



740575	FIRE-IN	D3.2 Results of the Request for Ideas: mapping RTOs and Industry potential, response and trends related to Fire-IN CCC/FCCCs
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Abstract:

This document describes the first cycle results of the implementation of the “Request of Ideas” procedure which has been defined in T3.1. The particularities and the issues raised during the initial cycle of interaction with the Industry, RTOs and standardization bodies as well as the necessary adaptation of the actions and communication methods for the maximization of the results of T3.2 is presented as well in this deliverable.

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Executive Summary

The FIRE-IN project is an initiative funded by the European Commission and initiated on the 1st of May 2017. FIRE-IN has been designed to raise the security level of EU citizens by improving the national and European Fire & Rescue (F&R) capability development process. FIRE-IN addresses the concern that capability-driven research and innovation in this area needs much stronger guidance from practitioners and better exploitation of the technology potentially available for the discipline.

The purpose of this report is to describe the steps and procedures followed for establishing cooperation schemes for collecting response of Research and Technology Organizations (RTOs) and industry suppliers to the identified Common Capabilities Challenges (CCCs) and Future Common Capabilities Challenges (FCCCs) and the implementation of the “**Request for Ideas**” (Rfi), based on the methodology described D3.1.

The actions described in this report are based on the work carried out so far in WP1 (the identification of the CCCs) and in WP2 (the screening for existing solutions) and is the first part of a three cycles implementation of T3.2. The deliverable includes the results of the interactions with the Industry, RTOs and standardization bodies during the first cycle of implementation of “Rfi” process. During the first cycle of Task 3.2 implementation, the e-platform and tools aimed to facilitate the interaction with the stakeholders, were not ready as expected. Thus, an adaptation to more traditional and less effective ways of interaction was necessary to collect the first solutions and ideas by RTOs, industries and standardisation bodies. Particularities, difficulties and limitations of the interaction with the WP3 stakeholders, which raised during this first cycle of T3.2, are all discussed in detail in this report since these are essential results for the continuation and appropriate adaptation of Rfi process, and so are for the maximization of results in the first and also in the next cycles.



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1. Introduction

The project FIRE-IN has been designed to identify capability gaps from the point of view of practitioners in the field of fire and rescue, and to fill these gaps by implementing a structured mechanism to identify existing solutions or define RDI capability challenges that should be addressed in future call for projects.

Based on the identification of the capability gaps in work package WP1 involving practitioners gathered in 5 thematic working groups (TWG) and the screening for solutions carried out in work package WP2, the work package **WP3** "Collaboration with research, industry and standardization bodies and recommendations" aims at developing the interactions with research, industry and standardization bodies to validate the identified gaps and help expressing the needs for future research, development and innovation.

The second Task of WP3, **T3.2** "Request for RDI ideas addressing CCCs and FCCCs and capitalisation of the feedback" concerns the implementation of the communication strategy with the industry, standardization bodies and RTOs aiming at the Request of Ideas realization.

The deliverable D3.2 presented herein describes the procedures and actions for interacting with industry, standardization bodies and RTOs, taking into account the profile of the stakeholders and the first results of interaction with them, for the achievement of the **Rfi** procedure. The work described in this deliverable is closely related and based on:

- The background work carried out in T3.1 and described in D3.1;
- The interactions with the WP1 and WP2, in particular the CCC and FCCC definition and the screening of possible solutions;
- The supporting tools, material and dissemination actions of WP4, in particular the 2nd FIRE-IN Dissemination Workshop that took place on May 15 in Barcelona.

This **deliverable D3.2 is organised in three (3) parts.**

- The first part describes the Background of the Request of Ideas procedure is described, concerning the analysis of prerequisites for the "Request of Ideas" and the first-cycle application of the Traffic Light System on technologies, which was proposed in D3.1.
- The second part concerns the applied tools, methods and actions for establishment of communication with the WP3 stakeholders and their engagement in FIRE-IN project, based on their profile and specific characteristics.
- The third part presents the 1st cycle results of the Rfi procedure including the outcomes of T3.2 from the FIRE-IN 2nd Dissemination Conference in Barcelona.



2. Background for the Request for Ideas implementation

2.1. Prerequisites of Rfi implementation

The “**Request for Ideas**” (**Rfi**) is a procedure within the FIRE-IN project, to collect recommendations for the development of solutions addressing the CCCs identified in WP1, that are not well covered, based on the results of the screening carried out in WP2. These recommendations are expected from the stakeholders outside the consortium and will be used to draft the Strategic Research and Standardization Agenda (SRSA) and Policy Brief as it is foreseen in task T3.4.

In order to carry out the **Rfi**, Task 3.2 aims at the capitalization of the results of WP1 and WP2 by:

- Combining the output of WP1 and WP2 aiming to identify technologies and solutions with high operational value and potential for industrial uptake;
- Establishing procedures and interactive cooperation schemes for collecting responses from RTOs and industry suppliers to the identified CCCs and FCCCs;
- Make a first assessment of the operational potential of such solutions.

“**Request for Ideas – Rfis**” implementation, which is the fundamental procedure for the achievement of T3.2 goals, is based on the results of T1.4, T2.2, the suggestions and analyses of T3.1 and the communication strategy, tools and facilities of the FIRE-IN e-platform which is being developed in WP4. All the actions above are considered as prerequisites of T3.2 work and their conceptual interconnection is presented in the diagram of Figure 1.

The results of the CCCs and FCCCs findings obtained by the activities of WP1 and WP2 are under continuous elaboration during the project cycles, as to make the volume of information understandable by the stakeholders who are contacted in WP3 for the implementation of **Rfis** (T.3.2).

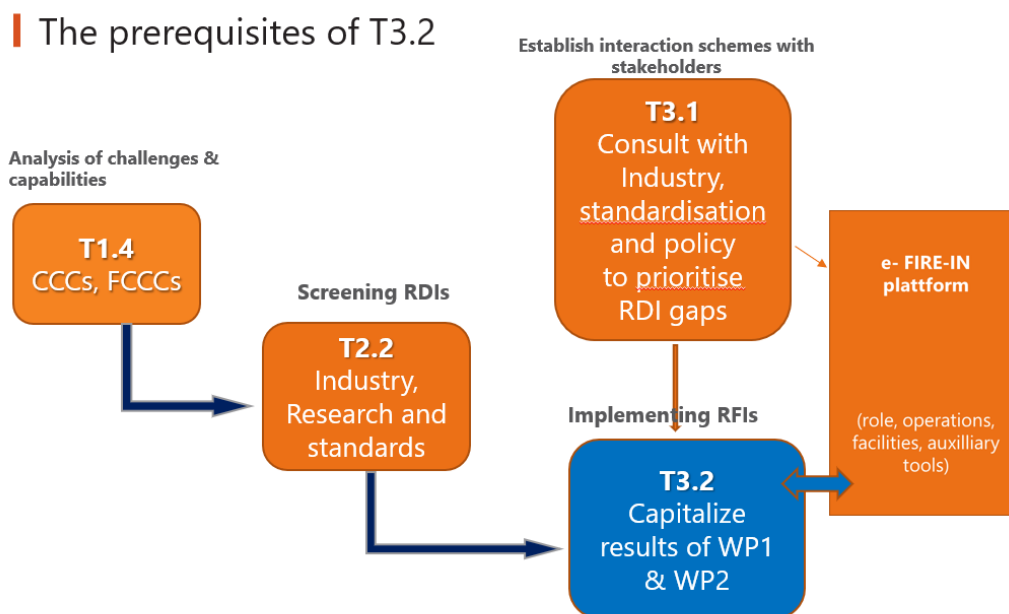


Figure 1: Task 3.2 prerequisites and interaction with other tasks



Thus, the steps to implement the **Rfl** concept in all cycles of T3.2, according to the above prerequisites and the *DoA* (see below) are the following:

1. Preparation of the Rfl according to the results of WP1, WP2 and T3.1;
2. Share with RTOs, Industry and standardization bodies via Fire-IN e-platform;
3. Pre-screening of the feedback received via Fire-IN e-platform;
4. Invitation to present and demonstrate solutions (*already available or in development*) in FIRE-IN dissemination events (WP4);
5. Analysis of feedback by the T5 groups;
6. Reporting on the analysis and recommendations.

Description of T3.2 in the DoA:

Following the CCCs and FCCCs identification (T1.4) and based on the input from the RDI screening (T2.2.), a request for ideas will be launched for each of the three cycles as described in T3.1. The requests shall be implemented in a period of six months arranged in four sub-tasks namely (i) preparation of the requests according to Task 3.1 framework and to the results of WP1 and WP2, (ii) invitation to Research and Industry to submit ideas and pre-screening of proposed ideas through the e-FIRE-IN platform (WP4) and interactions with existing networks of security industry and research (CoU, EOS, EENA, EARTO, ETPIS ..) (iii) analysis of proposals with T5 representatives and with the other FIRE-IN associated experts through the e-FIRE-IN platform developed in WP4 d. reporting and recommendations. The request for RDI ideas will be open to past and on-going projects as well as to new ideas in order to feed the RDI monitoring procedures. Based on feedback provided during this procedure, selected ideas addressing the arguments defined in T3.1 will be invited, through the FIRE-IN web platform, to further demonstrate their industrialisation potential and prove their operational capacity and maturity level. In addition, they will be invited to make a presentation during the annual dissemination workshops in front of a large panel of FIRE and Rescue Practitioners and TWG5 representatives. The feedback and results of evaluating RDI ideas will be considered in the final recommendations of the Strategic Research and Standardisation Agenda (SRSA-T3.3) and will be shared with the EC services and disseminated to the practitioners' networks through the e-FIRE-IN platform.

2.2. Solutions in the context of WP3

In the context of WP3, the term “solutions” refers to the products that are available by the FIRE-IN stakeholders who can act as “suppliers” (i.e. Industry, RTOs and Standardization bodies) to the demands that have been identified by the practitioners, policy makers etc. Thus, the solutions under consideration in T3.2 during all the cycles are the following:

- A. The results of EU Projects that have a high level of maturity and support of a specific organization or association, in order to be considered as products for operational use. These results concern:
- ✓ Clearly defined and described methods, procedures and tools supported by manuals and informative reports on scientific and technical background;
 - ✓ Platforms that have been developed in the frame of a past project and are sufficiently supported after the end of the project;
 - ✓ Platforms, currently under development in the frame of the project that are sufficiently reported and a plan for their support exists, after the end of the project;
 - ✓ Databases with a high quality and sufficient amount of data entries;
 - ✓ Software systems and tools that have been developed in the frame of the project, validated and supported by manuals and experts for updates.



- B. Products (hardware or software) of RTOs, industry and private companies with a high level of maturity (e.g. TRL \geq 6)
- C. Existing standards and procedures already adopted in the fire and rescue procedure relevant to software, hardware and equipment.

The other categories of knowledge-sources that have been screened in WP2, such as research, other publications, regulations, directives etc., are not considered per se as “solutions” for operational use in the context of WP3, since these are not practical tools answering to problems and challenges identified by the part of stakeholders which defines the “demands”. **However, this type of knowledge can have an informative and educational character to the suppliers and “innovation developers”**. In this sense it is expected to be an **essential background and support** of Rfl procedure, which will be available to them through the e-platform, for the purposes of the next cycles.

2.3. Rfl implementation characteristics and approach (1st cycle)

Rfl implementation is a rather dynamic multi-parametric procedure, as it depends on the level of interaction with the WP3 stakeholders. This section concerns the characteristics and results of the first cycle Implementation of the “Request for Ideas”.

This cycle of T3.2 work, which started on January 2019, is based on the corresponding cycle of WP1 and WP2 outcomes and was characterized by various particularities relevant to its prerequisites (section 3.1). Many of these particularities were actually raised when the T3.2 implementation started and the first contacts and discussions with the stakeholders took place.

One of the main limitations identified during this phase of work was the lack the e-FIRE-IN-platform which is under development in WP4, as an essential tool for interaction and information flow. Therefore, an analysis of the interaction with the stakeholders and an adaptation of the actions was necessary for the accomplishment of T3.2 work.

More particularly, the issues that have been faced and the adaptation actions were the following:

- ✓ Simplification and reformation of the CCCs specified during the 1st cycle of WP1;
- ✓ Clarification of concepts and terms used in FIRE-IN, during the interaction with the WP3 stakeholders;
- ✓ Initialization of the Traffic light system procedure using only the WP2 initial screening of solutions for the technology;
- ✓ Adaptation of the communication process, information flow and interaction methods with the WP3 stakeholders, using more traditional methods of communication.

The actions and the results of this cycle are described in detail in the following sections.

2.4. “Traffic light system” preliminary application for Technological Solutions

According to the methodology described in D3.1, the application of the Traffic light System is the first step of the “Request for Ideas” (Rfl) procedure, aiming to the characterization and prioritization of the CCCs (Table 1). The procedure of the Traffic Light System for the purposes of WP3 concerns the



categories of solutions which were screened in the first cycle of WP2 and are considered in WP3 for further elaboration, according to the above described concept (see chapter 3.2).

For the purposes of the first cycle of T3.2 the traffic light system has been applied to the technological solutions that were screened in the first cycle of WP2 (see deliverable D2.2).

The final colour attributed to each CCC on Table 1 was based on the qualitative and quantitative evaluation of the screening results for each group of the technological solutions under consideration, based on the criteria of this category of solutions described in deliverable D3.1.

Table 1: Overview of Common Capability Challenges (CCCs) identified by the FIRE-IN project and preliminary classification of CCCs for technologies according to the “traffic light system”

CCC	High flow of effort in hostile environment	Low frequency, high impact	Multi-agency / multi-leadership environment	High level of uncertainty	Screening field
Incident Command Organization	Focus on sustainability of safe operations	Prioritize the reduction of vulnerability and increase interactions with the public	Distribute decision-making	Strategies choosing safe scenarios, and maintaining credibility	Publications and projects
Pre-planning	Pre-plan a time-efficient, safe response	Negotiate solutions with stakeholders for anticipated scenarios	Plan interoperability and enhance synergies	Focus on governance and capacity building towards more resilient societies	Publications and projects
Guidance instruments	Establish procedures and guides	Standardize capabilities in front of pre-established scenarios.	Establish an interagency framework	Build doctrine for resilience in emergency services and societies	Standards
Knowledge cycle	Train specific roles	Learn about possible scenarios focusing efforts in key risks and opportunities	Build a shared understanding of emergency and train interagency scenarios	Focus on integral risk management	Publications and projects
Information management	Information cycle.	Manage key information focused on decision-making	Define common information management processes between agencies.	Provide an efficient, flexible flow of information for a shared understanding	Publications and projects
Community involvement	Develop public self-protection to minimize responders exposures	Prepare population for the worst scenario before it happens.		Cultural changes in risk tolerance and resilience	Publications and projects
Technology	Use technology to assess risks and minimize responder’s engagement	Simulate complex scenarios	Technological tools to support data sharing	Get a clear picture of the risk evolution	Technologies

General comments on the results of this procedure are provided below:

1. The **majority** of the solutions **cover the Green level** of the criterion **“Solution maturity (TRL) and industrialisation level (time to market, TTM)”**.



2. A **significant number** of the solutions **cover the Green level** of the **criteria “Operational value of existing solution”**, while it is not clear at this stage of the evaluation, if some solutions are successfully used for operational purposes, especially those related to robotics and drones. Further investigation is necessary for a final conclusion on this issue.
3. **Most of the solutions cover the Green level of the criteria “Interoperability and standardization”**, regarding a number of categories of standards and interoperability protocols and interfaces. However, it is not clear at this stage of analysis and evaluation, if specific recent standards or directives for the development of standards, related to aspects addressed in Fire-IN project, are covered adequately.

Specific comments on the colors attributed in each CCC are provided below:

1. CCC in the category **“High flow of effort in hostile environment – Use technology to assess risks and minimize responder’s engagement”** (Green).

Forty-five (45) solutions have been considered and evaluated. The Traffic Light System assessment with the details for this CCC is provided below

Table 2: traffic light system for the CCC category “High flow of effort in hostile environment – Use technology to assess risks and minimize responder’s engagement”

Criteria	Green	Yellow	Red
Operational value of existing solution	already available and operational 39 (already available, operational value not clear yet for some of them – see general comment 2)	available as pilot solution / demonstration 5 solutions	further research and development needed 1 solution
Solution maturity (TRL) and industrialisation level (time to market, TTM)	TRL ≥ 9 Already available on the market 39 solutions	6 ≤ TRL < 9 Already developed as prototype and being tested / validated 5 solutions	TRL < 6 Still need some research and development 1 solution
Interoperability and standardization	Availability of the standards describing to solutions and interoperability issues 34 solutions	Awareness of need for standard 10 solutions	Standard not yet addressed 1 solution

2. CCC in the category **“Low frequency, high impact - Simulate complex scenarios”** (yellow). Thirteen (13) solutions have been considered and evaluated. The Traffic Light System assessment with the details for this CCC is provided below

Table 3: traffic light system for the CCC category “Low frequency, high impact - Simulate complex scenarios”

Criteria	Green	Yellow	Red
Operational value of existing solution	already available and operational	available as pilot solution / demonstration	further research and development needed



	13 (already available, operational value not clear yet for some of them- see general comment 2)		
Solution maturity (TRL) and industrialisation level (time to market, TTM)	TRL ≥ 9 Already available on the market 13 solutions	6 ≤ TRL < 9 Already developed as prototype and being tested / validated	TRL < 6 Still need some research and development
Interoperability and standardization	Availability of the standards describing to solutions and interoperability issues	Awareness of need for standard 13 solutions Interoperability not yet clear for many of them. Limitations known for at least two of them	Standard not yet addressed

3. CCC in the category “Multi-agency/ multi-leadership environment- Technological tools to support data sharing” (Green).

Fifty (50) solutions have been considered and evaluated. The Traffic Light System assessment with the details for this CCC is provided below

Table 4: traffic light system for the CCC category “Multi-agency/ multi-leadership environment- Technological tools to support data sharing”.

Criteria	Green	Yellow	Red
Operational value of existing solution	already available and operational 44 (already available, operational value not clear yet for some of them – see general comment 2)	available as pilot solution / demonstration 6 solutions	further research and development needed
Solution maturity (TRL) and industrialisation level (time to market, TTM)	TRL ≥ 9 Already available on the market 44 solutions	6 ≤ TRL < 9 Already developed as prototype and being tested / validated 6 solutions	TRL < 6 Still need some research and development
Interoperability and standardization	Availability of the standards describing to solutions and interoperability issues 44 solutions (see general comment 3)	Awareness of need for standard 6 solutions	Standard not yet addressed



4. CCC in the category “High level of uncertainty - Get a clear picture of the risk evolution” (Yellow). Eighteen (18) solutions have been considered and evaluated. The Traffic Light System assessment with the details for this CCC is provided below

Table 5: traffic light system for the CCC category “High level of uncertainty - Get a clear picture of the risk evolution”.

Criteria	Green	Yellow	Red
Operational value of existing solution	already available and operational 13 (already available, operational value not clear yet for some of them – see general comment 2)	available as pilot solution / demonstration 4 solutions	further research and development needed 1 solution
Solution maturity (TRL) and industrialisation level (time to market, TTM)	TRL ≥ 9 Already available on the market 10 solutions	6 ≤ TRL < 9 Already developed as prototype and being tested / validated 7 solutions	available as pilot solution / demonstration 1 solution
Interoperability and standardization	Availability of the standards describing to solutions and interoperability issues 10 solutions (see general comment 3)	Awareness of need for standard 8 solutions	Standard not yet addressed

3. Interaction process

3.1. Characteristics of Communication with the Industry and RTOs during the 1st Cycle

To ensure effective communication with the industry organizations and RTOs during the 1st cycle implementation and to enhance outcomes, the following rules were considered:

- I. Deliver relevant project information and inquiries in an appropriate and timely manner and foster a regular two-way flow of information between T3.2 implementers and these stakeholders;
- II. Support sustained, broad and repetitive communication and advocacy about the benefits of the project.



When applied to written communication, there were several considerations that have been taken into account:

- The message must be framed (encoded) in a way that is easily understood by the receiver;
- It should have a clear purpose;
- It should be formatted to suit needs of receiver (i.e. structure of the company/organization);
- The medium for transmission should be appropriate to the content and purpose of the message;
- Noise and fuzziness should be minimized;
- Preferably use the language of the country where the contacted organization/company is active;
- Feedback in the form of “active listening” should be employed to increase the chances that the intent of the original message was received without distortion.

Moreover, the following issues, which have been raised during this first cycle contacts with the T3.2 stakeholders have to be considered as well:

- Most of the solution providers and mainly **medium to large size companies** that **already have strong contacts with experts and practitioners from the operational domain**.
- Many of the **solution providers are quite sceptic to provide new ideas**, especially if these are not going to be realized as new products in the market, in the near future, mainly due to competition issues.
- The **complex structure of large companies** with many departments.
- The purchase of innovative products (equipment, software) and their **adaptation for operational use depends mainly on the applied policies at the national and/or EU level** and not directly on the “operational expert” opinion or suggestion.

3.2. 1st cycle CCCs in the context of Task 3.2

During the first communication cycle with FIRE-IN stakeholders it was evident that the CCC table that has been created in WP1 was rather theoretical and abstract for the solution providers community, for the accomplishment of T3.2. However, during the annual FIRE-IN meeting in Barcelona (13th May 2019), it was pointed out also the necessity to keep the CCCs as simple as possible for the communication with the stakeholders.

Thus, a simplification and clarification of the CCCs concept was necessary, together with an appropriate translation into methods, procedures, tools, standards that could be provided as “solutions” in the context of WP3.

The above issue was thoroughly discussed during the Fire-IN Annual meeting and six (6) CCCs, among the 28 plotted in the matrix (table 1), were selected by WP1 team (representing the practitioners) as being the most urgent to address. These were translated accordingly by the T3.2 leading partner (KEMEA) experts, in order to be addressed to the stakeholders. The following table displays these six key CCCs as they were detailed in the frame of WP1 and the rewording operated for each of them. It also gives description and translation into possible “provider solutions” to be used for the purposes of WP3.



Table 6: Selected first cycle CCCs, description of their Topics and their “translation” to solutions that can be provided by T3.2 stakeholders.

Common Capability Challenge		
CCC Topics as they have been described by WP1	Rephrasing CCC topics for addressing to the Industry & RTOs	Existing innovative Solutions and future developments (i.e. to be provided by Industry e.tc.)
CCC #1: Focus on governance and capacity building towards more resilient societies		
<ul style="list-style-type: none"> • Study integrated risk management at a large scale, involving stakeholders, and focus on the interphase between different incidents, changes of behavior, domino effects and uncertainties. • Support for multi hazard scenarios, GIS tool. • Training of crews and commanders in decision-making and communication during uncertain, dynamic, unexpected scenarios, adapting tempos and synchronizing activities with other agents. Cultivate this kind of mentality. Facilitate the improvement of existing doctrine. • Understand probabilistic forecast of different scenarios, compare alternatives and have contingency plans. 	<ul style="list-style-type: none"> • Tools for probabilistic forecast, multiple hazard scenarios, risk assessment and training of personnel for crisis management • There is a demand for Tools that support multiagency and multi-hazard incident training & operations on all levels of command. The goal is to enhance Risk Management, especially on identifying emerging risks and qualitative and quantitative analysis of them. 	<ul style="list-style-type: none"> • Crosscutting Platforms for multi-hazard and multi-risk assessment. • Augmented reality-based training tools (software & hardware) • CC Systems including simulation tools for risk assessment • Complex reality integrative simulation tools to support decision making • Harmonized operational procedure for multi-hazard and multi-risk assessment • Advanced and innovative safety equipment for operational executives and citizens
CCC #2: Cultural changes in risk tolerance and resilience		
<ul style="list-style-type: none"> • Communication in uncertain events (chained events, dynamic environments...) is crucial; it has to be prepared, trained and stakeholders involved. • Focus on credibility. • Use all opportunities for cultural changes in risk awareness and policies. 	<ul style="list-style-type: none"> • Risk communication and awareness • The EU is a multicultural entity with an anthropocentric culture and philosophy. In order to improve the resilience of societies across Europe, it is a requirement to develop tools that empower communities and stakeholders with a modernized communication strategy in risk awareness and policies. 	<ul style="list-style-type: none"> • Credible Early warning systems • Educational tools and methods for raising public Risk awareness • Tools for interactive exchanges of knowledges between response agencies and communities both in preparedness phase and response phase



<ul style="list-style-type: none"> • Empower communities and stakeholders. Recognize and partner with existing civil-society initiatives addressing critical issues. 		
CCC #3: Use technology to assess risks and minimize responders' engagement		
<ul style="list-style-type: none"> • Locate responders anytime, anywhere and know how long they can sustain efforts. • Unmanned terrestrial and aerial tools to assess the risk and unmanned tools to transport equipment on the field. 	<ul style="list-style-type: none"> • Locate responders anytime, anywhere and know how long they can sustain efforts. • Unmanned terrestrial and aerial tools to assess the risk and unmanned tools to transport equipment on the field. 	<ul style="list-style-type: none"> • UAV's, vehicles and robots • Hardware and software for geolocation and spatial analyses • First responders Communication and seamless information sharing • Advanced Dispatching tools
CCC #4: Prioritize the reduction of vulnerability and increase interactions with the public		
<ul style="list-style-type: none"> • Boost the public information function. Develop a specific communication strategy to maintain credibility, including social media. • Shift of focus needed, from minimizing potential damages to reduce vulnerability for the final scenario, considering different values. Focus on key, relevant information. Anticipate relevant changes. Anticipate alternative scenarios, and contingency plans. • Psychological support for rescuers. • Integrate feedback from community. 	<ul style="list-style-type: none"> • Reducing vulnerability • Credible sharing of information to the public and enable feedback from the community • Psychological support to rescuers • It is a demand to be developed a modernized, and vice-versa, flexible communication strategy (tools, and techniques) that exploit every available communication channel. It is critical all the information channels be analyzed and used as an input in Decision Support Tools and of course assisting citizens and first responders. 	<ul style="list-style-type: none"> • Tools and methods for managing and validating Social Media information flow • Crowdsourcing methods, tools and data management • Evacuation planning tools for modeling and validation of plans • Mobile apps for crowdsourcing, data collection, evacuation instructions etc.
CCC #5: Negotiate solutions with stakeholders for anticipated scenarios		
<ul style="list-style-type: none"> • Pre-plans based on predicted possible major scenarios and negotiate accepted level of risk based on the pre-plans. • Involve risk owners, risk control owner, technical experts and other stakeholders in common debates on risk acceptance. • Change focus towards prevention, self-protection and risk mitigation. 	<ul style="list-style-type: none"> • Preparedness and prevention • Pre-planning based on worst case scenarios • Enabling direct interaction with communities in the preparedness stage • It is a demand to developed multiagency collaboration tools, IMS to enhance preparedness and incident mitigation. These tools must have the ability to import, export 	<ul style="list-style-type: none"> • Advanced and reliable Platforms for Information and knowledge sharing • Friendly and easy-to-use interaction tools between agencies and communities



<ul style="list-style-type: none"> • Interaction with external experts during large events when timely possible. • Build communities of practice of experts for experience exchanges and knowledge sharing 	<p>information using widely used industry or open standards in order to interact with external experts or platforms.</p>	
CCC #6: Plan interoperability and enhance synergies		
<ul style="list-style-type: none"> • Agreed chain of command, specifying roles and capabilities in advanced. • Pre-plan should be known by all agencies and stakeholders • Legal framework for cross-border help, emergency support, victim transportation, recognition of qualifications • Enhance synergies between experts and agencies at regional, national and international level. Share specialists and experts. • Emergency preparedness should be dealt with international / European perspectives. • European interagency round tables for lessons learned processes and the generation of new standards. 	<ul style="list-style-type: none"> • Interoperability in all aspects (communication, systems, synergies, e.tc.) based on common practices • It is a demand to develop guidance documents and plans, in order to enhance the European Union's Civil Protection Mechanism. A mechanism for experts networking will enhance synergies between them and knowledge exchange. 	<ul style="list-style-type: none"> • Guidance documents to improve interoperability and enhance synergies for prevention, preparedness and response • International workshops for knowledge exchange



For a given CCC, the stakeholders are asked to provide ideas and recommendations for research, development and innovation to fill the gaps and cover properly the CCCs.

According to the methodology proposed in D3.1, the ideas that are requested from the solution providers, address the following issues:

1) Operational value of existing solutions

- a) Green: Can you recommend existing solutions covering the CCC?
- b) Yellow: Can you recommend solutions in development covering the CCC?
- c) Red: Can you specify the objectives and characteristics of the solution that should be developed to address the CCC?

2) Solution maturity (TRL) and industrialisation level (time to market, TTM)

- a) Green: What are your recommendations to increase the deployment of the existing solutions and improve the operational (facilitate access, reduce the price, facilitate public procurement, etc.)?
- b) Yellow: What type of demonstration needed to elevate the TRL of the solution?
- c) Red: not relevant.

3) Interoperability and standardization

- a) Green: Can you recommend future standards that will improve the effectiveness, and the interoperability of the solutions covering the CCC?
- b) Yellow: Can you recommend standards that are needed to facilitate the use of the solutions covering the CCC?
- c) Red: not relevant.

3.3. Framework and methods for contacting the Technological Solutions providers (during the 1st cycle)

There were four primary objectives under the Solution Providers Communication Strategy implemented in the first cycle of T3.2:

- (i) Ensuring that all the entities are aware of and clearly understand FIRE-IN project and its impact;
- (ii) Addressing the solution providers concerns using informative and inclusive approaches;
- (iii) Benefiting of the involvement in FIRE-IN project are clearly defined;
- (iv) Minimizing the time of engagement of the involved people and maximize the outcomes for the project and mainly for the “Request for Ideas” procedure.

Communication Methods and tools

The aim of T3.2 in this cycle and also for the next cycles is the establishment of continuous and effective communication with the FIRE-IN providers which is planned in three phases or steps:

- ✓ Registration in FIRE-IN community
- ✓ Input of information about selected provided solutions that are meaningful and significant for FIRE-IN operational people and organizations
- ✓ Provision of new Ideas



Since FIRE-IN e-platform was not available in this first cycle of T3.2 implementation as a communication tool and also for the collection and organization of inputs from the stakeholders, the methods of communication with the stakeholders were the following:

- Telephone calls
- E-mail
- Skype calls
- Face-to-face meeting

The following material and tools were used for the communication with the FIRE-IN providers:

- FIRE-IN Project Site
- Leaflet of FIRE-IN project
- Letter to the providers which is included in D3.1

In addition to this, KEMEA has designed and implemented an EU-Survey/FIRE-IN form for the establishment of communication and the collection of information from the providers. This form will be used in the frame of T3.2 until the release of FIRE-IN E-platform which is under development in WP4. The data that will be collected through this temporal e-form will be extracted to excel files and will be forwarded to the E-platform developers for importing them in the FIRE-IN data base. A PDF version of this form is included in the Appendix.

On-line access of the EU-Survey/FIRE-IN form:

<https://ec.europa.eu/eusurvey/runner/FIRE-IN-provider>

“Privacy statement on the protection of personal data”

<https://ec.europa.eu/eusurvey/home/privacystatement>

3.4. Communication with the industry, RTOs and standardization bodies during the 1st cycle

Communication with SAFE cluster members

SAFE used all the available at that time means to contact with the SAFE cluster members. E-mail was the main method of communication to invite organisations to participate as stakeholders in FIRE-IN project. SAFE cluster invited 450 members of its cluster. 60% (meaning 270 members) are industry partners.

The procedure followed by SAFE was the following:

Firstly, SAFE invited organizations to visit the project’s website and asking them to check if they could address the Common Capability Challenges in the CCCs matrix (<http://fire-in.eu/index.php/matrix-ccc/>).

Secondly, in April 2019, invited them to submit specific solutions under the framework of the dissemination event that took place in Barcelona, May 2019.

Additionally, phone calls and face to face meetings have been completed with 4 companies and 3 research institutions.

A compact list and short description of the providers who responded so far to SAFE cluster is attached in the appendix (part A).



KEMEA contacts

KEMEA, in the framework of T3.2 concentrated on industry section in this first cycle of contacts. Means of communications are described in section 4.3, focusing on those that permitted direct interaction, **like face-to-face meetings or teleconferences**. The majority of contacted companies are **current or past partners of KEMEA or personal contacts of KEMEA team members and associated experts**. This provided: a. *the advantage of direct communication with well-known representatives of the contacted organizations, without being redirected* and b. *the possibility to explain and discuss the scope of FIRE-IN, the concepts and terms used in it and the benefits of being a member of FIRE-IN community*.

As a second step, after the first expression of interest from the contacted organization, an e-mail has been sent to them, with the invitation letter, in order to officially invite them to collaborate with FIRE-IN as stakeholders.

In the third step, the EU-survey form was used as a tool for registration and eventually submission of their solutions and ideas. Thus, the proper hyperlinks and additional informative material has been sent.

The communication was to Greek and European companies as well as European organisations. In total, we have sent e-mails in 50 organisations. The majority of the Greek companies have accepted the invitation of participating as stakeholders and approved our request either by e-mail or by a telephone call. For some large European and Worldwide companies, the request is still pending. Up to now, only a few have submitted information in the online EU-Survey form, but all have answered that they will complete the form in the near future. One of the Greek companies also attended the dissemination event in Barcelona (SATWAYS S.A) while at least other two of them expressed clearly their interest to participate in the next dissemination event.

CNBOP-PIB contacts

CNBOP-PIB contacted almost 700 providers. Most of the providers were contacted via e-mails, some of them by phone. Face-to-face meetings was not in the selected ways of communication. Many providers declared their interest to register in the FIRE-IN project as stakeholders and solution providers. The EU-survey form was used as a tool for the registration and the eventual submission of their solutions and ideas. Nevertheless, only a few of them have filled in and submitted the EU-survey form so far.

A compact list and short description of the providers who responded so far to KEMEA and CNBOP-PIB is attached in the appendix (part A).

Communication with the Standardization Bodies

Actions by INEDEV took place in order to reinforce the ideas of the synergies between FIRE-IN and ENCIRCLE project.

The following message from Clive Goodchild on May 13th, 2019, forwarded to FIRE-IN partners and associated experts.

As part of our platform integration and standards activities the ENCIRCLE project has two online surveys (Non-Technological and Technological) on standards and interoperability for CBRNe. The first survey asks high level CBRNe questions around required solutions and interoperability and comprises 5 open questions. The second survey asks more specific technology-based questions around interoperability and standards and is a combination of multiple choice and open questions. The output of the surveys will be used as part of the ENCIRCLE initiative to improve the implementation of H2020 research and



will be made available to the community. You are invited to respond to either or both surveys which will be open until July 31st

The surveys are available via www.sli.do and are accessed by entering the appropriate event code (can be accessed by PC, laptop, phone).

General CBRNe solutions and Interoperability

- *Event code T594 (English)*
- *Event code 1595 (French)*

Platform Integration – Standards and Interfaces – Technical questions

- *Event code 3395 (English)*

All responses will be treated as anonymous

4. Results

4.1. Feedback and outputs from the 1st cycle interaction with the Industry and private companies

Based on the interaction with the Industry and private companies the preliminary outcomes were the following:

- FIRE-IN concept and CCCs are hard to explain.
- FIRE-IN is/looks more appealing to SME's with low accessibility in the market compared to large companies. Of course, this is somehow accepted and expected since large companies have invaded the market and gain the proper recognition from the market, research, practitioners and policy makers.
- The WP3 stakeholders express their interest to the FIRE-IN project but they tend to delay any submission of solution, or Idea.
- Language is in several occasions a limitation, especially regarding the interaction with local SMEs.
- Enterprises do not devote the necessary time to fill in the requested form although they have the possibility to edit and change the form more than once. Experience showed that they accept this process usually after an appointment in which FIRE-IN project is presented to them with more detail.
- Nine (9) entities (research organizations and industries) have filled in and submitted the e-form. Additionally, five (5) answers have also been submitted under the registration form for Barcelona event and analysed further below. The low number of submissions is expected due to the little time available between the release of e-form and the time of this deliverable. Delays in the e-platform of FIRE-IN also affected this procedure. Nevertheless, repeated telephone contacts prove the interest of companies for the FIRE-IN project and it is expected that in the following months, the submission of solutions and ideas will increase enormously, enriching this procedure.



4.2. First screening and filtering of solutions and ideas submitted in EU-Survey form

Solutions and/or Ideas have been submitted by nine (9) organizations (industries and research institutions). Three (3) of them come from Greece, three (3) from Italy, two (2) from Poland and one (1) from the United Kingdom. In total, nine (9) current solutions and four (4) ideas were submitted in the EU-Survey form.

Concerning “*Incident and disasters mitigation: on site response for disaster reduction, containment and short-term recovery*” the submitted solutions cover the following thematic groups:

- Structure Fires
- Wildland Fires
- Natural Disasters
- Transportation Accidents
- CBRNE

Concerning “*People rescue: Search And Rescue (SAR) of victims, Triage, First treatment, Transport to safe areas*” the submitted solutions cover the following areas:

- Emergency Medical Services
- Health services in the field hospitals
- S.A.R. activities in specific context (mountain, USAR, sea rescue etc.)
- Controlled evacuation, evacuee’s management
- Decontamination of persons
- Site and local condition awareness
- Monitoring and detection

Concerning “*Security/Law enforcement: Security tasks in the context of crisis mitigation*” the submitted solutions cover the following areas:

- Maintain public order
- Investigations and forensic
- Environmental data

Concerning “*Coordination, command and control, situation assessment*” the submitted solutions cover the following areas:

- Incidents management and coordination, Decision making, planning, intelligence
- Volunteers management
- Public information

Concerning “*Prevention and preparedness, skills, processes*” the submitted solutions cover the following areas:

- Policy making
- Training and exercises
- Prevention
- Doctrine and procedures development
- Preparedness
- Training and exercises
- Earthquake hazard and risk assessment, modelling/simulation



Existing solutions cover three general categories, equipment and machinery, materials and software:

- ✓ Equipment and Machinery:
 - Multiple products already available in the market (TRL > 9) from SUPON company covering firefighting equipment, fittings, fixed foam systems, pellet feeding systems,
 - aluminium components for industry and custom orders.
 - Sprinkler systems and water mist systems already in the market (TRL 9) from the European Fire Sprinkler Network.

- ✓ Software:
 - Platform for assessing seismic hazard, building vulnerability and risk (OpenQuake Suite) by Global Earthquake Model (GEM) Foundation already available without any fee.
 - Software for remoting sensing imagery mainly related to monitoring from satellite and aerial imagery. Products already available in the market (TRL > 9) and constantly evolving (ENVI imagine).
 - Software mainly targeted for security purposes in governmental buildings and critical infrastructures within or close to dense urban environments. With the ability to visualize, simulate, and managing crises based on artificial intelligence (TRL 7-8).
 - Software for critical infrastructure protection, risk analysis and decision support systems (CIPcast) in development (TRL 5-6) covering natural disasters.

Ideas proposed by industry concentrate on materials and software:

- ✓ Fluorescent tapes that will be used on firefighters' suits making firemen visible even in no light/limited light conditions. The fluorescent light can last up to 6 hours. An update of standards and requirements for the construction of interventional suits (PPE) are expected.

- ✓ Software for Command and Control and Decision Support Tool, encompassing risk assessment, Web-based GIS, IT devices and Augmented Reality (AR) to allow for a two-way exchange between the control room and the emergency field. The use of innovative IT tools (such as google glasses, smart-eyes, and augmented reality, AR) along with satellite images is envisaged to bring/get data, videos, images and voice communications from the emergency field to the Control Room aiming to update in real-time and dynamically CIPCast predicted scenarios.

- ✓ Software for analysing the complexity of urban environment for different aspects (financial, architectural, topographical, cadastral, valuation, engineering, ownership,) 5D technologies for simulating complex scenarios encompassing 3d spatial data and time evolution at different levels of analysis

- ✓ Installation of Sprinkler systems and water mist systems in the majority of buildings and hazardous areas.



4.3. Results from the 2nd FIRE-IN dissemination conference in Barcelona

The 2nd FIRE-IN dissemination conference offered the opportunity of interaction with solution providers for the purposes of T3.2. Ten organizations participated in the event and presented their solutions (Table 7). A description of these providers and the presented solutions are provided in this section together with the analysis and results derived for the **Rfi** procedure. The solutions were presented in five (5) thematic round tables. Two solutions were presented in each table, in two cycles for respective groups of practitioners.

Table 7: Participating solution providers in the 2nd FIRE-IN dissemination event

Table	Topic	A/A	Solution Provider	Country
1	Multiagency decision making	1	Driver+	EU project
		2	Interagency tool	France
2	Information management #1	3	ELASTIC MAP	France
		4	PODIUM	France
3	Information management #2	5	HEIMDALL Project	EU project
		6	SatWays (Command and Control system of Hellenic Fire Service)	Greece
4	Public awareness	7	Fire Safe EU	EU project
		8	SMART RESILIENCE	Denmark
5	Community autoprotection	9	EXODUS evacuation modelling tools	UK
		10	STME	France



Description and analysis of the presented solutions

A detailed description and analysis of the presented solutions, in each interactive table, as well as the Ideas for the use and further development of the solutions that were extracted during this action are presented below.

<p>Solution Provider # 1</p> <p>Driver+ project</p> <p><i>Launched in May 2014, DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is a project funded under the 7th Framework Programme of the European Commission, whose main aim is to cope with current and future challenges due to increasingly severe consequences of natural disasters and terrorist threats, by the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management.</i></p>	<p>Solution(s) Presented</p> <p>DRIVER+ portfolio of Solutions</p>
<p>Topic: Multiagency Decision Making</p>	<p>CCCs Addressed: All</p>
<p>Description of the presented solutions</p> <p>PORTFOLIO OF SOLUTIONS A CENTRAL REPOSITORY TO SHARE INFORMATION ABOUT INNOVATION</p> <ul style="list-style-type: none"> - An on-line, open source database with existing and emerging solutions - Linked to CM functions and practitioner needs - Containing not only product information, but also experiences and lessons identified from practitioners after conducting Trials 	
<p>Ideas, Future developments</p> <ul style="list-style-type: none"> ✓ Four series of trials will be organised (respectively in Poland, France Austria, The Netherlands). During a trial, solutions will be operationalised and tested. They are based on updated Crisis Management gaps and practitioners needs and will benefit from the DRIVER+ Test-bed component. ✓ All the results will be stored made available in the PoS. The main practitioners' needs addressed are Cross-Border Tasking and Resource Management, High Level Coordination, Volunteer Management and Situation Assessment and Logistics. ✓ Centre Of Expertise (COE) Service Providers For Capability Development <ul style="list-style-type: none"> – A Centre of Expertise has the knowledge, expertise and facilities to design Trials, create realistic Trial environments using the Test-bed infrastructure, and to evaluate Trials. – – Development of a CoE toolkit supporting organisations, after the project, to take all steps in becoming a CoE 	



<p>Solution Provider # 2</p> <p>Aix Marseille Université</p> <p><i>AMU is an intensive research university, which has forged partnerships all over the world, has affirmed its anchoring and territorial integration and is one of the leading French universities in the Shanghai ranking. AMU has developed a strategy co-constructed at the site level in connection with the main research organizations (CNRS, Inserm, IRD, CEA ..) and structured around its many units and research federations and its five intersectoral and interdisciplinary research clusters (PR21):Energy,Environment classics, Health & Life Sciences, Advanced Science & Technology</i></p>	<p>Solution(s) Presented</p> <p>Interagency tool</p>
<p>Topic: Multiagency Decision Making</p>	<p>CCCs Addressed: Focus on capacity building towards more resilient societies</p>
<p>Description of the presented solutions</p> <p>A tool for evaluating interoperability for bilateral civil protection missions. Five factors: Governance, Standardised Operational Procedures (SOPs), Technologies, Training and Exercises, Language Skills and Operations are examined in the tool. Each factor takes a grade ranging from 1 to 5 and has been assigned with a certain weight. The final grade varies between 0 and 100 for the evaluation.</p>	
<p>Ideas, Future developments</p> <ul style="list-style-type: none"> ✓ Interoperability, sharing of information and knowledge and communication between the various operators during a crisis is a crucial matter in the cycle of disaster management 	

<p>Solution Provider # 3</p> <p>elasticMap</p>	<p>Solution(s) Presented</p> <p>elasticMap</p>
<p>Topic: Information Management</p>	<p>CCCs Addressed: Use technology to assess risks and minimize responders' engagement</p>
<p>Description of the presented solutions</p> <p>A decision support system based on Web-based GIS technologies. The software has the ability to coordinate multiple entities, cross your knowledge and help you take a decision during a crisis event. Through a user-friendly environment and a simplified interface data from various sources (open source or closed ones) are visualized in map format. Multi-criteria analysis is available for decision support and management. Interoperability of data and formats is available.</p>	
<p>Ideas, Future developments</p>	



Solution Provider # 4 PODIUM project	Solution(s) Presented Podium tools
Topic: Information management	CCCs Addressed: define common information management processes between agencies
Description of the presented solutions	
Ideas, Future developments	

Solution Provider # 5 HEIMDALL Project <i>HEIMDALL aims at improving preparedness of societies to cope with complex crisis situations by providing a flexible platform for multi-hazard emergency planning and management, which makes use of innovative technologies for the definition of multi-disciplinary scenarios and response plans, providing integrated assets to support emergency management, such as monitoring, modelling, situation and risk assessment, decision support and communication tools. HEIMDALL fosters data and information sharing among the relevant stakeholders, maximises the accuracy of valuable information and improves population awareness.</i>	Solution(s) Presented HEIMDALL platform
Thematic: Information management	CCCs Addressed: Focus on capacity building towards more resilient societies
Description of the presented solutions Heimdall is a Multi-Hazard Cooperative Management Tool which is built to provide management solutions for specific hazard situations; namely, landslides, floods and forest fires. It is a platform for data exchange, response planning and scenario building incorporating. It incorporates: - Standardised Risk Database (EU level and specifications) - Cooperation tools for sharing information with scenarios - Pattern similarity analyses between reality and risk database. Matches (any scenario, information may have a tag). Based on this tag, the best possible match can be found, between reality and risk database It accumulates simulation tools for numerous scenarios and events. The project ends on October 2020, and at that time the tool will be fully functional.	



Ideas, Future developments

- ✓ **HEIMDALL database could host various information such as: Lessons Learnt, Conditions, Data, Casualties, for several areas etc**
- ✓ **Interoperability with other platforms**

Solution Provider # 6 SATWAYS Ltd	Solution(s) Presented ENGANGE IMS/CAD, CIRP tool, tools of INPREP project
Thematic: Information Management	CCCs Addressed: Use technology to assess risks and minimize responders' engagement / Cultural changes in risk tolerance and resilience / Negotiate solutions with stakeholders for anticipated scenari
Description of the presented solutions <p>ENGAGE is a fully operational command and control system for the Hellenic Fire Brigade (National Scale). ENGAGE has been installed in Headquarters, all vehicles, aerial means, etc, thus it is available in Desktop, Mobile and Tablet (commander) apps (applications).</p> <p>ENGAGE can accommodate, equipment, application assess sites, resources, operational applications (data). It makes no use of the internet outbound or inbound for security purposes. Mobile devices are equipped with VPN sim cards. In order for the services to always have mobile signal, telecommunications are provided through Roaming.</p> <p>INPREP: InterAgency Collaboration Environment (maps, systems, symbols, and tactical picture)</p> <p>Emergency Message content Router (EMCR)</p> <p>CIRP tool: Decision support for Risks relating to climate change for specific infrastructure for specific events scenarios for response planning.</p>	
Ideas, Future developments <ul style="list-style-type: none">✓ Situational Awareness Systems✓ Collaborative response✓ Decision support tools for all phases of crisis management with connection to IMS/CAD systems✓ Interoperability and standards All systems must be interoperable	



<p>Solution Provider # 7</p> <p>Fire Safe EU project</p> <p><i>Fire Safe Europe is the European association for fire safety in buildings. It is a non-profit organisation whose mission is to improve fire safety in buildings for people and society. Fire Safe Europe (FSEU) works with experts, policy and decision makers to ensure that people and communities across Europe are safe from fire in every building they spend time in. Today, FSEU members are fire experts, researchers, firefighters, European associations, and international companies manufacturing and supplying cables, concrete, ceilings, fire protection equipment, flame retardants, insulation, sealants and more. Together we are working to make Europe fire safe.</i></p>	<p>Solution(s) Presented</p> <p>The Fire Exchange Platform</p>
<p>Thematic: Public Awareness</p>	<p>CCCs Addressed: Cultural changes in risk tolerance and resilience/ Plan interoperability and enhance synergies</p>
<p>Description of the presented solutions</p> <p>The Fire Exchange Platform (FIEP) was created by the European Commission DG Grow in 2017 thanks to the work of the European Parliament which debated fire safety in buildings at a plenary session in September 2017, and thanks to Fire Safe Europe' #EuCanBeFireSafe campaign.</p> <p>The FIEP's objectives are to stimulate the cooperation among Member States as well as to allow the exchange of best practices and lessons learnt between Member States and relevant stakeholders in the field of fire safety.</p>	
<p>Ideas, Future developments</p> <ul style="list-style-type: none"> ✓ Smoke toxicity should be included in the harmonised testing and standards, as more than half of fatalities in fires are caused by smoke. ✓ Moreover, synergies must be found with other pieces of European legislation having an impact on fire safety. 	



<p>Solution Provider # 8</p> <p>Smart-Resilience</p> <p><i>SmartResilience aims to provide an innovative “holistic” methodology for assessing resilience that is based on resilience indicators. SmartResilience specific objectives are: a. to identify existing indicators suitable for assessing resilience of SCIs b. to identify new “smart” resilience indicators (RIs) – including those from Big Data c.to develop advanced resilience assessment methodology and tools</i></p> <p><i>to test and validate the methodology/tools in 8 case studies, integrated under one virtual, smart-city-like, European case study dealing with energy, transportation, health, water infrastructures in smart cities, tackling also cascading effects.</i></p>	<p>Solution(s) Presented</p> <p>Smart-Resilience platform</p>
<p>Topic: Public Awareness</p>	<p>CCCs Addressed: Cultural changes in risk tolerance and resilience/ Plan interoperability and enhance synergies</p>
<p>Description of the presented solutions</p> <p>The project’s holistic approach considers an integrated view on resilience assessment, addressing a broad variety of issues including human factors, security, geo-politics, sociology, economy etc., and increased vulnerability due to changing threats. This holistic approach:</p> <ul style="list-style-type: none"> • Is focused and driven by the case studies tackling a variety of critical infrastructures • Implements integrative resilience assessment before an event/crisis and after as well as all three resilience types: Structural, Integrative, Transformative/ Adaptive • Considers “Smart Resilience indicators” built upon: <ul style="list-style-type: none"> • indicators accepted in the related areas, e.g. proposed by OECD, GRI, API and other organisations • New indicators proposed by experts in the project • New indicators delivered out of Big and Open Data • Combines all the above in a new, coherent Smart Resilience methodology and tools to be facilitate the resilience of infrastructures (to identify and define the indicators and determine their values). • The indicators characterizing the threats and the smart critical infrastructures (SCIs), respectively, are brought up together within the scenario. The indicators can be supervised or unsupervised, lagging or leading, basic (level 1) or more sophisticated (levels 2, 3...), can include conventional sources or Big Data, etc. 	
<p>Ideas, Future developments</p> <ul style="list-style-type: none"> ✓ There is a common viewpoint that resilience-based insurance solutions can serve as a meaningful add-on to pure risk-based methods (defined as probability x consequences), and SmartResilience can make a useful contribution. ✓ Potential applications for insurance companies include to develop new insurance products, based on a better understanding of CI resilience ✓ Methodological standardization to assess and manage resilience needs. 	



- ✓ **The definition and measure of loss also need to be standardised. Loss defined in the context of potential resilience-based insurance and measured after an event should be expected to coincide with loss defined in a traditional risk-based insurance**

<p>Solution Provider # 9</p> <p>Fire Safety Engineering Group (FSEG) - University of Greenwich</p> <p><i>FSEG is probably the largest, University based, fire safety engineering research group in Europe. FSEG research work includes the mathematical modelling and experimental analysis of: Pedestrian and Evacuation dynamics in complex spaces, combustion and fire/smoke spread, in enclosed compartments (e.g. buildings, trains, aircrafts...)</i></p>	<p>Solution(s) Presented</p> <p>urbanEXODUS, webEXODUS</p>
<p>Thematic: Community self-protection</p>	<p>CCCs Addressed: Anticipate vulnerability and communicate to the public</p>
<p>Description of the presented solutions</p> <p>FSEG presented “Urban EXODUS”, the new brick of the EXODUS software under development. This software can simulate evacuation of a crowded place, a city, an area, following a disaster.</p> <p>EXODUS is a microsimulation Agent Based Model (ABM):</p> <ul style="list-style-type: none"> • Capable of simulating the evacuation process of thousands of people (agents) from large complex spaces predicting the likely evacuation performance. • Agents are modelled individually each having distinct attributes, characteristics and abilities • Uses a set of rules or heuristics to simulate human behaviour • Some rules are stochastic (e.g. determining outcome of conflict resolution) • Incorporates adaptive behaviour such as: smoke avoidance, exit selection, congestion avoidance, itineraries, signage interaction, communication with other agents, use of lifts, escalators, travelators, etc. • Data that governs agent movement and behaviour comes from literature, experiments or studies of real events or incidents • Can utilize a hybrid approach to represent the discretisation of space • Can utilize a hybrid approach in population representation <p>EXODUS considers human factors and behaviours, as well as the environment when attempting to simulate the evacuation process. Two variants of EXODUS used for large scale evacuation simulations.</p> <ul style="list-style-type: none"> ○ urbanEXODUS → Evacuation simulation model Engine tailored to urban environments (large-scale evacuation) 	



- webEXODUS → web GUI that uses urbanEXODUS. webEXODUS is integrated with COP, training tools, etc

Intended applications include evacuations due to natural or man-made disasters including: Wildfires, Floods, Tsunamis, Earthquakes, Chemical spills, etc.

Ideas, Future developments

- ✓ **Coupling urbanEXODUS with wildfire and flood water models**
- ✓ **Incorporate digital elevation map data**
- ✓ **Incorporate travel speeds for steep inclines and various surface types (grass, gravel, etc)**
- ✓ **The evacuation simulation tools can be used to predict the likely evacuation behaviour of large crowds from large complex spaces. The users can examine multiple what-if scenarios and can assess changing conditions e.g. impact of arriving hazard (fire, chemical spill, flood), closed road, collapsed bridge etc. Without the use of simulation tools, it is extremely difficult, if not impossible, to obtain performance-related data such as evacuation times, assembly times, utilisation of escape paths, attained congestion levels, injury and fatality levels, etc. It is also difficult, if not impossible, to test and assess the effectiveness of evacuation procedures.**

<p>Solution Provider # 10</p> <p>STME <i>STME is a “small and medium” company located in France. STME is associated with research institutes (CEREN Valabre and Aix Marseille University) in a project to size the protection system to develop face to the radiative flux developed by fires. It has already installed systems to protect highways infrastructures in France.</i></p>	<p>Solution(s) Presented</p> <p>STME outdoor sprinkler</p>
<p>Topic: community self-protection</p>	<p>CCCs Addressed: Develop Public Self-Protection To Minimize Responder’s Exposure</p>
<p>STME outdoor sprinkler is a robust system of water or retardant sprinkler to protect buildings and infrastructures against wildfires.</p>	
<p>Ideas, Future developments</p> <ul style="list-style-type: none"> ✓ The water pressure, water flow and water source autonomy are key issues that need to be addressed properly ✓ The system can be suitable for critical infrastructures ✓ Before installing the system, a risk analysis by experts is required ✓ Normalization should be the next step 	



Summary of Ideas and Aspects resulting from the 2nd Annual Dissemination Event

Based on the above analysis of the presented solutions and activity of solution providers, as well as the insights and raised issues that have been discussed during the Dissemination event, the following Ideas and aspects were extracted and are summarized below:

- ✓ **Adaptation of common European symbology for civil protection.** NATO symbology could be a primary solution to this issue, although new common symbols and standards adopted by all member countries for civil protection purposes.
- ✓ **Existing and future softwares, platforms and decision support tools should be governed by interoperability.** Many types of data, various formats and software exists. Information should be shared in an easy way between various operators and systems.
- ✓ **Public procurement procedures can raise and necessitate the issue of interoperability.** Procurement should ask for interoperable systems.
- ✓ **Communication issues.** It is a fact that information is known to some responders but not to others that could avoid an imminent threat. Support tools and interoperability could help to minimize such effects.
- ✓ **Communicating Risk.** Communication with people in emergency situations is critical in terms of life and health issues. How do we communicate with them? At least for mass alerting for imminent threats, natural hazards or anthropogenic hazards only civil protection agencies or local municipalities have the right to take the decision and “press the red button”, e.g. to order immediate evacuation.
- ✓ **The existence of various decision support software, tools and platforms may complicate significantly operational decisions.** Analytical models provide results that cannot be used by first responders, civil protection officers or operators, demanding the aid of experts and scientists. A general overview of the current situation during a crisis is usually easier to manage than an analytical model.
- ✓ **Regulatory issues.** Liability issues raise due to the use of support tools. The situation usually is a conflict between the “screen” and the “expert”, the “system” and the “person”. Who can take the right decision? Three cases usually arise: a) the system is correct, b) the person is correct and c) the truth lies somewhere in between. The latter in many cases is the right decision! On the other hand, support tools usually provide important information concerning the forecast/simulation of a crisis. What if a decision is based on a system and the outcome is wrong (e.g. many people dead)? Regulation and law must be amended and updated in order to support people in the decision-making process. In this way, operators will trust and use more current and future systems.



5. Appendix



5.1. List and short description of the solution providers responded to KEMEA invitation

Organization Name	Country	Website	Short description of the Organization
Draeger Hellas	Greece	https://www.draeger.com/en_seeur/Home/Locations/Greece	Dräger manufactures medical and safety technology products. In so doing, the company protects, supports, and saves people's lives around the world in hospitals, with fire departments, emergency services, authorities, and in mining as well as industry. Dräger has grown into a worldwide, listed enterprise in its fifth generation as a family-run business. Dräger has more than 14,000 employees worldwide and is present in over 190 countries around the globe.
SCOTT	Greece	http://www.stop.gr	STOP is active in the field of personal protective equipment since 1978. Its basic commitment is to provide products and services to all workers offering Quality & Safety
Interspiro	Greece	http://etcetera.gr/safety/gr.php	Etcetera safety A.E. has a constant cooperation and supplies with various products the industry, the shipping companies, the Hellenic Army, the Hellenic Navy, the Hellenic Air Force, the Hellenic Police, the Fire Brigade, the special rescue units, and construction companies
Cristanini	Italy	http://www.cristanini.it/eng/products/fire-fighting-systems	The Cristanini SpA was founded in 1972 and has a long worldwide experience in the field of high pressure technology - with a strong presence around the world - and offers a full range of civil protection equipment, industrial and military. The Cristanini unmatched experience and know-how are the result of years of research, applied engineering, the production of accessories and equipment in order to offer innovative solutions in the field of CBRN decontamination.
Inforest	Greece	www.inforestgr.com	Information Technology for Earth & Life Sciences
Paralos	Greece	http://paralos-tech.gr/en/	Paralos S.A. is dedicated to providing engineering design, procurement, supplies, construction, installation, commissioning and maintenance services for the Industry, Energy and Marine sectors, on a turnkey basis. Paralos' proven track record since 2004, its technological and technical knowhow and field expertise in all required disciplines such as mechanical, electrical, chemical, civil, industrial processes and automation, combined with effective project management, ensure the successful implementation of any project at hand, including projects that require the highest degree of engineering specialisation. Paralos continuously invests in researching, engineering and developing of new products, services and solutions, in the fields of its activities.
SATWAYS Ltd	Greece	http://www.satways.net/	Satways Ltd. is a privately held organization founded in May 2006 and is based in Athens, Greece. The company is dedicated to develop integrated Geospatial command and control solutions for Security and Public Safety applications for



			<p>police, coast guard, emergency medical service, civil protection and fire & rescue operations, critical public infrastructure protection, transportation security and border monitoring. With core technology built on open standards, we offer an unmatched range of mission critical enterprise solutions empowering governments and businesses around the world to make better and faster operational decisions.</p> <p>The product line includes C2 and C3I enterprise software packages that respond to different operational requirements of Public Safety Agencies such as Distributed Geospatial Data management, Operational Resources Tracking, Incident Management and dispatch, Physical Security Information Management and Natural & Technological Hazards Crisis Management respectively. The common goal though, is to provide effective decision support, to simplify operations, to provide a Common Operational Picture (COP) and collaboration tools across organizations, to collect and disseminate data in the field and to coordinate response units and system users. Satways is ISO 9001:2008 certified for the development of geospatial command and control products and solutions.</p>
COSMOTE	Greece	https://www.cosmote.gr/cs/otegroup/gr/ote_ae.html	<p>COSMOTE is the leading mobile telecommunications company in Greece and together with its subsidiaries in Albania and Romania, offers mobile services to more than 15 million customers.</p> <p>To consolidate technological superiority - one of its strategic pillars- the OTE Group systematically promotes research and innovation (R&I) which generates multiple benefits for society, customers and the OTE Group as a whole, while also positively impacting on its business sustainability (future products and services, technologies and telecom networks, cost and energy efficiency, new business opportunities, competitiveness, etc.).</p>
UNISYSTEMS	Greece	http://www.unisystems.com/	<p>Founded in 1964, Uni Systems is focused in the systems integration marketplace and has developed a dynamic and comprehensive solutions portfolio based on its focused business strategy, in-depth business and technological know-how and its highly skilled and experienced workforce. By capitalizing on its experience and technical expertise and with highly specialized personnel and subsidiaries in Belgium, Luxembourg and Romania, Uni Systems prides itself in its exceptional reliability and success record, while continues substantial investment in its international perspective.</p> <p>UniSystems' workforce implements some of the largest and most complex ICT projects in the market, offering IT services to large enterprises in the Public, Financial, Telecommunications and Private sector.</p>
GEOSYSTEMS-HELLAS	Greece	http://www.geosystems-hellas.gr/	<p>GEOSYSTEMS HELLAS S.A. [GSH] was established in Athens in November 2009 as the newest member of GEOSYSTEMS EU GROUP Member (www.geosystems-group.eu) acting commercially as an authorized reseller for Hexagon Geospatial and Hexagon Airborne solutions, and as a consultant in Greece and Cyprus. [GSH] is working on commercial Environmental, Photogrammetrical, Remote Sensing projects and R&D projects for land management, crisis management and Spatial Data Infrastructure (INSPIRE Directive) implementations. [GSH] is a pioneer in introducing Information Technology using extensively modern, digital geodata capturing and data processing techniques for production of</p>



			maps and geographic information systems. [GSH] is deeply involved in Big Data and Data Fusion and Data Analytics techniques for National projects and establishment of infrastructure for spatial information (Metadata, Data Specifications, Data and Service Sharing and Monitoring and Reporting).[GSH] holds extensive expertise in regards to operational requirements/scenarios definition in fields of data exchange/sharing in an interoperability manner.
GET Map	Greece	https://www.getmap.eu/	GEOSPATIAL ENABLING TECHNOLOGIES (GET) was founded in 2006 with headquarters in Athens and in Thessaloniki, active in Greece and abroad. Get Map has a number of solutions in the domains of GeoInformatics, Open Data, Business Intelligence, Environment and Earth Observation. The team consists of professionals with high level of technical knowledge and experience in management and development of spatial information, in open standards, open and free software, open data and the environment.
FLIR (The World's Sixth Sense)	USA	www.flir.com	FLIR Systems, Inc. designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. The company brings innovative sensing solutions into daily life through our thermal imaging, visible-light imaging, video analytics, measurement and diagnostic, and advanced threat detection systems. FLIR offers a diversified portfolio that serves a number of applications in government & defense, industrial, and commercial markets. The products help first responders and military personnel protect and save lives, promote efficiency within the trades, and innovate consumer-facing technologies. FLIR strives to strengthen public safety and well-being, increase energy and time efficiency, and contribute to healthy and intelligent communities.
3M/SCOTTSAFETY	USA	https://www.3mscott.com/	3M Scott is a premier manufacturer of innovative respiratory and personal protective equipment and safety devices for firefighters, industrial workers, police squads, militaries, homeland security forces, and rescue teams around the world. With five global manufacturing locations, Scott products protect thousands of individuals each day from environmental hazards including smoke, toxic fumes, combustible gases, falling objects, and contaminants. The 3M Scott product line includes self-contained breathing apparatus (SCBA), supplied air and air-purifying respirators, PPE, gas and flame detection instruments, thermal imaging cameras, and firefighter communications and accountability devices.
DJI	China	https://www.dji.com/gr	Headquartered in Shenzhen, widely considered China's Silicon Valley, DJI benefits from direct access to the suppliers, raw materials, and young, creative talent pool necessary for sustained success. The companies offices can be found in the United States, Germany, the Netherlands, Japan, South Korea, Beijing, Shanghai, and Hong Kong. Established to produce DJI's innovative products safely and responsibly, our wholly owned subsidiary Shenzhen Dajiang Baiwang Technology Co., Ltd. is a high-tech manufacturing facility specializing in unmanned aerial vehicles. In 2016, Dajiang Baiwang passed the ISO 9001:2015 Quality Management System Certification and in 2017 passed the SGS ISO 14001:2015 Environmental Management System Certification.
ECA GROUP	France	https://www.ecagroup.com/	The ECA Group is renowned for its expertise in robotics, automated systems, simulation and industrial processes.



			Ever since 1936 it has been developing complete innovative technological solutions to perform complex missions in hostile or restrictive environments. Its products are used by a demanding international clientele requiring the highest levels of safety and efficiency, mainly in the sectors of defence, maritime, aerospace, simulation, energy and industrial equipment.
CARMENTA	Sweden	https://www.carmenta.com/en	Carmenta has been supplying world-class software for mission-critical systems for more than 30 years – systems in which superior situational awareness is the key to success. We provide high performance software products, develop client-specific solutions and offer a wide range of services that help some of the world's most technologically-advanced customers optimise their operations using real-time geospatial information. Whether you run an emergency response centre, plan and lead military operations or manage a traffic control centre – Carmenta is your trusted global partner.
HEXAGON SAFETY & INFRASTRUCTURE	USA	https://www.hexagonsafetyinfrastructure.com/	Hexagon Safety & Infrastructure provides mission-critical and business-critical software solutions to governments and service providers. Core values: We are profit driven. We are engaged. We are professional. We are customer-focused. We are innovative. We are entrepreneurial.
GEM	Italy	https://www.globalquakemodel.org/	The GEM Foundation is a non-profit, public-private partnership that drives a global collaborative effort to develop scientific and high-quality resources for transparent assessment of earthquake risk and to facilitate their application for risk management around the globe. Assisted by an initiative of the OECD's Global Science Forum, GEM was formed in 2009 as a non-profit foundation in Pavia, Italy, funded through a public-private sponsorship with the vision to create a world that is resilient to earthquakes. GEM's mission is to become one of the world's most complete sources of risk resources and a globally accepted standard for seismic risk assessment; and to ensure that its products are applied in earthquake risk management worldwide.
EUCENTRE	Italy	https://www.eucentre.it/	Eucentre is a private non-profit foundation that pursues a mission of research, training and service provision in the field of earthquake engineering and, more generally, of risk engineering. Founded in 2005 as an evolution of the European Centre for Training and Research in Earthquake Engineering already active in Pavia since 2003, it was established by four Founders, the University of Pavia, the University School for Advanced Studies IUSS of Pavia, the Italian Department of Civil Protection, the National Institute of Geophysics and Volcanology, to further develop the scientific, research and training expertise in the sector present in Pavia.
NOA-GI	Greece	www.gein.noa.gr/en	G.I. is one of the oldest Institutes in Greece operating continuously since 1893. In 1897 the first seismograph was installed in Athens and in 1899 the first seismic network started to operate. Since then, systematic and detailed seismic observations started for the region extending from 34° to 42° N and 19° to 30° E. The location of the Head Office of I.G is on the hill of Nymphs, opposite to Acropolis, at the center of Athens. It is the main center in Greece, for the continuous monitor of the seismicity of the country and reporting to national and international authorities. Moreover Institute's aim is the study and research



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			<p>in the fields of: seismology, physics of the earth's interior, geophysics, plate tectonics, volcanology and geothermy, neotectonics, tsunamis, seismotectonics. and Strong Motion and Engineering Seismology. Main tasks of G.I. are collection and processing of various seismological - geophysical parameters, the elaboration of research projects and relevant studies, the training and services provided to third bodies. The contribution of I.G to the Higher Education is also strong. A lot of undergraduate, postgraduate and PhD theses have been carried out at the Institute. I.G collaborates with Universities and Research Centres in Greece and abroad in order to carry out scientific research on various seismological and geophysical themes. The I.G operates around the clock, 365 days a year. The I.G has also a crucial mission, which is to inform the Government, the General Secretariat of Civil Protection, the Earthquake Planning and Protection Organization (E.P.P.O) and the Public about the seismic activity of Greece.</p>
what3words	UK	https://what3words.com/	<p>what3words provides a precise and incredibly simple way to talk about location. We have divided the world into a grid of 3m x 3m squares and assigned each one a unique 3 word address.</p> <p>Better addressing can enhance customer experience, deliver business efficiency, drive growth and support social and economic development.</p>
Ticinumaerospace	Italy	http://www.ticinumaerospace.com/	<p>Ticinum Aerospace is a spin-off company of the University of Pavia, and as such can rely on a strong backup from the underlying experience earned along almost two decades of scientific and technical activity of the Remote Sensing Group, within which the spin-off was founded in early 2014. Notwithstanding the young age of the company, its team took part in several projects worldwide, always proposing high-level, high-quality products.</p> <p>The mission of the company is to provide reliable, customer-oriented solutions taking advantage of machine learning techniques and heterogeneous remote sensing datasets, with the final aim of cutting the costs of uncertainties.</p> <p>Big Data is nowadays the de facto situation when we enter the Remote Sensing world. Tons of data are collected from many different sources, each one featuring its specific and unique capabilities, (usually) making each of them well-suited for some specific applications. However, a specific problem can be analyzed from different standpoints in terms of 'data', and thus several insights can be combined together thus increasing the accuracy of the generated information. Ticinum Aerospace possesses the required knowledge and ability to smartly fuse different dataset in order to retrieve the most reliable solution for a specific problem</p>
KEMEA - VASCO coordinator	Greece	www.kemea.gr	<p>The Center for Security Studies (KEMEA) has been established by the Law 3387/2005 as the Hellenic Ministry's of Citizen Protection (former Public Order and Citizen Protection) think tank on security policies.</p> <p>KEMEA is supervised by the Minister of Citizen Protection (former Public Order and Citizen Protection) and it is a scientific, consulting and research agency, whose purpose is to conduct theoretical and applied research and to perform studies, particularly at the strategic level, on security policies. In 2011, KEMEA was appointed by Presidential Decree No39 (06.05.2011), as the "National Contact Point" for the protection of European Critical infrastructures (ECIs) -</p>



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			<p>“ECIP contact point” – following the implementation of the 2008/114/EC Directive of the European Council of December 8th 2008 “regarding the definition and designation of the European Critical infrastructures and the assessment of the need to improve the protection of such infrastructures”.</p> <p>KEMEA is authorized to provide professional certification through examinations (in cooperation with the National Organization for the Certification of Qualifications and Vocational Guidance-EOPPEP no 3200/09-02/2012) to Private Security personnel.</p> <p>KEMEA represented the Hellenic Government to the European Research and Innovation Forum (ESRIF) of the European Commission (EC) and is a Member to the Board of Directors of the European Organization for Security (EOS). KEMEA is also successfully participating in many funded Projects by the EC and the European Space Agency (ESA)</p>
ADITESS	Cyprus	https://aditess.com/main/	<p>ADITESS is strategically bridging the fields of academia industry and the government, providing benefits in the form of research and emerging products. Enabled by sustainable collaborations and partnerships with a number of universities, non-profit research centers and laboratories as well as companies in the private sector.</p> <p>ADITESS LTD is a scientific, consulting and research company, whose purpose is to conduct theoretical and applied research and to produce studies, in strategic and tactical levels. It covers issues concerning security policies, transportation security and border management, critical infrastructure protection, aftermath on crisis events, emergency management situations, state-of-the-art modeling solutions and monitoring equipment for border security and to develop state of the art applied Security Solutions in the above mentioned areas.</p>
DIGINEXT	France	www.diginext.fr	<p>Created in July 1996 and a subsidiary of the CS Communication & Systèmes Group since 2005, DIGINEXT is a human scale company, recognised internationally for its ability to innovate, its excellence and responsiveness, as well as for the quality, reliability and performance of the systems and solutions that it offers.</p> <p>Working in a dual role in both the Civilian and Military sectors, DIGINEXT adopts a development strategy combining specialist and technical expertise to address the following niche markets:</p> <ul style="list-style-type: none"> ✓ Tactical Data Links ✓ Simulation, Modelling and Virtual, Augmente, Mixed Reality ✓ Security maintenance and crisis management ✓ Multimode passenger information systems ✓ Navy navigation systems ✓ Long-range HF radar for maritime surveillance ✓ Training of armed forces ✓ Training and support for maintenance operations <p>DIGINEXT products and services build on proven innovation thanks to a proactive and dynamic self-financing R&D policy, also supported by funded research projects. The technical know-how of DIGINEXT also gives rise to expertise in project management and system integration, definition and ergonomics for user interfaces (UX process). Mapping capabilities, definition</p>



			studies for specific electronic and mechanical systems, high-performance architecture, simulation and augmented or virtual reality are all integrated.
ENEA	Italy	http://www.enea.it/it	<p>"ENEA is the National Agency for New Technologies, Energy and Sustainable Economic Development, a public body aimed at research, technological innovation and the provision of advanced services to enterprises, public administration and citizens in the sectors of energy, the environment and sustainable economic development (article 4, Law no. 22 of 28 December 2015)".</p> <p>ENEA has highly qualified personnel, advanced laboratories, experimental facilities and excellent instruments for the realisation of projects, studies, tests, assessments, analyses and training services, with particular reference to product and process innovation and the valorisation of results to contribute to the development and competitiveness of the national economic system.</p> <p>Since its foundation in the 1960s, its strengths have been applied research, technology transfer and technical-scientific support to companies, associations, territories, central and local administrations: for this reason - unlike other research institutions - the Agency depends on the Ministry of Economic Development.</p>
Ylichron srl	Italy	http://www.enea.it/it	<p>"ENEA is the National Agency for New Technologies, Energy and Sustainable Economic Development, a public body aimed at research, technological innovation and the provision of advanced services to enterprises, public administration and citizens in the sectors of energy, the environment and sustainable economic development (article 4, Law no. 22 of 28 December 2015)".</p> <p>ENEA has highly qualified personnel, advanced laboratories, experimental facilities and excellent instruments for the realisation of projects, studies, tests, assessments, analyses and training services, with particular reference to product and process innovation and the valorisation of results to contribute to the development and competitiveness of the national economic system.</p> <p>Since its foundation in the 1960s, its strengths have been applied research, technology transfer and technical-scientific support to companies, associations, territories, central and local administrations: for this reason - unlike other research institutions - the Agency depends on the Ministry of Economic Development.</p>
JRC -eNatech	Italy	http://enatech.jrc.ec.europa.eu/	Technological accidents triggered by a natural hazard or disaster which result in consequences involving hazardous substances (e.g. fire, explosion, toxic release) are commonly referred to as Natech accidents. The aim of this database is to systematically collect information on Natech accidents that occurred worldwide and allow the searching and analysis of Natech accident reports for lessons-learning purposes.
JRC/DRMKC- Risk Data Hub	Italy	https://drmkc.jrc.ec.europa.eu/partnership/Scientific-Partnerships/Risk-Data-Hub	The DRMKC Risk Data Hub is a Web GIS platform for exchanging and sharing geospatial data. It provides tools and methodologies for data collection, dissemination and visualization. The main objective of DRMKC Risk Data Hub is to improve the access and share of EU-wide curated risk data for fostering Disaster Risk Management (DRM). As a knowledge hub, the Risk Data Hub is



			projected to be the point of reference for curated EU-wide risk data, through hosting relevant datasets and creating a network for knowledge transfer.
JRC	Italy	https://drmkc.jrc.ec.europa.eu/partnership/Scientific-Partnerships/Risk-Data-Hub	The DRMKC Risk Data Hub is a Web GIS platform for exchanging and sharing geospatial data. It provides tools and methodologies for data collection, dissemination and visualization. The main objective of DRMKC Risk Data Hub is to improve the access and share of EU-wide curated risk data for fostering Disaster Risk Management (DRM). As a knowledge hub, the Risk Data Hub is projected to be the point of reference for curated EU-wide risk data, through hosting relevant datasets and creating a network for knowledge transfer.
Signalerix	Cyprus	http://www.signalgenerix.com/en3/	SignalGeneriX has grown out of several decades of industrial experience and consulting mainly in the UK. It was formed in Cyprus with a vision to become a leader in delivering state-of-the-art Digital Signal Processing (DSP) and Communications solutions. The company is deeply involved in Research and Development and has amassed a broad portfolio of intellectual property rights covering Smart Sensors, Medical Systems, Defense Systems and Communications.
FORTH (ITE)	Greece	https://www.ics.forth.gr/	The Institute of Computer Science (ICS) is one the six institutes of the Foundation for Research and Technology - Hellas (FORTH), a major national research centre partly funded by the General Secretariat for Research and Technology of the Hellenic Ministry of Education and Religious Affairs. The mission of FORTH-ICS is to perform high quality basic and applied research, to promote education and training, and to contribute to the development of the Information Society, at a regional, national, and European level. Since its establishment in 1983, FORTH-ICS has had a long history and recognized tradition in conducting basic and applied research, and playing a leading role, in Greece and internationally, in the field of Information and Communication Technologies.
IAFSS (International Association for Fire Safety Science)	Sweden	https://iafss.org/	IAFSS was founded with the primary objective of encouraging research into the science of preventing and mitigating the adverse effects of fires and of providing a forum for presenting the results of such research. The International Association for Fire Safety Science perceives its role to lie in the scientific bases for achieving progress in unsolved fire problems. It will seek cooperation with other organizations, be they concerned with application or with the sciences that are fundamental to our interests in fire. It will seek to promote high standards, to encourage and stimulate scientists to address fire problems, to provide the necessary scientific foundations and means to facilitate applications aimed at reducing life and property loss. Since its inaugural meeting, the IAFSS has grown to more than four hundred members. Current members come from Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Germany, Finland, France, Holland, Hong Kong, India, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Russia, Spain, Sweden, Switzerland, Taiwan, United Kingdom and United States of America.
Firefighter Mayday Project (FMP)	Belgium	https://www.brandweermaninlood.be/ , www.firefightermaydayprogram.com	The Firefighter Mayday project has the mission to improve the safety of every firefighter during an intervention. The Firefighter Mayday projects aims at developing and organizing courses that are adaptable and within reach of every



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			firefighter. The Firefighter Mayday project wants to help the Fire Departments in finding an answer on the question "What is the most adequate reaction as a team when a colleague is in trouble?" Where that we understand "problem" in all its possible meanings.
Brandforsk, the Swedish Fire Research Foundation	Sweden	www.brandforsk.se	Everything you see around you needs security and protection. Knowledge is the key to a safer society. Research and experience have made it possible to understand and anticipate risks. Through our activities, campaigns and focus issues, we influence society to take greater responsibility for fire safety. In this way we save lives and property together.
Brandskyddsföreningen (Swedish Fire Protection Association)	Sweden	www.brandskyddsforeningen.se	Everything you see around you needs security and protection. Knowledge is the key to a safer society. Research and experience have made it possible to understand and anticipate risks. Through our activities, campaigns and focus issues, we influence society to take greater responsibility for fire safety. In this way we save lives and property together.
CFPA-E (Confederation of Fire Protection Associations Europe)	Denmark	http://cfpa-e.eu/	The Confederation of Fire Protection Associations Europe (CFPA-Europe) is an association of national organisations in Europe concerned primarily with fire prevention & protection and also safety & security and other associated risks. CFPA Europe is the European confederation of national fire protection organisations. CFPA-E's products are International exchange, training, guidelines, education standards, arson prevention and conferences. CFPA-E publishes newsletters and recommendations on European level.
Euralarm	Switzerland	www.euralarm.org	Euralarm was founded in 1970, born of the will of the companies that pioneered modern electronic fire safety and security. European excellence in engineering is deep rooted in the association's history. Euralarm strives for a professional, innovative and transparent market for the members to deliver products, systems and services with a high level of quality, performance and lifetime dependability, for the benefit of society. Key elements of EURALARM's mission, goals and objectives are: Standardisation, Testing, Auditing and Certification, Industry Environment, Education and Qualification, Alliances.
European Association for Passive Fire Protection (EAPFP)	UK	www.eapfp.com	EAPFP was formed in 1988 to act as a "European" voice on behalf of national associations representing manufacturers, contractors and other institutions involved in fire protection to steelwork, timber, and other passive fire protection applications, including penetration seals and ductwork. EAPFP has representation on CEN TC 127, the Technical Committee dealing with the harmonisation of standards for fire safety buildings. Close liaison is maintained with EGOLF the European Organisation for Fire Testing Laboratories. Joint Conferences have been held down the years. The last event was held at Jean Monnet Building Luxembourg entitled "Revising the Construction Products Directive - The impact on construction products with a fire performance" Meetings of the Association are held on a regular basis at venues throughout Europe to update members on technical issues and to develop closer commercial contacts.



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European Fire Safety Alliance	Netherlands	www.europeanfiresafetyalliance.org	The European Fire Safety Alliance is a project to reduce the risk from fire in the home and is delivered by an Alliance of Professionals from within the European Fire Sector. The European Fire Safety Alliance believes the vast majority of fire deaths that occur following an accidental fire in the home are preventable. It is also true that fire discriminates in as much as it affects the most vulnerable people (particularly the elderly) in the most vulnerable areas of society.
European Fire Sprinkler Network	UK	www.eurosprinkler.org	The EFSN is a coalition across the fire safety, political and other relevant communities which encourages the greater use of fire sprinklers to save lives and protect property and the environment. The European Fire Sprinkler Network collects and distributes accurate information about fire losses and fire sprinklers, and connects and supports those who believe that fitting fire sprinklers is essential to help Europe save itself from fire. As a not-for-profit organisation for the public good, the Network welcomes members from many different backgrounds with a common interest in better fire protection.
Fire Safe Europe (FSEU)	Belgium	https://firesafeeurope.eu/	Fire Safe Europe (FSEU) was founded in 2011 with the goal of putting fire safety on the agenda of the European Union (EU). Why? Because although the European Union (EU) has made many important strides to improve the sustainability and energy efficiency of buildings, those strides have sidestepped one of the oldest and most menacing threats of daily life: fire safety. Fire Safe Europe promotes the highest standards for fire safety in buildings in Europe for regulations, policies, test methods and best practices. Its role is to connect policy makers, firefighters, fire experts, NGOs and industries in view of keeping people safe from fire in every building they spend time in.
Flame Retardants Europe	Belgium	www.flameretardants.eu	Flame Retardants Europe (FRE) is an association representing all flame retardants technologies and applications at the European level. Our members are leading organisations that manufacture, market or use flame retardants in Europe. We seek to enhance fire safety and the understanding of flame retardant technologies through promoting expertise and exchange. We support all flame retardant technologies based on bromine, phosphorus, nitrogen and inorganic compounds. FRE addresses common regulatory and scientific challenges related to flame retardants and fire safety.
Groupement Technique Français contre l'Incendie (GTFI)	France	www.gtfi.org	The French Technical Association against Fire, professional syndicate created in 1948, brings together all the actors of the passive protection against the fire in the fields of the construction, the development and the transport. It is open to all stakeholders who manufacture, market and install products and materials that improve rating in response and fire resistance. The purpose of the GTFI is to: <ul style="list-style-type: none"> ☑ To federate the professionals of passive fire protection to valorize their techniques and to prepare the future of the profession, ☑ Defend the collective interests of the professions it groups together and represent them if necessary, ☑ Promote good practices and compliance with regulations, ☑ To inform and inform the members and all the participants in the act of passive fire protection,



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			<ul style="list-style-type: none"> ☑ Contribute to the development of passive fire protection techniques, ☑ Participate with the public authorities in the evolution of fire safety regulations.
Imperial College	UK	http://www.imperial.ac.uk/hazelab	Imperial Haze Lab is the research group of Prof Guillermo Rein at the Department of Mechanical Engineering. We study heat transfer, combustion and fire science. The purpose of our work is to reduce the worldwide burden of accidental fires and protect people, their property, and the environment. In doing so, we aim to solve fire problems and threats to the environment, energy resources and infrastructure. We are especially successful at solving multidisciplinary problems combining experimental and computational methods.
IMT Mines d'Alès	France	http://www.mines-ales.fr/	<p>L'École des Mines d'Alès : A French 'Grande École'</p> <p>Part of the prestigious École des Mines Group of engineering schools (grandes écoles d'ingénieurs), L'Ecole des Mines d'Alès is a graduate Institute of Engineering and Applied Science in Alès, southern France, with additional campuses in Nîmes and Pau.</p> <p>The 'Grandes Écoles' represent the French standard of excellence in academic education for the fields of science, technology, engineering and management. They lead to the postgraduate French degree of 'diplôme d'ingénieur' (equivalent to a master's degree) and attest a high level training, founded on a rare blend of broad-based studies in science, engineering and management.</p> <p>More than 20,000 Grande École graduates per year find jobs in most industrial sectors, but also in new firms, business, services, public administrations, research institutes and consulting companies.</p>
Modern Building Alliance	Belgium	www.modernbuildingalliance.eu	<p>We are an alliance of trade associations and companies representing the plastics industry in the construction sector.</p> <p>Plastics are increasingly used in building and construction applications to make our buildings more sustainable, from window frames and durable pipes to state-of-the-art insulation solutions.</p>
pinfa (Phosphorus Inorganic Nitrogen Flame Retardants Association), a sector group of Cefic	Belgium	www.pinfa.eu	<p>Pinfa is the Phosphorus, Inorganic and Nitrogen Flame Retardants Association and is a Sector Group within Cefic, the European Chemical Industry Council. Pinfa represents the manufacturers and users of non-halogenated phosphorus, inorganic and nitrogen flame retardants (PIN FRs). The members of Pinfa share the common vision of continuously improving the environmental and health profile of their flame retardant products. Therefore, Pinfa members seek to dialogue with the users of PIN FRs in order to identify their needs and technologies they are looking for.</p> <p>Pinfa also co-operates with national & supranational organisations (EU, OECD, United Nations) & other industry associations, consumer organisations & non-governmental organisations and will ensure the development of scientific knowledge related to the whole life cycle of PIN FRs. Pinfa works in close cooperation with its sister association Pinfa North America, the North American Phosphorus, Inorganic and Nitrogen Flame Retardants Association located in USA.</p>



			We are a group of global flame retardant manufacturers and users committed to fire safety and improving the health and environmental profiles of our products.
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This project has received funding from the European Union's Horizon 2020 Coordination and Support Action programme under grant agreement No 740575.

5.2. List and short description of the members of SAFE cluster responded to SAFE invitation

Organization Name	Country	Website	Short description of the Organization
STME	France	http://www.fire-stme.com/actualites-protection-incendie-prevention-feu-de-foret	<p>Considering the multi technicity (project management, electricity, automatism, hydraulic, piping, electro technical) of the study teams and ground teams of STME, for over 15 years STME have chosen to invest in the development of fire fighting systems, previously named and patented SPACI. SMTE innovation consists in improving the SPACI system with the FIRE system.</p> <p>The markets obtained with ESCOTA have allowed to reinforce the knowledge in fire barriers and forest fire fighting. In 4 years SMTE have put in place 10 sites (the SPACI system) and always ensure the preventative and corrective maintenance in order to keep the outside fire protection optimal. The company offers a fixed system against forest fires which has evolved and been patented (FIRE).</p>
Elastic Map	France	http://elasticmap.fr	
COPPERNIC	France	https://www.copernic.fr/	
Entente Valabre	France	www.valabre.com	<p>The preservation and the fight deal with major natural hazards are the strategic priorities of the public institution.</p> <p>Missions share skills, resources and tools in a logic of service with its founding partners in four areas:</p> <ul style="list-style-type: none"> • Information and prevention against forest fires • Training specialties Civil Security • Testing and Research for operational <p>New technologies and geomatics</p>
Aix Marseille Université	France		<p>AMU is an intensive research university, which has forged partnerships all over the world, has affirmed its anchoring and territorial integration and is one of the leading French universities in the Shanghai ranking. AMU has developed a strategy co-constructed at the site level in connection with the main research organizations (CNRS, Inserm, IRD, CEA ..) and structured around its many units and research federations and its five intersectoral and interdisciplinary research clusters (PR21):Energy,Environment classics, Health & Life Sciences, Advanced Science & Technology</p>
SYSTEL S.A.	France	http://www.systel-sa.fr/	<p>SYSTEL is a cutting-edge company focusing on national and regional services related to alert processing, decision support tools, 3D mapping & emergency calls handling</p> <p>SYSTEL range of innovative services, products and software enables Fire & Rescue, emergency medical and civil security services to take actions in optimal conditions and cope with crisis situations.</p> <p>SYSTEL also provides advice, technological surveillance and monitoring of your information system as well as the continuous training of your staff responsible for civil security disaster & emergency services on a daily basis.</p>



5.3. List and short description of the responded solution providers contacted by CNBOP-PIB

Organization Name	Country	Website	Short description of the Organization
UTC Climate, Controls & Security Fire & Security Products	Poland	firesecurityproducts.com	leading provider of innovative electronic security and fire safety solutions that help secure and protect people, assets, communities and infrastructures. UTC Fire & Security Products, offers fire detection systems, intrusion detection, access control, video surveillance and integrated security solutions, fixed firefighting systems
JAFAR	Poland	http://www.jafar-valves.com/	polish leader in the production and sales of iron fittings for potable water, effluent water and gas. Producer of Fire Fighting Fittings
STEKOP SA	Poland	https://stekopsa.pl/en/	Security service and protection systems.
PIAP	Poland	https://piap.pl/en/ https://www.antiterrorism.eu/	Industrial Research Institute for Automation and Measurements- provider of solution for security market. Producer of mobile robots, special vehicles, CBRN and special equipment
BOXMET	Poland	www.boxmet.com.pl	firefighting equipment manufacturer like internal hydrants
Teknosystem Sp. z o.o.	Poland	www.teknoystem.com.pl	manufacture electromechanical systems, harnesses and optic fibers





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5.4. E-form for communication (PDF format)



Application Form to join FIRE-IN providers Network

Fields marked with * are mandatory.

1 GENERAL INFO

* Legal entity (Organization/Company) Name

Legal entity short name

* Legal entity name in English

Category of the legal entity

- Private Company, Emergency and/or Fire & Rescue services provider
- NGO, association, federation of Emergency and/or Fire & Rescue practitioners

Address, City

* Country

* Contact person (First & Last name)

1





Application Form to join FIRE-IN providers Network

Fields marked with * are mandatory.

1 GENERAL INFO

***Legal entity (Organization/Company) Name**

Legal entity short name

***Legal entity name in English**

Category of the legal entity

- Private Company, Emergency and/or Fire & Rescue services provider
- NGO, association, federation of Emergency and/or Fire & Rescue practitioners

Address, City

***Country**



***Contact person (First & Last name)**

***Phone number**

Please add your country code phone number (e.g. +30 xxx)

***E-mail address**

Company's Web/URL

2 DESCRIPTION OF THE ORGANIZATION

Short profile of the organization and its main activity

(max. 10 lines)

Indicate expertise of the organization and areas of interest in Emergency and/or Fire & Rescue

Incident and disasters mitigation: on site response for disaster reduction, containment and shortterm recovery

- Structure Fires
- Wildland Fires
- Natural Disasters
- Transportation Accidents
- CBRN-E
-



Other (Please define)

Please define

People rescue: Search And Rescue (SAR) of victims, Triage, First treatment, Transport to safe areas

- Emergency Medical Services
- Health services in the field hospitals
- S.A.R. activities in specific context (mountain, USAR, sea rescue, etc.)
- Controlled evacuation, evacuee's management
- Decontamination of persons
- Other (Please define)

Please define

Security/ Law enforcement : Security tasks in the context of crisis mitigation

- Maintain public order
- Investigations and forensic
- Traffic management
- Other (Please define)

Please define

Coordination, command and control, situation assessment

- Incidents management and coordination, decision making, planning, intelligence
- Volunteers management
- Public information
- Other (Please define)

Please define

Prevention and preparedness, skills, processes



- Policy making
- Training and exercises
- Prevention
- Doctrine and procedures development
- Preparedness
- Other (Please define)

Please define

Motivation to join FIRE-IN Network

(max. 10 lines)

***Possible way(s) of communication**

- E-mail
- Telephone
- Skype
- Face to face meeting
- E-platform tools (forum, on-line questionnaires, etc)
- Other

Please provide your skype address

Please indicate your contact details

***I hereby declare**

- I accept to be contacted by the FIRE-IN consortium for updates on project's activities
- and results I accept to receive information on security research, technology,



standardization, civil protection and other updates related to FIRE-IN activities and topics of interest I don't wish to be further contacted

***Do you want to add existing solutions of your Organization?**

Y

e

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N

o

***Do you want to add new ideas of your Organization for technological solutions?**

Yes

No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

3 Description of Specific Solution(s) provided by the Organization

*If you have more than one solutions please start here from the first and click **Yes to Add solution** question to add more.*

***Name of the Solution (S1)**

250 character(s) maximum

***Disaster's domain (S1)**

Structure Fires

Wildland Fires

Natural Disasters

Transportation Accidents

CBRN-E

Other (Please define)

Please define

Please indicate what applies best to your technological solution (S1)



More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

Please provide a short description of the solution, its scope, current functionalities, etc. (S1)

~~100~~ *characters* maximum

TRL of the solution (S1)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Web address/ URL of flyers and information, videos, etc. (S1)

Please upload brochures or leaflets, if available

(1/2) (S1). The maximum file size is 1 MB

Please upload brochures or leaflets if available (2/2) (S1).

The maximum file size is 1 MB

Expected/scheduled future developments on the specific solution (S1)



100 ~~character~~ maximum

Generic comments (S1)

100 ~~character~~ maximum

***Add solution ?**

Y

e

s

N

o

***Do you want to add new ideas of your Organization for technological solutions?**

Yes

No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Name of the Solution (S2)**

250 character(s) maximum

***Disaster's domain (S2)**



- Structure Fires
- Wildland Fires
- Natural Disasters
- Transportation Accidents
- CBRN-E
- Other (Please define)

Please define

Please indicate what applies best to your technological solution (S2)

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

Please provide a short description of the solution, its scope, current functionalities, etc. (S2)

~~100~~ *100* ~~characters~~ *maximum*

TRL of the solution (S2)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Web address/ URL of flyers and information, videos, etc. (S2)

Please upload brochures or leaflets, if available

(1/2) (S2). The maximum file size is 1 MB



Please upload brochures or leaflets if available (2/2) (S2).

The maximum file size is 1 MB

Expected/scheduled future developments on the specific solution (S2)

100 ~~character~~ maximum

Generic comments (S2)

100 ~~character~~ maximum

***Add solution ?**

Y

e

s

N

o

***Do you want to add new ideas of your Organization for technological solutions?**

Yes

No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Name of the Solution (S3)**

250 character(s) maximum

***Disaster's domain (S3)**



- Structure Fires
- Wildland Fires
- Natural Disasters
- Transportation Accidents
- CBRN-E
- Other (Please define)

Please define

Please indicate what applies best to your technological solution (S3)

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

Please provide a short description of the solution, its scope, current functionalities, etc. (S3)

~~100~~ ~~characters~~ maximum

TRL of the solution (S3)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Web address/ URL of flyers and information, videos, etc. (S3)



Please upload brochures or leaflets, if available

(1/2) (S3). The maximum file size is 1 MB

Please upload brochures or leaflets if available (2/2) (S3).

The maximum file size is 1 MB

Expected/scheduled future developments on the specific solution (S3)

~~100~~ ~~character~~ maximum

Generic comments (S3)

~~100~~ ~~character~~ maximum

***Add solution ?**

Y

e

s

N

o

***Do you want to add new ideas of your Organization for technological solutions?**

Yes

No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Name of the Solution (S4)**

250 character(s) maximum



***Disaster's domain (S4)**

- Structure Fires
- Wildland Fires
- Natural Disasters
- Transportation Accidents
- CBRN-E
- Other (Please define)

Please define

Please indicate what applies best to your technological solution (S4)

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

Please provide a short description of the solution, its scope, current functionalities, etc. (S4)

100 characters maximum

TRL of the solution (S4)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Web address/ URL of flyers and information, videos, etc. (S4)



Please upload brochures or leaflets, if available

(1/2) (S4). The maximum file size is 1 MB

Please upload brochures or leaflets if available (2/2) (S4).

The maximum file size is 1 MB

Expected/scheduled future developments on the specific solution (S4)

100 characters maximum

Generic comments (S4)

100 characters maximum

***Add solution ?**

Y

e

s

N

o



***Do you want to add new ideas of your Organization for technological solutions?**

- Yes
 No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Name of the Solution (S5)**

250 character(s) maximum

***Disaster's domain (S5)**

- Structure Fires
 Wildland Fires
 Natural Disasters
 Transportation Accidents
 CBRN-E
 Other (Please define)

Please define

Please indicate what applies best to your technological solution (S5)

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
 Technology is used to simulate complex scenarios
 Technological tools to support data sharing
 Technology is used to get a clear picture of the risk evolution

Please provide a short description of the solution, its scope, current functionalities, etc. (S5)

1000 character(s) maximum

TRL of the solution (S5)



- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Web address/ URL of flyers and information, videos, etc. (S5)

Please upload brochures or leaflets, if available

(1/2) (S5). The maximum file size is 1 MB

Please upload brochures or leaflets if available (2/2) (S5).

The maximum file size is 1 MB

Expected/scheduled future developments on the specific solution (S5)

~~100 characters~~ maximum

Generic comments (S5)

~~100 characters~~ maximum

***Do you want to add new ideas of your Organization for technological solutions?**

- Yes
- No



Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

4 Request for ideas

*If you have more than one solutions please start here from the first and click **Yes** to **Add idea** question to add more.*

***Please indicate what applies best to your idea for technological solution (I1)**

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

***Name of the proposed idea (I1)**

150 character(s) maximum

Scope, rationale and context (I1)

~~100~~ ~~character(s)~~ maximum

Please provide background on the solution

Description of the features of the proposed idea (I1)

~~100~~ ~~character(s)~~ maximum

Description of previous work, having been the starting point for the proposed ideas and new developments (I1)

1000 character(s) maximum



Expected impact (I1)

1000 character(s) maximum

Please include reference to specific issues (e.g. regulation, standards, interoperability)

Expected TRL of the proposed ideas (I1)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Description of teams and networks working on the proposed ideas (I1)

~~100~~ ~~character(s)~~ maximum

Opportunities for international cooperation (I1)

~~100~~ ~~character(s)~~ maximum

Industrialization level and time to market (TTM) (I1)



- Ready for commercialization
- 2-3 years
- 3-5 years
- > 5 years

Other Remarks (I1)

*** Add idea ?**

- Yes
- No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Please indicate what applies best to your idea for technological solution (I2)**

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

***Name of the proposed idea (I2)**

150 character(s) maximum

Scope, rationale and context (I2)

~~100~~ *100* character(s) maximum

Please provide background on the solution

Description of the features of the proposed idea (I2)



~~100~~ ~~character(s)~~ maximum

Description of previous work, having been the starting point for the proposed ideas and new developments (I2)

1000 character(s) maximum

Expected impact (I2)

1000 character(s) maximum

Please include reference to specific issues (e.g. regulation, standards, interoperability)

Expected TRL of the proposed ideas (I2)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Description of teams and networks working on the proposed ideas (I2)

~~100~~ ~~character(s)~~ maximum

Opportunities for international cooperation (I2)



100 ~~character~~ maximum

Industrialization level and time to market (TTM) (I2)

- Ready for commercialization
- 2-3 years
- 3-5 years
- > 5 years

Other Remarks (I2)

*** Add idea ?**

- Yes
- No

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.

***Please indicate what applies best to your idea for technological solution (I3)**

More than one options are applicable

- Technology is used to assess risks and minimize responders engagement
- Technology is used to simulate complex scenarios
- Technological tools to support data sharing
- Technology is used to get a clear picture of the risk evolution

***Name of the proposed idea (I3)**

150 character(s) maximum

Scope, rationale and context (I3)



~~100~~ ~~character(s)~~ maximum

Please provide background on the solution

Description of the features of the proposed idea (I3)

~~100~~ ~~character(s)~~ maximum

Description of previous work, having been the starting point for the proposed ideas and new developments (I3)

~~100~~ ~~character(s)~~ maximum

Expected impact (I3)

1000 character(s) maximum

Please include reference to specific issues (e.g. regulation, standards, interoperability)

Expected TRL of the proposed ideas (I3)

- 1-2
- 3-4
- 5-6
- 7-8
- 9-10

Description of teams and networks working on the proposed ideas (I3)



100 ~~characters~~ maximum

Opportunities for international cooperation (I3)

100 ~~characters~~ maximum

Industrialization level and time to market (TTM) (I3)

- Ready for commercialization
- 2-3 years
- 3-5 years
- > 5 years

Other Remarks (I3)

Attention! Please keep the Contribution-ID so as to be able to edit your contribution any time after the submission.



