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Emerging technologies for the Early location of Entrapped victims under Collapsed Structures & Advanced Wearables for risk assessment and First Responders Safety in SAR operations

D8.2 S&R Use Case 1: Victims trapped under rubble (Italy) – Pilot plan

Workpackage: WP8 – S&R Validation and Demonstration

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Search and Rescue Project Profile

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	KONNEKT-ABLE TECHNOLOGIES LIMITED (KT)	Ireland
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1 Plan Form of D8.2 – Use Case 1

Title of UC 1:

The Poggioreale Old Town Demo Victims trapped under rubble

1. Introduction

The Use Case will take place in Poggioreale, a small community in Sicily, Italy, set in the Belice valley, which administratively belongs to the province of Trapani (TP). On the night of January 15th, 1968, a terrible earthquake raked through the Valle del Belice in southwest Sicily. Around 900 people died and ten towns and villages were significantly damaged.

Due to its current situation, the city is the perfect scenario to simulate an earthquake. A whole series of ad hoc situations will be simulated, in which the contribution of the tools/equipment developed within the project will be tested.

In UC1 we expect to simulate:

- people trapped under the rubble and / or in premises not reachable as a consequence to the earthquake;
- the release of gases and / or other toxic substances;
- blocked roads preventing traditional vehicles to reach the area.

The S&R UC1 will be held at the Municipality of Poggioreale, which is home to the "Poggioreale International Academy" (PIA) for Civil Protection, and it will be organized by the Regional Department of Civil Protection of Sicily (DRPC) in collaboration with CNR, with the participation of the Regional System of Civil Protection, the Fire Department, and the Municipality of Poggioreale.

The event will be communicated to the Italian National Department of Civil Protection, which will evaluate its possible participation.

The S&R UC1 will be developed during 4-6 hours, at the ruins of Poggioreale Old Town, where a conference room with video projection will be made available for briefing and debriefing.

An ambulance operated by Volunteers of Sicilian Civil Protection will be always on site during the course of operations.

To ensure a quick intervention in case of real accident, the closer hospital to the pilot scene (in Sciacca, Province of Agrigento) will be notified of the exercise; the same for SEUS 118, responsible for all health emergencies.

Due to fact that mock victims will not include children, the pilot will use dummies to represent children in order to test the rescue kits for children.

Fire Brigades and sentinels will be present on the site to ensure participants' safety.

During the exercise, if extreme adverse weather conditions occur (heat, cold, wind, precipitation), the exercise would be interrupted. Should a real emergency occur, the exercise would be suspended.

Law enforcement is expected to guarantee a constant vigilance to prevent any action of disturbance from the outside. This must be arranged with Prefecture of Trapani (which is the local office of Italian Ministry of the Interior).

Moreover, during the exercise, an action of disturbance will be simulated to test the adaptability of Rescue Teams.

2. Responsible End – User Organisation

Regional Department of Civil Protection of Sicily (DRPC) and CNR

3. Time(*) and place

Poggioreale "Old Town" (TP), Italy, sometime in April 2022.
All the exercise will be held during daytime.

4. Components(*) / technologies that will be tested

- 1) Wearable GPS tracker (UniCA)
- 2) Situational Awareness Model (UBITECH)
- 3) Emergency communication App (KT)
- 4) Decision Support System (DSS)(KT, CNR, NTUA)
- 5) Rescue kits for children (UniFI)
- 6) Smart textile professional uniform (UniFI)
- 7) Wearable ECG, EMG (UniCA)
- 8) Wearable strain sensors (UniCA)
- 9) AI algorithms for recognizing objects from drone images (AIDEAS)

The local Rescue Teams will make available drones, K9 units, and fire extinguisher modules, and operate to maintain safe operating condition.

5. First version of KPIs

DSS KPIs

- degree of accordance/discordance of the decision-maker and the DSS recommendations (e.g., in case of recommended EMS allocation to Incidents, how many EMS unit did the High Commander actually dispatch to a specific Incident, and what is the difference with the recommended?)
- time that is required by the DSS to consume a message, process it and return the send a response back.

Field Operation KPIs

- time of initial notification call;
- time until the first ill/injured victim has been triaged in the field;
- time until the last ill/injured victim has been triaged in the field;
- time until first treatment was performed;
- time until victim is evacuated from scene;
- time until victim arrives to the Emergency Department;
- time to notification of the first appropriate staff person who assumes medical management coordination role;
- time to arrival of the first EMS ambulance on scene;
- time to transportation/evacuation of the last ill/injured survivor from the scene;
- time until first triage assessment in Emergency Department;
- time until last triage assessment in Emergency Department;
- average time spent by victims on the scene;
- average time spent by victims on ambulances and helicopters;
- number of victims evacuated from scene;
- number of victims that receive first triage;
- number of victims transported to emergency department (first triage);
- number of victims transported to emergency department.

6. Participating technical support partners (internal) and other members of consortium S&R as Players, Observers and Evaluators etc

MAG, UniCa, UNIFI, THALIT

7. External Participants as players, evaluators, actors-guests in UC

Each Partner should suggest one or two external expert(s) for the UC evaluation process. The experts will be contacted in advance to help suggesting the criteria for UC evaluation.

Some professionals, from the different Agencies and Organizations operating during the UC will participate in the demo as observers, dislocated at different points (on the field, and at decisional stations) to annotate and raise the main functionality-related issues.

8. Ethics Approval

Ethics approval will be required when the final plan of the UC has been defined

9. Gaps / Problems that should be closed and context in which they appear

- 1) Disruption of radio communications;
- 2) Disruption of data line;
- 3) Electric blackout;
- 4) Breakdown to a means of transport;
- 5) Principle of fire;
- 6) Landslide;
- 7) Temporary adverse weather condition;
- 8) Real accident to a rescuer/mock victim.

10. Certificates of Participation

Participation certificates will be made available by the Planning Team of the UC to all those who have requested them.

11. Planning Team of UC

Paolo Blandino (DRPC)
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Simona Panunzi (CNR)