CURSOR

Accelerating Search and Rescue operations

Coordinated **U**se of miniaturized **R**obotic equipment and advanced **S**ensors for search and rescue **O**pe**R**ations

Your name

Organisation

Date

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 832790 and from the Japan Science and Technology Agency

EU Consortium with international collaboration

- **16 partners in 8 countries**
  - 5 Practitioners / First responders
  - 4 Small-to-medium enterprises
  - 1 Industry partner
  - 5 Research institutions
  - 1 Non-for-profit association

- **Funding: 7 461 361,48€**
  - European Commission
    - EU Horizon 2020 (6 999 822,50€)
  - Japan Science and Technology Agency
    - JST SI-CORP (461 538,98€)

- **Duration: 3 years**
  - From September 2019 until August 2022

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Current situation

Due to climate change, global society will have to face a severe increase of natural disasters in the future.

Strengthening societal resilience against disasters like flooding, droughts, forest fires but also earthquakes has been declared as a priority also for the European Union

Challenges for First Responders

Insufficient situational awareness causes lengthy search and rescue processes→ the Golden 72 hours

Hostile and uncharted environments

Overall goals

CURSOR will develop a new Search and Rescue (SaR) system to detect victims under debris **quicker** and **faster**.

The CURSOR SaR Kit will :

be easy and fast deployable - and therefore – will significantly **reduce the time** to detect and locate trapped victim.

provide an aggregated, comprehensive, optimised **near-real time common operational picture for prioritisation of actions** during complex search and rescue operations.

Expected Impact

- Better involvement of First Responders in the development of Technical equipment.
- Improvement of the current situation of First Responders.

Our objectives

1. 1.Deepen the shared understanding between First Responders and (technological) solution providers on the operational needs and requirements during USaR operations.
2. 1.Reduce the time needed for deployment of search and rescue personnel and equipment.
3. 1.Reduce the time needed for situational assessment (SA) during USaR operations.
4. 4.Reduce the time needed for onsite disaster response.
5. 4.Improve the protection of First Responders' health and safety during USaR operations.

Our approach

Collaboration FR-Technicians

1.Continuous Practitioner-Technologist dialogue within the project and will be both the basis for all development and validation activities in CURSOR (internal exchanges between partners in the project, workshops and trainings with external stakeholders, …).

Time reduction for USAR

1.The *CURSOR SaR Kit* is highly mobile and easy to set up, also during complex and challenging disaster situations.

Time reduction for SA

1.The *CURSOR SaR Kit* establishes immediately (even in hazardous environments) a shared operational picture of the affected area using UAVs that provide a basic 3-D model from the scene within short time and that carry a ground penetrating radar.

Time reduction on site

The *CURSOR SaR Kit* includes a new geophone-based system and miniaturised robots equipped with sensors, which will be dropped precisely where a void was identified. The robots will inform about any detectable life signals (e.g. human scents, breathing and small movements).

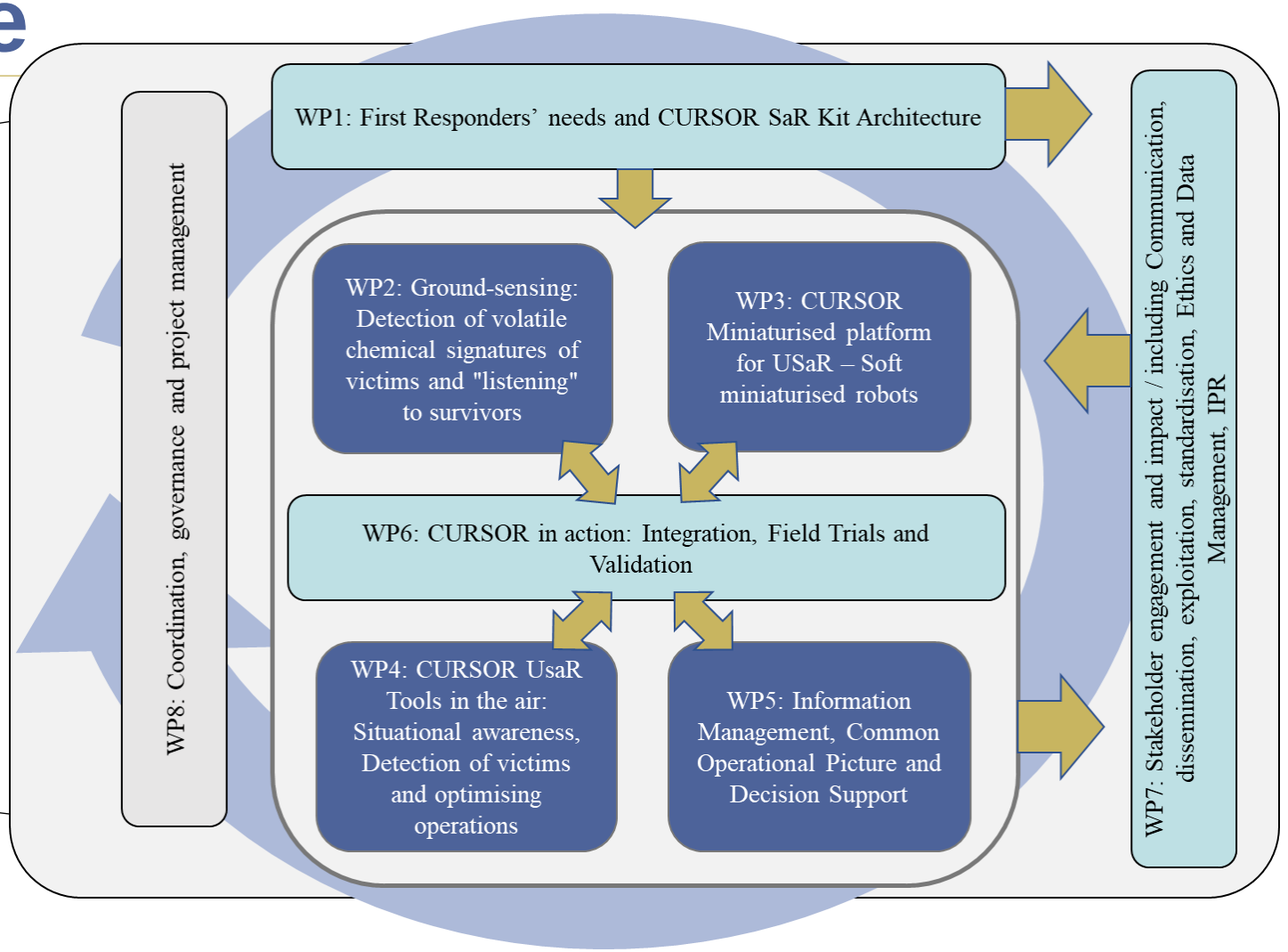
Safety of FR

4. The project will innovate a system with unmanned robotic platforms allowing for highly remote operations.

Project structure

Lead: Technisches Hilfswerk (German Federal Agency for Technical Relief)

Technical Lead: Institute of Communications and Computer Systems (Greece)



- 8 Work Packages (WPs)
- Several Lab Tests
- 2 Small Scale Field Tests
- 2 Field Trial Validation Tests

WP structure and output

WP1: THW	• To develop a “master” scenario and relevant Use Cases. • To define technical specifications and architecture of the *CURSOR SaR Kit.*
WP2: CEA	• To develop chemical sensing systems deployed on soft miniaturised robots enabling to identify living versus deceased victims.
WP3: SINTEF	• To develop and prototype a miniaturised robot. • To develop and implement novel communication and localisation algorithms.
WP4: ISCC	• To design and develop a drone-based system (UAV platform and worksite functionalities). • To coordinate communication between UAV-system and soft miniaturised robots.
WP5: ICCS	• To develop and implement a wide range of functions related to data management (data fusion and analytics, Command and Control, information exchange).
WP6: THW	• To test and evaluate extensively all components of the CURSOR SaR Kit (user satisfaction through field trials, training workshops with FR, …).
WP7: ARTTIC	• To disseminate, communicate and exploit the results generated in CURSOR in the most efficient way and to foster sustainability.
WP8: THW	• To provide leadership, governance, legal & ethical supervision, technical coordination and management support to CURSOR.

CURSOR SaR Kit

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