



Funded by
European Union
Civil Protection

EUROPEAN COMMISSION

Directorate-General for European Civil Protection and Humanitarian Aid Operations
(ECHO) Disaster Preparedness and Prevention Knowledge Network and Evidence-Based
Policy



B.03 – Knowledge Network and Evidence-Based Policy



RESISTANT

Crisis Training Platform

Training and Knowledge Sharing Platform for First Responders and Educational Tools for students' and citizens' awareness and preparedness against Natural and Manmade Disasters and Risks

D3.1 RESISTANT Use case guidelines and User's Handbook

Workpackage: WP3 – RESISTANT Validation and Demonstration

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Status:	Final
Due Date:	30/06/2021
Version:	1.0
Submission Date:	22/06/2021
Dissemination Level:	PU

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RESISTANT Project Profile

Grant Agreement No.: 101017819

Acronym:	RESISTANT
Title:	Training and Knowledge Sharing Platform for First Responders and Educational Tools for students' and citizens' awareness and preparedness against Natural and Manmade Disasters and Risks
URL:	http://www.resistantproject.eu/
Start Date:	01/01/2021
Duration:	18 months

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Document History

Version	Date	Author (Partner)	Remarks/Changes
0.1	08/03/2021	Manuela Titorencu (KTGR)	Table of Contents
0.2	23/04/2021	Manuela Titorencu (KTGR)	1 st Draft ready for internal review
0.3	18/05/2021	Mitko Bogdanoski (MAGMA), Igor Magdalenic (CCMA)	Contribution to Chapter 2 (description of UC3 and UC4) and Chapter 3 (Approach to organization of pilot UC3 and UC4 and Calendar of activities for UC3 and UC4)
0.4	31/05/2021	Michail Chalaris (MAGMA)	Contribution to Chapter 2 (description of the UC2), Chapter 4 (subsections 4.1 and 4.2) and the evaluation instruments in Annex 3
0.5	15/06/2021	Prof. D. Emmanouloudis (IHU) Prof. N. Kokkinos (IHU), Prof. A. Tsinakos (IHU)	Contribution to Chapter 2 (description of the UC1)
0.6	16/06/2021	Manuela Titorencu (KTGR)	Final review, Consolidated version sent for Quality Control
1.0	22/06/2021	Kalliopi Angelaki (KTGR), Giorgos Mimoglou (KTGR)	FINAL VERSION TO BE SUBMITTED

Abbreviations and acronyms

Definition	Abbreviations and acronyms
Augmented Reality	AR
Croatian Crisis Management Association	CCMA
Expected Outcomes	EO
Emergency Management Framework	EMF
Enosi Ptychioychon Axiomatikon Ypaxiomatikon Pyrosvestir Oy Somateio (Association of officers and sub-officers with university degrees of Hellenic Fire Corps)	EPAYPS
Full-Scale Exercise	FSE

International Hellenic University	IHU
Konnekt-able Technologies Ltd. – Greek Branch	KTGR
Military Academy General Mihailo Apostolski	MAGMA
Natural disasters trigger technological accidents	Natech accidents
Non-governmental organization	NGO
Operational Objectives	OO
Rescue Team DELTA	RTD
Evia Rescue Team	S.A.R. 312
Strategic Objective	SO
Standard operating procedures	SOP
Tabletop Exercise (Discussion Exercise)	TTX
Use Case	UC
Union Civil Protection Mechanism Programme	UCPM
Virtual Control Room	VCR

Executive Summary

RESISTANT is a 18 month duration project co-funded by the Union Civil Protection Mechanism Programme (UCPM-2020) under grant agreement no. 101017819.

The overarching objective of the RESISTANT project is to build the first European Crisis Training Platform to train first responders through threefold comprehensive training: educational training with the state-of-the-art knowledge in safety, including tools for characterisation of hazards and associated risks, operational training on mock-up real scale transport, and innovative virtual reality training reproducing the entire accident scenarios, intervention strategies and tactics, including the whole chain of command and communications between all members of the first responders team, facility managers, and public (e.g. volunteer fire fighters, school children, citizens with disabilities). RESISTANT will also put in place a virtual 'agora' for first and second responders, academia, market practitioners, volunteers and other civil protection stakeholders to share knowledge and exchange best practices, especially in cross-border crisis management. The 'agora' will facilitate discussion and contribute towards the development of a common prevention and protection culture.

The project Consortium will evaluate the overall approach of RESISTANT with the help of a series of tests that will be based on real life scenarios and case studies and that will be implemented in 4 pilot use cases. The main purpose of this document is to present the RESISTANT's pilot use cases, the guidelines for use cases implementation and management, the evaluation methodology and instruments for the use cases to assess the impact of the project to its target communities as well the User's Handbook for the COncORDE platform.

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1 Introduction

1.1 About the project

RESISTANT (Training and Knowledge Sharing Platform For First Responders and Educational Tools for students' and citizens' awareness and preparedness against Natural and Manmade Disasters and Risks) is a 18 months project that has been started on 01/01/2021 and is implemented by a consortium led by the International Hellenic University – IHU (Greece) in cooperation with the Association of officers and sub-officers with university degrees of Hellenic Fire Corps -E.P.A.Y.P.S. (Greece), Konnekt-able Technologies Limited, Greek Branch – KTGR (Ireland), Military academy „General Mihailo Apostolski“, Skopje – MAGMA (North Macedonia), Croatian Crisis Management Association – CCMA (Croatia), Evia Rescue Team – S.A.R. 312 (Greece) and Rescue Team DELTA – RTD (Greece). The project is co-funded under the **Union Civil Protection Knowledge Network : Network Partnership (UCPM-2020-KN-AG) call of the Union Civil Protection Mechanism.**

RESISTANT's aim is to build the first **European Crisis Training Platform** to train first responders through threefold comprehensive training:

- **educational training** with the state-of-the-art knowledge in safety, including tools for characterisation of hazards and associated risks,
- **operational training** on mock-up real scale transport, and
- **innovative virtual reality training** reproducing the entire accident scenarios, intervention strategies and tactics, including the whole chain of command and communications between all members of the first responders' team, facility managers, and public (e.g. volunteer fire fighters, school children, citizens with disabilities).

RESISTANT Operational Objectives (OO)

OO.1: Support civil protection and disaster risk management actors that promote and facilitate the development, dissemination and exchange of knowledge, good practices and expertise.

OO.2: Update and expand **a training programme** through further development of emergency scenarios to reflect the latest state of the art

OO.3: Implement an **educational platform**, where educational and training programs for primary, secondary schools, residents of endangered areas, citizens with disabilities of the aforementioned areas and tourists, as well as, for municipalities' employees, could be demonstrated with the help of **Augmented Reality (AR) Techniques.**

OO4: Mapping and status of current initiatives, procedures and resources for coordination, education and training for natural disasters and technological risk mitigation.

RESISTANT Strategic Objectives (SO)

SO.1: Support new and consolidate existing partnerships in civil protection and disaster risk management that **enhance cooperation and synergies** in prevention, preparedness and response.

SO.2: Establish **a European network of trainers for first and second responders**, supported by stakeholders from EU and beyond, to share best practices and facilitate dissemination of knowledge and experience generated within the RESISTANT project and relevant follow-up projects from EU to national level.

SO.3: Educate and train tomorrow's responder trainers through established and regularly updated comprehensive educational, operational and virtual reality training.

SO.4: Establish strong links between first responders' activities from different countries and constituencies and research and educational projects; Valuing the responders' experience and their feedback to **enrich and harmonise harm criteria, models for hazards and risk assessment**, expand communications to other stakeholders, including but not limited to legislators, technology experts, insurance companies, citizens and students to raise awareness and increase preparedness.

RESISTANT Expected Outcomes (EO)

EO.1: The implementation of **a Trans-European Network of trainers for first and second responders.**

EO.2: Design and implementation of **innovative training programs for natural disaster and technological risks prevention and mitigation especially focusing on cross-border events** that will be implemented in Virtual Control Room (VCR) with an integrated state of the art emergency management system.

EO.3: Implementation and deployment of a **dual-purpose platform** which will incorporate **the training programs for natural disaster and technological risks prevention and mitigation** along with **a series of educational and awareness programs enhanced with AR techniques for students', citizens' and tourists' preparedness.**

EO.4: Mapping of current activities in Croatia, Greece and North Macedonia in the areas of disaster management and of disasters' education and training. A comprehensive report with data derived from the mapping training exercises will allow decision and policy makers to evaluate the current state, challenges and opportunities for collaborative disaster management across Europe. Results and the mapping itself will serve as a basis for collaboration, knowledge sharing/exchanging and training among the network member countries.

1.2 Purpose of the document

The purpose of this document (**D3.1 RESISTANT Use case guidelines and User's Handbook**) is to present the methodology and plans for demonstration and validation of RESISTANT's overall approach for training and education of first responders and civilians. D3.1 will guide RESISTANT's deployment and the actual execution of the use cases under realistic conditions and data through a series of trials with end-users who will evaluate the demonstrators and apps and assess the quality and usability of the RESISTANT education and training infrastructure. This document is the output of two tasks: **Task 3.1 Preparation of RESISTANT use cases** and **Task 3.2 RESISTANT Pilot Running and Monitoring.**

1.3 Work Package Objective

D3.1 RESISTANT Use case guidelines and User's Handbook is a deliverable of Work Package (WP) 3: **RESISTANT Validation and Demonstration.** WP3 defines the implementation framework for the training use cases and the evaluation procedures for the use cases to assess the impact of the project to its target communities. The main purpose of this WP is to implement and evaluate the overall approach of RESISTANT methodology and educational and training infrastructure and to define validation activities in order to assure validity of results. The following are specific WP3 objectives:

- To define the use case scenarios to pilot and evaluate RESISTANT.
- To setup the pilot environment considering all the special requirements / needs of the end users and stakeholders based on the infrastructure of IHU and the technology of KTGR (COncORDE emergency management platform).
- To fully operate and test the RESISTANT solution on specific piloting experiments.
- To validate the RESISTANT from a usability and end-user point of view.
- To make the capabilities of the RESISTANT educational and training infrastructure available to policy stakeholders willing to use RESISTANT methodology.

1.4 Relation to other deliverable/Work Package

The current deliverable – **D3.1 RESISTANT Use case guidelines and User's Handbook** - is related to the deliverable **D2.4 RESISTANT's educational and training infrastructure** of WP2, released in the form of a Demonstrator. D3.1 defines the use case scenarios to pilot and evaluate the **RESISTANT educational and training infrastructure** described in D2.4 report.

The current deliverables is also related to the deliverable **D3.2 RESISTANT use case Implementation and Evaluation Report** that will be released on Month 18 of the project (June 2022) and will present and overall assessment and evaluation of RESISTANT. Deliverable D3.1 presents the evaluation procedures and instruments that will be used for the overall assessment and evaluation while the deliverable D3.2 will present the results of the evaluation activities based on the procedures and instruments defined in deliverable D3.1. The current deliverable is the output of the Task **T3.1 Preparation of RESISTANT use cases**.

1.5 Intended audience

The intended audience of this deliverable consists of the following target groups:

- Trainers, educators and students who indent to become future trainers for first responders and for civilians (e.g pupils from primary and secondary schools, residents of endangered areas, citizens with with special needs -disabilities, limited or no vision and even those with no reading capabilities- tourists, municipalities' employees) on topics related to natural and manmade Disasters and Risks
- UCPM National Training Coordinators
- Representatives from civil protection and risk disaster management community - First responders (fire fighters, law enforcement, emergency services, etc.), civil protection experts
- Civil society organisations / NGOs and their networks with interest in the Crisis Management domain, Humanitarian organisations
- International and national networks of civil protection and disaster management actors
- Members of the projects funded under the same call as RESISTANT project (Union Civil Protection Knowledge Network: Network Partnership (UCPM-2020-KN-AG)
- Information Communication Technology entities (industry organisations and SMEs)
- Primary and secondary schools, Vocational Education Training Institutions, Universities and research centres with interest in the training and education for civil protection and disaster management

- Civil protection authorities and public health authorities of European countries
- Policymakers at local, national, EU and the wider Neighbourhood level
- RESISTANT project partners and Advisory Board
- The Project Officer at the Knowledge Network and Evidence-Based Policy (ECHO.B.3) Unit in the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO) of the European Commission

1.6 Structure of the document

The structure of this report is as follows:

- Chapter 2 provides a general overview of the RESISTANT's use cases plans that will include the set of case studies and scenarios that will run during each use case aimed to pilot and evaluate RESISTANT overall approach, the actors involved, the overall time plan and who is responsible for each action (use case partners).
- Chapter 3 provided guidelines to support use case partners in the organisation and management of use cases.
- Chapter 4 shows the methodology for pilot monitoring and evaluation
- Chapter 5 presents the user's handbook for COncORDE emergency management platform
- Chapter 6 includes final remarks and next steps
- At the end of the report in the Annexes there are provided an Information sheet and an Informed consent form for the RESISTANT participants, an Administrative/logistic checklist for the organization the pilot activities and the evaluation instruments.

2 Pilot Use cases and scenarios for education and training

The project Consortium will evaluate the overall approach of RESISTANT with the help of a series of tests that will be based on real life scenarios and case studies and that will be implemented in 4 pilot use cases (UC) aimed at education and training for emergency preparation and disaster response:

- **UC1: Educational and Training Seminars for students and Citizens of endangered areas**
- **UC2: Emergency Management Frameworks (Cross-border Use Case)**
- **UC3: Full-Scale Exercise - Flood case caused by torrent**
- **UC4: Tabletop training exercise - Earthquake response during the COVID-19 pandemic**

The aim of UC1 is to educate civilians of different ages and to raise their awareness and preparedness against Natural Disasters and Technological Risks while the aim of UC2, UC3 and UC4 is to test the technologies, equipment and uniforms proposed by RESISTANT in real settings, focusing on how the first responders utilize them in real scenarios.

A review of training literature will usually bring up the names of five common types of exercises commonly used in emergency preparation and disaster response (EPDR) training: Orientation, Tabletop, Drill, Functional and Full. In case of RESISTANT, there will be organized:

- **Tabletop exercises** - A tabletop exercise is conducted in a classroom setting, usually at a table, with a facilitator guiding the process. Participants are given an EPDR scenario to work through. Props, scale models and maps, can be added for realism and as training tools. The exercise can be made more challenging by adding multiple events, or limiting available time, or adding an unforeseen complication. Tabletop exercises encourage teamwork and group problem-solving skills but also allow for testing and evaluation of a plan.
- **Full scale exercises** – They take place in real time and test both participants and the plan. They usually take place in the field and are designed around realistic EPDR situations that require participants to react as they would if the situation was real. Participants use their equipment and procedures to successfully address EPDR issues. Full scale exercises provide participants with the opportunity to practice, interact and communicate but can be stressful. Additional realism can be achieved through controlled fluctuation of resources during the exercise such as communication hitches, or equipment that is unavailable or non-functioning.¹

The training exercises will be based on scenarios that are reality based and derived from multiple real life incident reports. Scenarios in simulation exercises will aim to test the response of professionals and will be enabled by **modern monitoring and tracking technology**.

For the educational training both for civilians and the first responders/future trainers of first responders, all educational and training materials will be available on the **RESISTANT Training platform**².

The **full-scale exercises** for first responders will focus on gathering real time data from the field and communicating them via the **CONCORDE emergency management platform**³.

1

https://www.researchgate.net/publication/320288691_THE_DESIGN_AND_IMPLEMENTATION_OF_TRAINING_EXERCISES_FOR_EMERGENCY_PREPARATION_AND_DISASTER_RESPONSE

² <https://www.resistantproject.eu/training-platform/>

³ <https://www.konnektable.net/emergencymgt.html>

2.1 Use Case 1: Educational and training seminars for students and citizens of endangered areas

2.1.1 General Description

The aim of UC1: To educate civilians of different ages and to raise their awareness and preparedness against Natural Disasters and Technological Risks. As a preliminary step, two informative and educative seminars (training the trainers) will be held in Skopje and Thessaloniki, where invited participants (primary, secondary educators, Civil Protection Authorities staff and Municipal employees) will have the opportunity to be familiarized and trained with the Virtual school and the other Deliverables, in order to try to apply these activities to their organizations by multiply in the addressed groups.

Partner leading the UC1: International Hellenic University (IHU), Greece

Locations: areas along the border line between Greece and North Macedonia (Thessaloniki and Skopje)

Beneficiaries: Beneficiaries of this pilot case study implementation are students of primary and secondary schools of North Macedonia and Greece of the areas along the border line between Greece and North Macedonia (Pelagonia Vardar, South District, Florina, Kastoria (Ptolemaida), Pella, Kilkis, Kozani), as well as tourists and visitors of the abovementioned villages, towns and cities.

2.1.2 Use case scenarios

Pilot case study 1: Training of children and adolescents

Target audience:

- a) pupils of primary schools of Greece and North Macedonia (Piraeus, Aliveri, Skopje),
- b) pupils of secondary schools of Greece and North Macedonia (Piraeus, Aliveri, Skopje),

Overview of the training programme:

- a) The training programme targeting pupils of primary schools aged 6 to 11 will use the Virtual School methodology. The Virtual School action aims to educate students of primary schools on how to deal with natural disasters and to protect them from such hazards by using Mixed Reality technologies, and to train them on the use of three-digit emergency numbers. Students are asked to build a 3D miniature model of their school and use cutting-edge technologies (Augmented Reality) to train in dealing with natural disasters (earthquake, flood, fire, injury, etc.).

This action could be extended to any elementary school in a more specialized way, by implementing scenarios adapted to each of them individually.

Only in this way will it be possible for today's elementary school students to create such a culture that, when they are mature citizens, they will have learned not only how to protect the environment but also how to protect themselves and their families from natural disasters and technological hazards.

The above training programme will be implemented in situ in all 3 cases.

- a) The training for children and adolescents aged 12 to 18 years will be complemented by innovative educational material (both text and multimedia) related to the labelling and risk management from natural or technological disasters. These training activities will focus not only on the prevention or the initial actions to be taken after an event but also on how to proceed. The ultimate goal is to

complete the training by drawing up action plans, as well as setting up specific groups of tasks / responsibilities that will complete the training program. The topics of the training course are as follows:

- Firefighting - fire protection in urban and agricultural environments
- Earthquakes
- Floods
- Marine accidents
- Rescue - panic management

The above training programme will be implemented in situ in all 3 cases.

Format and Duration: The training programme for children and adolescents will include classroom learning and practical training in the classrooms of the participating schools, conducted by teachers appointed by IHU and using role players to give added realism, based on civil protection scenarios. The Virtual School attempts to educate students to recognize good practices dealing with Natural Disasters

The project is based on the following items for the successful implementation:

1. A three-dimensional School Model created by the students. (Figure 1)



Figure 1. 3D Model of a School building and of its school yard

2. The use of a computer with an Internet connection, printer (monochrome or colour), and a mobile device, such as a tablet.
3. The use of the educational material and instructions provided to teachers and students by the AETMA Lab⁴. (Figure 2)

⁴ <http://aetma.ihu.gr/>



Figure 2. Educational Materials in form of guidelines

4. The instalment of the ARTutor (Version 3), which is an Augmented Reality educational platform developed by the AETMA Lab. (Figure 3)



Figure 3. ARTutor version 3

During the application of Virtual School, the students divided into teams and with the use of the ARTutor attempt to solve puzzles/scenarios relevant to natural disasters and 3-digit emergency numbers.

The scenarios are already developed and augmented in the ARTutor and the students try to solve the problems through a process similar to a game. It is worth mentioning that the Virtual School Team can easily update and enrich remotely the associated educational scenarios and can be applied in any space with internet connectivity, bringing in life the school of tomorrow, the school without boundaries.

Virtual School supports several pedagogy theories such as inclusive and problem-based learning, game-based and MAR (mobile augmented reality) learning, as well as discovery and cross-context learning.

In the scope of RESISTANT, more sophisticated scenarios will be implemented in Greek and English in order to train students to deal with cases of natural disasters or emergency cases. More specific, the following cases will be covered: Fire, Flood, Injury, Storms, Earthquake.

Scenarios will include not only the appropriate actions to make but also will explain the impact of talking the wrong decision in case of emergency.

In order to promote collaborative learning, and problem solving, small groups of students (comprised of 2-3 members) are formed which act as the brainstorming cells and the decision makers

Students are expected to analyze the evidence of the given scenario (i.e you are located in the upper floor of your school and there is a fire on the next classroom. How do you react?), discuss the optimum solution and pick the appropriate action card (among the available per scenario) which is the optimum way to react

Once the group reaches to a consensus, the leader of the group places the selected card within the 3D miniature of the Virtual School and with the help of a mobile device such as smartphone or tablet they are triggering a response via the augmented reality application ARTutor (version3)

As mentioned above ARTutor (version3) will provide feedback via augmentations, not only in the case where correct answer is selected, but also analyses the wrong answers by explaining why the selected reaction is not appropriate. In such case the group can reconsider their answer and try again to find the correct reaction (Figure 4).



Figure 4. Students' feedback via AR

Virtual School is an innovative educational program for disaster preparedness and response training, utilizing educational frameworks such as gamification, inclusive learning and problem-based learning.

Therefore, during the RESISTANT program and in addition to the above-mentioned scenarios, a more customized training will be provided to the students of the school units towards the earthquake case by utilizing the existing escape floor plans that are already available for their school unit. These specific directions will be adjusted to the students' realistic environment in order to raise their preparedness to act fast and efficient in case of evacuation.

The existing escape floor plans will be available to classrooms in printed or electronic format (Figure 5)

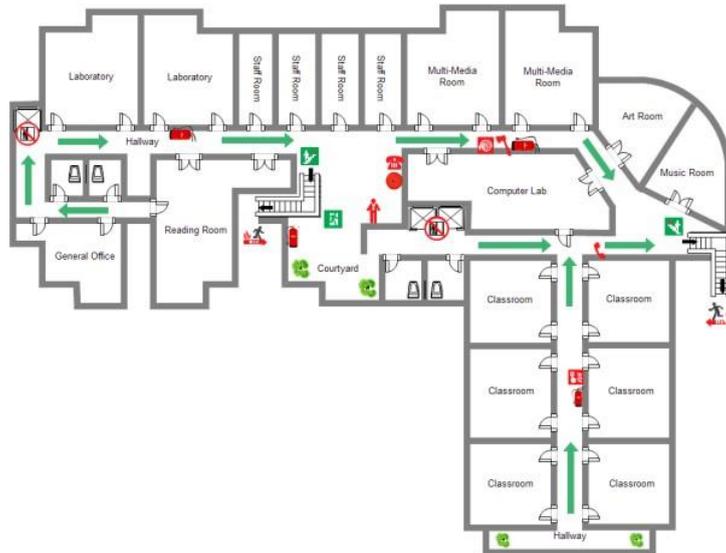


Figure 5. Utilization of school's evacuation plan via Virtual School training

In this gamified version of evacuation, a set of scenarios and choices will be available to the students' groups (via playing cards). The students will be asked to take actions in case of earthquake, depending on their random location within their school unit and use the appropriate route to leave the building.

Mixed reality technologies will be utilized to provide feedback to the students and make the training more immersive, attractive and effective for them.

To further assist the use of Virtual School in the classroom, a set of guidelines will be provided to the teachers in the form of step-by-step activity plan.

All the materials will be disseminated in the form of pdf files, as according to the feasibility results of the already implemented pilot of Virtual School, the use of pdf is the most common and easy way to share documents (of specific format) among educators.

Technical Requirements

- Internet connection,
- Existence of e-mail
- Access to a printer
- Ability to use a browser
- Access to a mobile device (Smartphone or Tablet) with the following features
 - 1) Android devices compatible with Google ARCore (see list of compatible devices here: <https://developers.google.com/ar/devices>)
 - 2) iOS devices (all)

The duration of one training course will be 8 hours for the pupils of the primary schools and 8 hours for the pupils of secondary schools.

Learning Objectives

By the end of this course, participants will be able to know:

- Which are the different types of disasters
- How to protect the environment
- How to protect themselves and their families from natural disasters and technological hazards.

Timeline and locations:

Training course title	Date	School (name and type)	Location	Country
Virtual School 1 st training course for pupils on how to protect the environment	28 September 2021	Primary school	Piraeus	Greece
Secondary education programs on natural and technological disasters	29 September 2021	Secondary School	Piraeus	Greece
Virtual School	30 September 2021	Primary school	Aliveri	Greece
Secondary education programs on natural and technological disasters	1 October 2021	Secondary school	Aliveri	Greece
Virtual School	19 October 2021	Primary school	Skopje	North Macedonia
Secondary education programs on natural and technological disasters	20 October 2021	Secondary school	Skopje	North Macedonia

Pilot case study 2: Training-the-Trainers informative and educative seminars

Target audience: Educators from primary and secondary schools, Civil Protection Authorities staff and Municipal employees from Skopje, Florina, Kastoria (Ptolemaida), Pella, Kilkis, Kozani.

The objectives of the Training-the-Trainers seminars:

1. To ensure that participants have the capacity and confidence to replicate and adapt the methodology proposed by RESISTANT for training of children and adults in different areas of civil protection, being flexible and changing the training in response to participants and circumstances.
2. To provide curricular guidelines and instructions on how to use the teaching aids contained on the RESISTANT training platform.
3. To provide training guidelines for the trainers of civilians involved in the emergency response.

Overview of the Training-the-Trainers informative and educative seminars:

Two informative and educative seminars will be held in **Thessaloniki (February 2022)** and **Skopje (January 2022)**, where invited participants (primary and secondary school educators, Civil Protection Authorities staff and Municipal employees) will have the opportunity to be familiarized and trained with **the Virtual School methodology** as well as with **the Virtual Control Room methodology** in order to try to apply these activities to their organizations by multiply their effect in the addressed groups.

Virtual School is a training methodology of IHU which aims to educate pupils of primary schools on how to deal with natural disasters and to protect them from such hazards by using Mixed Reality technologies, and to train them on the use of three-digit emergency numbers. Children are asked to build a 3D miniature model of their school and use cutting-edge technologies (Augmented Reality) to train in dealing with natural disasters (earthquake, flood, fire, injury, etc.).

The Virtual Control Room (VCR) established in International Hellenic University (IHU) is one of the most complete and modern VCR all over Europe. The VCR of IHU has been funded by the Administrative Region of Eastern Macedonia and Thrace in Northern Greece. It specializes in the fundamental and advanced training of students and professionals on control room operations and emergency responses during technological or Natech accidents. In an effort to develop efficient and effective synergies in training between the Virtual School and the VCR, an alternative scenario may also be investigated of a technological accident triggered by natural disaster that took place on a chemical industry nearby a school. The trainees will have the opportunity to be familiarized with VCR methodology in order to cope with more complicated scenaria.

Format and duration: Each seminar will be conducted in a classroom setting by a teacher appointed by IHU and will consist of 8 hours of theoretical lessons - teacher-centred face-to-face classroom learning or online lessons (depending on the COVID-19 situation in Greece and North Macedonia).

The training will be conducted in Greek language in Greece and in English Language in North Macedonia

Learning Objectives

By the end of this course, participants will be able to:

- Identify which are the key information to be provided to the pupils.
- How to be familiarized and trained with the Virtual School and Virtual Control Room methodologies, and the other Deliverables.
- How to apply these activities to their organizations by multiply their effect in the addressed groups.

Timeline and locations:

Seminar title	Date	Location	Country
1 st Training of Trainers (TOT) seminar	22 February 2022	Thessaloniki	Greece
2 nd TOT seminar	25 January 2022	Skopje	North Macedonia

Pilot case study 3: Training of adults

Target audience: residents, tourists and visitors of the areas along the border line between Greece and North Macedonia (Florina, Kastoria (Ptolemaida), Pella, Pelagonia Vardar, South District), including citizens with special needs - disabilities, limited or no vision and even those with no reading capabilities.

Overview of the training programme for adults:

The training program targeting adults will include a number of four (4) seminars and will be open to the public. These seminars will inform citizens about practices and methods of protecting their lives and property from forest fires, urban fires, floods, earthquakes, tsunamis, and technological incidents. Part of the seminars will be devoted to techniques of escaping and setting free other people, along with providing first aid.

Format and Duration: Each seminar will be four-hour duration and will have maximum 30 participants. All seminars will be held with the help of augmented reality techniques which will facilitate strongly the purpose of citizens learning. The seminars will be held in Greek language for the Greek cities and in English language for the North Macedonia cities by the representatives of IHU. Each seminar will also be held in the sign language with the support of an interpreter.

Learning Objectives:

By the end of this course, participants will be able to:

- Understand about practices and methods of protecting their lives and property from disasters
- To use techniques of escaping and setting free other people
- To provide first aid.

Timeline and locations:

Seminar title	Date	Location	Country
1 st seminar for citizens' awareness and preparedness against Natural and Manmade Disasters and Risks	22 March 2022	Edessa	Greece
2 st seminar for citizens' awareness and preparedness against Natural and Manmade Disasters and Risks	23 March 2022	Kastoria (Ptolemaida)	Greece
3 st seminar for citizens' awareness and preparedness against Natural and Manmade Disasters and Risks	24 March 2022	Bitola	North Macedonia
4 st seminar for citizens' awareness and preparedness against Natural and Manmade Disasters and Risks	25 March 2022	Ohrid	North Macedonia

2.2 Use Case 2: Emergency Management Frameworks

2.2.1 General Description

Partner leading the UC2: EPAYPS

Other partner(s) involved: Evia Rescue team (S.A.R. 312), Rescue Team Delta (RTD), IHU, MAGMA

Location(s) of the UC2: Southern part of North Macedonia (South-eastern district, Vardar district and Pelagonia district).

Target audience: firefighters, police officers, ambulance personnel, government employees, military personnel, and private industry emergency responders from North Macedonia and members of RESISTANT Consortium (EPAYPS, IHU, SAR3.1.2 and RTD).

2.2.2 Use case scenario

The pilot use case will be based on a specific scenario named: **Emergency Management Frameworks (EMFs)** and will consist of a six-day **discussion exercise (TTX)** focus on three Hazards (Technological Accident, Forest Fire and Flood) in a cross-border area aimed at common EMFs preparation and implementation.

Aim/Objectives:

Reflecting the ever-changing emergency management environment and risk landscape, this scenario will be aimed at creating innovative Emergency Management Frameworks in the Southern part of North Macedonia (Southeastern district, Vardar district and Pelagonia district). Recognizing that Emergency management is a shared responsibility across all sectors of society, the Emergency Management Frameworks for the above-mentioned areas will aim to guide and strengthen the way local governments and partners assess risks and work together to prevent/mitigate, prepare for, respond to, and recover from the threats and hazards that pose the greatest risk to citizens of the region. In addition, given that each local government has a responsibility for emergency management and public safety in North Macedonia, the Frameworks' design aims to strengthen collaboration with all the parties (authorities, volunteers etc).

Characteristics of scenario context:

Emergency management of a country will need to adopt an all-hazards approach to address both natural and human-induced hazards and disasters. These are increasing in number and frequency worldwide, resulting in ever-growing human suffering and economic cost. Greece and North Macedonia are not immune to these events. Natural and human-induced hazards and disasters have become more prevalent in urban and rural communities. Human-induced hazards, such as terrorist attacks and hazardous material incidents are likely to persist. In addition, scientists predict that climate change will continue to increase the frequency and intensity of extreme weather events such as heatwaves, heavy rainfalls, and related flooding, droughts, forest fires, serious winter storms; that may increasingly strain emergency management capacities and budgets across North Macedonia and Greece. These events can have profoundly negative effects on citizens of study areas.

Most emergencies in Greece and North Macedonia are local in nature and are managed by municipalities and communities, or at the provincial or territorial level. Moreover, accumulating risks associated with increased urbanization, critical infrastructure dependencies and interdependencies, terrorism, climate change, environmental change, animal and human diseases, and the heightened movement of people and goods worldwide have increased the potential for various types of catastrophes. Such events could

transcend geographic boundaries to challenge cross-border emergency management, including the response.

The fundamental concepts and principles will be outlined in the framework flow from emergency management activities and measures are undertaken in North Macedonia. Frameworks will support legal and policy frameworks, programs, activities, standards, and other measures to enable and inspire all emergency management partners and the whole-of-society in the above-mentioned areas to work in better collaboration to keep citizens safe.

The frameworks will align with key international agreements, including the Sendai Framework for Disaster Risk Reduction 2015-2030, which was built on previous agreements, including Hyogo (2005) and Yokohama (1994), to advance disaster risk reduction priorities globally. In addition, the framework will support the implementation of the Paris Agreement, aimed at reducing the impact of climate change, and the United Nations Sustainable Development Goals (SDGs). Each of these agreements aligns with the tenets of these frameworks to advance North Macedonia's domestic approach to Disaster Risk Reduction.

Moreover, in the mirroring area of Greece, Kastoria (Ptolemaida), Pella, Florina, and Kozani prefectures are situated. The above-mentioned Greek prefectures have already been supplied with Emergency Management frameworks by the Greek Civil Protection Secretary, but by considering these brand new Emergency management frameworks, could probably improve their own EMF plans, given that these are plans of neighbourhood areas with similar geomorphological and vegetation cover conditions. Both Greek EMF plans that already existed and North Macedonia's EMF plans that will be implemented under this project could be used for the realization in the future of some common Transboundary EMF plans. This will be a very useful tool for the Civil Protection authorities of both countries.

Pedagogical approach:

"Constructivism" will be used as a basic pillar of the Pedagogical Approach because the emphasis of case-based instruction is on learning by simulating real situations, problem-based instruction emphasizes solving realistic but ill-defined problems as a learning tool. Constructivism's central idea is that human learning is constructed, that learners build new knowledge upon the foundation of previous learning. This prior knowledge influences what new or modified knowledge an individual will construct from new learning experiences (Phillips, 1995).⁵

The second notion is that learning is an active rather than a passive process. The passive view of teaching views the learner as 'an empty vessel' to be filled with knowledge, whereas constructivism states that learners construct meaning only through active engagement with the world (such as experiments or real-world problem solving).

Information may be passively received, but understanding cannot be, for it must come from making meaningful connections between prior knowledge, new knowledge, and the processes involved in learning. Learning is a social activity - it is something we do together, in interaction with each other, rather than an abstract concept (Dewey, 1938).⁶

⁵ Phillips, D.C (1995). "The Good, the Bad, and the Ugly: The Many Faces of Constructivism", *Educational Researcher*, 24(7), 5-12.

⁶ Dewey, J. (1938). *Experience and Education*. New York Macmillan Company

For example, Vygotsky (1978)⁷, believed that community plays a central role in the process of "making meaning." For Vygotsky, the environment in which children grow up will influence how they think and what they think about. Thus, all teaching and learning is a matter of sharing and negotiating socially constituted knowledge.

Problem-based instruction, like case-based instruction, is also an active learning method. The learner becomes actively engaged in the process of learning by either engaging in an exercise or by actively thinking about the learning. Like case-based instruction, it derives its theoretical underpinnings from the learning theory of constructivism. While the emphasis of case-based instruction is on learning by simulating real situations, problem-based instruction emphasizes solving realistic but ill-defined problems as a learning tool.

Type of activities:

Study visit and survey - January 2022

A working team consisting of EPAYPS, MAGMA, and IHU representatives will implement study visits to mountainous and remote areas of Kastoria (Ptolemaida), Pella, Florina, Kozani (Greece), and the Vardar, Pelagonia, and south district (North Macedonia) to implement a survey. The visit and the survey in the above-mentioned areas are quite essential because only under this way, the risk factors that create and affect natural disasters (forest fires, floods, landslides, etc), could be determined and evaluated, something that could lead to a successful and integrated EMFs implementation.

Discussion exercise - January 2022

It is expected that several training sessions will be required for all participants in UC2 regarding the RESISTANT technologies. For example, first a multi-day discussion exercise (TTX) will be organized to provide an overview of emergency response activities. Within this type of training exercise, the participants from Greece and North Macedonia will discuss in a roundtable setting how they should and do respond to transportation events (test all major aspects of transportation emergency response supported by the COncORDE platform). Emphasis will be placed on participation and coordination among the participating organizations to demonstrate integrated response capabilities.

The core TTX will take part for all the participants in 1st, 3rd, and 5th day, while the 2nd, 4th, and 6th-day will participate only the RESISTANT project members to evaluate the previous date and prepare the next day.

Narrative of the emergency scenario:

(i) **The first day of the discussion exercise** will test the existing Flood Emergency Plan and Consequences Management. The basic aim of an EMF is the immediate and coordinated response of the involved Bodies at the Central, Regional and Local level:

- for the implementation of preparatory measures and civil protection actions that contribute to the preparedness of human resources and the means for dealing with emergencies and the immediate/short-term management of the consequences of the occurrence of flood phenomena.

⁷ Vygotsky, L.S. (1978). "Mind in Society: The development of higher psychological processes." Cambridge, MA: Harvard University Press

- for the effective response to emergencies from the occurrence of floods and the immediate management of their consequences, actions aimed at protecting the life, health, and property of citizens, as well as the protection of the natural environment, wealth resources, and infrastructure of the country.

A prerequisite for achieving this goal is the synergy, cooperation, and interoperability of the involved Bodies at the Central, Regional and Local levels. Moreover, Flood Risk Management Plans must comply with the requirements of the European Flood Directive (2007/60 / EU) "On the assessment and management of flood risks".

According to Directive 2007/60 / EU, flood is defined as the temporary subsidence of soil from water which, under normal conditions, is not covered by water. This concept includes floods from rivers, mountain streams, and ephemeral streams overflows of lakes, floods from groundwater, floods from the sea in coastal areas, as well as floods caused by gravity waves. It also includes floods from major hydraulic disasters, such as the breaking of embankments and dams. Also, the above Directive 2007/60 / EU defines the risk of flooding as the combination of the likelihood of a flood occurring and the potential adverse effects on human health, the environment, the cultural heritage, and the economic activities associated with that flood.

Land or river floods are caused by rapid rainfall and heavy storms or by the sudden melting of snow, or even a combination of the above resulting in a large increase in river runoff, as well as the failure of large hydraulic projects. Land or river floods can be further divided into slow-moving floods (field floods) and rapidly emerging floods (flash floods). Land or river floods are caused by rapid rainfall and heavy storms or by the sudden melting of snow, or even a combination of the above resulting in a large increase in river runoff, as well as the failure of large hydraulic projects. Land or river floods can be further divided into slow-moving floods (field floods) and rapidly emerging floods (flash floods).

Although the intensity, duration, and spatial distribution of rainfall is a major cause of flooding, the occurrence of a flood depends on a number of other factors that can act either as a deterrent or as a support. Such factors that can determine the occurrence or not of a flooding phenomenon are:

- the ability of the hydrographic network to effectively drain the surface runoff
- the geology, size of and geomorphology of the catchment
- the saturation of the surface soil from previous rainfall
- the vegetation
- land uses

For the assessment and management of flood risks, based on which flood protection projects should be launched, it is clarified that there should be an integrated framework for their assessment in order to reduce their negative consequences.

Useful tools are the Flood Risk Management Plans which include:

- basic objectives for flood risk management
- measures and priorities necessary to achieve the above objectives
- findings of the Preliminary Flood Risk Assessment in the form of a map with potentially high flood risk zones and flood risk and flood risk maps

(ii) **The third day of the discussion exercise** will be tested the existing Plan for Emergency Response due to Forest Fires.

The basic aim of an EMF is the immediate and coordinated response of the involved authorities at the Central, Regional and Local levels for the suppression of forest fires and the effective response to emergencies due to forest fires. A precondition for achieving this goal is the synergy, cooperation, and interoperability of the involved Bodies at the Central, Regional and Local levels.

The scientific approach and investigation for the causes of forest fires of the Mediterranean countries, has concluded that forest fires are part of their ecology, thus their complete elimination is impossible even if there was the most perfect fire planning. The high temperatures, the prolonged drought, and the strong winds that prevail during the summer months combined with the flammability of various types of natural vegetation compose an extremely favorable environment for the occurrence of forest fires. Fires as an ecological factor of a country's terrestrial ecosystems are a natural force that affects humans, vegetation, and animal organisms. Forest fires can cause injuries and loss of life, loss of civilian property, direct and indirect losses in the primary sector (forestry, agriculture, livestock), damage to infrastructure (electricity, telecommunications, etc.), forest recreation and tourism in general.

Fires contribute positively to the natural renewal and increase of the biodiversity of forest ecosystems, and negatively causing their destabilization and degradation to other simpler forms (shrubs, shrubs, etc.), or even their complete collapse when they are re-ignited relatively short intervals in this place. The concern and importance given to managing the problem of forest fires is therefore reasonable, as they have an adverse effect on human activities and contribute to catastrophic floods by simultaneously sweeping mountainous terrain causing gradual desertification of affected areas.

Finally, it is clarified that in the forest-city mix zone, i.e., where urban areas have great proximity or extend within forests and forest areas in general, as well as in individual buildings near or within forests and forest areas in general, the protection of buildings as well as and all types of infrastructure from an impending fire is determined primarily by their proximity to the fire. That is, how close can the flames and the produced thermal loads of a forest fire (heat propagation is done by conduction, transport, and radiation) with individual building materials of a building or an infrastructure causing their ignition.

The spread of a fire is a process that evolves and spreads in space, only when the requirements for combustion are met, i.e., when the three factors coexist: fuel, oxygen, and heat. If one of the three factors ceases to exist, the fire stops, and its development is stopped. Therefore, it is obvious that a forest fire spreads to buildings when the requirements for potentially available fuels and thermal loads are met which, in the presence of oxygen, meet the conditions for ignition and continued combustion.

Potentially available fuels that will allow a forest fire to develop into an urban environment include, in addition to plant fuels, the individual building materials of a building, including materials adjacent to the building, of non-vegetable origin, whose flammability in combined with their exposure to heat caused by an impending fire, will ensure or interrupt its continuity. Therefore, potential losses in buildings and infrastructure due to forest fires are mainly related to their distance from the flammable fire front which produces a heat flow that is sufficient or insufficient to ignite building materials or infrastructure of a building.

(iii) **The fifth day of the discussion exercise** will be tested the Large-Scale Technological Accident Management Plan. Via the Large-Scale Technological Accident Response Plan the immediate and coordinated response of the involved author to all levels of Administration (central, regional, local) is aimed:

- To support the work of the responsible authority in the suppression of incidents / major accidents in SEVESO facilities,
- For the effective response to emergencies and the immediate/short-term management of the consequences due to a major accident to be achieved, which are actions aimed at protection of the life, health, and property of citizens, as well as the protection of the natural environment, the wealth-producing resources and the infrastructure of the country.

A precondition for achieving this goal is the synergy, cooperation, and interoperability of the involved authorities at all levels of Management. Objectives of a Successful Plan will be aimed:

- To define the roles and responsibilities of all involved Bodies at each level of Administration (central, regional, local) in all phases of mobilization of the Civil Protection system,
- To coordinate the activities of all involved civil protection bodies based on their institutional framework, in order to support the work of suppression of incidents / major accidents which is the responsibility of the Fire Brigade,
- To coordinate the activities of all involved civil protection bodies, based on their institutional framework, to deal with emergencies and the immediate/short-term management of consequences due to a Large-Scale Technological Accident, with the ultimate goal of restoring the daily operation of areas that have been in a state of emergency because of this.
- To provide guidelines for the preparation of the Special Plans for the Response of Large-Scale Technological Accidents of the higher-level facilities by the Regions.

This type of plan is activated and implemented whenever an unexpected event of leakage, fire, or explosion occurs within the SEVESO installation, which is due to accidental factors during the operation of the installation and not within its conventional operation, as the latter can develop into a major accident and cause serious effects inside and outside the installation.

In each day that take part the discussion exercise, we will follow the procedures below:

a) Performance Objectives:

- Implement the incident command system.
- CONCORDE emergency management platform will be used for incident management during the multi-day discussion exercise (TTX)
- Successfully resolve problems that arise while managing an incident related to 3 hazards.
- Simulate the allocation of emergency response resources.
- Demonstrate all the functions for simulated sub incident.
- Report a summary of actions taken.

b) **Condition:** Participants will respond to a simulated scenario at each of the above hazards conducted as a discussion exercise in a classroom setting.

c) **Standard:** Participants will demonstrate the tasks in accordance with the appropriate performance checklists and with the written portion of the appropriate lessons.

d) Instructions:

- Divide into 4-6 groups.
- Each group given the same scenario.
- Function as an incident management team
- Create and implement the incident management system.
- Each member has equal say.
- Share duties; do NOT delegate.
- Develop a written plan.
- Document all proceedings.
- Report to the class.

e) Handouts and Materials :

- Incident Command Checklist
- Resource Response List
- Diagram of Incident Area
- Close-up Diagram of Incident Area
- Incident Command Information Sheet
- Related to hazard Forms.
- Worksheets
- White paper
- Colored markers

Timetable:

Title of training	Topics	Participants	Due date for implementation
Emergency Management Framework (EMF) for Flood in a cross-border area will be tested via Discussion exercise (TTX)	Flood Emergency Plan and Consequences Management	Representatives of MAGMA, IHU, EPAYPS, SAR 3.1.2 and RTD	January 2022
Emergency Management Framework (EMF) for Forest Fire in a cross-border area will be tested via Discussion exercise (TTX)	Plan for Emergency Response due to Forest Fires	Representatives of MAGMA, IHU, EPAYPS, SAR 3.1.2 and RTD	January 2022

Emergency Management Framework (EMF) for Large Scale Technological Accident in a cross-border area will be tested via Discussion exercise (TTX)	Large Scale Technological Accident Management Plan	Representatives of MAGMA, IHU, EPAYPS, SAR 3.1.2 and RTD	January 2022
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2.3 Use Case 3: Full-Scale Exercise - Flood case caused by torrent

2.3.1 General Description

Partner leading the UC3: Military Academy "General Mihailo Apostolski (MAGMA)

Other partners and collaborators involved: IHU, Directorate for Protection and Rescue and Red Cross

Location of the UC3: Skopje, North Macedonia

Target audience:

- representatives from stakeholders in Crisis Management System from **North Macedonia** (firefighters, police officers, ambulance personnel, government employees, military personnel, and private industry emergency responders)
- trainers of first responders from Directorate for Protection and Rescue from North Macedonia
- Training of trainers from Directorate for Protection and Rescue and other stakeholders in Crisis Management System from **North Macedonia**

2.3.2 Use case scenario

The pilot use case will be based on a specific scenario named: "**Flood case caused by torrent**", which will consist of a **series of educational training courses (Training of Trainers, Training of first responders, two planning conferences)** and a **Full-Scale Exercise**.

Aim/Objectives:

- To identify limitations and safely and effectively use appropriate water rescue equipment, whilst operating near or in moving water appropriate to the limits of a non-buoyant rescuer
- Demonstrate water rescue scene management and dynamic assessment of risk
- Identify and apply the role of the First Responder within the incident management structure
- Identify and use appropriate Personal protection equipment (PPE)
- Identify and understand flood hazard mitigation measures

The pilot will deal with testing how the **CONCORDE emergency management platform** supports the first responders to organize themselves in case of **a flood caused by torrent**.

After the finalization of the training course the participants will have the opportunity to apply and use what he/she learned and practiced in his/her country in case of a flood as the way of training and the

methods used could be applied in any torrent of Balkan peninsula or at semi-mountainous or mountainous areas of the Eucrate zone of the world.

Characteristics of scenario context:

In the Republic of North Macedonia one of the most flood risk area is Skopje region. In this region in recent history there were two major torrential floods which caused a lot of damages and loss of lives. One was in 1962 and second one in 2016.

In torrential flood in 2016, according to the official data of the Hydro Meteorological Service (HMS) of the Republic of North Macedonia, about 93 mm (or 93 liters) of precipitation per square meter fell, which is equivalent to the average for an entire month of August. In addition, the main maximum rainfall of about half an hour occurred, with close to 35 mm or more than 1 mm / min which is a very high intensity. This or that intensity of precipitation (close to 30-40 mm / h) occurs rarely and only a few occurrences have been observed with previous measurements. The water level of some of the areas affected reached a height of 1.5 meters. The reasons are in the regional meteorological conditions, a sudden penetration of moist air mass from the west with the development of a powerful cumulonimbus and the state of the weather in the previous days. Due to the direction of the clouds' movement towards mountain Skopska Crna Gora (as a medium-high barrier with 1651 m), the largest amount of precipitation fell on the southern slopes of this mountain, ie the northern part of the Skopje Valley. In this flood 21 people died and dozens of others injured. Three villages to the northeast of the city were cut off due to landslides. Health authorities have advised residents in the worst hit areas to use only bottled water or water from public authority cisterns for drinking and cooking. In this disaster situation unpreparedness of some institutions that need to announce, prevent and deal with such natural disasters, further complicates the situation. Most of the population was also not sufficiently prepared and educated to deal with floods and other disasters, for which it is necessary to raise public awareness while it is time (in fact, due to panic caused by traffic accidents and other reasons, traffic in some places was completely bloody, causing even greater risk). There is no functional system for permanent information of citizens in such situations (via radio or mobile applications) about risk points to be avoided, problem areas and similar notifications that can be even vital.

To prevent disasters in the future integral measures are needed for identification and protection of torrential catchment areas. Also is need better cooperation of the institutions with scientists and experts in the relevant fields, in the form of more frequent consultations, meetings, exchange of views and similar measures. It is necessary to raise public awareness, especially of the consequences of deforestation, greenery, shooting, construction of transverse buildings or embankments, landfills, transverse walls, pits, especially in areas with high groundwater, informing about procedures in case of disasters, etc.

The 1962 flood in Skopje occurred on November 16, 1962. Skopje, and many cities, villages and settlements in Western part of North Macedonia were hit by the water disaster, which was the result of extremely heavy rains. The waters of the Sharplanin basin from Bistra and other mountains that gravitate towards Treska, stagnant and opaque, collapsed in the bed of the muddy river Vardar. 730 cubic meters of water flowed out of the main discharge tunnel at the Matka hydropower plant, and over 70 cubic meters of water per second flooded the dam's walls. The water in just 15 minutes a 4-centimeter raised. The water disaster caused demolished of 1,050 houses in Skopje, 157 buildings under water, 4,445 homeless citizens, nearly 4,000 hectares of fertile land flooded and 4 human casualties. The hydrometeorological service installed a water meter on bridge and a water level of 8

cm higher was observed which compared to flood in 1937, when the water level was 260 cm above normal, ie 330 cm.

Pedagogical approach: In this UC, new concepts will be introduced, which include harmonized security training curriculum based upon agreed training material and practical training exercises which will build on the complimentary methodical approaches:

1. Modern, didactically refined lectures and seminars, emphasizing interactive learning and including self-tutoring possibilities, documented in open-structured, user-friendly, based on state-of-the-art software tools in data and knowledge management.
2. Computer-based interactive models and virtual reality with biofeedback, simulating threat scenarios and the resulting consequences without and with appropriate countermeasures.

Type of activities:

Training-the-trainers course - September 2021

IHU will organize a Training-the-Trainers course. After finishing of training of trainers in IHU, Military Academy in cooperation with IHU, Directorate for Protection and Rescue and Red Cross, will organize a training course for up to 25 participants future trainers of first responders from stakeholders in the Crisis management System in North Macedonia.

The learning objectives of the course will be:

- Understand the limitations of the role, rescue team, and organisation
- Group maintenance/management
- Goal setting for varying levels of ability
- Introducing subjects, principles and procedures
- effectively use appropriate water rescue equipment, whilst operating near or in moving water appropriate to the limits of a non-buoyant rescuer

The duration of the course will be 8 hours.

The course will be facilitated in Macedonian and English language.

Training course for first responders - March 2022

MAGMA in cooperation with IHU, Directorate for Protection and Rescue and Red Cross will organize a training course for first responders from stakeholders in the Crisis management System in North Macedonia.

The aim of the course is: To train responders to identify their limitations and safely and effectively use appropriate water rescue equipment, whilst operating near or in moving water appropriate to the limits of a non-buoyant rescuer.

Learning objectives:

- Understand the limitations of the water rescue wading responder capability;
- Identify and apply the role of the First Responder within the incident management structure;
- Recognition of water features and their impact;
- Identify and use appropriate Personal protection equipment (PPE);
- Understand and apply relevant rescue techniques;
- Identify and explain the additional hazards and difficulties associated with working in darkness and reduced visibility and application of suitable control measures.

Two planning conferences (initial and main planning conference) – October 2021 and March 2022

Two planning conferences will be implemented by MAGMA in Skopje with the aim to prepare the field training exercise in UC3. At these events will participate up to 20 representatives from MAGMA, Directorate for Protection and Rescue and Red Cross and other stake holders in the Crisis Management System in North Macedonia.

Initial planning conference will take place in **October 2021**. The aim of the initial planning conference is to develop draft scenario, extent and aim of the exercise, define multi-disciplinary exercise planning team and agree the objectives for each area to be exercised, sketch out and then develop the main events of the exercise and associated timetables, determine the outside agencies to be involved, such as the media or voluntary agencies and list the facilities required for the exercise and confirm their availability e.g. transport, buildings and equipment. During this conference, the participants will be trained by KTGR how to use COncORDE emergency management platform for incident management during the full-scale exercise.

The final planning conference will take place in **March 2022**. The aim of the final planning conference is to finalize the scenario of the exercise, develop the main events of the exercise and associated timetables, confirm the availability of the outside agencies to be involved, confirm their availability of outside agencies to be involved, agree and prepare a detailed set of recommendations, each one accompanied by an action addressee and timescale and prepare invitation to spectators from stake holders in the Crisis management System in North Macedonia

During the planning conferences will be developed different type of incidents including prevention, early warning and response. In order for participants to understand the risk presented by natural disasters and how to apply the best methods of prevention, assessment and mitigation, the Stop Disasters Simulation⁸ developed by the International Strategy for Disaster Reduction (ISDR) will be used too.

Full-Scale Exercise (FSE) - April 2022

During this Exercise, there will be simulated different scenario and incidents in the Skopje torrent's area and all participants will use disaster response procedures in (Crisis Management System) CMS. Also, during the training, existing procedures will be evaluated and if it is needed will be updated or developed new one. **COncORDE emergency management platform** will be used for incident management during the full-scale exercise. In this regard, the system will show the map of Skopje valley.

In order participants to understand the risk presented by natural disasters and how to apply the best methods of prevention, assessment and mitigation in preparation phase of full-scale exercise, the **Stop Disasters Simulation** game developed by the International Strategy for Disaster Reduction (ISDR) will be used. Each scenario can be experienced at different levels of difficulty (easy, medium, hard).

Narrative of the emergency scenario (The hypothetical storyline):

During the winter 2020/21, a large amount of snow fell on the mountains around the Skopje valley (Shara mountain, Bistra and Skopska Crna Gora mountain). In the spring 2021 (April) the rise of the temperature and torrential rainfall caused a sudden melting of the snow which caused an increased inflow into the rivers. The several-day increased inflow of the river Vardar, Treska and Lepenec and 530 cubic meters of water flowed out of the main discharge tunnel at the Matka hydropower plant, and

⁸ <https://www.stopdisastersgame.org/>

over 50 cubic meters of water per second flooded the dam's walls caused floods in the Skopje valley. The water level of some of the areas affected reached a height of 1.5 meters. The water disaster caused demolished of 850 houses in Skopje, 123 buildings under water, 2,355 homeless citizens, nearly 3,500 hectares of fertile land flooded and 4 human casualties. In order to deal with flood and to rescue affected population first responders' teams from Protection and rescue Directorate, Red Cross of the Republic of North Macedonia and other crisis management stakeholders institutions are engaged.

One first responder team will use their available equipment and will organize search and rescue operations in the river Vardar and rescue people from the river. Other first responder team will organize extracting the water from the houses flooded by the river Vardar in Skopje. During the exercise, all first responders' teams will test their equipment and technologies.

2.4 Use Case 4: Tabletop training exercise - Earthquake response during the COVID-19 pandemic

2.4.1 General Description

Partner leading the UC4: Croatian Crisis Management Association (CCMA)

Location(s) of the UC4: Primorsko-Goranska County

Target audience: Fire fighter service, Red Cross and specialists in civil protection from Croatia

2.4.2 Use case scenario

The pilot use case will be based on a specific scenario named "**Earthquake response during the COVID-19 pandemic**", which will consist of educational training using the training materials from the **RESISTANT training platform** and introduction and tabletop exercises for participants from Croatia.

Aim/Objectives:

- Inform the participants about the benefits of using modern geospatial and information system in large scale events
- Increased situational awareness by integration of available information from different sources
- Enhance real time capabilities and information interoperability
- Increased efficiency of operations by rational and cost-effective resource deployment and joint emergency services interoperability
- Evaluation of existing operational procedures and development of further recommendations

Characteristics of scenario context:

A magnitude M6.2 earthquake struck Sisak-Moslavina County with an epicenter 3 km southwest of the town of Petrinja on Tuesday, December 29, 2020, at 12:19 PM CET. The maximum intensity of feelings was estimated at from VIII. (very harmful) to IX. (devastating) degree on the European macroseismic scale. This event was preceded by three major earthquakes, the strongest of which was of magnitude M5.2. This was followed by a series of several hundred earthquakes, the strongest of which had a magnitude of 5.0 on the Richter scale. Seven people were killed, five of them in Majske Poljane when the family house collapsed, and the rest in Žažina and Petrinja. The quake was felt not only in the whole of Croatia, but also in parts of Austria, Bosnia and Herzegovina, Montenegro, the Czech Republic,

Italy, Hungary, Germany, Romania, Slovakia, Slovenia and Serbia. The first reports showed that many buildings in Petrinja were destroyed. The epicenter was reported in Strašnik. The depth of the earthquake was 10 km. Due to power outages and interruptions in telecommunications, sporadic information is arriving from the field about victims and huge material damage to residential buildings, educational institutions (kindergartens, schools and colleges), cultural and religious facilities.

The entire city center of Petrinja has suffered significant damage, and according to initial estimates, a large number of apartments are unusable for further housing. Five schools are unusable and nine are badly damaged. City Hall has been declared dysfunctional.

The Sisak General Hospital suffered some damage, but despite the earthquake, it continued to operate, except for the children's ward, which was closed due to cracked walls.

No damage was recorded at the industrial plants (Gavrilović, Sisak Refinery).

The earthquake caused several fires.

In one kindergarten, the ceiling collapsed and the outside staircase separated.

Due to the subsequent shaking of the ground, it is feared that further damage to the already cracked walls could further damage buildings and endanger people's safety due to collapsing structures, falling off parts of facades and plaster and collapsing chimneys, which causes people to sleep in cars in front of houses. A large number of the affected population lives in rural areas and does not want to leave their livestock and their properties.

The earthquake caused extensive damage to three apartment buildings in downtown Zapresic, built in the 1960s. 20th century, from which more than 100 families were evicted, fortunately, there were no casualties or injuries.

The Krško nuclear power plant was automatically closed, after which will be systematically inspected. Session of the Croatian and Slovenian parliaments adjourned. Due to the magnitude of the earthquake, the soil in some parts of the affected area shifted up to 44 cm, the wider area of Petrinja rose more than 12 cm, while on the opposite side of the fault there was a deterioration of soil in the amount of 7 cm. soil - cracks, landslides, landslides and liquefaction. As a result of deformations in the ground, roads, bridges and embankments were damaged/cracked, especially the Brest Bridge over the Kupa River, the embankment in the village of Palanjek, the embankment along the Petrinjčica River and the old Sisak bridge. The earthquake occurred during lockdown - passes are issued to go outside the area of residence.

Pedagogical approach:

A hypothetical storyline is assumed in order to highlight that the is able to provide a detailed and updated outline of the situation of a potential **Earthquake during the COVID-19 pandemic**, with the incident reports, and additional available information on the map of the Rijeka region, Primorsko-Goranska County, which was selected for the table-top exercise. Thus, it offers a great decision support tool to the first responders.

A facilitator will guide participants through a tabletop training exercise. In tabletop training exercise new concepts will be introduced, operational recommendations from early warning to consequence management with hazard scenario based on the real experience from the participating experts. Lessons learned from this training exercises could be integrated into RESISTANT training platform.

Type of activities:**Educational training - January 2022**

Each lecture and seminar will be **2-hour duration** and will have maximum 10 participants with 5 persons from TTX management and could also take place before the tabletop exercise in a single day.

Timetable:

Title of educational training classes	Topics	Participants	Due date for implementation
Tactical support and situational awareness	Introduction to tactical support and situational awareness for large scale events	15 (10 participants + 5 TTX management) -firefighters -Red Cross -Croatian Mountain Rescue Service -Civil Protection	January 2022
Practical example	Examples from 2 earthquakes during a pandemic in 2020	15 (10 participants + 5 TTX management) -firefighters -Red Cross -Croatian Mountain Rescue Service -Civil Protection	January 2022
RESISTANT training platform	Introduction to RESISTANT training platform	15 (10 participants + 5 TTX management) -firefighters -Red Cross -Croatian Mountain Rescue Service -Civil Protection	January 2022
COncORDE	The participants will be trained by KTGR how to use <u>COncORDE</u> emergency management platform	15 (10 participants + 5 TTX management) -firefighters	January 2022

	for incident management during the table-top exercise.	-Red Cross -Croatian Mountain Rescue Service -Civil Protection	
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Tabletop training exercise – February 2022

Tabletop training exercises are disaster preparedness activities that test hypothetical situations of disaster events and evaluate participants' readiness to respond and their ability to work together.

The selected scenario for this training exercise is: "**Earthquake response during the COVID-19 pandemic**". It is expected that the tabletop training exercise to be completed over the course of 8 hours.

Narrative of the emergency scenario (The hypothetical storyline):

A magnitude M6.2 earthquake struck Sisak-Moslavina County with an epicenter 3 km southwest of the town of Petrinja on Tuesday, December 29, 2020, at 12:19 PM CET. The maximum intensity of feelings was estimated at from VIII. (very harmful) to IX. (devastating) degree on the European macroseismic scale. This event was preceded by three major earthquakes, the strongest of which was of magnitude M5.2. This was followed by a series of several hundred earthquakes, the strongest of which had a magnitude of 5.0 on the Richter scale. Seven people were killed, five of them in Majske Poljane when the family house collapsed, and the rest in Žažina and Petrinja. The quake was felt not only in the whole of Croatia, but also in parts of Austria, Bosnia and Herzegovina, Montenegro, the Czech Republic, Italy, Hungary, Germany, Romania, Slovakia, Slovenia and Serbia. The first reports showed that many buildings in Petrinja were destroyed. The epicenter was reported in Strašnik. The depth of the earthquake was 10 km. Due to power outages and interruptions in telecommunications, sporadic information is arriving from the field about victims and huge material damage to residential buildings, educational institutions (kindergartens, schools and colleges), cultural and religious facilities.

The entire city center of Petrinja has suffered significant damage, and according to initial estimates, a large number of apartments are unusable for further housing. Five schools are unusable and nine are badly damaged. City Hall has been declared dysfunctional.

The Sisak General Hospital suffered some damage, but despite the earthquake, it continued to operate, except for the children's ward, which was closed due to cracked walls.

No damage was recorded at the industrial plants (Gavrilović, Sisak Refinery).

The earthquake caused several fires.

In one kindergarten, the ceiling collapsed and the outside staircase separated.

Due to the subsequent shaking of the ground, it is feared that further damage to the already cracked walls could further damage buildings and endanger people's safety due to collapsing structures, falling off parts of facades and plaster and collapsing chimneys, which causes people to sleep in cars in front of houses. A large number of the affected population lives in rural areas and does not want to leave their livestock and their properties.

The earthquake caused extensive damage to three apartment buildings in downtown Zapresic, built in the 1960s. 20th century, from which more than 100 families were evicted, fortunately, there were no casualties or injuries.

The Krško nuclear power plant was automatically closed, after which will be systematically inspected. Session of the Croatian and Slovenian parliaments adjourned. Due to the magnitude of the earthquake, the soil in some parts of the affected area shifted up to 44 cm, the wider area of Petrinja rose more than 12 cm, while on the opposite side of the fault there was a deterioration of soil in the amount of 7 cm. soil - cracks, landslides, landslides and liquefaction. As a result of deformations in the ground, roads, bridges and embankments were damaged/cracked, especially the Brest Bridge over the Kupa River, the embankment in the village of Palanjek, the embankment along the Petrinjčica River and the old Sisak bridge. The earthquake occurred during lockdown - passes are issued to go outside the area of residence.

Response:

- local / regional
 - activation of all emergency services
 - part of the population was evacuated and tents with food and water were set up
- national response
 - activation of CP operational forces (OS CZ) from the entire territory of the country
 - firefighters
 - Red Cross
 - Croatian Mountain Rescue Service (CMRC)
 - Civil Protection
 - Civil Engineers
 - activation of the Civil Protection Mechanism
- self-organization (citizens / companies / organizations)
 - members of fan groups joined in cleaning the ruins in Petrinja, Sisak and the surrounding affected areas and collecting supplies
 - retail chains
 - humanitarian organizations (Caritas)

Modules:

AMP - Advance Medical Post
ETS - Emergency Temporary Shelters
FRUB - Flood Rescue Using Boats
HCP - High Capacity Pumps
HMP - Ambulance
MEDEVAC - Medi cal Evacuation (by Air)
TAST - Technical Assistance and Support Team
USAR - Urban Search and Rescue

Scenario elements:

1. EARTHQUAKE during an epidemic (lockdown) / civil protection measures that apply (emergency phase):

a) search and rescue from ruins [USAR, HMP]

=> testing a plan of selective mobilization and engagement of dedicated operational forces (specialist fire brigades, CP, CMRS ...);

b) Evacuation and Temporary Shelters - medical and other necessary care (COVID patients, population, livestock, cold and snow - Cold Conditions Manual ...)

[AMP, MEDEVAC, ETS,, veterinary service]

2. ACCIDENT WITH DANGEROUS SUBSTANCE - damaged area of the radiology clinic

a) Sampling / detection / decontamination [CBRN module]

b) search and rescue in CBRN conditions

3. establishment of communication

a) o securing logistics routes (damaged bridge, congested roads)

[police]

b) damaged communication system - establishment of radio communication between services

c) damaged embankment - flooding of settlements and roads [FRUB, HCP]

4. inter-service coordination = TTX

a) Staff training - 10 persons / services

b) information gathering, analysis, dissemination [drones]

c) ICT support, GIS platforms [TAST]

d) public relations (SimPress)

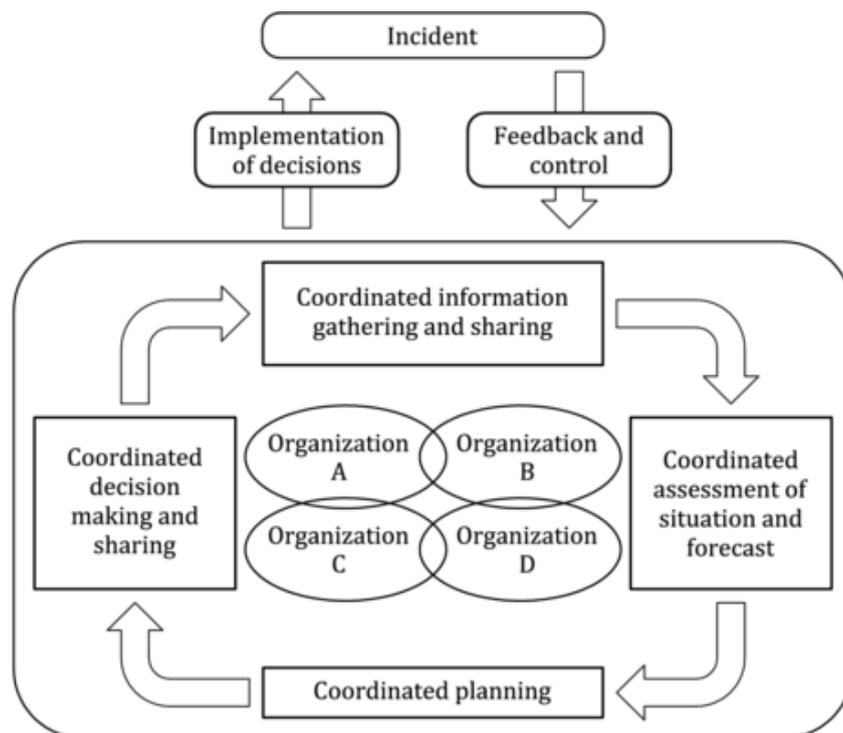


Figure 6. Coordinated incident management process for multiple organizations (ISO 22320: 2018 Security and resilience - Emergency management)

Timetable:

Title of the table-top exercise	Topics	Participants	Due date for implementation
TTX Croatia 2022	Earthquake response during the COVID-19 pandemic - 1 hour introduction - 6 hours exercise - 1hour debriefing	10 participants 10 control -firefighters -Red Cross -Croatian Mountain Rescue Service -Civil Protection	February 2022

3 Guidelines for the implementation of pilot use cases

3.1 Approach to organization of pilot Use Case 1

The practical arrangements of the training pilot case studies and training courses and exercises are presented below.

3.1.1 Guidelines for the implementation of the Pilot case study 1: Training of children and adolescents

a) Resources/Equipment required for the case study:

- A computer with an Internet connection
- A printer (monochrome or colour)
- A mobile device (tablet or Smartphone)

b) Planning and Preparation:

Checklist for including children and adolescents in a training event⁹:

- Seek the informed consent of children, ensuring that children know that they can withdraw at any point.
- Also seek informed consent for any work with children from parents/guardians/schools
- Gain written permission for photos and film and ensure children can opt out easily from the training.

3.1.2 Guidelines for the implementation of the Pilot case study 2: Training-the-Trainers informative and educative seminars

a) Resources/Equipment required for the case study:

- A computer with an Internet connection
- A printer (monochrome or colour)
- A mobile device (tablet or Smartphone)

b) Planning and Preparation:

The following checklist will ensure that important steps are not omitted and will assign responsibilities and time for tasks to be performed.

- **Define criteria for the selection of participants** (profiles, professional experiences and cultural and educational backgrounds)
- **Develop a training agenda and invitation for the seminar**
- **Identify and recruit participants**
- **Prepared handouts, slides and work sheets**
- **Arrange for snacks/drinks**
- **Arrange the room and equipment**

⁹ <http://research.gold.ac.uk/id/eprint/22908/1/Childhope-CYPP-Toolkit-FINAL.pdf>

- **Print and multiply the Evaluation form, the Information Sheet and the Inform consent form (see Annexes)**

3.1.3 Guidelines for the implementation of the Pilot case study 3: Training of adults

a) Resources/Equipment required for the case study:

- A computer with an Internet connection
- A printer (monochrome or colour)
- A mobile device (tablet or Smartphone)
- Conference Rooms for implementation of four seminars

b) Planning and Preparation:

There could be **invitation based seminars** (submit invitations to NGOs especially dealing with people with disabilities, local authorities, tourism associations) or **Open seminars** (advertise in local media that the training course is open to everybody)

The following checklist will ensure that important steps are not omitted and will assign responsibilities and time for tasks to be performed.

- **Define criteria for the selection of participants** (profiles, professional experiences and cultural and educational backgrounds)
- **Identify (and rent) conference rooms in the 4 locations where the seminars will take place**
- **Develop a training agenda and invitation for the seminar**
- **Identify and recruit participants (submit invitations or press releases to announce the events)**
- **Prepared handouts, slides and work sheets**
- **Arrange for snacks/drinks**
- **Arrange the room and equipment**
- **Print and multiply the Evaluation form, the Information Sheet and the Inform consent form (see Annexes)**

3.2 Approach to organization of pilot Use Case 2

a) Resources/Equipment required for the pilot UC2:

For the needs of the common EMF preparation and implementation, an off- road vehicle will be leased in order to facilitate the access of the working team to mountainous and remote areas. Arrangements for the travel and subsistence of the Greek participants will take place before the pilot use case implementation. The pilot should be executed within the budget's limited budget.

b) Planning and preparation:

A planning committee is recommended to ensure proper preparation. The planning committee should consist of a single senior-level individual who is responsible for the overall control of the event, as well as representatives from each participating organization. All members should be familiar with emergency plans and procedures in their areas of technical expertise. They should be in charge of :

- Handling logistics and administrative details (see Annex 2 -Checklist for Administration/logistics planning)
- Deciding of the scenario for the discussion exercise
- Choosing an incident scene for the discussion exercise
- Developing safety, security and media plans, as applicable
- Scheduling and conducting briefings for participants before the exercises and debriefings after the exercises.

The following checklist will ensure that important steps are not omitted and will assign responsibilities and time for tasks to be performed.

- Partners participating in UC2 (EPAYPS, MAGMA, SAR312, RTD, IHU) will appoint the human resources for the discussion exercises and will agree on the scenario, the main events of the exercise and associated timetables
- Determine and confirm the availability of the external participants if necessary. For example, a representative from the national media could be invited to attend the exercise.
- An Exercise Controller needs to be appointed who has overall oversight and the authority to alter the planned programme, including early termination for safety reasons (e.g. adverse weather) and Observer (s) with no role to play in the exercise but to witnessing events to assess the preparations of individuals within it. Non-participating personnel such as the exercise controller, observers etc. should be clearly identifiable from exercise participants.
- Before the start of the training exercise, all pilot participants will sign an **Informed Consent Form** provided in **Annex 1**.
- Selection of a suitable site should be undertaken in the early stages of exercise planning. A Map of the site will be created in COncORDE platform by KTGR.
- Ensure that all equipment to be used during the exercise is available and all devices for communication (e.g. mobile devices) have been tested prior to the exercise.
- Ensure that all participants have been briefed about the scenario of the training exercise and the technologies used. They should be made aware of any hazards within the area and reminded of safety issues (in this regard a safety plan may be created-which establishes precautions and limitations necessary for the safe conduct of the event). At the same time, they should be instructed that during the exercise, participants should act according to their own, regular functions as if it was a real-life situation, i.e. a real emergency deployment and that they should use the regular chain of command and communication channels that their respective organizations would use during an emergency deployment
- Hot' debrief - Debrief immediately after an event
- Cold' debrief - Debrief sometime after an event (e.g. a written assessment)
- Prepare a clear and concise summary report of the exercise to distribute to all organisations and groups which took part, together with major recommendations.

3.3 Approach to organization of pilot Use Case 3

a) Resources/Equipment required for the pilot UC3:

Resources/ Equipment required for the Use Case	Description	Responsible partner
A room for train the trainers course In North Macedonia	A room with a capacity of maxim 50 seats.	MAGMA and IHU
A room for Training course for first responders	A room with a capacity of maxim 50 seats.	MAGMA
A room for the initial planning conference	A room with a capacity of maxim 20 seats.	MAGMA
A room for the main planning conference and equipment	A room with a capacity of maxim 20 seats.	MAGMA
Equipment for the field training exercise	Water pumps with high capacity rescue boat Lifejacket Rescue equipment Personal protective equipment Rope Floating objects Off road vehicle	MAGMA

The pilot should be executed within the budget's limited budget and timeframe of 12 months set in the project.

b) Planning and preparation:

The following checklist will ensure that important steps are not omitted and will assign responsibilities and time for tasks to be performed.

- **Define criteria for the selection of participants** (profiles, professional experiences and cultural and educational backgrounds)
- **Develop a training agenda and invitation for the participants to the courses**
- **Identify and recruit participants**
- **Prepared handouts, slides and work sheets**
- **Arrange for snacks/drinks**
- **Arrange the room and equipment**
- **Print and multiply the Evaluation form, the Information Sheet and the Inform consent form (see Annexes)**
- **Prepare the Curriculum of the Train the Trainers Course:** The development of educational materials for Train the Trainers course targeting future trainers of first responder will be based on a **Curriculum** that will be created by IHU in English language. Curriculum will contain but not

limited to the following information: aim and objectives of the educational training, target audience, envisaged content of chapters and sections, references and sources. The educational material will be made available to the public through the RESISTANT Training Platform, on the section for first responders training, in its final version. It may consist of lectures, videos of demonstrations and experiments, photos, links to other website and other sources of information, etc

- **Prepare the Curriculum for the Training course for first responders:** The development of educational materials for this course targeting first responders from North Macedonia will be based on a **Curriculum** that will be created by Military Academy (MA) in cooperation with IHU. Curriculum will contain but not limited to the following information: aim and objectives of the educational training, target audience, envisaged content of chapters and sections, references and sources. The educational material will be made available to the public through the RESISTANT Training Platform, on the section for first responders training, in its final version. It may consist of lectures, videos of demonstrations and experiments, photos, links to other website and other sources of information, etc
- **Organization of the initial planning conference:**
MAGMA will be in charge of logistic arrangements of the conference while KTGR will be in charge of preparation of the training on how to use COncORDE emergency management platform for incident management during the full-scale exercise.
- **Organization of the final planning conference:** the following organisational issues and planning considerations that are important for the implementation of the conference:
 - **Preparation of administrative and logistics.** MAGMA in cooperation with Protection and Rescue Directorate will make the necessary administrative and logistical arrangement e.g. rooms and communication systems and other resources and equipment necessary for the exercise (as mentioned in the Table above). It will ensure that the necessary audio/visual training aids can be used with ample space and viewing for participants.
 - **Briefing of participant before the exercise.** The briefings should provide details on the following¹⁰:
 - The overall timeframe for the conduct of the exercise.
 - The timetable for main activities of each stage of the exercise.
 - The main scenarios being played.
 - The process of injecting the anticipated problems.
 - Location map or layout plan for specific incidents or problems being played.
 - Roles of exercise participants.
 - Admin and logistical support and arrangements
 - **Debriefing after the exercise:** Immediately after the conclusion of the exercise proper, a debrief on the exercise has to be conducted and documented in a report. The aim of the debrief is:
 - a. To document the observations and findings arising from the exercise.
 - b. To bring up lessons learnt and recommend measures for improvement and implementation.

¹⁰ <https://www.scdf.gov.sg/docs/default-source/scdf-library/p-fm/erp-guidelines-on-table-top-exercise.pdf>

- c. To allow participants to clarify doubts and uncertainties that they may have with regard to their roles or the procedures to be adopted.
- **Organization of the Full-Scale Exercise (FSE):**
 - A planning committee is recommended to ensure proper preparation. The planning committee should consist of a single senior-level individual who is responsible for the overall control of the event, as well as representatives from each participating organization. All members should be familiar with emergency plans and procedures in their areas of technical expertise. They should be in charge of:
 - Handling logistics and administrative details
 - Deciding of the scenario for the field training exercise
 - Choosing an incident scene
 - Developing safety, security and media plans, as applicable
 - Scheduling and conducting briefings for participants before the exercises and debriefings after the exercises.
 - Partner participating in UC3 (MAGMA) will appoint the human resources for the FSE and will determine and confirm the availability of the representatives from Protection and Rescue Directorate, Red Cross of the Republic of North Macedonia and other crisis management stakeholders' institutions. A representative from the national media could be invited to attend the exercise.
 - An Exercise Controller needs to be appointed who has overall oversight and the authority to alter the planned programme, including early termination for safety reasons (e.g. adverse weather) and Observer (s) with no role to play in the exercise but to witnessing events to assess the preparations of individuals within it. Non-participating personnel such as the exercise controller, observers etc. should be clearly identifiable from exercise participants.
 - Before the start of the training exercise, all pilot participants will sign an Informed Consent Form provided in Annex 1.
 - During the preparation phase all efforts will be made to communicate to the members of the public in the vicinity of the exercise (who might be worried or affected by the exercise) that this is a simulation exercise.
 - Before the FSE, visit the location -at a similar time/day as the exercise -to ensure that it is appropriate.
 - Seek written permission from parties which have a claim to an area where is the location of the exercise and inform any potential users that it may be out of bounds on a certain date, if necessary.
 - Ensure that all equipment to be used during the exercise is available and all devices for communication (e.g. mobile devices) have been tested prior to the exercise.
 - Ensure that all participants have been briefed about the scenario of the training exercise and the technologies used. They should be made aware of any hazards within the area and reminded of safety issues (in this regard a safety plan be created-which establishes precautions and limitations necessary for the safe conduct of the event). At the same time, they should be instructed that during the exercise, participants should act according to their own, regular functions as if it was a real-life situation, i.e. a real emergency deployment and that they should use the regular chain of command and communication channels that their respective organizations would use during an emergency deployment.

- First aid/ambulance cover should be provided to deal with any health problems or injuries sustained during the exercise. For safety reasons, exercise directors should adopt an agreed procedure for intervention into the exercise, including cessation where necessary.
- The use of Codewords will ensure that everyone involved is aware that they are part of the exercise and not a real incident. Control Rooms / operations centres of all participating organisations must be informed about the codename, prior to the exercise.
- Hot' debrief - Debrief immediately after an event
- Cold' debrief - Debrief sometime after an event (e.g. a written assessment)
- Prepare a clear and concise summary report of the exercise to distribute to all organisations and groups which took part, together with major recommendations.

3.4 Approach to organization of pilot Use Case 4

a) Resources/Equipment required for the pilot UC4:

Resources/Equipment required for the Use Case	Description	Responsible partner
Room for lectures and seminars (lectures and seminars)	A room with a capacity of maxim 20 seats.	CCMA
Room for table-top exercise	A room with a capacity of maxim 20 seats.	CCMA
Laptops	Laptops that will be used by the participants to the table-top exercise	CCMA
Food/water	Lunch for the participants	CCMA
paper, pens, flip charts etc.	For lectures and seminars and table-top exercise	CCMA

The pilot should be executed within the budget's limited budget and timeframe of 12 months set in the project.

b) Planning and Preparation:

Up to 15 persons will be invited by CCMA to attend the educational training classes and up to 20 persons the table-top exercise that will take place in Croatia.

The following checklist will ensure that important steps are not omitted and will assign responsibilities and time for tasks to be performed.

- **Define criteria for the selection of participants** (profiles, professional experiences and cultural and educational backgrounds)
- **Develop a training agenda and invitation for the participants to the educational training classes**
- **Identify and recruit participants**
- **Prepared handouts, slides and work sheets**
- **Arrange for snacks/drinks**

- **Arrange the room and equipment**
- **Print and multiply the Evaluation form, the Information Sheet and the Inform consent form (see Annexes)**
- **Prepare the educational training materials:** The lectures and seminars (educational training classes) will be based on the training materials available on the RESISTANT training platform in English language.
- **Organization of Tabletop exercise:** Croatian Crisis Management Association (CCMA) is responsible for the planning and conduct of the **TTX**. In the planning and preparation for the exercise, the following organisational issues and planning considerations that are important for the execution of the exercise:
 - **The General Instructions File** (ensuring that all the exercise participants are clear about the exercise scope and the roles expected of them -e.g. the roles of the participants) should be issued by CCMA to the exercise participants prior to the conduct of the exercise to allow time for the necessary preparation.
 - **Preparation of administrative and logistics.** CCMA will make the necessary administrative and logistical arrangement e.g. rooms and communication systems and other resources and equipment necessary for the exercise (as mentioned in the Table above). It will ensure that the necessary audio/visual training aids can be used with ample space and viewing for participants.
 - **Briefing of participant before the exercise.** The briefings should provide details on the following¹¹:
 - The overall timeframe for the conduct of the exercise.
 - The timetable for main activities of each stage of the exercise.
 - The main scenarios being played.
 - The process of injecting the anticipated problems.
 - Location map or layout plan for specific incidents or problems being played.
 - Roles of exercise participants.
 - Admin and logistical support and arrangements
 - **Debriefing after the exercise:** Immediately after the conclusion of the exercise proper, a debrief on the exercise has to be conducted and documented in a report. The aim of the debrief is:
 - a. To document the observations and findings arising from the exercise.
 - b. To bring up lessons learnt and recommend measures for improvement and implementation.
 - c. To allow participants to clarify doubts and uncertainties that they may have with regard to their roles and the procedures to be adopted.

¹¹ <https://www.scdf.gov.sg/docs/default-source/scdf-library/p-fm/erp-guidelines-on-table-top-exercise.pdf>

3.5 Calendar of activities

The following table shows the months of implementation of the pilot activities within each use case (UC).

UC no.	Activity/Activities	Type of activity	Responsible Partner	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
				Jun. 2021	Jul. 2021	Aug. 2021	Sep. 2021	Oct. 2021	Nov. 2021	Dec. 2021	Jan. 2022	Feb. 2022	Mar. 2022	Apr. 2022	May 2022	Jun. 2022
UC1	Training of children and adolescents	Virtual School training	IHU				X	X								
	Training-the-Trainers informative and educative seminars	Virtual School training	IHU								X	X				
	Training of adults	Virtual School and Virtual Control Room training	IHU										X			
UC2	Study visit and survey	Study visit and survey	EPAYPS								X					
	Discussion exercise (tabletop exercise)	Operational training	EPAYPS								X					
UC3	Training-the-trainers course	Educational training	IHU				X									
	Training course for first responders	Educational	MAGMA										X			

UC no.	Activity/Activities	Type of activity	Responsible Partner	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
				Jun. 2021	Jul. 2021	Aug. 2021	Sep. 2021	Oct. 2021	Nov. 2021	Dec. 2021	Jan. 2022	Feb. 2022	Mar. 2022	Apr. 2022	May 2022	Jun. 2022
		training														
	Two planning conferences	Operational training	MAGMA					X					X			
	Full-Scale Exercise		MAGMA												X	
UC4	Lectures and seminars	Educational training	CCMA								X					
	Tabletop exercise	Operational training	CCMA									X				

4 RESISTANT Pilot Monitoring and Evaluation methodology

The aim of the pilot use cases/scenarios is to assess the quality and usability of the **RESISTANT** education and training infrastructure. Members of the consortium will take part in the training **as organizers and instructors** to deliver the educational content during the class, the operational exercises, and virtual reality training sessions. Pilot monitoring will stop at the end of May 2022 to allow enough time to analyze the results and present them in the deliverable **D3.2: RESISTANT use case Implementation and Evaluation Report** by the end of July 2022.

KTGR will closely monitor throughout the pilot the operation of the ConCorde Platform to assure maximum system operability and to locate possible deficiencies that should be considered.

Using a variety of Monitoring and Evaluation (M&E) methods will help to maximize the validity of project results, by providing triangulation of the methods and/or the data.

Below we present the Monitoring and Evaluation methodology

4.1 Monitoring and Evaluation methodology

Objectives

Why evaluate?

The process for evaluating an exercise should start with the initial concept meeting and continue through until the final debriefings have been completed, reports are issued and corrective actions are agreed on.

Exercise managers need to consider whether it is their responsibility only to evaluate the exercise and report on the outcomes to be resolved, or whether they should also implement and track corrective actions as part of the resolution process.

Even the smallest of exercises should incorporate an exercise report, although this will be less detailed than for a large-scale exercise. Conducting a thorough evaluation is not a minor undertaking and may require dedicated staff and careful consideration.

Evaluation can include input from all aspects of the exercise and should be informed by:

- outputs from the exercise planning process and planning meetings
- observations from exercise staff
- outputs from the exercise debrief
- observations / reports from the exercise evaluator(s).

The output from the evaluation should be a written report. This might include observations, findings, treatment options, or recommendations based on the information gathered during the exercise. The outcomes from one exercise may not be appropriate to all situations and therefore any corrective action needs to be carefully considered.

The exercise evaluation should include two components:

1. Exercise outcomes [participants' performance against objectives], and
2. Exercise management [what you as an exercise management team have learned / would improve]

For each of these components, the exercise report should attempt to answer the following questions:

- What did we plan to do [what were the objectives]?
- What did we achieve – how did this differ from what was planned [were objectives met and if not, how did the outcomes differ]?
- Why did it happen [what led to the objective(s) not being achieved as planned]?
- What can be done differently in the future [what improvements need to be made]?

Outcomes from an exercise should contribute to an organization's learning and improvement.

Evaluation methods are not designed solely for use during exercises; they are also transferable to real-time operations and other activities (e.g. training, performance reviews). While real-time operations will not be structured and pre-planned as exercises (particularly in terms of the scripting aspect), the design of objectives for the evaluation can be modified to reflect the active operational situation and gather lessons from the real-time deployment of capabilities. These types of lessons are an indispensable input to the development of any capability.

Sound objectives are essential not only to a successful exercise but also to its evaluation. A good exercise planning team will produce achievable, measurable objectives. Evaluators should help with this process – in some instances, they will need to identify objectives that need to be revised or improved to meet the required outcomes. Evaluators may be placed in the situation of being brought into the exercise late in the planning process where the existing objectives are not achievable and/or measurable and will therefore need to be revised.

These objectives should conform to the SMART criteria; that is, Specific, Measurable, Achievable, Realistic, and Task-related. A challenge for evaluators will be to ensure the objectives meet these criteria, and that standards or performance measures exist for them. The ideal situation for an evaluator is for a capability to have clear objectives with measurable standards. Where these do not exist, the evaluator will have to help develop measurable standards against which to evaluate.

The focus for evaluators during any activity should be on reporting against the objectives. On occasion, evaluators may identify things outside the objectives that merit reporting, but this is generally the exception rather than the rule.

In addition to the design of robust objectives, it is critical to identify how achievements of these will be measured. This can be done via performance measures or standards, which may:

- exist as part of current standard operating procedures (SOPs), or
- need to be developed before the activity is conducted.

It may be that for the testing of new SOPs, such standards need to be developed as a product of the activity or through interaction with the relevant organization. These will subsequently need to be tested and evaluated for their validity.

Standards provide evaluators with a benchmark against which to assess performance and are used to quantify the objectives to reflect aspects of the task that are critical to successful performance. These

aspects will determine what evaluators measure and use as will evidence to support their conclusions about performance during the activity.

4.1.1 Evaluation process

There are four stages in the exercise evaluation process:

- Plan and coordinate the evaluation
- Observe the exercise and collect data
- Analyze the data
- Develop the exercise report

These four stages begin with pre-exercise evaluation planning and conclude with the development of the exercise report. By using an exercise evaluation process, exercise planners ensure the exercise aim and objectives inform a focused evaluation, which produces actionable outcomes.

4.1.2 Plan and coordinate the evaluation

Planning and coordination support an effective and successful exercise evaluation.

The planning process should include the:

- appointment of an evaluation coordinator
- examination and review of exercise objectives to determine the requirements of the evaluation
- development of an evaluation plan
- identification, training, and briefing of evaluators.

4.1.2.1 Appoint evaluation coordinator

The evaluation coordinator should be appointed at the start of the concept phase to oversee the evaluation process. The evaluation coordinator should be a member of the exercise planning team and be familiar with:

- the identified need, aim, and objectives of the exercise
- plans, policies, and procedures of the participating organization(s)
- inter-agency coordination issues
- data collection and analysis techniques.

4.1.2.2 Determine evaluation requirements

An analysis of the aim and objectives of the exercise will determine the evaluation requirements. These include the plans, tools, and evaluators needed to effectively collect data and analyze information.

Discussion activities may not require the same level of evaluation planning as deployment (functional or field) exercises. More complex exercises involve multiple evaluators, possibly in different locations, and require more detailed planning to ensure the evaluation is coordinated.

4.1.2.3 Identification, training, and briefing of evaluators

Once evaluation requirements have been determined, the evaluation coordinator manages the identification, training, and briefing of evaluators. The evaluation requirements determine how many evaluators will be needed, what kind of subject-matter expertise they require, how they are assigned during an exercise, and what kind of training and briefing they need before the exercise.

4.1.2.4 Identifying evaluators

Evaluators need appropriate expertise in evaluation. They also need to either have subject-matter expertise or be able to identify requirements for and manage subject-matter experts to help the evaluation where required. An evaluator may also be called on to provide impartial and supportive guidance. The role of the evaluator is not meant to be adversarial or confrontational.

Evaluation needs to be considered in the exercise management process from the initial concept development. During this phase, evaluation needs to inform and support the development of the aim and objectives. Exercise planners need to revisit objectives throughout the planning process to ensure they can still be achieved.

External evaluators may contribute their subject-matter expertise from outside the agency to be evaluated and must therefore understand jurisdictional and agency variations.

4.1.2.5 Assigning evaluators

During deployment exercises, evaluators will be assigned to observe different activities based on their subject-matter expertise. They may be assigned to look only at individual tasks or capabilities. They may be asked to look at organizations or particular functions across the exercise or organisations (e.g. command within an organisation or command, control, coordination, communication and information management across an agency or multiple agencies).

A deployment exercise master schedule of events provides a timeline and location for all expected exercise events. Reference to a master schedule of events can help the evaluation coordinator determine the times at which specific evaluators should be at certain locations. Evaluator assignments should be decided on, recorded and communicated to evaluators before the exercise is conducted.

4.1.2.6 Briefing and training evaluators

Evaluators will need to be briefed and may also need to be trained before the exercise. Briefing/training should address all aspects of the exercise, including the exercise aim and objectives; the scenario; participants; and evaluator roles, responsibilities and assignments. During or before the training, evaluators should be provided with copies of the following materials to review:

- exercise documents, such as the scenario for discussion-based exercises or the exercise plan, evaluation plan and master schedule of events for deployment exercises
- evaluation materials and tools and evaluator assignments
- appropriate plans, policies, procedures, legislation and agreements of the exercising organization (s).

Any training provided should also address the roles and responsibilities of evaluators during the various stages of an exercise.

Evaluator responsibilities include the following:

Pre-exercise:

- examine the exercise aim, objectives and exercise instructions
- identify key and trigger points of the activity
- develop a data collection plan to enable objective reporting on the performance of capabilities against the stated objectives (through demonstrated performance and evidence).

During exercise:

- gather evidence to be able to demonstrate/report on performance within the specific capability
- participate in scheduled meetings/briefings as required
- act as a forward observer for EXCON staff to report on activities in real-time versus exercise time
- where requested and after consultation with EXCON staff, provide injects to the exercise to help exercise flow
- be contactable
- provide feedback to participants and clarify observations made (e.g. through hot debrief)
- assess situational awareness of participants
- assess the flow of information and analyze the root cause of problems
- consult with other evaluators about the effect of good or poor performance.

Post-exercise:

- compile and review the data collected to make comments and recommendations
- analyse and summarise outcomes
- develop treatment options
- identify good as well as poor performance
- transfer and articulate findings in the post-exercise report.

4.1.2.7 Conduct evaluator briefings

The evaluation coordinator should brief evaluators to ensure roles, responsibilities and assignments are understood. For functional and field exercises, this briefing often includes a tour of the exercise site so that evaluators become familiar with the venue and know where they should position themselves to best observe exercise activity.

4.1.2.8 Development of an evaluation plan

The evaluation plan should contain the following:

- exercise information

- aim, objectives, scope and focus of the evaluation (these may be different from those of the exercise)
- key evaluation questions
- methods for data collection and analysis
- security, safety and ethics
- risk management strategy
- evaluator preparation – training, briefings etc.
- reporting requirements
- timeframes
- aide-memoires, evaluation tools.

4.1.3 Observe the exercise and collect data

The data collection plan describes how all the data you need to answer your research question will be collected and measured, by whom and by which means during the exercise. This structured plan is key to addressing the research questions.

The starting point to formulating a good data collection plan is the rationale behind it. Why there is a need for a specific set of data and for which purposes? The answers should be easily found in the exercise objective(s) and in the research questions such as “to answer this research question, I have to collect this set of data”, “what is needed to provide an answer?” or “how much time and resources are available?”.

To collect the data needed, the appropriate KPIs should be identified in all three performance measurement dimensions (exercise, CM, solutions). Data could be collected through the test-bed technical infrastructure and/or through observers during a specific session of the exercise and in a given moment of the scenario, or through surveys and focus groups. Ultimately, the data collection plan will serve the purpose of a roadmap. To get to the final destination, all the information need should be carefully mapped, bearing in mind the exercise objective(s).

Exercise observations and data collection can differ between discussion and functional/field exercises.

4.1.3.1 Discussion exercises

Discussion exercises tend to focus on higher-level issues involving the plans, policies and procedures of an organization/jurisdiction. As such, many discussion exercises break participants into syndicate groups to facilitate smaller group discussions. In these smaller group discussions, evaluators and/or scribes may need to be present to record proceedings and capture observations and outcomes.

After the syndicate groups have finished their discussions, the entire group usually reconvenes in plenary to address any multi-agency issues or conflicting opinions. Although individual evaluators are assigned to record discussions within a designated group, all evaluators should capture the information aired in this open discussion.

A debrief with the exercise planning team, facilitators and evaluators should be held immediately afterwards to collect observations and thoughts about the exercise conduct. This will provide an opportunity for evaluators to clarify any points.

Following the exercise, evaluators may also supplement the data collected during the discussions by collecting additional data from participants through interviews or questionnaires.

4.1.3.2 Functional/field exercises

Evaluation of deployment exercises requires observations to take place where the exercise activities are occurring. After an exercise, the information recorded by evaluators is used to analyse whether or not the activities and tasks were successfully performed, and the objectives achieved.

During exercises, evaluators need to keep accurate records of their observations. Evaluators should take detailed notes as well as consider other means of recording data, such as the use of personal recording devices. Any electronic recording of exercises should be following the policies/procedures of the participating organisations.

Because numerous exercise activities may be occurring simultaneously, evaluators need to plan to be placed to observe those activities most relevant to the objectives they are evaluating.

Some examples of evaluators' observations include:

- any deviations from plans or procedures
- timeliness of response/completion of tasks
- effectiveness of, o shortcomings in, command and control
- processes and arrangements that work well and should be maintained
- and/or enhanced
- creative, adaptive problem solving
- equipment issues that affect participant efforts
- exercise management issues that affect the ability of participants to achieve objectives.

Evaluators should not interfere with or disrupt the conduct of the exercise. However, it may be necessary for an evaluator to interact with participants during the exercise if he or she has a question about something observed. These questions should not influence how participants respond to the scenario and be as brief as possible.

4.1.3.3 Collecting supplementary data

The evaluation team may wish to collect additional data immediately after the exercise. For example, useful sources of information could include logs, message forms and maps. These records can help evaluators validate their observations and identify the effect of inaccurate information on performance.

4.1.4 Develop exercise evaluation documents

The evaluation approach of the exercise depends on the data collection plan and deals with “making sense” of the data through different techniques. These can include:

- evaluation plan
- data collection tools
- information for evaluators
- evaluation report templates.

Evaluation templates that may be populated with the questions/objectives of the evaluation have been provided. These can form a useful guide for evaluators to ensure they are gathering the correct evidence to evaluate performance relative to the objectives.

4.1.4.1 Guidance for templates

Once the evaluation plan is written it can be submitted to the relevant approving body for sign-off.

The data collection plan template is simply a means for evaluators to develop an aide-memoire for themselves to ensure they are:

- observing the correct activities
- in the right place at the right time
- covering all the information required to report against the objectives
- aware of any relevant standards or measures that need to be applied to performance.

When completed before an exercise, they may also identify issues or questions that must be resolved before the exercise starts so that the evaluation can be conducted effectively.

The evaluator report template guides what needs to be reported against following the activity and contains several important sections that are briefly described here.

4.1.4.2 Observations

These are records of the noteworthy facts or occurrences from the activity: they form the evidence for the evaluation conclusions.

Important observations should be recorded in terms of (a) what worked well and why, and (b) what didn't work well and why. This identifies both good performance and areas for improvement to support the learning and development of individuals and capabilities.

Initial analysis and summarizing of data can include the use of the P2OST2E elements of capability (People. Process. Organisation. Support. Technology. Training. Exercises.) to help identify the root causes of any observed issues/performance gaps.

4.1.4.3 Issues

A matter drawn from the evidence (observations) collected that needs to be further considered. These are generally negative, flagging problems associated with performance.

4.1.4.4 Treatment options

Potential solutions for addressing issues identified during the activity. These are optional rather than mandatory – they should only be included if they are concrete, realistic and feasible.

Each of these areas is reported relative to each objective, and for each, there is also a section detailing whether the objective was achieved or not (or partially), accompanied by a summary of why (or why not).

The report is prefaced with an executive summary (for which there is guidance in the template) that summarises what the exercise was, what was being evaluated, whether the capability was successful overall in the achievement of its objectives, and what the identified issues and treatment options were.

4.1.4.5 Information for evaluators

This simply refers to any SOPs, jurisdictional / capability, or other materials relevant to the activity that evaluators need to be aware of to conduct the evaluation accurately and meaningfully. This information may be given in various forms, including printed/electronic documents or verbal briefings.

4.1.5 Analyze data

During data analysis, the evaluation team consolidates the data collected during the exercise and identifies demonstrated strengths and areas for improvement. Functional and field exercises tend to yield higher amounts of data than discussion-based exercises and thus require a more comprehensive data analysis phase.

The main objective is to analyse all the data and observations that are gathered during the exercise. In order to do so, what is received should be checked and cleaned up. The next step is dedicated to processing the results so that the occurred change due to the introduction of the solution(s) could be identified. The sense-making takes place during synthesizing the results of the exercise.

4.1.5.1 Identifying root cause and developing recommendations

To ensure the exercise evaluation process produces a report that produces useful, actionable outcomes for improving an organization's capabilities, evaluators must discover not only what happened, but why it happened. Each task not completed as expected offers evaluators the opportunity to search for a root cause. A root cause is a source of or underlying reason behind an identified issue. To arrive at a root cause, an evaluator should attempt to trace the origin of each event back to earlier events and their respective causes. Root cause analysis may also require the review and evaluation of an organization's emergency plans, policies and procedures.

Uncovering root causes enables the development of actionable solutions that can be described in the subsequent exercise report. While these solutions are based on the evaluation team's experience and best judgment, the responsibility for implementing recommendations ultimately lies with the participating organizations.

4.1.5.2 Conducting analysis

During the exercise, a lot of different kinds of data with various means (observer, test-bed technical infrastructure, questionnaires etc.) are gathered. This was done according to the data collection plan. Plans are always just ideal imaginations of how reality should work. There are cases in which plans work out as expected, but, commonly, deviations occur. These deviations are exactly what we need to identify during the data quality check.

Firstly, all the collected data should be gathered in one place and the same format. Is there data missing or broken? If so, is this data critical? Secondly, the data should be structured. Is there a structure to use? Is there data missing or broken? Are there strong deviations? If there is no way to improve the data, indicate in the evaluation that the conclusions on this can only be limited. A data set for analysis should be created. Irrelevant or poor-quality data must be excluded (with an indication only).

Following any debriefs, evaluators should review their notes and begin to develop preliminary analyses of the exercise.

When conducting an analysis, evaluators should consider:

- Were the objectives achieved?
- Were organizations able to successfully fulfill their roles and responsibilities? If not, why?
- What were the key decision/trigger points?
- Were any resource issues identified?
- Do the current plans, policies and procedures support an effective response to an event? Were participants familiar with the relevant plans, policies and procedures?
- Were there any multi-agency coordination issues that need to be addressed?
- What should be learned from this exercise?
- What strengths were identified?
- What areas for improvement were identified?

It is not enough to know what data, what to do with it is also important. For example, if you are planning to ask specific questions based on KPIs, you will carry out a survey and you will use a rating scale to measure opinions (quantitative method). If you are looking for more in-depth information that can be better inferred through discussions, your evaluation should take into account more qualitative methods (focus groups) and appropriate techniques to analyse the data collected (qualitative data analysis software). What is important at this stage is the "sense-making". While you still don't have a precise idea of how the data will look like, you should start thinking of the advantages and disadvantages of specific techniques and tools.

4.1.6 Develop the exercise report

Any exercise evaluation should result in the development of an exercise report, however brief, that describes what happened, good performance and areas for improvement, and makes

recommendations. For a small exercise, there may be one evaluator who produces a one-page report. For a large exercise there may be several individual evaluator reports that need to be analyzed and summarized into the final exercise report. The exercise evaluation team may be asked to draft the exercise report. Exercise reports should be produced to effect change and improvements. They do not have to be long/ large to do that. Exercise reports should clearly identify areas/issues to be improved and/or enhanced. They should include enough contexts for each issue or provide links to that context (e.g. individual evaluator reports as annexes). If treatment options or recommendations are known they can be included. The length of the report is not likely to increase its effectiveness.

The exercise report should contain the following:

- Introduction – executive summary
- Background – aim, objectives, scope, participating organizations
- Evaluation – commentary on objectives (observations, recommendations)
- Conclusions.

The exercise director is responsible for finalizing the exercise report and submitting it to those responsible for approving/releasing it and then to those responsible for resolving the issues that have been identified.

4.1.6.1 Resolution of evaluation findings

The resolution process should involve (as a minimum) the following steps:

1. Identify the findings/issues and the improvements or remedial activities required.

Where issues have been identified and validated, existing treatment options should be considered as well as alternatives that are appropriate to the organization and its development goals.

2. Finalize the report.

The draft report should be reviewed and any necessary amendments made so it can be finalized and distributed to the appropriate individuals, units or organizations.

3. Track implementation of the corrective action plan.

Where a corrective action plan has been developed (i.e. a plan for implementing remedial training/equipment enhancements / revised SOPs), an individual should be asked to track the plan's progress or specific actions within it. That is, the corrective action plan should have a timeline for implementation and those responsible should report on progress at appropriate intervals to ensure the momentum in enhancing the capability (through addressing identified performance problems) is not lost.

In other words, the final checklist should include the following:

- Lessons Learnt Library filled in
- Knowledge base updated

- Portfolio of Solutions updated
- Internal documentation done
- Internal dissemination done
- External documentation done
- External dissemination done

Consider legal restrictions or limitations with regards to the solutions when you communicate results. Always interpret and consider the evaluation results in the exercise context.

4.2 Evaluation instruments

The evaluation instruments for each Use case are presented in **Annex 3**.

They consist of:

1. Evaluation Questionnaires for UC1
2. Evaluation instruments for UC2, UC3 and UC4: Three (3) Questionnaires & Interview guidelines
3. Questionnaire on perceived usability of the RESISTANT platform (COncORDE emergency management platform)

5 User's Handbook

The User's Handbook is intended to assist people using the **COncORDE platform** and is primarily targeted to trainers and facilitators of training programs for first responders for natural disasters and technological risk mitigation.

COncORDE is a state-of-the-art system of a systems software platform that supports and enhances the existing coordination and decision processes during small or large-scale crises and medical emergencies, at local, regional and cross-border levels. By its design, the platform meaningfully connects all Emergency Management Services (EMS) participants in emergency response, which are in generic terms the Public Safety Access Point -PSAPs (112/control rooms), the dispatched EMS responders, the First receiver hospitals and any involved Higher command centers. Concorde Platform provides Satellite connection in case that the user doesn't have access to Wifi Network.

ACRONYMS

DSS: Decision Support System

EMS: Emergency Medical Services

PSAP: Public Safety Answering Point

CIS: Common Incident Screen

SITREP: Situational Report

DEFINITION OF ROLES:

Higher commanders: These are the persons responsible for the higher-level decision making and communications at regional, national, European, international levels, that may not use COncORDE system for the hands-on operational needs, however, they are called to make higher-level decisions during large-scale incidents that, e.g., require upscale for resource allocation as well as to provide the link to the higher level and wider boundaries.

PSAP Operator (call handling operator and dispatch operator): PSAP is the space, which takes the initial call for an alert. The person who takes the call may be referred to as the call handler/operator. PSAP also hosts the dispatch operators who are responsible for making the initial decision for the dispatch of EMS units to the incident field.

EMS en route staff: After an alert for an emergency incident, EMS vehicles are dispatched to the field via road, water, or air. The vehicles are manned by (EMS) staff who have the task to provide emergency medical care to the victims/patients. An alert can result to the dispatch of more than one vehicle and also various types of vehicles. Examples are - ambulances, private cars, helicopters. The people who attend to an incident in an EMS vehicle may be also referred to as ambulance crew, ambulance officer, doctor, commander, emergency physician, paramedic, nurse, etc., depending on country and local specifics. Search and Rescue (SAR) teams may be part of the EMS staff as well or of a separate response unit.

Field Staff - Field (Incident) Commander: Usually it is the first arriving EMS en route staff on the field who becomes physically involved in control and command. In larger incidents, a designated field commander may arrive and take over this role. The incident field commander will have higher commanders, usually in control rooms not on the field.

Field Staff - Triage Runner: It is the person on the field that is assigned an area in the field and runs towards the victims/patients to tag them according to the severity of injuries and overall status so that the most serious cases are retrieved first for medical help.

Field Staff - Retrieval Runner: It is the person on the field that is assigned an area or specific patients identified on the field and retrieves them to transfer them to the medical area set up on the field.

Field Staff - Field (para-)medics: They are the medical and/or para-medical staff of the temporary field treatment area to which all patients are taken for further triage, stabilization, treatment, and allocation to first receivers. Usually, there is medical staff performing the tasks and communicating with the incident commander.

Transport crew: It is the crew of any vehicle, which takes patients requiring emergency medical care from the incident field to the first receiver. The vehicle is not always a specialized medical vehicle, especially when there is no available resource. The team in the transport vehicle is usually part of the EMS (Transport staff) and continues to provide medical care to the patient while on their way to the first receiver, however, non-medical transport may be staffed by non-medical people, bystanders, members of the public, volunteer organisations, etc..

First Receiver staff: It is the staff at the place the patients are transferred for hospital care after being triaged and treated on the field. Usually, the first receiver is a hospital, not necessarily the closest one to the incident, but rather the hospital most appropriate to the situation. In disasters where infrastructure is damaged or the number of patients requiring help is overwhelming, a first receiver can be an adapted environment, such as a field/tent hospital, a polyclinic, a school or any other structure suitable to use to provide care.

Bystander: They are people who happen to be on or close to the incident field, that do not require emergency medical help but are (or can be asked to) assist in emergency management. They can support the EMS units either by providing information or by undertaking some tasks depending on their capacity and the needs of the incident commander. Usually, a bystander acts also as a Caller, i.e., the person who calls the PSAP to report an incident and alert to the need for EMS. In any case, a caller can also be a victim.

System administrator: This role is not derived by the user requirements, however, any large software system needs a technical support team and actors able to configure and administer all functionalities of the system. They are usually super-users who can access all parts of the system (unless specifically hidden with encryption) and offer setup or operational support to other actors. They are responsible to ensure the proper operation of the system in a production environment.

Organisation's privileges (or super) user: This role is given to the first actor from an organization registered to CONcORDE, who is responsible to bound the organisation with his/her decision to register it and also is responsible to assign roles to specific other actors from the organisation.

System: This is the CONcORDE system itself. Since all actions are happening through this system, it is an actor in all technical use-cases, responding appropriately to user actions and requests or even performing pre-scheduled tasks.

Victim/Patient: These are not actors of the system but they are added here for completeness since they are referred to a lot through the technical use cases and specifications. They are the people who as a result of an incident require emergency medical help, usually for the treatment of injuries. Common terms to refer to them are casualties, victims, patients, and injured people. The above actors undertake

different tasks in an emergency response incident, according to their role. The roles will define different access rights in the system, however, some roles may have similar access rights to information and may be emulated by the same system role. An effort is made here to group the actors into general roles. The grouping was based on the needs of the actors by the system, and is done to simplify the setup of the as much as possible and avoid unnecessary complexity, as well as increase acceptance and usefulness. The defined groups (that will influence the system-roles) are:

- **General public:** Access public space of COncORDE system; unclassified information.
- **Bystanders:** May need some basic information about the incident and the patients, to offer support as required; need basic registration to access the information.
- **PSAP staff:** They need full access to managing incident and resources allocation, etc; need registration to access classified information.
- **EMS en route staff, Field staff, Transport staff:** Access medical information and field-specific information as well; need registration to access classified information.
- **Hospital Personnel (First Receiver staff):** Have access mainly to medical data of involved patients and their mapping to treatment needs; need registration to access classified information

REGISTRATION OF ORGANIZATION (FIRST RESPONDERS):

COncORDE main functionalities are offered only to authenticated actors, that in most cases belong to organisations active in the emergency response domain. These organisations need to be made known to COncORDE before their staff undertake any role or become able to perform any action in the COncORDE system.

To register an organization the user should navigate to Organizations tab from the web browser and select the type of organization.

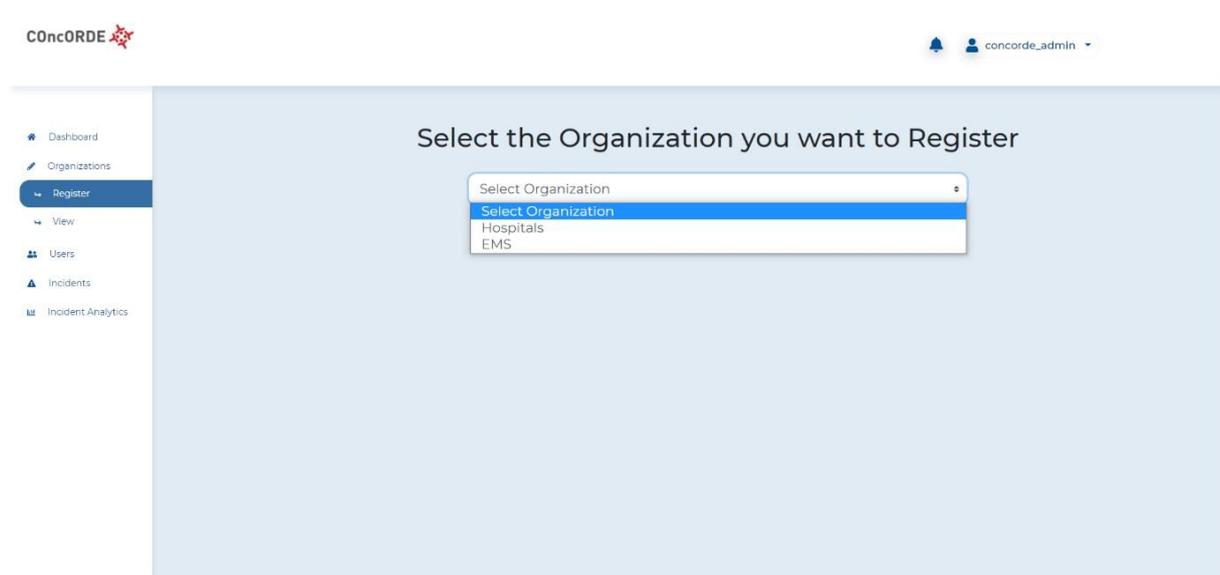


Figure 7. Organization's registration

According to the type of each organization choose the suitable option. The type of form that should be filled from an EMS organization is the following.

The screenshot shows the 'Register' page in the RESISTANT system. The main heading is 'Select the Organization you want to Register'. A dropdown menu is set to 'EMS'. The form is divided into several sections:

- Emergency Medical Services Details:**
 - Name:** Name (text input), Telephone Number (text input)
 - Location:** Location (text input)
 - Fleet Size:** Fleet Size (text input), Fleet Type A Vehicles (text input), Fleet Type B Vehicles (text input)
 - Total Number Of Paramedics:** Total Number Of Paramedics (text input)
 - Expertise:** Choose Expertise (dropdown menu)

At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 8. EMS registration form

In case that the registration concerns a hospital, the registration form differs.

The screenshot shows the 'Register' page in the RESISTANT system for a hospital. The main heading is 'Select the Organization you want to Register'. A dropdown menu is set to 'Hospitals:'. The form is divided into several sections:

- Register Hospital:**
 - Name:** Name (text input), Telephone Number (text input)
 - Address:** Address (text input)
 - Total Number Of Beds:** Total Number Of Beds (text input)
- Beds By Specialties:**
 - Emergency Medicine Beds:** Emergency Medicine Beds (text input)
 - Critical Care Beds:** Critical Care Beds (text input)
 - Neurosurgery Beds:** Neurosurgery Beds (text input)
 - Burns Or Plastic Surgery Beds:** Burns Or Plastic Surgery Beds (text input)
 - Pediatrics Or Pediatric Surgery Beds:** Pediatrics Or Pediatric Surgery Beds (text input)
 - Vascular Beds:** Vascular Beds (text input)
 - Resuscitation Beds:** Resuscitation Beds (text input)
 - Trauma Beds:** Trauma Beds (text input)
 - Ophthalmology Beds:** Ophthalmology Beds (text input)
- Level of Care per Speciality:**
 - Emergency Medicine Care:** Choose Emergency Medicine Care (dropdown menu)
 - Critical Care:** Choose Critical Care (dropdown menu)
 - Neurosurgery Care:** Choose Neurosurgery Care (dropdown menu)
 - Burns Or Plastic Surgery Care:** Choose Burns Or Plastic Surgery Care (dropdown menu)
 - Vascular Care:** Choose Vascular Care (dropdown menu)
 - Pediatric Care:** Choose Pediatric Care (dropdown menu)
- Trauma Operating Theaters:**
 - General Theaters:** General Theaters (text input)
 - Orthopaedics Theaters:** Orthopaedics Theaters (text input)
 - Neurosurgery Theaters:** Neurosurgery Theaters (text input)
 - Cardiothoracic Theaters:** Cardiothoracic Theaters (text input)
 - Number Of Ventilators:** Number Of Ventilators (text input)
 - Number Of CT or MRI Scanners:** Number Of CT or MRI Scanners (text input)
- Decontamination Unit:** Choose Decontamination Unit (dropdown menu)
- Helicopter Landing Station:** Choose Helicopter Landing Station (dropdown menu)

Figure 9. Hospital's Registration Form

The actor provides all required details (e.g., name of organisation, legal status, type of services provided, types of resources managed, contact details, etc.), including the details of the organisation member that will act as administrator responsible for managing organisation information and human actors.

The actor provides the "pass-code" received after the completion of any prior offline authentication process.

The system stores the information and presents a message of success (can be accompanied by a printed certificate, an email sent, etc.)

The system sends an email to the organisation administrator, with the authentication credentials and other security-related information.

The registration of the Organization has been completed.

USER'S REGISTRATION:

The actions in the COncORDE system will be performed by registered human actors/individuals. These will either belong to already registered organisations in the system or, in some cases, they will register as individuals.

The preconditions require that all the users should be registered in the system (although a fast track registration is also possible). In the case of individual registration, the individual has previously followed the offline authentication process and obtained a special type of passcode.

The screenshot shows the 'Register New User' form in the COncORDE system. The form is titled 'Register New User' and 'New User Form'. It contains several input fields: 'First Name', 'Last Name', 'Email', and 'Phone Number'. Below these is a 'Special Expertise' dropdown menu. Further down are 'Organization Type', 'Organization', 'User Role', and 'Position' dropdown menus. At the bottom are 'Username' and 'Password' input fields. There are 'Submit' and 'Cancel' buttons at the bottom right, with a note '* All fields are required.' below them. The left sidebar shows navigation options like Dashboard, Organizations, Users, Register, View, Incidents, Add New, Show Incidents, and Incident Analytics. The top right shows the user 'concorde_admin'.

Figure 10. User's Registration

The user must fill all the fields and specify

- Special Expertise
- Organization Type
- Organization that belongs to
- User Role(EMS defines the roles of Police, Fire Brigades and first responders in general)
- Position(Low Ranking Officer, Medium Ranking Officer, High Ranking Officer)

After submitting the registration form the user receives a confirmation email with his username.

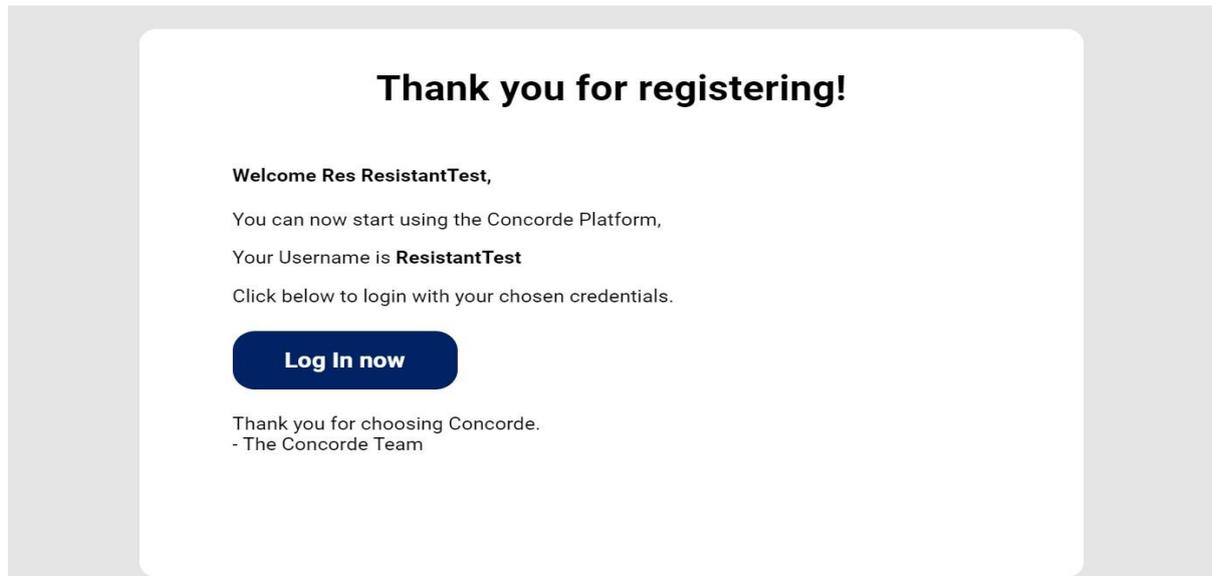


Figure 11. Confirmation Email for User's Registration

INCIDENT ASSIGNMENT:

An incident occurs in a specified location. The PSAP receives the initial call for an alert.

The high commander creates the incident assignment by completing the Incident Details Form.

In the incident, details form the High Commander should specify the Type of Emergency, the Location of the Incident, and the Hazard Type apart from the other details.

Incident Details

Incident Details

Name: Date: Time: Incident Status Code:

Name: mm/dd/yyyy Choose an Incident Status Code

Incident Description

Caller Details

Caller Relationship: Caller Description: Contact: Caller Contact Details:

Choose Caller Relationship Insert Caller Description Here Choose Caller Contact Insert Caller Contact Details Here

Type of Emergency

Emergency Type: Emergency Type Details:

Choose a Type of Emergency Additional Emergency Information Details Here

Estimation of Human Casualties

Number of Adults: Number of Children: Number of Fatalities:

Number of Adults: Number of Children: Number of Fatalities:

Hazard Types

Hazard Type: Hazard Type Details:

Select... Insert Additional Hazard Description Here

Location

Location: Area Types:

Location: Choose an Area Type

Figure 12. Incident Details Form

Insert An Incident Description Here

Caller Details

Caller Relationship: Choose Caller Relationship
Caller Description: Insert Caller Description Here
Contact: Choose Caller Contact
Caller Contact Details: Insert Caller Contact Details Here

Type of Emergency

Emergency Type: Choose a Type of Emergency
Emergency Type Details: Additional Emergency Information Details Here

Number of Fatalities: [] Number of Fatalities

Hazard Type Details: Insert Additional Hazard Description Here

Area Types: Choose an Area Type

Location: []

DISPATCH
SUBMIT CANCEL

Figure 13. Type of Emergency

After the completion, the incident form gets submitted.

DISPATCH OF EMS UNITS:

The incident assignment is ready. High Commander and Command Center is responsible for the allocation of EMS units to the incident's site. On the "Show Incidents" tab High Commander can choose the assigned Incident and press "Dispatch" to generate the dispatch of PSAP and EMS units and submit the form.

After pressing "Dispatch" a new table will appear with the registered EMS and PSAP units. High Commander must choose the appropriate units.

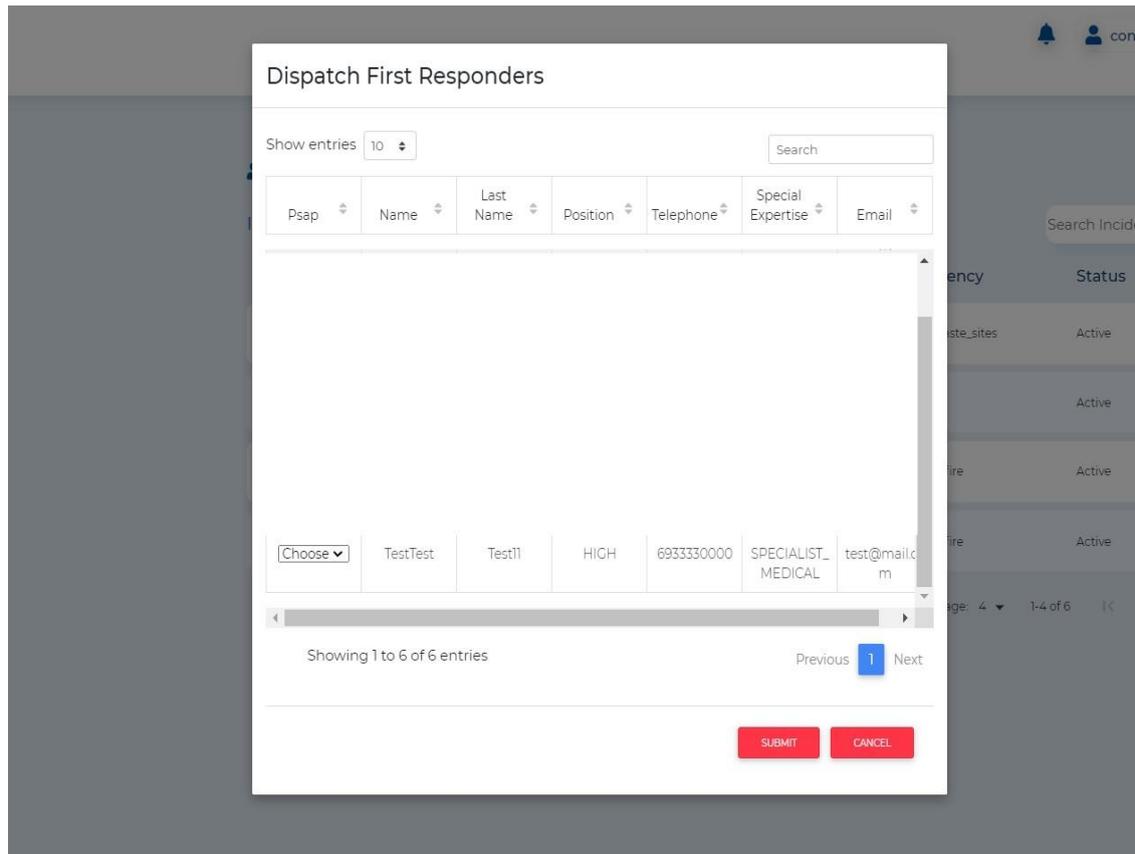


Figure 14. Dispatch of First Responders

In a result the units that have been chosen for allocation will receive an email to their accounts. The First Responder must decide to Accept or Deny the Dispatchment option.

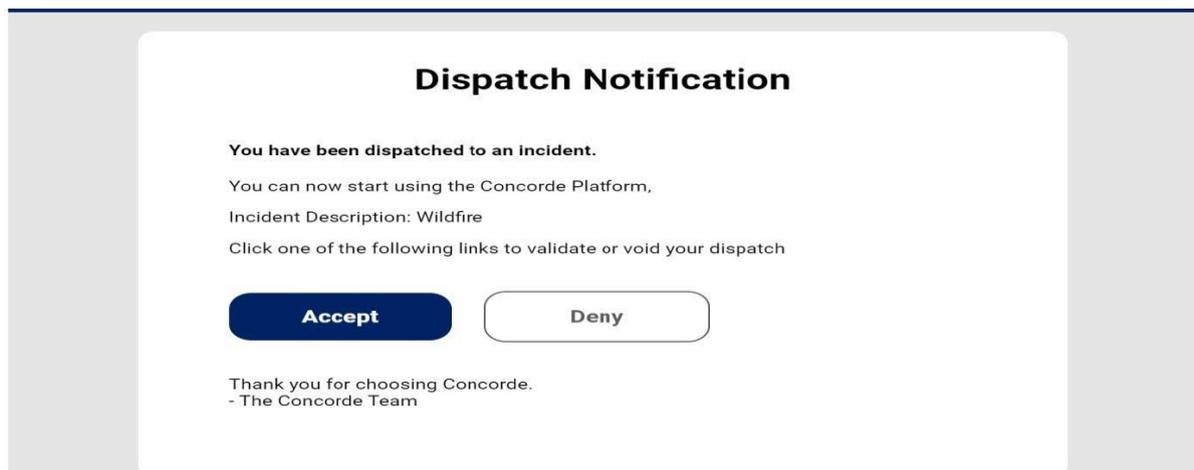


Figure 15. Dispatch Notification received from a first responder

Since the First Responder accepted the Dispatch invitation, then must log in to the System.

On the Dashboard will appear the Interactive Map of the Incident's location with the indication **"ARRIVED ON SITE"**.

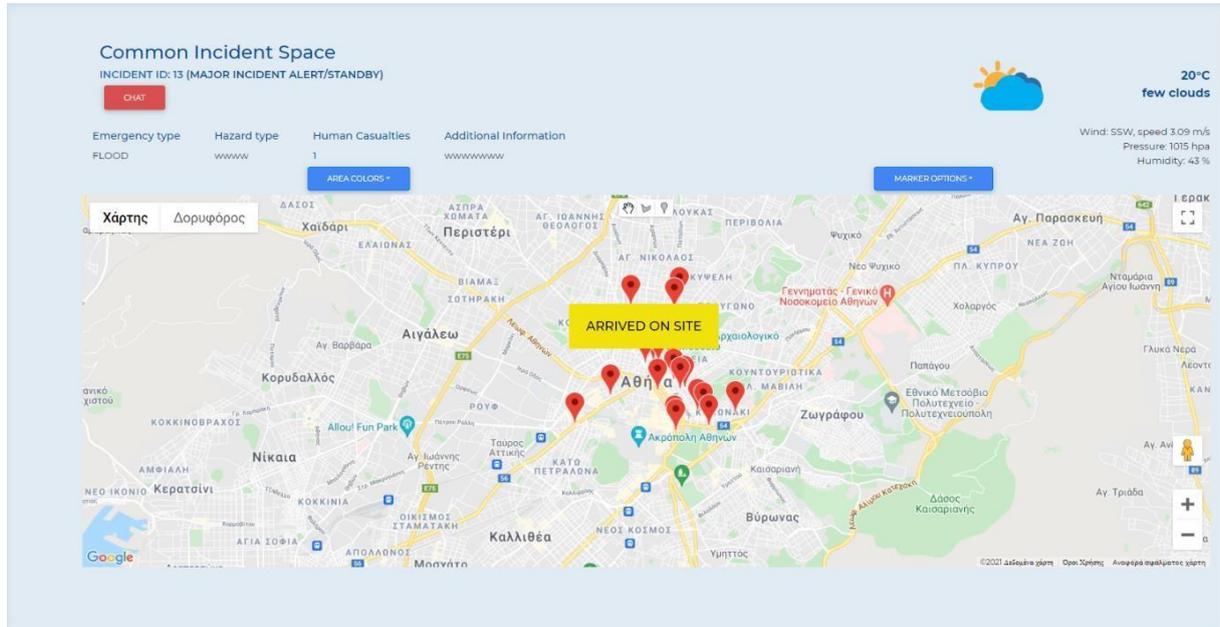


Figure 16. The Interactive Map with the Indication "ARRIVED ON SITE"

The first EMS unit that arrives in the scene is assigned as a "Field Commander" and asks for extra EMS units if needed through the SITREP report form.

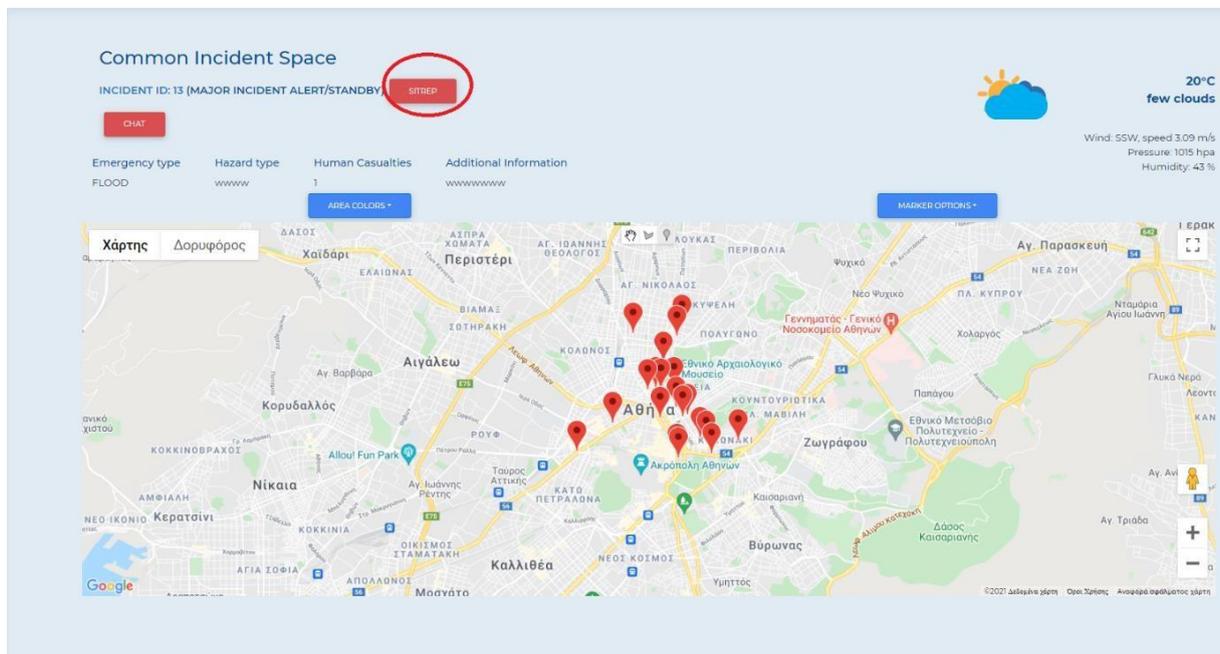


Figure 17. The "SITREP" option above the Interactive Map

Figure 18. The SITREP report Form

All the fields of the SITREP form must be filled and get submitted to allocate the appropriate number of EMS units. The SITREP form allows the user to send media files/images from the incident scene.

ROLES OF EMS UNITS AND HOSPITAL COMMANDER:

The Hospital Commander is responsible for the update of the hospital's capacity. The EMS is responsible to allocate the patients to the hospital and to transport vehicles.

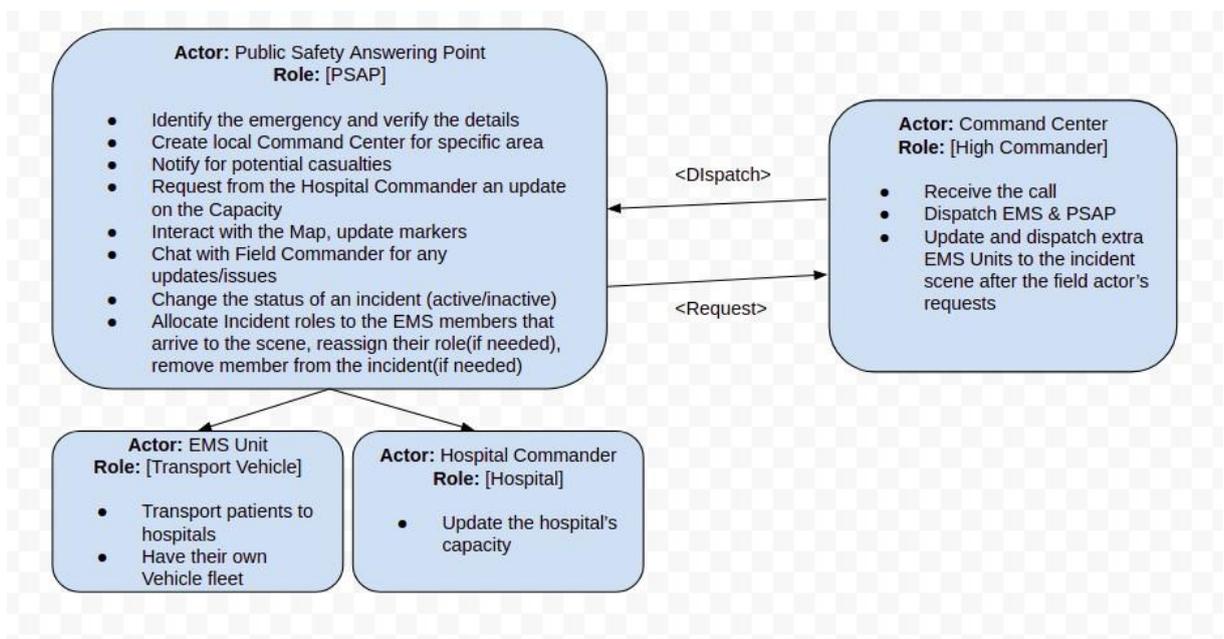


Figure 19. An overview of the EMS-PSAP-High Commander Responsibilities

TOOLS AND CAPABILITIES ON THE INTERACTIVE MAP

The Interactive Map offers a few options in order to assist to the First Responder's responsibilities. There is a chat option on the Map that allows Field Commander to communicate with the PSAP through chat rooms.

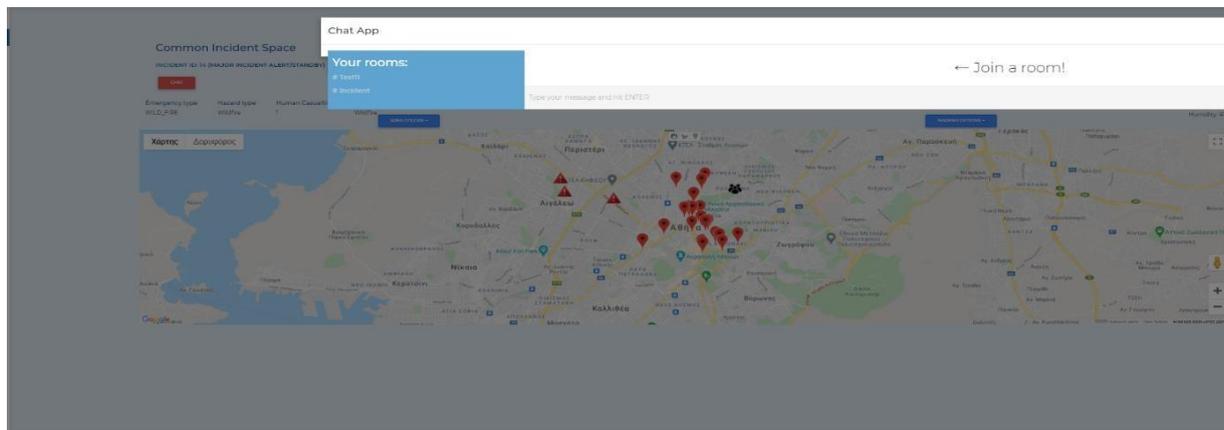


Figure 20. The “Chat” tool

There is also the **“Markers”** tool on the Map. This tool has six different options and the **“Area Colors”** that the Field Commander can use to draw a polygon to a specific area and indicate the level of the emergency.

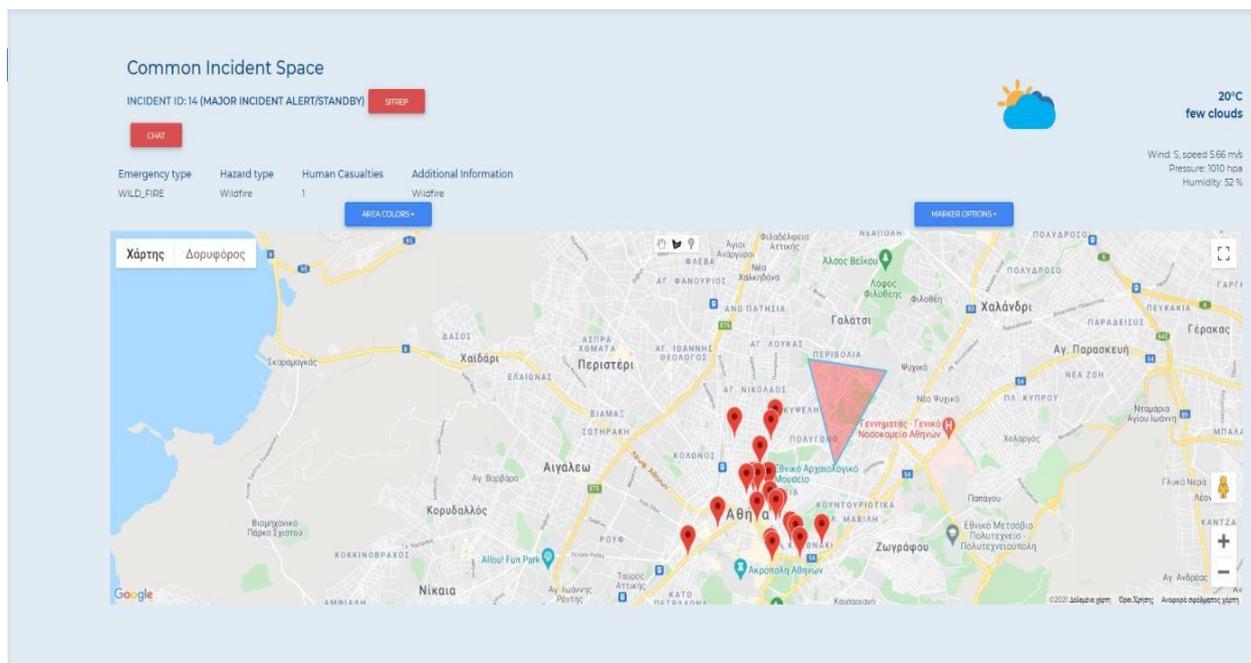


Figure 21. The polygon option

6 Final remarks and next steps

They identified and presented training use cases and the evaluation procedures for the use cases will serve as an approved and mutually agreed "starting point" for evaluation and validation of the methodologies and technologies proposed by RESISTANT and lays the foundation for the main implementation activities during the next 12 months.

This deliverable proposes 'a general view' of activities to assess the impact of the project on its target communities. This was only possible by close and successful collaboration with all project partners.

Annex 1 RESISTANT Information Sheet and Informed consent form for pilot participants

RESISTANT Information Sheet

On behalf of the RESISTANT project team, we would like to invite you to take part in our pilot activity. Your participation is voluntary. Before you decide if you want to participate, it is important that you understand the aim of the pilot, what it will involve, and your rights as a participant. To ensure that you have a proper understanding of these matters, please read carefully through this document. Please feel free to ask questions and satisfy yourself that you have received understandable answers before making a decision. You can also find further information at <http://www.resistantproject.eu/>

What is the aim of the project?

RESISTANT aims to build the first European Crisis Training Platform to train first responders through threefold comprehensive training: educational training with the state-of-the-art knowledge in safety, including tools for the characterisation of hazards and associated risks, operational training on mock-up real scale transport, and innovative virtual reality training reproducing the entire accident scenarios, intervention strategies and tactics, including the whole chain of command and communications between all members of the first responders team, facility managers, and public (e.g. volunteer fire fighters, school children, citizens with disabilities).

Who is funding the research?

This project has received funding from the European Union Civil Protection Mechanism (UCPM) Programme under grant agreement No 101017819

Who is carrying out the project?

The project is implemented by members of the RESISTANT team, which includes the following entities:

Participant	Partner short name	Country
INTERNATIONAL HELLENIC UNIVERSITY	IHU	Greece
ASSOCIATION OF OFFICERS AND SUB-OFFICERS WITH UNIVERSITY DEGREES OF HELLENIC FIRE CORPS	EPAYPS	Greece
KONNEKT-ABLE TECHNOLOGIES LIMITED, Greek Branch	KT GR	Ireland
UNIVERSITY GOCE DELCEV-STIP, MILITARY ACADEMY GENERAL MIHAILO APOSTOLSKI-SKOPJE, ASSOCIATE MEMBER	MAGMA	North Macedonia

CROATIAN CRISIS MANAGEMENT ASSOCIATION	CCMA	Croatia
EVIA RESCUE TEAM	S.A.R 312	Greece
RESCUE TEAM DELTA	RTD	Greece

What will the pilot use case involve?

The pilot may involve

- Testing the RESISTANT technology during the execution of the pilot
- Observations on your work with the RESISTANT technology
- Gathering feedback from you for the evaluation of the RESISTANT technology used during the pilot
- It involves also: Being photographed and videoed for dissemination purposes

How will the collected data be used?

The information collected during the pilot will be used as a part of the evaluation of the technology developed by RESISTANT. It will be analyzed, depersonalized and documented in reports, which will be disseminated to a wider audience. In some cases, the reports might make use of excerpts from conversations and interviews.

Note that the data will be shared between RESISTANT project partners. All data will be stored in and/or shared through secure online platforms, where access is restricted using usernames and passwords. Under no circumstances will independent access to the collected personal data be given to people who are not involved with the project, unless a separate agreement about such use has been established.

How will the collected images be used?

The collected images (photos, videos) will be used as part of the dissemination activities of RESISTANT and could be displayed on the project website, Youtube or during meetings.

How will my data privacy be maintained?

The RESISTANT team will ensure your anonymity regarding the evaluation outputs to the very best of our abilities. All collected data will be treated confidentially by the European Data Protection Directive (Directive 95/46/EC 1998) and new EU regulation to be issued throughout the project. The collected personal data (e.g. notes, information resource material) will be stored securely, and access will only be given to those responsible staff for analyzing the data in the project consortium.

Further information

Please contact us if you have any questions regarding the handling of data, your privacy as a participant, or other matters, or want to know more about our project by sending an email at info@resistantproject.eu or via the Contact Form available at: <http://www.resistantproject.eu/contact/>

Thank you for taking the time to read this information sheet! If you are happy to participate, please sign the attached Informed Consent Form.

RESISTANT Informed consent form

By filling out the form below, you confirm that you have read and understood the above RESISTANT participant information sheet, and wish to participate in the described pilot and that you do not have any opposition for being photographed or videoed during the pilot:

Name (in capital letters): _____

Telephone: _____

Email: _____

I consent to being recorded with audio-visual devices.

Signature: _____

Date: _____

Annex 2 Checklist for Administration/logistics planning

Event title: _____ Date to be Conducted: _____

ACTIVITY	ASSIGNED TO	DUE DATE	DATE COMPLETED
Determine event requirements and budgetary needs			
Identify Scenario Committee members			
Identify logistics (location, equipment) and time constraints for the event			
Identify participants			
Make arrangements for transportation needs of participants from other country			
Make arrangements for accommodation needs of participants from other country			
Make arrangements for food and beverages			
Obtain necessary equipment			
Determine need for and if needed arrange for tents, seating, drinking water, portable toilets and a sound system			
Develop safety plan			
Develop media plan and, if necessary, appoint Official Information Contact person			
Develop phone directory of participants			
Develop briefs/packages for participants			
Check the location and the communications equipment			

Observation: Not all aforementioned activities are applicable to each event (tabletop or full-scale exercise). This activity schedule is a list of items to be considered, but actual application is dependent on the type and scope of the particular event being addressed.

Annex 3 Evaluation instruments

1. Evaluation Questionnaires for UC1

Evaluation Questionnaire for Use Case 1:

"Educational and Training Seminars for students and Citizens of endangered areas"

The aim of UC1: To educate civilians of different ages and to raise their awareness and preparedness against Natural Disasters and Technological Risks.

Demographic Questions					
AGE (years old)		GENDER	EDUCATION	EMPLOYMENT	MARITAL STATUS
A. Under 18		A. Male	A. Less than a school diploma	A. Full time	A. Single
B. 18-24		B. Female	B. High school degree	B. Part time	B. Married
C. 25-34		C. Prefer not to say	C. Bachelor's degree	C. Unemployed	C. Divorced
D. 35-44		Other (please specify):	D. Master's degree	D. Student	D. Windowed
E. 44-54			E. Doctorate	E. Retired	
F. 55-64			Other (please specify):	F. Self - employed	
G. Over 65				G. Unable to work	

Please answer the following questions (1 = strongly disagree ... 5 = strongly agree)		1	2	3	4	5
1	The programme of the training was well balanced.					
2	The topics of the training were well selected.					
3	The content of the training was useful and from now on is part of my knowledge.					
4	The format of the training was interesting and allowed me to participate more actively.					
5	The length of the discussions in the training was adequate.					

6	The training provides adequate networking and collaborative opportunities.					
7	Information and general management before the training was helpful and efficient.					
8	The registration process was simple and easy to handle.					
9	The training environment was appropriate.					
10	The trainers were helpful, friendly and efficient.					

2. Evaluation instruments for UC2, UC3 and UC4

2.1 Questionnaires

2.1.1 Evaluation questionnaire for UC2

Evaluation Questionnaire for Use Case 2: "Emergency Management Frameworks"

The aim of UC2: The Emergency Management Frameworks aim to guide and strengthen the way local governments and partners assess risks and work together to prevent/mitigate, prepare for, respond to, and recover from the threats and hazards that pose the greatest risk to citizens.

Demographic Questions					
AGE (years old)		GENDER	EDUCATION	EMPLOYMENT	MARITAL STATUS
A. Under 18		A. Male	A. Less than a school diploma	A. Full time	A. Single
B. 18-24		B. Female	B. High school degree	B. Part time	B. Married
C. 25-34		C. Prefer not to say	C. Bachelor's degree	C. Unemployed	C. Divorced
D. 35-44		Other (please specify):	D. Master's degree	D. Student	D. Windowed
E. 44-54			E. Doctorate	E. Retired	
F. 55-64			Other (please specify):	F. Self-employed	
G. Over 65				G. Unable to work	

Please answer the following questions (1 = strongly disagree ... 5 = strongly agree)		1	2	3	4	5
1	The introduction and the material that was given to the participants were adequate.					
2	The topics of the exercise were well selected.					
3	The content of the exercise was useful and from now on is part of my knowledge.					
4	The format of the exercise was interesting and allowed me to participate more actively.					
5	The length of the exercise was adequate.					
6	The exercise provides adequate networking and collaborative opportunities.					

7	Information and general management before the exercise was helpful and efficient.					
8	The registration process was simple and easy to handle.					
9	The exercise environment was appropriate.					
10	The exercise was well structured and organized.					
11	The exercise was well structured and organized					
12	The scenario was realistic.					
13	The briefing before the exercise was useful and prepared me for the exercise.					
14	The exercise allowed us to test our response plans and systems.					
15	The exercise improved my understanding of my role and function during an emergency response.					
16	The exercise helped me to identify some of my strengths as well as some of the gaps in my understanding of response systems, plans and procedures.					
17	At the end of the exercise, I think we are better prepared for an emergency.					

Based on the UC, what are the main strengths and areas for improvement?

Strengths	
Areas for improvement	

Please share any recommendation(s) you must improve similar UCs in the future.

Thank you!

2.1.2 Evaluation questionnaire for UC3

Evaluation Questionnaire for Use Case 3:**"Full-Scale Exercise - Flood case caused by torrent"**

The aim of UC3: To identify limitations and safely and effectively use appropriate water rescue equipment, whilst operating near or in moving water appropriate to the limits of a non-buoyant rescuer / Demonstrate water rescue scene management and dynamic assessment of risk / Identify and apply the role of the First Responder within the incident management structure / Identify and use appropriate Personal protection equipment (PPE) / Identify and understand flood hazard mitigation measures.

Demographic Questions					
AGE (years old)		GENDER	EDUCATION	EMPLOYMENT	MARITAL STATUS
H. Under 18		D. Male	F. Less than a school diploma	H. Full time	A. Single
I. 18-24		E. Female	G. High school degree	I. Part time	B. Married
J. 25-34		F. Prefer not to say	H. Bachelor's degree	J. Unemployed	C. Divorced
K. 35-44		Other (please specify):	I. Master's degree	K. Student	D. Windowed
L. 44-54			J. Doctorate	L. Retired	
M. 55-64			Other (please specify):	M. Self - employed	
N. Over 65				N. Unable to work	

Please answer the following questions (1 = strongly disagree ... 5 = strongly agree)		1	2	3	4	5
1	The introduction and the material that was given to the participants were adequate.					
2	The topics of the exercise were well selected.					
3	The content of the exercise was useful and from now on is part of my knowledge.					
4	The format of the exercise was interesting and allowed me to participate more actively.					
5	The length of the exercise was adequate.					
6	The exercise provides adequate networking and collaborative opportunities.					
7	Information and general management before the exercise was helpful and efficient.					

8	The registration process was simple and easy to handle.					
9	The exercise environment was appropriate.					
10	The exercise was well structured and organized.					
11	The exercise was well structured and organized					
12	The scenario was realistic.					
13	The briefing before the exercise was useful and prepared me for the exercise.					
14	The exercise allowed us to test our response plans and systems.					
15	The exercise improved my understanding of my role and function during an emergency response.					
16	The exercise helped me to identify some of my strengths as well as some of the gaps in my understanding of response systems, plans and procedures.					
17	At the end of the exercise, I think we are better prepared for an emergency.					

Based on the UC, what are the main strengths and areas for improvement?

Strengths	
Areas for improvement	

Please share any recommendation(s) you must improve similar UCs in the future.



Thank you!

2.1.3 Evaluation questionnaire for UC4

Evaluation Questionnaire for Use Case 4:**“Training for situational awareness and emergency services interoperability in complex environment”**

The aim of UC4: To inform the participants about the benefits of using modern geospatial and information system in large scale events / Increased situational awareness by integration of available information from different sources / Enhance real time capabilities and information interoperability / Increased efficiency of operations by rational and cost-effective resource deployment and joint emergency services interoperability / Evaluation of existing operational procedures and development of further recommendations

Demographic Questions									
AGE (years old)		GENDER		EDUCATION		EMPLOYMENT		MARITAL STATUS	
O. Under 18		G. Male		K. Less than a school diploma		O. Full time		A. Single	
P. 18-24		H. Female		L. High school degree		P. Part time		B. Married	
Q. 25-34		I. Prefer not to say		M. Bachelor's degree		Q. Unemployed		C. Divorced	
R. 35-44		Other (please specify):		N. Master's degree		R. Student		D. Windowed	
S. 44-54				O. Doctorate		S. Retired			
T. 55-64				Other (please specify):		T. Self-employed			
U. Over 65						U. Unable to work			

Please answer the following questions (1 = strongly disagree ... 5 = strongly agree)		1	2	3	4	5
1	The introduction and the material that was given to the participants were adequate.					
2	The topics of the exercise were well selected.					
3	The content of the exercise was useful and from now on is part of my knowledge.					
4	The format of the exercise was interesting and allowed me to participate more actively.					
5	The length of the exercise was adequate.					
6	The exercise provides adequate networking and collaborative opportunities.					

7	Information and general management before the exercise was helpful and efficient.					
8	The registration process was simple and easy to handle.					
9	The exercise environment was appropriate.					
10	The exercise was well structured and organized.					
11	The exercise was well structured and organized					
12	The scenario was realistic.					
13	The briefing before the exercise was useful and prepared me for the exercise.					
14	The exercise allowed us to test our response plans and systems.					
15	The exercise improved my understanding of my role and function during an emergency response.					
16	The exercise helped me to identify some of my strengths as well as some of the gaps in my understanding of response systems, plans and procedures.					
17	At the end of the exercise, I think we are better prepared for an emergency.					

Based on the UC, what are the main strengths and areas for improvement?

Strengths	
Areas for improvement	

Please share any recommendation(s) you must improve similar UCs in the future.

Thank you!

2.2 Interview guidelines

INTERVIEW GUIDELINES

A Successful Interviewer is:

1. Knowledgeable: is thoroughly familiar with the focus of the interview; pilot interviews of the kind used in survey interviewing can be useful here.
2. Structuring: gives purpose for interview; rounds it off; asks whether interviewee has questions.
3. Clear: asks simple, easy, short questions; no jargon.
4. Gentle: lets people finish; gives them time to think; tolerates pauses.
5. Sensitive: listens attentively to what is said and how it is said; is empathetic in dealing with the interviewee.
6. Open: responds to what is important to interviewee and is flexible.
7. Steering: knows what he/she wants to find out.
8. Critical: is prepared to challenge what is said, for example, dealing with inconsistencies in interviewees' replies.
9. Remembering: relates what is said to what has previously been said.
10. Interpreting: clarifies and extends meanings of interviewees' statements, but without imposing meaning on them.
11. Balanced: does not talk too much, which may make the interviewee passive, and does not talk too little, which may result in the interviewee feeling he or she is not talking along the right lines.
12. Ethically sensitive: is sensitive to the ethical dimension of interviewing, ensuring the interviewee appreciates what the research is about, its purposes, and that his or her answers will be treated confidentially.

The Interview as an Interpersonal Encounter

- The social skills of empathy, warmth, attentiveness, humor (where appropriate), and consideration are essential for good interviewing.
- Any judgmental attitudes, shock or discomfort will be immediately detected.
- Never answer a question for the respondent.
- One must be completely engaged with the respondent, while at the same time keeping track of the questions one needs to ask.
- Use every active listening technique at your disposal:
 - Repeating back
 - "Wow!"
 - "Tell me more about that!"
 - "That is really interesting."
- Don't be afraid of silence; you can use it to prod the respondent to reflect and amplify an answer

- Don't follow the interview guide—follow the respondent. Follow up new information that he or she brings up without losing sense of where you are in the interview.
- Try not to think about time—relax into the interview.

Source: https://sociology.fas.harvard.edu/files/sociology/files/interview_strategies.pdf

2.3 Questionnaire on perceived usability of RESISTANT platform**Evaluation Questionnaire for Perceived Usability of
"RESISTANT" platform (CONCORDE emergency management
platform):**

Demographic Questions					
AGE (years old)		GENDER	EDUCATION	EMPLOYMENT	MARITAL STATUS
A. Under 18		A. Male	A. Less than a school diploma	A. Full time	A. Single
B. 18-24		B. Female	B. High school degree	B. Part time	B. Married
C. 25-34		C. Prefer not to say	C. Bachelor's degree	C. Unemployed	C. Divorced
D. 35-44		Other (please specify):	D. Master's degree	D. Student	D. Windowed
E. 44-54			E. Doctorate	E. Retired	
F. 55-64			Other (please specify):	F. Self - employed	
G. Over 65				G. Unable to work	

Please answer the following questions (1 = strongly disagree ... 5 = strongly agree)		1	2	3	4	5
1	Overall, I am satisfied with how easy it is to use this platform.					
2	It was simple to use this platform.					
3	I could effectively complete the tasks and scenarios using this platform.					
4	I was able to complete the tasks and scenarios quickly using this platform.					
5	I was able to efficiently complete the tasks and scenarios using this platform.					
6	I felt comfortable using this platform.					
7	It was easy to learn to use this platform.					
8	I believe I could become productive quickly using this platform.					
9	The platform gave error messages that clearly told me how to fix problems.					

10	Whenever I made a mistake using the platform, I could recover easily and quickly.					
11	The information (such as online help, on-screen messages, and other documentation) provided with this system was clear.					
12	It was easy to find the information I needed.					
13	The information provided for the platform was easy to understand					
14	The information was effective in helping me complete the tasks and scenarios.					
15	The organization of information on the platform screens was clear.					
16	The interface of this platform was pleasant.					
17	I liked using the interface of this platform.					
18	This platform has all the functions and capabilities I expect it to have.					
19	Overall, I am satisfied with this platform.					