

# RESPOND-A : 5G in the service of First Responders (Next-generation equipment tools and mission-critical strategies for First Responders)

5G TRIALS IN EUROPE

5G Experimentation Facilities & Vertical Trials

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# Background

## 3 main types of dangers considering their impact on society, economy:

- Weather related (storms, extreme temperature events, forest fires, droughts, floods, etc.)
- Geophysical (earthquakes, landslides, volcanoes, etc.)
- Technological (oil spills, industrial accidents, toxic spills from mining activities, etc.)

## 4 major Common Global Capability Gaps for the Responders' operations

- Ability to know the location of Responders and their proximity to risks and hazards in real time;
- Ability to detect, monitor, and analyse passive and active threats and hazards at incidents scenes in real time;
- Ability to rapidly identify hazardous agents and contaminants;
- Ability to incorporate information from multiple non-traditional sources into incident command operations.

5G technology may offer the necessary broadband connectivity infrastructure to support the increased demands of next-generation tools for First Responders



# RESPOND-A analysis

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## The project aims

- to provide to First Responders immediate access to recent technological achievement
- to design and implement network-enabled tools and innovative equipment that will entail continuous security and safety
- to enhance situational-wide monitoring capabilities to the responders for resolving the identified danger-related gaps

RESPOND-A promotes First Responders' efficiency and safety by the following means:

- introducing a joint technological and conceptual framework for maximal Situational Awareness
- boosting Early Assessment, Safety Assessment and Risk Mitigation capabilities
- providing a clear Common Operational Picture (COP) at any scaling and complexity of disasters.

# RESPOND-A analysis

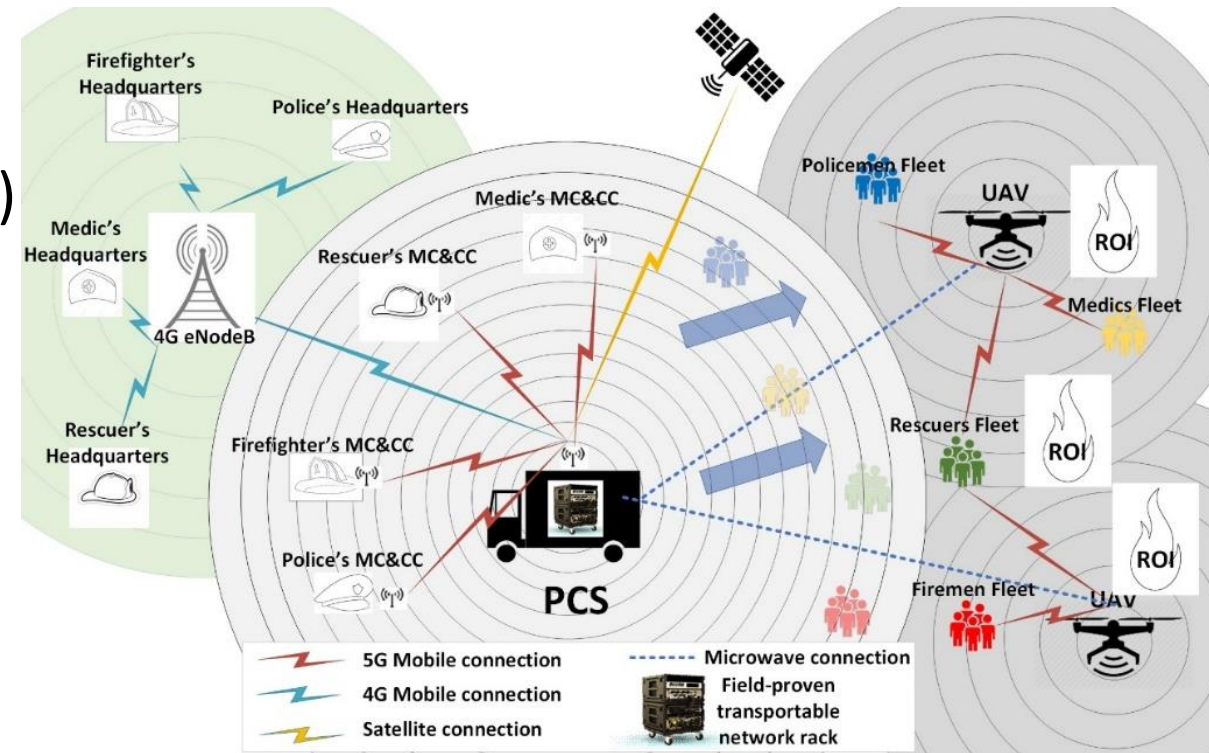
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- The project targets at building up and implementing **disaster scenarios** that have multiple effects on ***society, economy*** and ***ecosystem***,
- These scenarios will be exercised to get First Responders familiar with
  - The new mission-critical 5G network,
  - AR/MR applications,
  - localisation services,
  - bio-sensors, and others.
- Pilots will be demonstrated using **real-world training facilities** through sessions in Greece, Cyprus, and Spain

# RESPOND-A Use cases

## 5G for Mission Critical Communications

- RESPOND-A will provide 5G (next-generation) capabilities to First Responders
- Design and implement a Portable Communication System (PCS), which will be integrated as a light-weight physical platform that will enable voice, video and enhanced services to FRs, using the capabilities of 5G networks.
- A fleet of drones flying over the ROI will provide better coverage and better situational awareness

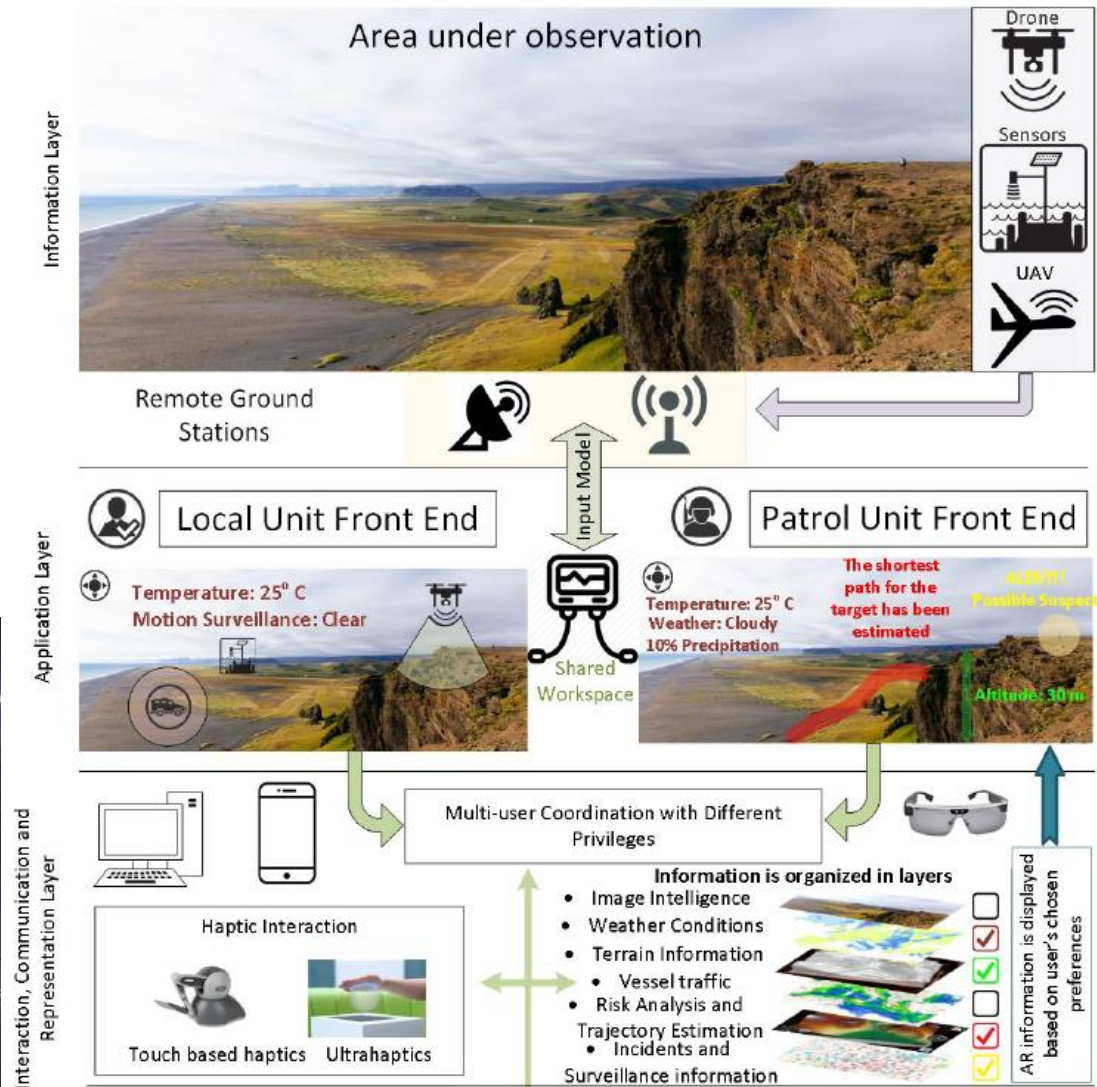




# RESPOND-A Use cases

## AR framework for Situation Awareness and Early Warning

- RESPOND-A will provide enhanced experiences of real-world situations and offering advanced Situational Awareness and Early Warnings to First Responders
- Based on AR/MR
- Exploiting broadband (eMBB) and low latency (URLLC) features of 5G

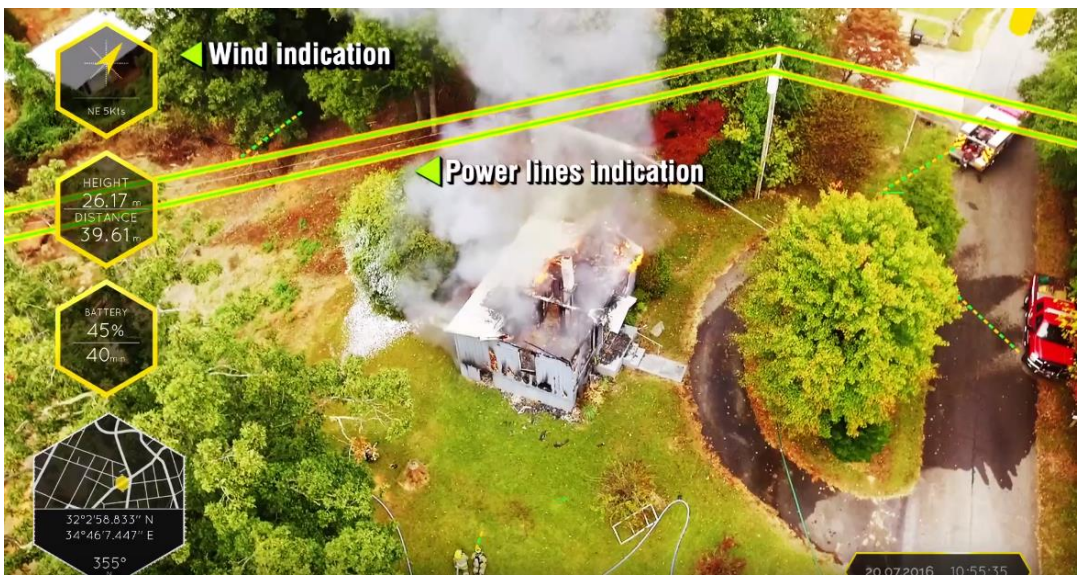


# RESPOND-A Use cases

## Interactive and Low-Latency Multi-View 360° VR video streaming

RESPOND-A will provide real-time access to video scenes

- Make use of both traditional and VR displays, like Head Mounted Displays (HMDs), along with object recognition techniques, to allow First Responders to identify dangerous infrastructures/objects, that are not easily visible (like power lines)



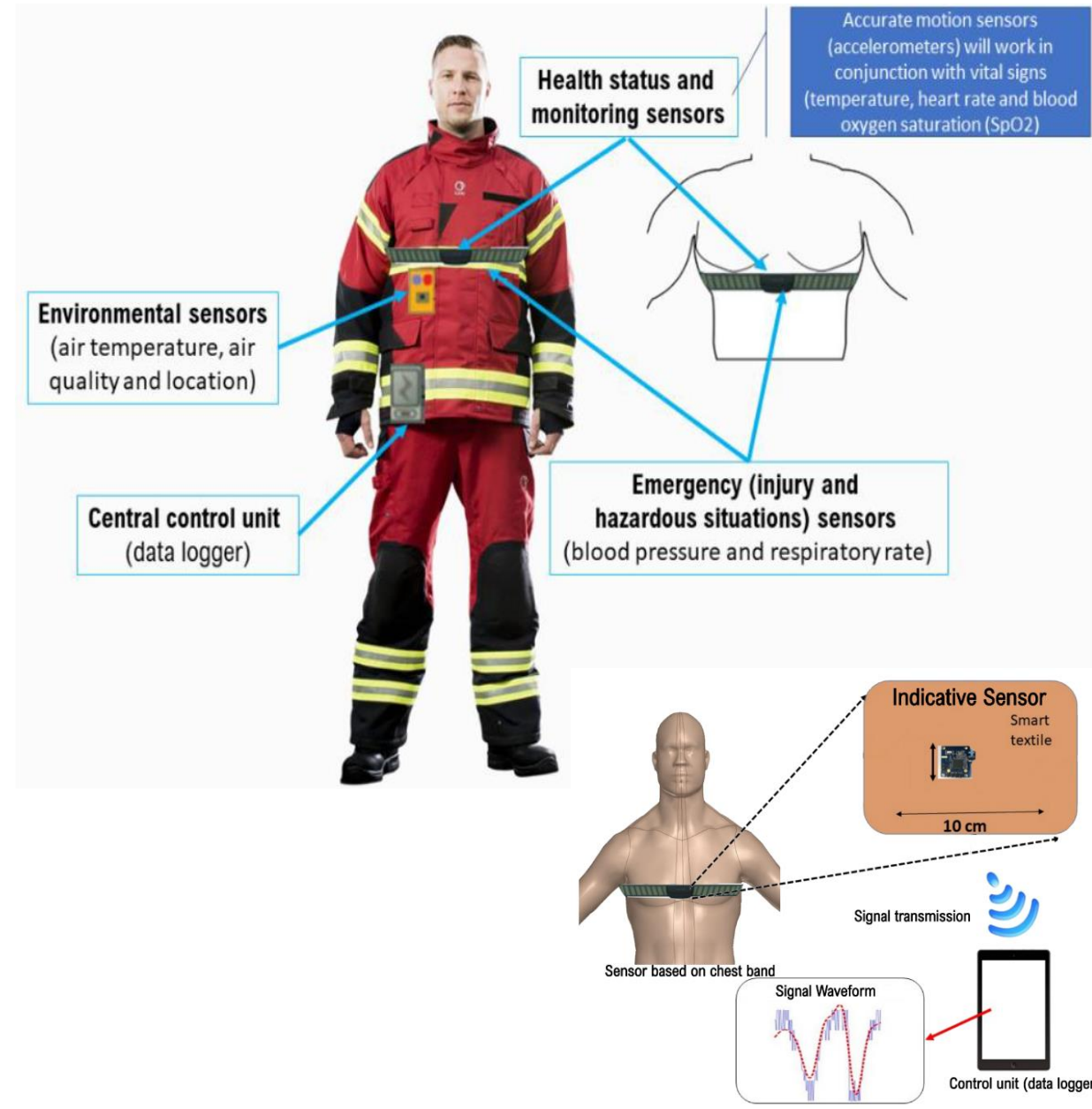


# RESPOND-A Use cases

## Wearable sensors for First Responders

RESPOND-A will design a discreet, light-weight, “wearable chest band or clothing” (vest) that can be integrated seamlessly and unobtrusively with protective layers, providing information about the subject’s ID, medical record, location and vital signs, and is able to detect and classify injuries and hazardous situations arising from environmental and body conditions.

- Health, environmental, emergency-activated sensors
- Communication to C&C center will be achieved over 5G network



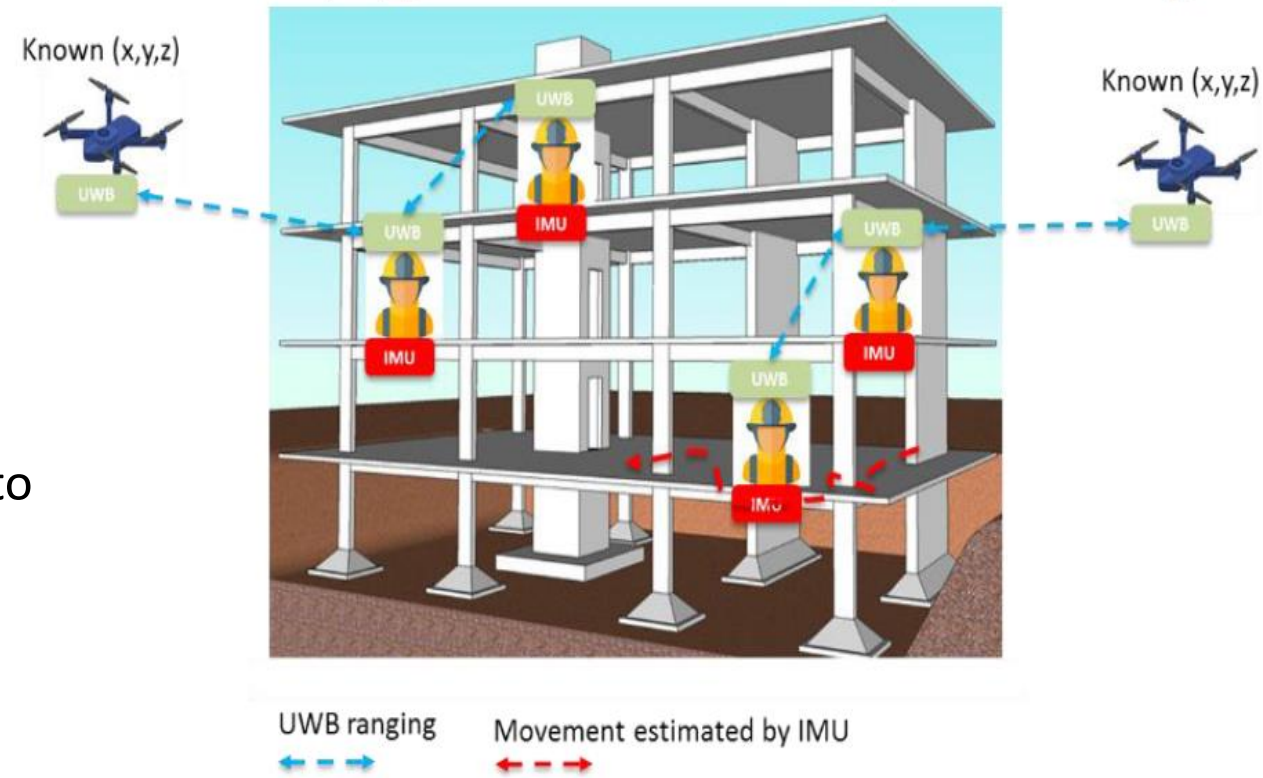


# RESPOND-A Use cases

## Reliable localisation for First Responders in indoor environments

RESPOND-A will propose a solution based on

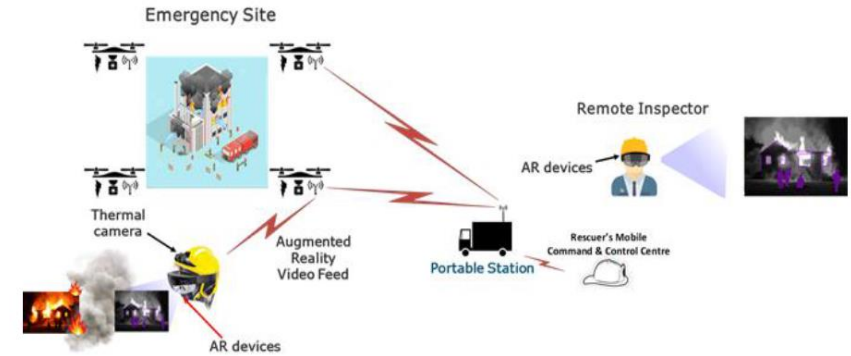
- radio-based ranging using IEEE 802.154a Ultra-Wide Band (UWB) radios,
- use of UAVs to quickly deploy mobile UWB anchors to support the real-time localisation of the First Responders.



# RESPOND-A Pilots

## Three pilots are anticipated

- Pilot 1: Enhanced Situational Awareness (Cyprus) / Weather-related EEA classified hazard
- Pilot 2: Professional Communications and Crowdsourcing through 5G (Greece) / Geophysical EEA classified hazard
- Pilot 3: AR applicability in maritime SAR operations (Spain) / Technological EEA classified hazard





Thank you!

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