



ASSISTANCE

ASSISTANCE Overall Presentation

Dr. Federico Carvajal



H2020-SU-SEC-DRS02 - 832576

ASSISTANCE Objectives

- **The main ASSISTANCE objective is twofold, on the one hand the project will protect and help the different FRs organizations that work together during the mitigation of large disasters (Natural or Man-made) and on the other hand ASSISTANCE will improve the FRs capabilities and skills for facing these kind of events**
- This will be achieved by accomplishing the following operational objectives:

O1. To pay attention to the FRs expressed needs and preference during the proposal preparation phase in terms of useful information for increasing their capabilities and new sensors being mounted on unmanned platforms or integrated in their wearable equipment.

O2. To develop a novel SA platform, including the integration of UAV, Robots and drones' swarms and innovative modules that will enhance the FRs SA. These novel SA tools will be integrated in a complete SA platform that will be able to be adapted to the specific information needs of the different types of FRs organizations that cooperates during the mitigations of a big disaster (natural or man-made)

O3. To establish the core of an advanced training network based on virtual reality and/or augmented reality, which includes recognized FRs training institutions that form part of ASSISTANCE consortium along with a set of training curricula tailored to the needs of the different types of first responders (e.g. firefighters, sanitary staff, police, etc.) in order to improve their current capabilities.

O4. To provide robust network infrastructure for ensuring FRs and unmanned platforms connectivity during the mitigation operations. When it is not possible to have correct connectivity the consortium will provide ad-hoc network performance capabilities based on drones' swarm for ensuring the basic sensors and modules connection.

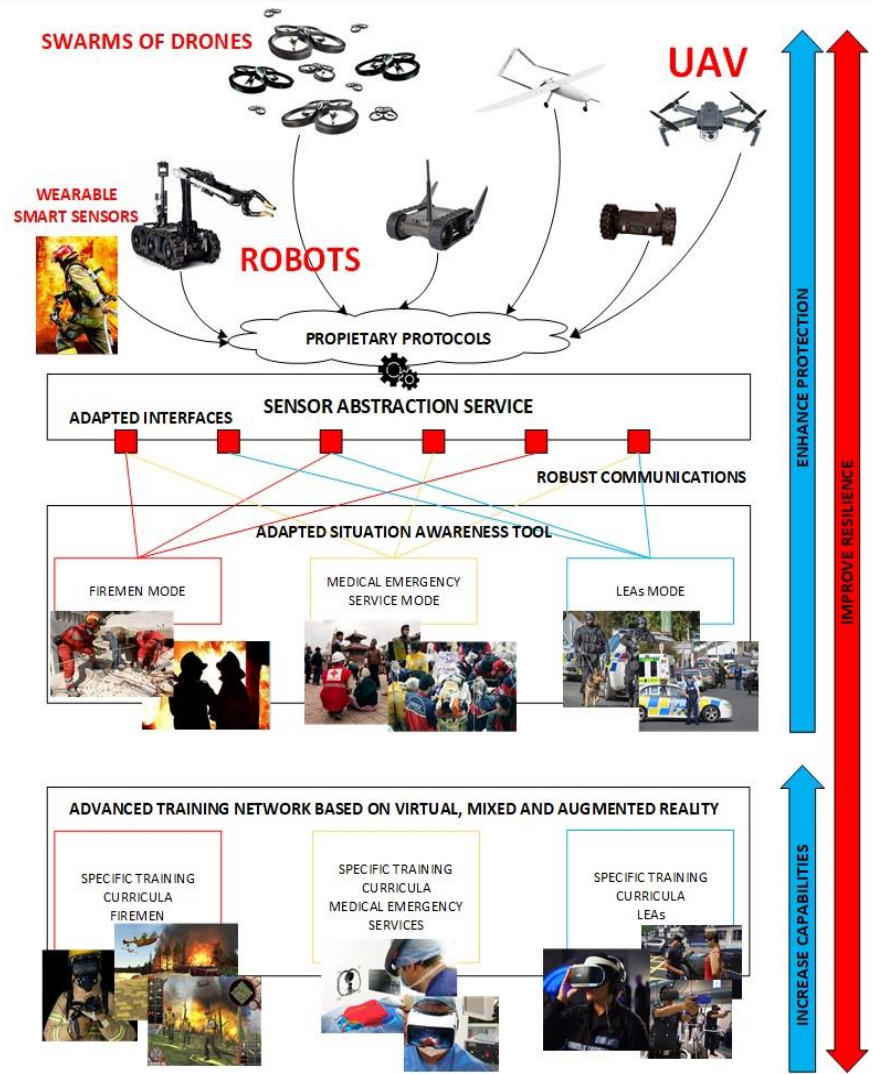
O5. To validate the project results in a cost effective way under real conditions in a controlled environment through 3 pilots demonstrations which will involve FRs from different organizations

O6. To measure the societal impact of the project and assure compliance with legal, gender and ethical EU principles and requirements, identify lacunae and hurdles and develop concrete recommendations to policy makers and FRs with the aim to improve the current level of protection for the FRs and increase their capabilities in a legal and ethical manner..

ASSISTANCE Concept

- ASSISTANCE project will use **UAVs, Smart wearable sensors, Robots and drones' swarms equipped with specific sensors for covering the FRs specific data needs stated by them during the proposal preparation phase through questionnaires** (e.g. real time video, persons and objects location, evacuation routes status, ad-hoc network coverage, etc.). The sensors mounted on unmanned platforms along with the ones mounted on the FRs' equipment will be integrated in a **complete SA platform that will also include innovative modules that** will improve the FRs SA and capabilities for performing their work in a more efficient and secure manner. Additional capabilities for using drones as active FRs' tools, instead of only as unmanned platforms for mounting sensors, will be also developed.
- On the other hand, ASSISTANCE proposes to create an **advanced European training network based on the use of Virtual Reality (VR), Mixed Reality (MR) and Augmented Reality (AR) for increasing the FR's capabilities** according to their current training needs. This **advanced training network development will include** tailored curricula design, immersive interfaces, adapted training methodology definition, virtual scenarios, etc. **All developments stated in this section are related with the end users' needs reflected in the gathered questionnaires.**

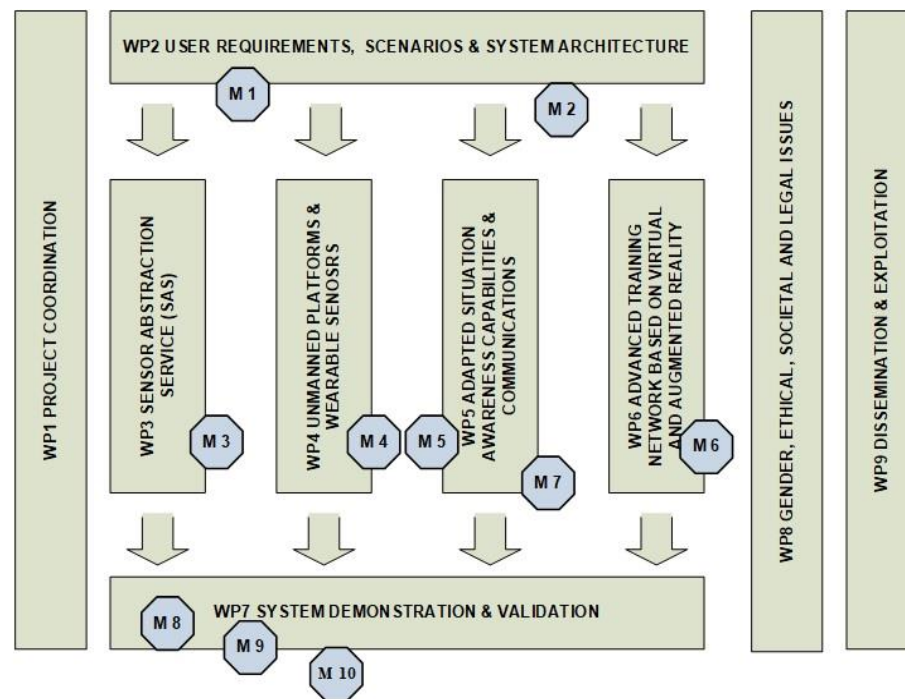
ASSISTANCE Concept



ASSISTANCE Main innovations

- Real time video overlapping on the FRs GIS (Advanced Video Fusion module)
- To integrate CBRN sensors on mobile platforms
- Hostile drone neutralization
- Provide network coverage through the use of swarms of drones
- CBRN hazard evolution
- To use semantic orders for controlling drones (Mission management module)
- Creation of a dedicated training network for FRs based on virtual, mixed and augmented reality

ASSISTANCE WP Structure



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| M1 User requirements gathered | M6 Training network set up ready |
| M2 System architecture released | M7 ASSISTANCE SA platform ready for testing |
| M3 SAS ready for testing | M8 First project pilot done |
| M4 Unmanned platforms and control devices integrated | M9 Second project pilot done |
| M5 ASSISTANCE communication network ready | M10 Third project pilot done |

ASSISTANCE FIRST PILOT

- **Earthquake in urban environment pilot scenario description (Turkey)**
- Izmir is the third more populated city of Turkey, during the night around 3 a.m. a big earthquake (7.8 in the Richter scale) shake the whole city during more than 2 minutes. Many big building have collapsed or are severely damaged and in the suburbs hundreds of houses have been completely destroyed. In addition, the main commercial communication networks have been heavily affected. Several FRs organizations start working in the first hours after the disaster, medical emergency services are attending people directly in mobile medical tents or even in the streets. The most urgent cases have to be transported to the available hospitals immediately. Information on optimal routes, which include real time information on damaged roads or other infrastructures (e.g. bridges), are required by ambulance teams in order to transport the victims in a more secure and efficient way. Many fires have been declared and gas pipes are damaged, in this sense information on toxic agents in the area is required by the FRs organizations in order to take the necessary protection measures.
- Turkish pilot will be led by AAHD and supported by the rest of project end users and technical partners. The simulation of this scenario will take place in the AAHD training premises in Izmir with the participation of real ambulance teams volunteers and other FRs organizations all of them using new ASSISTANCE SA capabilities and training platforms.

ASSISTANCE SECOND PILOT

- **Industrial accident pilot scenario description (The Netherlands):**
- Rotterdam Rijnmond area includes a variety of chemical plants most of which activities include bulk amounts of dangerous goods (transported, stored and processed - toxic, flammable or explosive). The vicinity of these process industries - the greater Rotterdam urban area - is densely populated. In a huge chemical warehouse storing various chemical end products (IBC's), a big fire is developing, producing large amounts of potentially toxic fumes. Because of the unknown nature of the toxic fumes, and prevailing wind-direction blowing towards the populated city centre, reliable information is required to take appropriate actions. Chemical sensors in drones, actual and predicted meteorological information will assist in generating a plume path and potential hazard footprints, which are continuously updated, allowing to correctly inform, alarm or even evacuate specific areas.
- The Dutch pilot will be led by GB and supported by the rest of the project end users. The rest of the Dutch partners (TNO and IFV) will support strongly the technical deployment of ASSISTANCE SA platform in the GB dedicated training site and the training workshop performance and evaluation.

ASSISTANCE THIRD PILOT

- **Terrorist attack pilot scenario description (Spain):**
- The Seville fair is one of the most populated celebrations in Spain where more than 3,5 million people attend for having fun. During the second day of the fair the more expected bull fight is taking place in the Maestranza bullring located 2 Km from the fair area. Suddenly, a truck crash in the bullring west part and a big explosion takes place. There are several casualties and the large amount of people inside the building go into panic. Many calls arrive to the emergency services talking about great breathing difficulties for the people which is trying to escape, also police officers already deployed in the area for protecting the event inform in the same way to their commanders and also on the presence of at least two unknown drones in the area. These facts alert the FRs on the potential presence of a toxic agent/substance and maybe malevolent drones in the area. Ten minutes later when all LEAs resources are focussed in the bullring area trying to know what has happened, a suspicious tank truck is detected going very quickly to the direction of the feria main entrance, where a large crowd is being evacuated.
- The Spanish pilot will be hosted by CATEC and led by MIR-PN and supported by AVSRE (Valencia 112) and the rest of the project end users. The rest of the Spanish partners (UPVLC, ETRA and UC) will support strongly the technical deployment of ASSISTANCE SA platform in ATLAS UAV Test centre (managed by CATEC) and the training workshop performance and evaluation. This location will allow realistic experiments and pilot demonstrations with UAVs/drones.

ASSISTANCE Milestones

MS No	Milestone name	Related WP	Est. date	Means of verification
M1	User requirements gathered	WP2	M6	D2.3 released
M2	System architecture released	WP2	M9	D2.4 released
M3	SAS ready for testing	WP3	M17	D3.2 released
M4	Unmanned platforms and control devices integrated	WP4	M21	D4.1-D4.3 released
M5	ASSISTANCE communication network ready	WP5	M21	D5.3 released
M6	Training network set up ready	WP5	M23	D6.3 released
M7	ASSISTANCE SA platform ready for testing	WP6	M24	D5.4 released
M8	First project pilot done	WP7	M30	D7.3 released
M9	Second project pilot done	WP7	M32	D7.3 released
M10	Third project pilot done	WP7	M34	D7.4 released