Integrated Operations Center for Providing Humanitarian Assistance HELP

1. HELP Project Overview

All disasters have a common factor, besides the loss of life and panic; they are immediately followed by loss of ability to communicate with the outside environment. Telephone services are discontinued, and GSM services are either nonexistent or are so congested. The flow of information must remain unattached and clear to and from the field of humanitarian operations so that rescue operators in the ground can make the right decisions depending on the situation and the changes they may face. In case of emergencies, besides the challenge of coordination and communication, there is also an urgent need to provide medical services as much close as possible to the area of the incident.

In this context, the "Integrated Operations Center for Providing Humanitarian Assistance" project (project acronym: HELP) delivers tangible outputs to: (i) facilitate the communication and cooperation between multiple agencies, such as Police, Fire Brigade, EMS services, Civil Protection and Rescue Volunteer Organizations during a crisis event; (ii) facilitate the responsiveness of civil protection via enabling the efficient coordination among all involved stakeholders; and (iii) provide medical services.

1.1 Objectives

The overall objective of the HELP project is to improve the strategic and operational efficiency of public administration and public services in managing Natural Disasters, Risks and Hazards (NDRH) within the wider Cross-Border Area (CBA), explicitly focusing on Greece and North Macedonia. The HELP project envisioned, designed and developed an integrated solution for the technical support and management of post-disaster humanitarian "on-site" relief operations and logistics.

In particular, the HELP project involved the conceptualization, design, development and implementation of an integrated operations center for providing humanitarian assistance that includes a cluster of interconnected prototype containers, including: (i) two Command, Control, Coordination, Communication and Intelligence Centers – C4I (herein called the Command Center Containers); and (ii) one on-site medical treatment facility – MED (herein called the Medical Center Container or MED Container). Overall, the scope of the HELP project includes the following:

- Crisis management plan for the effective use of the developed containers and the training of the stakeholders on how to use them on a national and cross-border level.
- National and cross-border communication, cooperation and coordination protocols that can deploy existing assets and practices of the involved stakeholders and jointly extend their capacity in terms of infrastructure, equipment, and management.
- Pilot actions with simulation exercises under realistic scenarios.
- Demonstration and training to the involved entities on the use of the developed infrastructure.
- Raising awareness of local communities and the general public, and promotion of volunteerism.
- Signing of Memorandum of Understanding (MoU) between entities of the cross-border regions on the provision of the equipment for preparedness and crisis response.

Ultimately, HELP aims to broaden the overall regional and national capacity of providing humanitarian relief on the basis of the common challenges that have to be tackled.

1.2 Beneficiaries

The target groups and beneficiaries of the HELP project include:

- National, local and regional structures dealing with emergency situations (e.g., public authorities, civil protection authorities, organizations of volunteers, NGOs).
- Local branches of international structures.
- Local communities.

The following benefits are envisaged, per beneficiary body:

- Public authorities: Strategic operational tool, CMP, well-informed population.
- NGOs: Operational efficiency from the provided infrastructure and action plans, volunteerism.
- Local populations: Integrated solution to support them in case of disaster, raising awareness and acquaintance on relief operations.

2. HELP Infrastructure

A key output of the HELP project is the development of infrastructure consisting of clusters of mobile container units. The proposed containers' cluster, along with the associated crisis management plan, provides the necessary technical infrastructure and equipment and the appropriate implementation platform to hedge the wider CBA against NDRH, in terms of enhancing pre-disaster preparedness, mitigating the corresponding post-disaster impacts in the aftermath of a disaster, and increasing the managerial effectiveness and efficiency. Training of personnel on the equipment and pilot investigation of a realistic scenario at the cross-border interface was also performed to demonstrate operational readiness.

2.1 Command Center Container

The Command Center Container (Fig. 1) is a fully transportable and autonomous unit, specially designed to provide communication services. It can be transferred – either by helicopter or a truck – and set up in places hit by natural and/or man-made disasters (e.g., earthquakes, floods, fires). The Command Center Container is powered by a generator, which makes it incredibly autonomous. It is designed so that it can unfold and double in space, while the unfolding can be realized in a really short time by only three people.

Fig. 1. The Command Center Container.

The Command Center Container is equipped with an Emergency Management Information System (M.I.S.) to support all phases of emergency management (i.e., "before – during – after crisis") in the following ways:

- To assess risks.
- To plan for response.
- To manage real-time situational awareness.
- To dispose resource management.
- To display availability and resources.
- To manage online communication and messaging.

Fig. 2. Emergency Management Information System.

In particular, the smart Emergency Management Information System (Fig. 2), able to be also installed in smartphones, enables all the involved stakeholders to receive and transmit data and information (i.e., text, video, audio) to the Command Center Container to assess the on-site situation, proceed to the necessary decisions and enable synchronization of actions.

The Command Center Container also has backup communication systems. It is designed to integrate all types of communication (i.e., landline, satellite, GSM, radios, microwave transmission) (Fig. 3). Furthermore, the Container is equipped with all the necessary equipment to hold meetings for designing and executing emergency action plans.

Fig. 3. Communication Systems of the Command Center Container.

2.2 Medical Center Container – MED Container

The Medical Center Container (or MED Container) (Fig. 4) is a fully transportable and autonomous unit, specially designed to provide medical services. It can be easily transferred and set up in places hit by natural or man-made disasters (e.g., earthquakes, floods, fires). The Medical Center Container is powered by a generator, which makes it considerably autonomous.

The Container has all the necessary medical equipment, and it is fully equipped with a large volume of medical supplies and everything a doctor needs during an emergency (such as surgical bed, defibrillator, oxygen device, intubation devices) (Fig. 5). It can even be used

to perform minor surgeries. In the MED Container there are also two inflatable tents, 35 and 56 m^2 respectively, which can be used for screening and temporary hospitalization of disaster victims / patients, until they are transferred to a hospital. The tents are equipped with military-type rollaway beds.
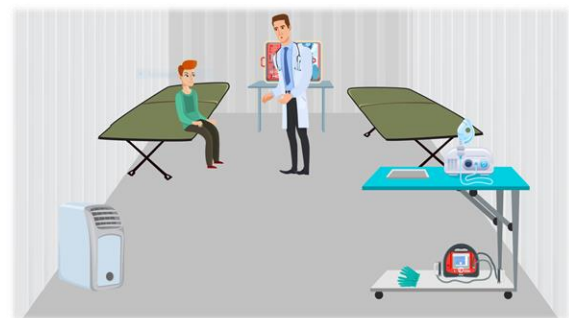

Fig. 4. The Medical Center Container.

Fig. 5. Equipment of the Medical Centre Container.

3. Crisis Management Plan

In order for the effective use of the highly specialized and innovative infrastructure that were designed and developed in the context of the HELP project, a detailed Crisis Management Plan was further developed.

A Crisis Management Plan needs emergency planning which can be defined as "*the process of preparing systematically for future contingencies, including major incidents and disasters*". The Plan usually specifies all the tasks and responsibilities that need to be adopted among stakeholders in a multi-agency response to an emergency. It is a blueprint for managing events and should be responsive to management needs.

One of the greatest challenges that always need to be tackled in rescue operations is the constant communication of the agencies operating on the ground with their headquarters and between them. In addition, the flow of information must remain unattached and clear to and from the field of operations so that rescue operators can take the right decisions, based on real-time evidence from the field.

In this regard, the C4I Containers were designed and developed based on the directives of NATO, United Nations and private organizations that operate and build mobile C4I stations around the world. In this context, the C4I Containers are appropriately equipped to be fully operational without the need to be located very close to the area of the incident. A primary requisite determining the location of the C4Is is that the telecommunication equipment: (i) is connected; (ii) establishes an effective connection with the rescue teams operating at the area of the event; and (iii) transmits the requested data for efficient communication and coordination.

Regarding the C4I Containers (Fig. 6), it is first essential to know the role of the Container during a crisis event. Second, it is of great importance to identify the number of people operating inside the Containers and the exact role of every team member. Finally, there must be interconnectivity between the Containers, the public civil protection authorities and other supporting voluntary groups.

Fig. 6. Interior of the C4I Container and its basic equipment.

Considering the MED container (Fig. 7), this has multi-complex roles that can be exploited, such as: (i) military medical mobile unit; (ii) humanitarian mobile medical unit; and (iii) rescue mobile medical unit.

Fig. 7. Deployed actual MED Container and an inflatable tent.

4. Pilot Implementation

The HELP project provisioned the implementation of a two-day Pilot Action at the cross-border between Greece and North Macedonia (Fig. 8), during which all Containers were deployed and tested against real-world situations. Local stakeholders were activated, involved and engaged for the Pilot Action to be as close to real-life conditions as possible. Specifically, stakeholders included different levels of civil protection public authorities, NGOs and volunteer teams activated in civil protection, and the local population.

Fig. 8. Cross-border pilot scenario implementation.

4.1 Scenario

Following the scenario, on the first day, a forest fire spread in the belt towards Piri Hodja

(terrain altitude of 1.645 m) at the North Macedonia side. Late in the evening, the winds directed the fire to the ridge of the Belasica Mountain, towards the location Semer Kajas, threatening to expand on the territory of Greece. In that area within the Prefecture of Serres, Greece, there is an area protected under Natura 2000.

On the second day, the fire progressed towards the Greek side of the Beles Mountain (Fig. 9). The strong winds intensified and spread the fire due to the inaccessible terrain and NW winds blowing in the area. The Greek Civil Protection mechanism was activated, and the Hellenic Rescue Team was contacted for assistance.
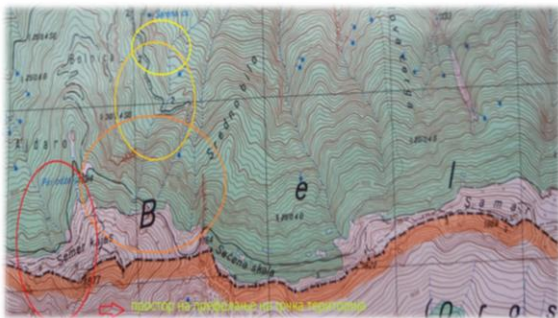

Fig. 9. The red circle presents the area where the fire crossed the borderline and expanded to the Greek territory.

Contemporarily, except for the forest fire, another incident emerged. In particular, the Greek police informed about three missing hikers in the same area where the forest fire occurred (Fig. 10).
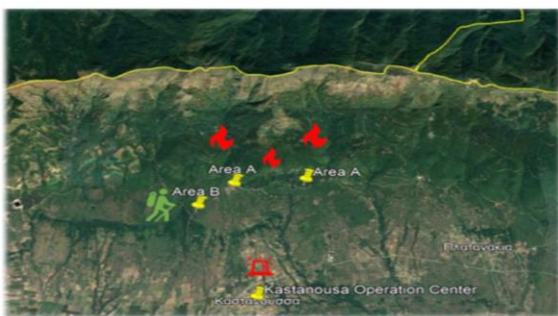

Fig. 10. Operational points of interest.

4.2 Response Outcome

Due to the coordinated action of rescue teams from the Command Center Containers (Fig. 11), all three hikers were rescued with minor injuries. The hikers were then transferred to the MED Container for primary level treatment. The fire was extinguished on the territory of both Greece and North Macedonia.

Fig. 11. Coordination of actions of the multiple response teams from the Command Center Container.

5. Main HELP Project Results

Following the developments within the auspices of the HELP project, the main results are summarized in the following:

- Development of two C4I containers and one MED container.
- Increased capacity of public authorities in tackling natural and/or man-made disasters.
- Increased emergency response preparedness in cross-border areas.
- Reinforced strategic and operational cooperation on humanitarian relief operations issues between two countries.
- Raised natural disaster awareness of populations.
- Promotion and cultivation of humanitarian volunteerism.

Acknowledgements