responders, DIREKTION addresses the increasing number and severity of disasters in Europe. Our mission is to provide Europe with faster, more efficient access to innovative solutions and technologies in disaster response and recovery. The DIREKTION project aims to establish a network in the Disaster Resilience thematic area and is funded under EU-HORIZON-CSA.

As a first step, the project has developed a methodology and toolset to facilitate establishing priorities for future research programming and capacity building. With this objective, the project has further built on the results of previous disaster risk management research (e.g. DRIVER+, ACRIMA, MEDEA, FIRE-IN...), to provide tools and methodologies that will strengthen the EU's disaster resilience capacities.

Through the **DIREKTION Assessment and Screening Framework (DASF)**, a robust methodology and toolset have been developed to help EU policymakers and disaster responders to identify capability gaps and assess solutions for disaster resilience. The **DIREKTION Assessment and Screening Framework (DASF)** offers step-by-step methods and tools to:

1. Identify and address capability gaps.
2. Implement systematic screening of technologies and solutions.
3. Set-up a research roadmap.

The DASF provides a well-structured and generically applicable framework for identifying gaps and needs. It considers both the user's perspective—whether at the Europe-wide level or country-specific contexts—while also acknowledging the complexity of disaster management organizations in different Member States, each with its own structure, culture, and administrative setup.



## 1 Introduction and Context

In recent years, Europe has faced a rise in the frequency and intensity of disasters. Climate change, aging industrial infrastructure, and the ongoing effects of geopolitical instability have compounded the vulnerability of European societies. The DIREKTION project responds to these challenges by promoting innovation, technology uptake, and cooperation between multiple stakeholders, including policymakers, first responders, and civil protection agencies.

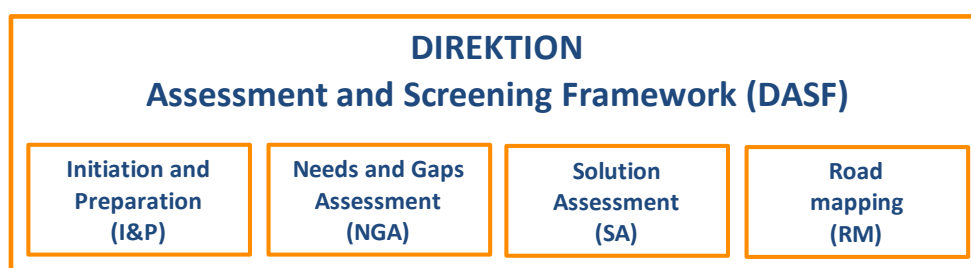
The European Union has established several key frameworks to address European disaster resilience, including the Union Civil Protection Mechanism (UCPM), which coordinates assistance when national response capacities are overwhelmed and the Disaster Risk Management Knowledge Centre (DRMKC), which aims to improve understanding of disaster risk, in addition to contributing to global efforts to improve first responder access to affordable and innovative solutions (e.g. IFAFRI).

The DIREKTION project supports these strategic initiatives by building on the results of previous disaster risk management research (e.g. DRIVER+, ACRIMA, MEDEA, FIRE-IN...), to provide tools and methodologies that will strengthen the EU's disaster resilience capacities. The DIREKTION Assessment and Screening Framework (DASF) plays a critical role in this process by offering a systematic approach to assessing current capabilities and identifying solutions that can improve the EU's disaster response mechanisms.

## 2 The DIREKTION Assessment and Screening Framework (DASF)

The DIREKTION Assessment and Screening Framework is built around four key methods:

1. **Initiation and Preparation (I&P).**
2. **Needs and Gaps Assessment (NGA).**
3. **Solution Assessment (SA).**
4. **Roadmapping (RM).**



*Figure 1 DIREKTION Assessment and Screening Framework*

The initial steps concern the method for Initiation and Preparation, while the other steps refer to the identification of capability needs and gaps, to screening and assessing solutions, and to assisting research programming.

Four methods, including twelve steps, comprise the DASF. In figure 2 these steps are shown as a linear set of subsequent steps. This might give the impression that it is meant for a one-time execution. This is clearly not what is intended. The complete set is meant to be executed regularly. For instance, once a year or once every four years to get an updated insight into capability needs, capability gaps, potential solutions and to update regularly the roadmap for EU or national research opportunities. As such, the DASF provides the basis for a sustainable process for research programming.

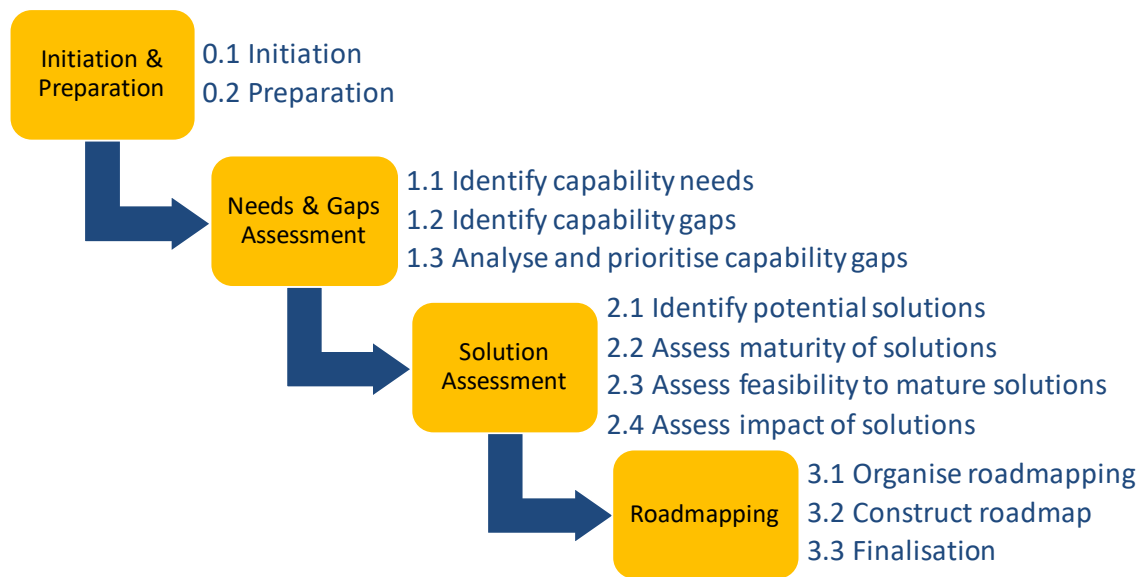


Figure 2 Overview of methods and steps in the DASF

Steps 1.1 to 1.3 support the screening of capability needs and gaps. Steps 2.1 to 2.4 support the assessment and validation of current and expected state-of-the-art solutions. And, steps 3.1 to 3.3 support the roadmapping process for research programming. The framework provides a complete overview of steps. It should be noted, however, that not all steps are mandatory. For instance, if capability gaps have already been identified through other means, steps 1.1 and 1.2 can be skipped. Similarly, if a roadmap is not required, the process can be concluded after completing the Solution Assessment steps. The steps are outlined in greater detail below.

### 2.1 Initiation and Preparation (I&P)

In this phase, stakeholders are brought together to define the scope of the disaster management assessment. This step includes identifying the relevant disaster types, such as natural hazards (e.g., floods or wildfires) or man-made risks (e.g., cyberattacks or industrial accidents). A clear understanding of the disaster context is crucial for successful assessments in subsequent phases.

Other activities in the phase include the choice of specific themes for the cycle, the composition of the list of participants for the workshops, the time schedule for the assessment and road mapping activities, etc. The topics outlined in this chapter are inspired on the eExercise Guidance Method from EU project STRATEGY<sup>51</sup>, which in turn was substantially based on the methodology outlined in the “Trial Guidance Methodology Handbook” from the EU project DRIVER+.

### 2.2 Needs and Gaps Assessment

This phase consists of three steps.

1. The first step is focused on identifying the specific capability needs for disaster response and management, through the examination of available risk analyses, trend assessments, and historical accident data, as well as insights from end-users (practitioners) and experts.
2. The second step is focused on identifying the capability gaps; several methods were analysed beforehand to assess the best fitting/useful ones. Three methods are described in this step, the use of scenarios (FEMA, IFAFRI, MEDEA), the use of guiding questions, and the World Café Method (FIRE-IN).
3. The final step consists of validating, prioritizing, and analysing the gaps. The prioritization is dependent on criteria derived from ENTRAP such as responder safety, incident mitigation, and overall effectiveness. The THOR framework, from the MEDEA project, is used to gain insights into the problem areas of the identified gaps and will also be used to categorize the gaps.

## 2.3 Solution Assessment

In the Solution Assessment phase, the identified gaps are addressed by evaluating potential technological and operational solutions. The assessment and validation process of current and expected state-of-the-art products, processes or methods (or short solutions) consists of separate steps. Solution assessment starts with identifying potential solutions to fulfil user needs and/or bridging capability gaps and assessing their maturity. Solutions can have the form of a (sub)product (software and/or hardware) or a methodology or procedure. Where state-of-the-art solutions are available, their impact can be assessed. For promising developments, however, first their feasibility to become mature solutions should be assessed before their impact can be estimated; in fact, this is part of the pathway to roadmapping.

## 2.4 Roadmapping

The Roadmapping phase connects the results of the needs and gaps assessment and the solution assessment to long-term planning and policy development. This process supports EU institutions in aligning their future research and funding programs with the most critical disaster resilience needs. The roadmap helps ensure that solutions are not only identified but also scaled and sustained across multiple disaster contexts and regions. The DASF Method for Roadmapping (RM) consists of three steps: preparation, construction and finalisation. The objective of the DASF Method for RM is to produce a dynamic roadmap. For instance, for the use case of EU DRS research programming at short (3 years), medium (5-10 years) and long terms (15+ years). In this use case, the RM will function as a draft research programming scheme for the planning of future DRS research in Horizon Europe. It will have a dynamic nature, meaning that the roadmap will be assessed and amended continuously for new research needs identified through the DIREKTION knowledge network.

## 3 DIREKTION Tools for Analysis and Screening

The DASF toolset consists of several tools designed to support the DASF method by simplifying and systematising the assessment and screening process for disaster management capability gaps and solutions. The tools target different stakeholder groups across the innovation ecosystem, with the aim of supporting collaboration and dialogue between supply and demand side actors.

The **DASF toolset** is designed with usability and flexibility in mind. The tools are MS excel-based, allowing for easy customization and use across different operating systems and organizations. They feature simple dropdown lists for predefined answers, and free-text boxes for adding contextual information, making it easy for users to input data. The toolset is designed to be modular, and can be used as standalone tools or a suite. The tools automatically generate visual representations of the results, allowing users to quickly understand and compare key findings.

A supporting user guide has been developed to guide prospective users through the assessment process. The user guide provides detailed instructions on how to complete each of the tools, along with supporting visuals and definitions for key terms used across the toolset.

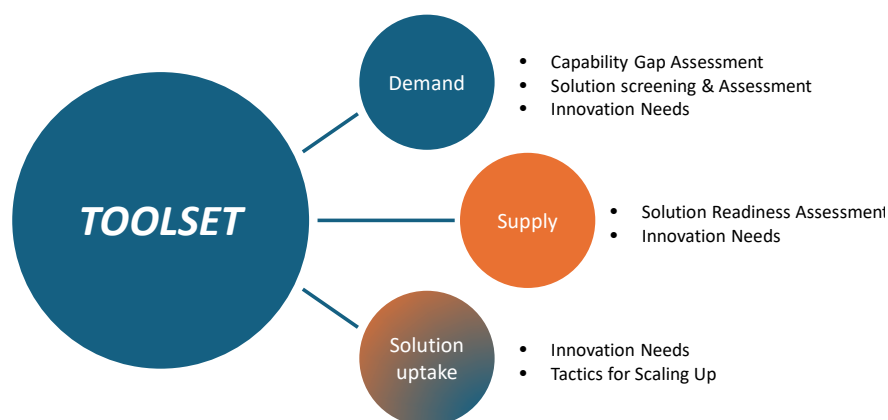


Figure 3 The DASF Toolset

### ***3.1 Demand Tool***

The **Demand Tool** is completed by demand side actors. The tool is made up of several steps, including:

1. Capability Gap Assessment.
2. Solution Compatibility and Impact Assessment.
3. Post Assessment Reflection on innovation needs and willingness to adopt.

The Capability Gap Assessment step supports the user to assess their current capability; determine their capability gap; identify challenges to addressing the capability gap; and in cases where the solution to fill the capability gap has not yet been selected, users can identify what functionality they believe is needed to address the gap. This assessment provides a baseline overview of an organisations capability to support them in determining and rationalising the level of response required when choosing and investing in a solution.

The Solution Compatibility and Impact Assessment step supports the user to assess a potential solution against their capability gap. Assessment questions are organised around four topics, user needs; operational needs; organisational needs; and expect impacts.

The Post Assessment Reflection step supports the user to reflect on their innovation needs and willingness to **adopt** the solution. For market ready solutions these questions are designed to support the transition from solution assessment to solution procurement. And for in-development solutions these questions help to identify promising solutions that should be included in the roadmapping for future research planning and programming.

### ***3.2 Supply Tool***

The **Supply Tool** is completed by solution providers and assesses the readiness of the solution according to a variety of scales: technology; societal; manufacturing; integration; commercialisation; legal, privacy, and ethical; and security.<sup>1</sup> This tool is intended to provide a structured space to capture information on the readiness of the solution.

Post-assessment questions have been included to help to situate the assessment results in the context of innovation uptake, prompting reflection on innovation needs and willingness to supply the solution.

The results of this assessment can be shared with the responder organisation and can help to inform the solution assessment carried out under the DEMAND tool. Alternatively, the tool can be used by solution providers to help communicate information about their solution to members of their target market audience to increase awareness and support uptake and adoption.

### ***3.3 Solution Uptake Tool***

The **Solution Uptake Tool** presents a range of questions to promote discussion between Demand and Supply side actors about the factors that enable and hinder the adoption and implementation of solutions. The tool is completed collaboratively by the solution providers and solution users.

The questions focus on enhancing understanding of responder needs, and determining potential actions Demand and Supply side actors are willing to undertake to support solution scaling and successful innovation uptake.

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<sup>1</sup> For more information on these scales, see: <https://www.multirate.eu>



The DASF has been applied in the first round of capability gap identification and solution assessment carried out within the **DIREKTION** project (WP2 and WP3). This process revealed several interesting trends, which should help to inform future research planning.

1. A 1-2-1 mapping of first responder capability gaps against solution providers definition of their solutions is challenging. Capability gap description should aim to strike a balance between specificity and flexibility, ensuring that the gaps identified are broad enough to encourage engagement, yet focused enough to remain relevant to the needs of the sector.
2. Many vendors were unfamiliar with the TRL framework and solutions often contained multiple components at different TRLs. This led to confusion when attempting to classify the overall maturity of the solution, as well as when assessing the maturity of individual components. This issue suggests that additional clarification and guidance on the TRL would be beneficial.
3. While many solutions effectively addressed capability gaps, experts noted that they did not fully meet the specific needs of practitioners. This highlights the need for further evaluation and testing, particularly in real-world contexts. A key recommendation is the importance of live demonstrations and pilot programmes. These hands-on evaluations will allow first responders to gain practical experience with the solutions, thereby increasing their confidence in the potential of the technology. The creation of simulation or sandbox testing environments where users can interact with solutions in a controlled manner prior to full implementation would be an innovative step forward in overcoming uncertainties.
4. Future solutions may need to be more adaptable to meet the various needs of different organisations. In some cases, end users may need to work with solution providers to customise or tailor solutions to meet specific operational requirements. Solutions that prioritise the user experience - ensuring they are intuitive, easy to use and tailored to the specific needs of first responders - are more likely to succeed. This means involving end-users more actively in the development process, particularly in the early stages, to ensure that solutions are truly aligned with their operational needs.
5. Solutions should not be static; they must evolve based on user feedback and changing operational needs. Incorporating agile methodologies into the development process will enable rapid iterations, ensuring that solutions remain relevant and effective over time. In addition, data-driven decision making will play a key role in helping first responders assess the effectiveness of new technologies and identify areas for improvement.
6. Concerns about the ease of use and maintenance of the solutions highlight the need for ongoing training and support, particularly when solutions are not widely used or familiar to first responders. Ensuring that users have the resources they need to effectively implement and operate these solutions will be critical to their success.
7. Solutions that integrate seamlessly with existing systems and workflows will face fewer barriers to adoption. Modular solutions that can be easily plugged into different platforms and technologies will allow for smoother transitions and upgrades, minimising disruption to ongoing operations. This trend towards greater compatibility and interoperability should be a key consideration for future development.
8. The challenges faced by first responders often span multiple domains - technology, emergency management and social sciences - and require solutions that address these issues holistically. Future research should foster interdisciplinary collaboration between academia, industry and first responders to develop solutions that draw on a wide range of expertise and perspectives.
9. With the increasing complexity of technologies such as artificial intelligence and data analytics, it is critical that future solutions adhere to established legal and ethical standards. The development of frameworks to help organisations assess the compliance and ethical implications of new technologies will be important to ensure widespread adoption and integration.

*Spotlight – Using the DASF*

## 4 Next Steps

The DASF will continue to be used in yearly cycles within the DIREKTION project, with updates based on evaluation experiences. The final updated version will be reported in ~~DS-1~~ by August 2026. Post-project applications include developing research agendas, prioritizing gaps, and creating roadmaps for cross-border collaboration. Examples of where the DIREKTION Assessment and Screening Framework (DASF) and its tools could be applied include:

1. Other projects in DRS topic that require gap analysis and identification of solutions.
2. DG HOME – Providing input for the development of the DRS research agenda for a certain time period.
3. Member State – Providing input for the process of setting up research agenda on emergency management focussed on coping certain types of incidents (e.g., preventing and responding to electric vehicle fires).
4. End-user umbrella organisation (e.g., CTIF, FEU) – Prioritisation of gaps that have been identified by its members, and identification of potential solutions and determination of research needs.
5. Multiple neighbouring Member States – Providing input for developing a roadmap for solving gaps in cross-border collaboration within the upcoming years.

The DIREKTION Assessment and Screening Framework (DASF) offers a comprehensive, adaptable method for identifying disaster management capability gaps and screening innovative solutions. By adopting the DASF framework and toolset, policymakers across the European Union can enhance disaster resilience, align research programming with critical needs, and ensure that Europe is better prepared for future disasters.

**We invite you to engage with the DASF as part of your own efforts to assess your capability gaps and solution needs. The DASF, user guide, feedback form and supporting project deliverables are available here:**

<https://www.direktion-network.org/dasf>

Any feedback you might wish to share, will be used to update the DASF at the end of DIREKTION.