POLICY BRIEF

Strengthening Responder Technology in Disasters

Strengthening Responder Capability through Enhanced and Innovative Solutions

Responder Technology Cluster
Innovation for the Front Line

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DIREKTION
Disaster Resilience Knowledge Network

CMINE
Fostering Innovation in Crisis Management

Strengthening Responder Technology in Disasters

Strengthening Responder Capability through Enhanced and Innovative Solutions

POLICY BRIEF

CARMA
CMINE Fostering Innovation in Crisis Management
Collaris
DIREKTION
driver+
embrace
iProcure Security PCP
FIRE-IN
INTREPID Citius Altius Fortius
MED1st MR Mixed Reality Training
NIGHTINGALE
TARATUS
POWERBASE
SYNERGISE
TeamaWare
TEAMUP CBRN-E

RTC Responder Technology Cluster Innovation for the Front Line

*The Responder Technology Cluster (RTC) of projects is an **informal** and **voluntary** subset of the Community for European Research and Innovation for Security (CERIS). It is facilitated by the Crisis Management Information Network Europe (CMINE) and is made-up of 20 projects working on the development of solutions for emergency responders.*

Foreword

In an era marked by increasingly complex and unpredictable crises, ensuring the resilience and preparedness of our first responders is more critical than ever. The European Union has long recognized the need for robust research and innovation (R&I) in disaster resilience, but to truly enhance the capabilities of emergency responders, we must move beyond a reactive approach and adopt a forward-looking, capability-driven strategy.

Capability Development Planning serves as a cornerstone in this effort, providing a structured and strategic framework for identifying gaps, anticipating future threats, and aligning security research investments with operational needs. By prioritizing real-world capability requirements, we ensure that research outcomes translate into tangible benefits for responders on the ground - enhancing foresight, situational awareness, improving coordination, and accelerating the adoption of cutting-edge solutions.

Policy briefs such as this one play a vital role in bridging the gap between research, policy, and practice. Developed through collaboration among over 17 projects and 200 organisations, this document consolidates key insights from the field, offering actionable recommendations that directly inform European security policy and investment planning. It is only by understanding the practical challenges faced by first responders that we can design and implement research programs that have meaningful impact.

Through Horizon Europe's Disaster Resilient Societies (DRS) research and innovation activities and the collective efforts of projects within the Responder Technology Cluster, we are shaping a future where innovation meets operational reality. This document calls on policymakers, R&D actors, and responder organisations to work together, ensuring that European security research delivers solutions that are not only technologically advanced but also practical, interoperable, and aligned with the evolving needs of those who safeguard our communities.

By strengthening the link between research, innovation and implementation, we take a significant step toward a more resilient Europe, where first responders are equipped with the tools, knowledge, and strategies they need to protect lives and mitigate disaster impact effectively.

Giannis Skiadaresis

Area Coordinator of Disaster Resilient Societies, DG HOME - European Commission

The Policy Environment

Disaster Resilient Societies (DRS) research and innovation is a key driver for European resilience. Responder Technology projects through multiple funding streams play a vital role in supporting and delivering against the evolving and critical security policy environment of the Union.

This Policy Brief presents a consolidated view of the needs for further policy development to enable planning for legislative, standardisation, work-scheduling and financial provision aimed at reinforcing the capabilities of emergency responders through enhanced and innovative solutions. These innovative solutions include advanced technology and other capabilities-driven solutions such as standards, trainings and standardised operative procedures.

This Policy Brief has been developed by representatives of some 17 projects and more than 200 organisations working together as part of the Responder Technology Cluster of projects facilitated by **CMINE** and has been enabled and managed through the offices of the Horizon Europe DRS Knowledge Network project **DIREKTION**.

The objectives of the policy brief are to:

- Ensure that Responder Technology R&I maintains the focus on the final use of its outcomes in alignment with policy priorities;
- Contribute to a forward-looking planning of EU security capabilities to anticipate solutions to future threats;
- Ensure the development of innovative security technologies that are socially compatible;
- Pave the way to industrialisation, commercialisation, acquisition and deployment of successful R&I outcomes;
- Safeguard EU autonomy and technological sovereignty in critical security areas by contributing to a more competitive and resilient EU security industrial base.

This Brief seeks to follow the forward-looking capability-driven approach in Security by moving from a *REACTIVE* to a *PROACTIVE* approach to innovation based on professional and expert foresight, prevention and anticipation. Its recommendations contribute directly to achievement of the goals and outcomes within the Sendai Framework for Disaster Risk Reduction in the context of climate change, energy transition and political instability.

The recommendations presented address Emergency Responder Organisations, Policy Makers, and R&D arms of the Solution Provider Sector. Together, these stakeholder groups can strengthen the capabilities of emergency responders with technological and organisational innovative solutions enabling them to better face current and future disasters and better realise the objectives of Europe. Some recommendations are not new, in particular, those referring to interoperability, cooperation, the simplification of innovation procurement and the usefulness of standardisation. Nevertheless, from the point of view of the contributors, they are still relevant, and special efforts still need to be

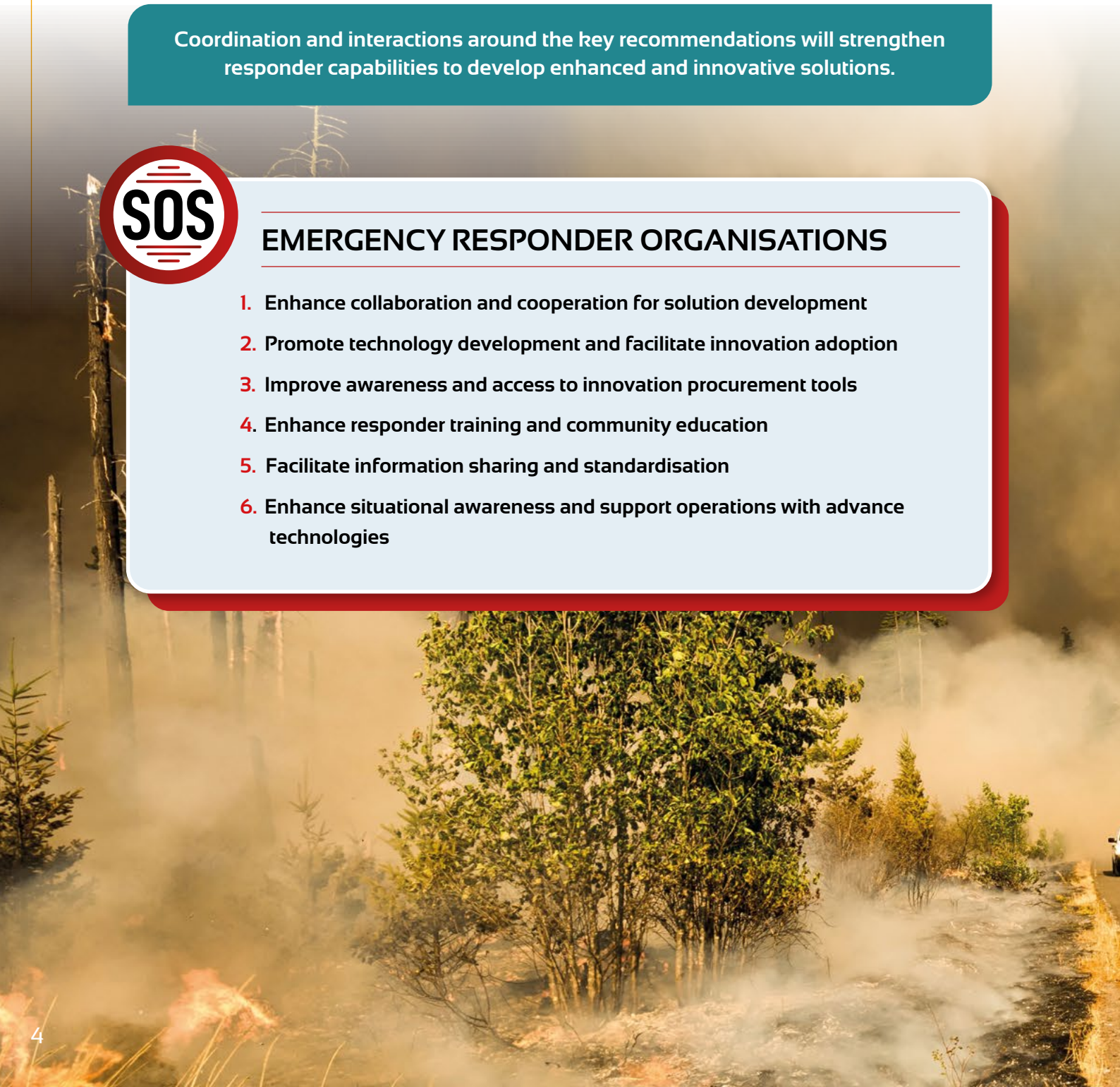
deployed so that they can be fully addressed.

The recommendations are the result of a co-production process involving experts, scientists, practitioners and decision-makers from many organisations and authorities working in Disaster Risk Reduction (DRR). They have been developed from a common vision provided through past and current work programmes and through the outcomes of the many complete and ongoing European projects co-financed by various instruments from the European Commission (Horizon 2020 and Horizon Europe programmes for Disaster Resilient Societies, UCPKN, EDF, etc). This document reflects the collective vision from these projects and the organisations they represent.

Key Takeaways

The recommendations gathered in this policy brief address three key stakeholder groups: Emergency Responder Organisations, Policy Makers, and R&D and Solution Provider Sector. By working together in a coordinated manner, these groups will strengthen the capabilities of emergency responders with technological or organisational innovative solutions, enabling them to better face current and future disasters.

Coordination and interactions around the key recommendations will strengthen responder capabilities to develop enhanced and innovative solutions.



EMERGENCY RESPONDER ORGANISATIONS

1. Enhance collaboration and cooperation for solution development
2. Promote technology development and facilitate innovation adoption
3. Improve awareness and access to innovation procurement tools
4. Enhance responder training and community education
5. Facilitate information sharing and standardisation
6. Enhance situational awareness and support operations with advance technologies

POLICY MAKERS

1. Enhance engagement at emergency responder level and support with administrative tasks
2. Promote innovation and technological adoption
3. Enhance information sharing and collaboration
4. Streamline procurement
5. Provide financial support for relevant solutions and structures
6. Promote Data Centric Architectures/Frameworks

R&D AND SOLUTION PROVIDER SECTOR

1. Address current and emerging capability gaps
2. Provide training and education solutions
3. Promote transparency and compliance
4. Improve information sharing and access
5. Address standards and procurement
6. Stress the key role of innovation procurement in R&D and solution development.

Emergency Responder Organisations

What are their roles?

Emergency responder organisations refer to firefighters, civil protection, medical services and law enforcement agencies engaged in cases of disaster. They are the European federations and associations of emergency responder practitioners as well as relevant national, regional or local organisations. The staff of these organisations are the practitioners and end-users of the innovative solutions that need to be developed. It is necessary that they clearly specify the capability gaps they want to fill with research and technological investment.

How to put them into practice?

Attitudes and behaviours must evolve towards more cooperation for the development of solutions and towards a culture open to innovation. The use of existing procedures for innovation procurement needs to be widely and better implemented. Training for volunteer responders and education of the communities will be more effective using virtual reality or similar techniques. Standardization and sharing of experience about new solutions will reinforce the wide spread of relevant and interoperable solutions.

1. Enhance collaboration and cooperation for solution development

- **Between stakeholders:**
  - Foster collaboration among technology developers, the R&D sector, emergency responder organisations and policymakers to create practical and scalable solutions, establishing a feedback loop for continuous improvement.
  - Make use of networks, initiatives and collaborative platforms already developed by EU-funded projects.
  - Form working groups / thematic networks to exchange knowledge and experience on specific themes (e.g. forest fires, floods, energy crises, dealing with affected population) to develop new or improve existing solutions.
  - Create a dedicated space for experience exchange, coupled with a comprehensive understanding of the technology provider landscape and the benefits and challenges of available technologies, enhancing informed decision-making, mitigating risks associated with procurement and ensuring the choice of solutions that best align with operational and strategic objectives.

1. Enhance collaboration and cooperation for solution development (continued)

- **Between states:**
  - Further develop the mechanisms initiated in recent projects for cross-border information sharing on best practices, lessons learned, emerging needs and innovative technology development.
  - Involve experts from emergency responder organisations from multiple countries to ensure solutions are globally compatible with current practices, adaptable and interoperable.
  - Promote standardisation across sectors, regions and borders to develop cost-effective and interoperable technologies that integrate seamlessly with existing systems.

2. Promote technology development and facilitate innovation adoption

- **New technology awareness:**
  - Create a team in charge of monitoring innovation, research, development and testing of new technologies and concepts, and incorporating new technologies to improve operations.
  - Try out new solutions during trials and/or as shadow technologies applied in parallel during rescue operations.
  - Build up know-how and experiences on new technologies and organize their transfer to other organisations.
  - Consider procurement regulations already during the conception of technological projects.
- **Enhancing innovation potential and acceptance addressing capability gaps and needs:**
  - Increase technology acceptance in emergency responder organisations by including innovation management as an ordinary task into these structures.
  - Increase foresight capacities regarding future needs and capability gaps to enable early R&D and market readiness at the time of demand.
  - Proactively identify capability gaps and needs to ensure solutions align with emerging real-world requirements, consolidating the findings and outcomes of EU projects.
  - Promote the development and use of AI technologies according to ethical and legal requirements, to enhance data-driven foresight as well as disaster preparedness and response.
  - Ensure that innovative and advanced technologies have an (analogue) back-up solution if they cannot be applied in certain contexts.

3. Improve awareness and access to innovation procurement tools

- Promote the procurement of innovative solutions using procedures such as Pre-Commercial Procurement (PCP) and Public Procurement of Innovative solutions (PPI).
- Develop training programs and guidelines to enhance procurers' knowledge of innovation procurement processes, including PCP and PPI.
- Establish national or regional helpdesks to provide technical assistance, legal guidance, and best practices on leveraging procurement tools for innovation.
- Facilitate partnerships between emergency responders, procurement agencies, and innovators to share experiences, lessons learned, and success stories from previous procurement initiatives.
- Advocate for more flexible (national and cross-border) procurement processes to enable quicker adoption of innovative solutions.
- Streamline the approval and procurement process.

4. Enhance responder training and community education

Regular training and ongoing education:

- Provide regular, ongoing education and training for emergency responders in real-life conditions to stay current with new technologies and procedures.
- Elaborate common training modules in the framework of EU R&D projects that can be used by users' organisations in different EU countries, to develop a common operational culture.
- Consider Erasmus+ for mobility, exchange of experts and common training.

Technologies for training centres:

- Establish training centres utilizing Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) technologies for immersive training of first responders, including volunteers, in order to complement the traditional training experience. This will raise preparedness for high-risk situations that cannot be easily and cost-effectively trained in traditional real-life simulation training.
- Use training centres to focus on the collaboration between professionals and citizens.
- Beside the introduction of new technology, support training frameworks with ethical/legal frameworks for more effective adoption.

Communities' awareness and education:

- Raise awareness and educate communities to enhance disaster preparedness and response capabilities beyond responder capacities.
- Organise regular trainings between professional emergency responders and community members.
- Enable access to information about training and setups that are easy to understand for persons e.g. in need of „specific language ", or blind & deaf persons.
- Make use of digitally available serious games to raise interest in training.

5. Facilitate information sharing and standardisation

- **Sharing capability and resources:**
  - Exchange feedback related to the potential usage of the new solutions, from aspects related to procurement and integration in existing response capabilities to their practical use in the field.
  - Enhance mechanisms for sharing information on capabilities and resources across states, in addition to the European UCPM.
- **Common operational procedures and terminology:**
  - Standardise operational procedures and terminology to ensure interoperability and coordination across emergency responder organisations, as well as across borders.
  - Promote and make use of terminologies, definitions and (pre) standards already developed by EC-funded projects.

6. Enhance situational awareness & support operations with advanced technologies

- **Support the use of innovative technologies for situational awareness:**
  - Promote the development and use of ethical and explainable AI technologies to enhance disaster preparedness and response.
  - Promote and give access to advanced technologies, e.g. Digital Twin Earth based system or Intelligence Amplification, keeping the user at the heart of the process and assisting operators, while also ensuring feasibility, trustworthiness and replicability.

Policy Makers

What are their roles?

The policy makers addressed are primarily the policy officers from the European Commission concerned with DRR, but also the national authorities at various levels. They are in charge of defining the priorities for investment in research and technological development. They create the substrate and the environment that support the innovation and facilitate the innovative solutions uptake.

What needs to be changed?

Emergency responder organisations require support from policymakers to simplify administrative tasks and procedures for procurement, to promote innovation and technological adoption, and to stimulate information sharing and collaboration even on sensitive issues and data. With a strategic view, policymakers are expected to anticipate future crises and provide financial support for relevant solutions and structures.

1. Enhance engagement with emergency responders and support with administrative tasks

- **Presenting challenges to policymakers:**
  - Increase dialogue and interactions with emergency responder organisations to be aware of their challenges and to inform relevant policy development.
  - Incorporate end-user challenges into new policies, programs and calls.
- **Support with administrative tasks:**
  - Support and promote innovative solutions that directly address end-user needs through updates in regulatory and legal frameworks.
  - Provide a legal framework to facilitate the active participation of end-user organisations in innovation activities.
  - Assist emergency responder organisations in overcoming administrative barriers to engage with innovations.
  - Provide checklists for regulations and topics that need to be considered when introducing innovative and advanced technologies to emergency responder organisations.
  - Use a unified terminology for civil security research projects (e.g. trial, pilot test, demonstration, field test) with clear definitions.

2. Promote innovation and technological adoption

- **Encourage investments in innovative technologies:**
  - Promote innovative technologies in EU-funded research programs for Disaster Risk Management (DRM) training.
  - Support the development and implementation of innovative solutions, e.g. AI, satellite-based solutions, including Earth observation and drones, to enhance disaster response and safety.
- **Improve understanding of consequences of disaster and climate change:**
  - Implement policies to evaluate the health, environmental and economic impacts of disasters, taking a multi-hazard approach to assess the interrelated consequences of all risks, including large fire emissions, floods, earthquakes and other potential threats.
  - Use risk assessments (of the cascading effects) of climate change and energy transition to define capability needs and gaps of emergency responder organisations and communities.

3. Enhance information sharing and collaboration

- **Create information-sharing mechanisms:**
  - Make use of already developed platforms by EC-funded projects.
  - Create opportunities (events, forums, thematic networks, etc.) for exchanging on terminology, lessons learned, good practices, technical resources... among (inter) national emergency responder organisations to better manage innovation projects as well as emergency events.
- **Adopt (harmonised) international standards:**
  - Support the adoption of disaster response technology standards through recognised standardisation bodies such as CEN and ISO, to ensure interoperability.
  - Enhance creation of standards across technology developers for emergency responders to obtain less dependency on single providers and to generate opportunities for start-ups to provide solutions.

4. Streamline procurement

- **Streamline the approval and procurement process:**
  - Align procurement policies to prioritise advanced and environmentally responsible technologies for emergency responders.
  - Provide a simplified and unique European legal framework from research towards procurement.
  - Implement training programmes for procurement staff for innovation procurement instruments.
  - Provide more dedicated fundings for the innovation procurement tools within the Cluster 3 DRS programme and facilitate the procedures of the stream CSA – PCP – PPI, especially after the end of the PCP.
  - Advocate for financial support mechanisms to encourage emergency responder organisations to engage in innovation procurement.
  - Support end users in developing long-term procurement strategies that integrate innovation goals into their operational and budgetary planning.
- **Reduce procurement bureaucracy:**
  - Innovate and simplify the procurement process for new technologies to ensure timely deployment in disaster preparedness and response efforts.
  - Address inefficiencies in procurement to select optimal solutions within budget limits.

5. Provide financial support for relevant solutions and structures

- **Ensure safety solutions are deployed despite cost:**
  - Prioritise safety technologies based on capability needs, even if some of them are more expensive than alternatives, especially in financially constrained regions (e.g. thermal cameras to characterise the size and intensity of fires).
  - Support the funding of NGOs involved in disaster risk reduction.

6. Promote Data Centric Architectures/Frameworks

- Adopt regulations to fasten access to sensitive data for research purposes, in particular for the training of AI systems.
- Make emergency event data and solutions available to experts and responders, facilitating knowledge exchange and adoption of best practices.
- Enable civil security organisations to control the access on the data they own.
- Promote a one-stop-shop website including archive for all Cluster 3 research projects (Civil security for society).

R&D and Solution Provider Sector

What are their roles?

R&D and the solution provider sector are all organisations contributing to the development and commercialisation of solutions aimed at improving disaster risk reduction (DRR), such as applied researchers from industry, technology developers and academics. Their understanding of the real capability gaps of the emergency responders will enhance the quick development of the expected innovative solutions.

What needs to be changed?

Research and innovation need to focus on the expressed capability gaps considering the emergency responders experiences and feedback. Therefore, more interactions are needed for development as well as for the accompaniment of the innovative solution uptake. It means that R&D and solution providers must anticipate the conditions for procurement and changes in SOPs and doctrines required with new solutions.

1. Address current and emerging capability gaps

- **Develop solutions addressing emergency responder needs and capability gaps:**
  - Focus on creating technologies that directly support and protect emergency responders at operational level.
  - Design solutions in a way which ensures their interoperability with already existing ones (data format, frequencies, interfaces, etc.).
  - Ensure solutions are adaptable, usable and efficient in real-world disaster scenarios.
  - Incorporate feedback from emergency responders to close key capability gaps with emerging technologies (e.g. exoskeletons, AI for large data).
  - Based on foresight and trend analysis research, identify future gaps to timely co-develop targeted solutions.
- **Foster collaboration with emergency responder organisations throughout the whole solution development cycle:**
  - Engage responders early in the development process to co-create technologies that meet their emerging needs directly.
  - Conduct systematic laboratory and field tests, and integrate feedback from all levels

1. Address current and emerging capability gaps (continued)

(operational, tactical, strategic) into the final solution to improve its effectiveness, making use of trial/test guidance methodologies already developed by EC-funded projects.

- Engage emergency responders as equal partners and ensure adequate funding for thorough testing and evaluation.

- **Develop environmentally responsible technologies for high-impact areas:**
  - Focus on areas where the greatest participation and support from end-users is needed, such as climate change-related threats, electric vehicles, new energy carriers, photovoltaic systems, tools for interactions with affected populations.
  - Develop solutions to reduce the exposure of emergency responders to harmful chemical substances such as PFAS (Perfluoroalkyl and Polyfluoroalkyl Substances) and improve decontamination processes.
  - Design technologies optimised for sustainability that can be adapted for both large-scale and localised emergency scenarios.

2. Provide training and education solutions

- **Develop user-friendly training and engage in co-creation of Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) content:**
  - Develop cost-effective training technologies and methodologies (e.g. VR/AR/MR and simulation-based solutions) for emergency responders (professional and volunteers) and citizens.
  - Collaborate with academic, industry and practitioner communities to develop VR / AR / MR content tailored to specific disaster scenarios.

3. Promote transparency and compliance

- **Promote transparency in data security and privacy:**
  - Comply with international data protection standards to build trust between responders, developers and governments.
  - Train and support emergency responders right from the beginning in questions related to intellectual property rights.

4. Improve information sharing and access

- **Collect, fuse and visualise data and solutions for emergency events:**
  - Use available emergency event data and solutions promoting knowledge exchange and adoption of best practices.

5. Address standards and procurement

- **Consider standards and procurement processes:**
  - Ensure that the solutions developed are compliant with relevant standards and are adaptable to procurement processes to streamline their adoption by emergency responder organisations.
  - Involve procurement staff in innovation projects from start on.

6. Stress the key role of innovation procurement in R&D and solution development.

- Align R&D efforts with real-world needs by leveraging innovation procurement as a demand-driven tool.
- Create mechanism of sharing of information with other R&D and solution providers, by learning what is already available, resulting from other EU-funded initiatives.
- Use the innovation procurement to test and validate emerging technologies through structured procurement processes.
- Utilise innovation procurement mechanisms like Pre-Commercial Procurement (PCP) to reduce risk of R&D investments and attract funding.
- Facilitate the transition from prototypes to market-ready solutions through phased procurement processes.

Contributors

CARMA

Creates a modular platform with autonomous ground vehicles to assist first responders and citizens during disasters, including in low-visibility environments.

CMINE
Fostering Innovation in Crisis Management

A network that connects experts, practitioners, and policymakers to enhance disaster resilience across Europe. It facilitates knowledge sharing, innovation, and the development of solutions for disaster risk management.

Collaris

A network connecting experts, a capacity-building initiative to develop a sustainable European network of scientific, engineering, and end-user expertise related to unmanned aerial systems (UAS) in civil protection and disaster response.

DIREKTION
Disaster Resilience Knowledge Network

Enhances disaster resilience by connecting first responders, researchers, and industry experts to accelerate access to innovative disaster response solutions.

driver+

Addressing crisis management challenges by developing and promoting innovative solutions for practitioners managing natural disasters and terrorist threats. It is where CMINE was originally created.

embrace

Enhances Europe's biotoxin crisis response by updating protocols and developing solutions through scientific, clinical, and technological advances. Key outputs include improved PPE, portable diagnostics, risk assessment tools, and a Biotoxin Task Force for knowledge sharing and standardisation.

iProcureSecurity PCP

Many emergency medical services were involved in the EU-funded iProcureSecurity project (2019-2020) to identify, evaluate and prioritize future challenges and needs. Then, iProcureSecurity PCP project developed an innovative triage management system that provides quick and accurate overview of victims, and improved interoperability.

FIRE-IN

Identifies and addresses fire and rescue capability challenges through five thematic groups, including natural hazard mitigation. Workshops, like a Mediterranean tsunami scenario, engage practitioners, researchers, and industry to develop innovative solutions for enhancing European disaster preparedness and resilience.

INTREPID
Citius Altius Fortius

Delivers a secure platform using Intelligence Amplification, Extended Reality, and autonomous assistants to improve first responders' safety and efficiency in hazardous zones.

MED1st MR
Mixed Reality Training

Develops a mixed reality training solution for medical first responders, enhancing mass casualty preparedness through AI, stress measurement, and realistic scenarios. It complements, not replaces, real-life exercises, enabling cost-effective, scalable training for more responders in realistic environments.

NIGHTINGALE

Develops a comprehensive emergency response toolkit to improve mass casualty incident management for medical and civil protection agencies.

TARATUS

Enhances first and second responders' preparedness for multi-hazard events with a cloud-based platform. It analyses hazard interactions, reduces risks, and co-designs scenarios with stakeholders through case studies in the Caribbean, Romania, Istanbul, and the Alpine regions.

POWERBASE

Develops low-emission, mobile energy solutions for emergency response, addressing diverse disaster scenarios such as wildfires and floods. It unites emergency organisations and innovators to map needs and technologies.

Rescurer aims to design and develop a First-Responder-centered technology toolkit that will empower the next generation of First Responders (FR) by enhancing their operational capacity and safety, specifically in adverse conditions, both environmental and infrastructure-wise.

SYNERGISE

The SYNERGISE project boosts collaboration and mission efficiency using its innovative toolkit, enhancing first responders' situational awareness for effective emergency responses. It empowers first responders by unveiling an innovative toolkit, enhancing incident management and response efficiency.

TeamAware

Integrated and cost-efficient situational awareness system for first responders from different sectors with heterogeneous and hardly interoperable sensor units including drone mounted, wearable and external sensor systems

TEAMUP CBRN-E

Develops a toolkit of innovative solutions, based on the First Responders operating requirements, for improved operations throughout the lifecycle of a CBRN-E incident. It includes detection, identification, and monitoring of hazardous material, Search & rescue, Triage and Decontamination, as well as health status of First Responders.

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- Ecole Nationale Supérieure de la Police (ENSP)
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- Safe Cluster

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- TNO

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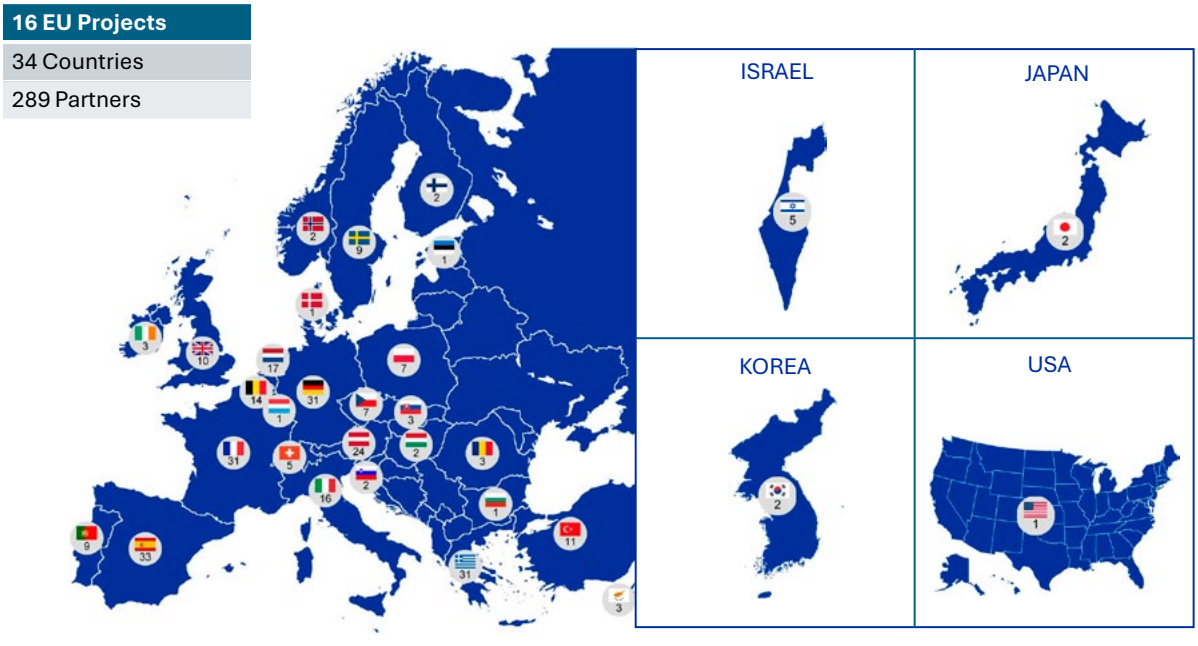

References & further reading

- Marco Manso, Alessia Melasecche Germini, Maite Boyero Egido, David Lund, Antonio Marqués, Marina Martínez-Garcia, Christian Resch and Giannis Skiadaresis. White Paper on *Market and Innovation Uptake* presented at SMI2G 2024 Brokerage Event. https://www.resilienceadvisors.eu/docs/SMI2G24/19%20Market-Uptake-panel.pdf
- Proceeding of the CERIS SSRI workshop on *Capability-driven approaches across security sectors*. March 2023 https://home-affairs.ec.europa.eu/news/ceris-ssri-workshop-capability-driven-approaches-across-security-sectors-2023-03-16_en
- EARTO. *Towards Capability Driven Approaches across Security Sectors.* November 2021 https://www.earto.eu/wp-content/uploads/EARTO-Working-Group-Security-Defence-Paper-Towards-CDAs-across-Security-Sectors-Final.pdf
- *QUELLES AMBITIONS POUR L'EUROPE EN MATIÈRE DE PROTECTION CIVILE ?* DOCUMENT D'INTERPELLATION POUR LES ÉLECTIONS EUROPÉENNES. https://www.pompiers.fr/sites/default/files/content/download-file/interpellationeuropeennes.pdf
- European Commission. Commission staff working document. *Enhancing security through research and innovation*. December 2021. https://ec.europa.eu/home-affairs/document/download/ff888398-0b0a-4511-9717-ad41beb22314_en
- *Safer Together. Strengthening Europe's Civilian and Military Preparedness and Readiness*. Report by Sauli Niinistö, former President of the Republic of Finland, in his capacity as Special Adviser to the President of the European Commission. October 2024 https://commission.europa.eu/topics/defence/safer-together-path-towards-fully-prepared-union_en
- *Study on the Factors Influencing the Uptake of EU-Funded Security Research Outcomes*. December 2022 https://op.europa.eu/en/publication-detail/-/publication/b2aaafb9-ab4f-11ed-b508-01aa75ed71a1/language-en
- Mission letter to Hadja Lahbib. Commissioner-designate for Preparedness and Crisis Management. *Commissioner-designate for Equality*. September 2024 https://commission.europa.eu/document/download/faaf33ff-c8c7-49a1-b01d-56681e11a5e6_en?filename=Mission%20letter%20-%20LAHBIB.pdf *Proceedings of the 7th Disaster Risk Management Knowledge Centre (DRMKC) Annual Seminar.* November 2023. https://publications.jrc.ec.europa.eu/repository/handle/JRC136680
- CTIF Addressing the Climate Crisis: *A Call to Action for Fire and Rescue Services Worldwide*. October 2023 https://ctif.org/news/ctif-addressing-climate-crisis-call-action-fire-and-rescue-services-worldwide
- United Nations Office for Disaster Risk Reduction (UNDRR) (2023). *Europe and Central Asia Risk Reduction 2023 Report.* https://www.undrr.org/report/rar-2023-europe-and-central-asia
- United Nations Office for Disaster Risk Reduction (UNDRR) (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030.* https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030
- United Nations Office for Disaster Risk Reduction (UNDRR) (2023). *The Report of the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*. UNDRR: Geneva, Switzerland. https://www.undrr.org/publication/report-midterm-review-implementation-sendai-framework-disaster-risk-reduction-2015-2030

POLICY BRIEF

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