CURSOR: Coordinated use of miniaturised robotic equipment and advanced sensors for search and rescue operations

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Arriving to the disaster site

Source: THW

Unknown disaster site – iceberg example

Earthquake disaster

Location, estimation of the victims number, damage size, weather…

Detection&location

- Number and location of collapsed buidlings
- The structure and building materials
- How many people are affected?
- How deep can/need to we search
- Etc.

FR own safety

- Dangers when searching the victims
- Cascading effects (gas explosion, fire etc.)
- Afterschocks
- Etc.

Scope of the CURSOR project

Safety of the first responders

Time needed for detection and localisation of the victims

CURSOR - reduce time for detecting & locating victims trapped under the debris while increasing the **personal safety** of the S&R teams.
Additional focus on strong **practitioners involvement**

Coordinated by THW :

5 practitioners

10 technical & research partners

Supported by ARTTIC/AI

In collaboration with Japan

Duration: Sept. 2019- Febr.2023

Budget: € 7 461 361,00

www.cursor-project.eu

THE CONSORTIUM

CURSOR mission

- Provide an easy and fast deployable SaR Kit of integrated technological solutions, which:

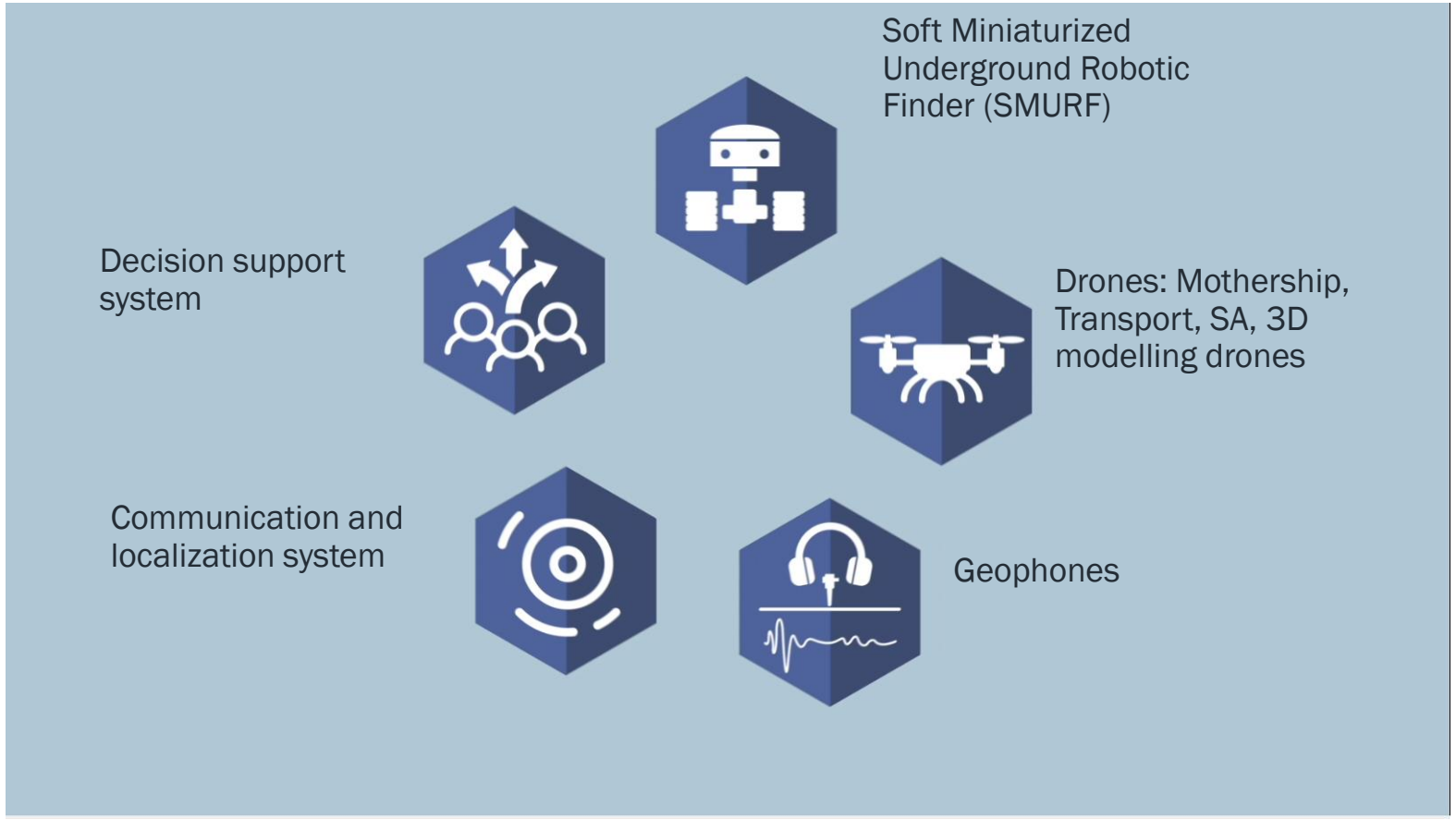
➢ is responding FR needs

➢ is reducing the time to detect and locate trapped victims

➢ is providing aggregated, comprehensive, optimized near-real time common operational picture for prioritization of actions

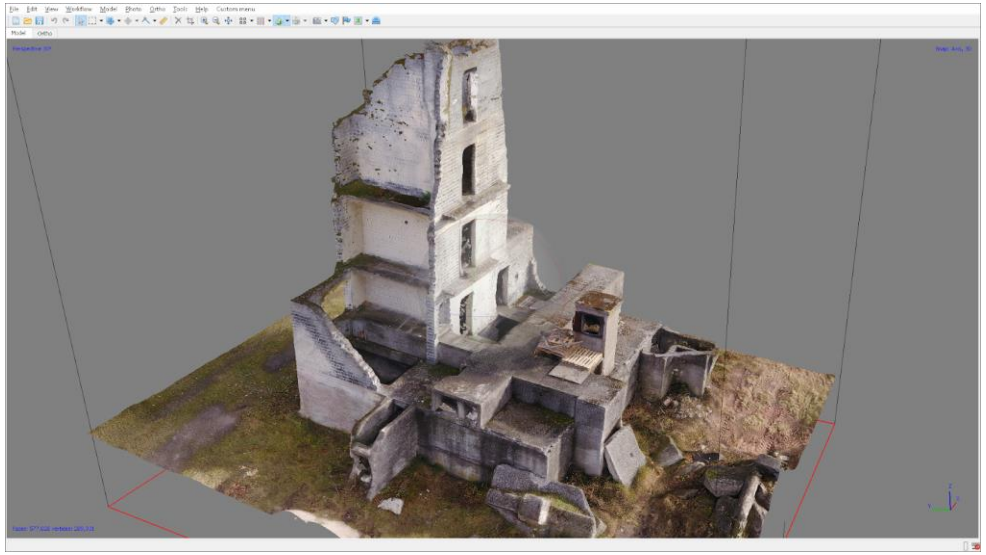
CURSOR Search and Rescue (SaR) Kit

CURSOR SaR Kit components



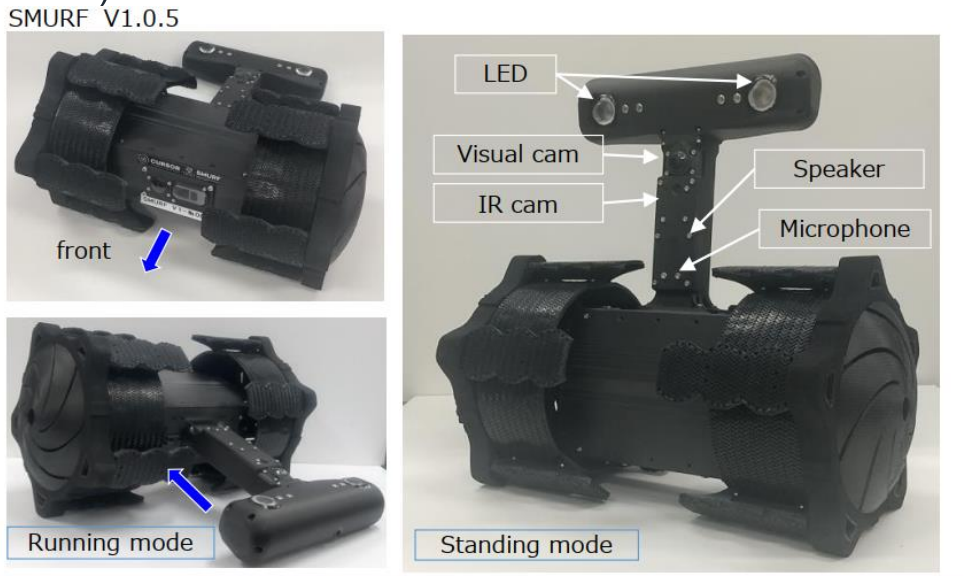
CURSOR solutions – CURSOR in the air

- Mothership drone
- 3D modelling drones (5 DJI Mavic Pro drones)
- Transport drone
- SA drone



CURSOR on the ground

SMURF (Soft Miniaturised Underground Robotic Finder)



2. Start up sequence

..Turn ON the Power switch

A LED on the power switch light up when turned ON

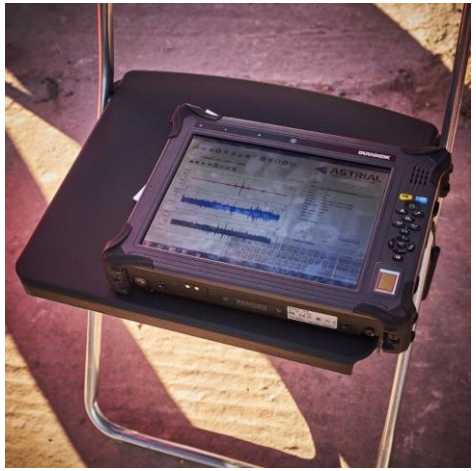
2.Start the GUI

3.Select "Joystick" in "Mode_select"

4.Select the sensors to use from "Camera", "IR Camera", "Microphone" (Camera is selected in the fig)

GUI

Geophones



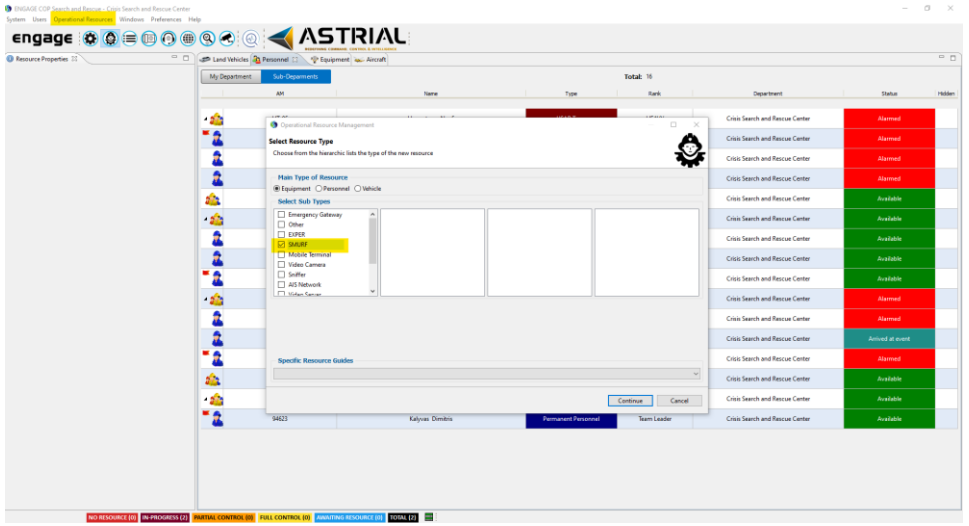
CURSOR communications

Communication & localisation system

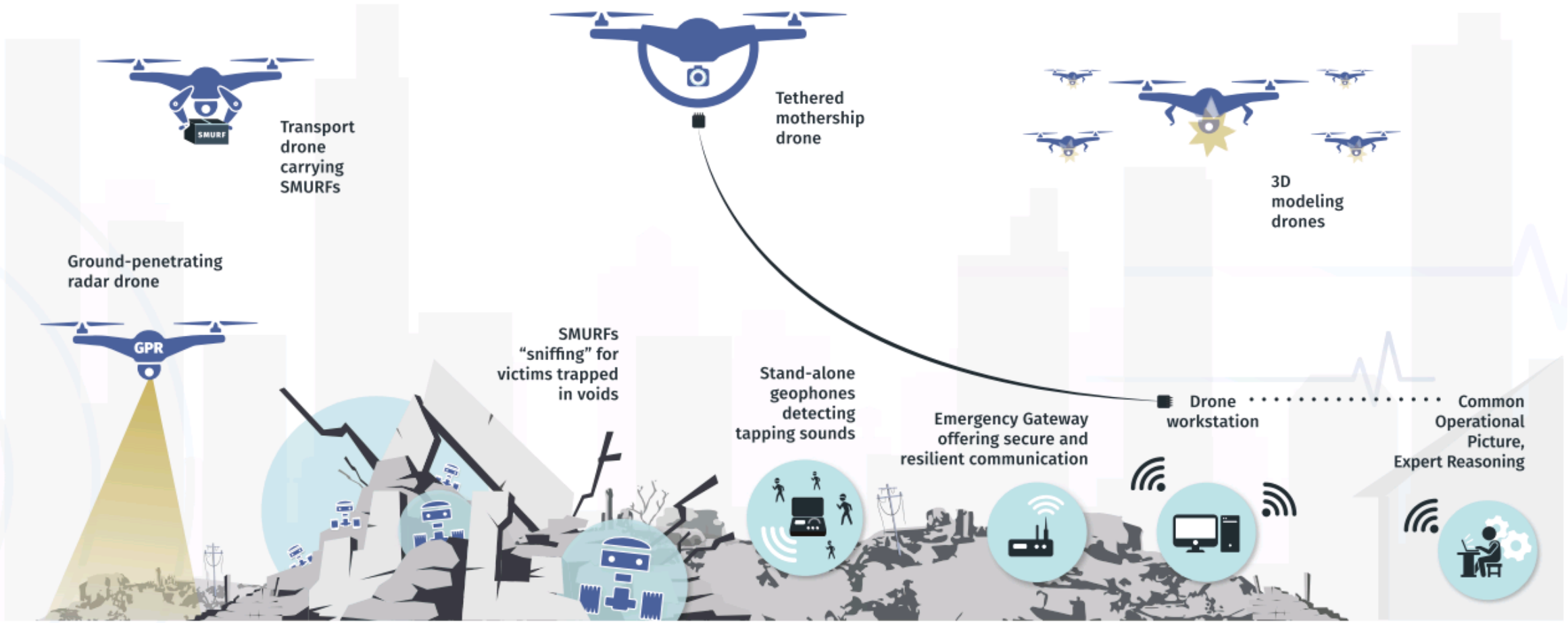
- EXPER
- Emergency gateway
- Localisation system

Decision making support

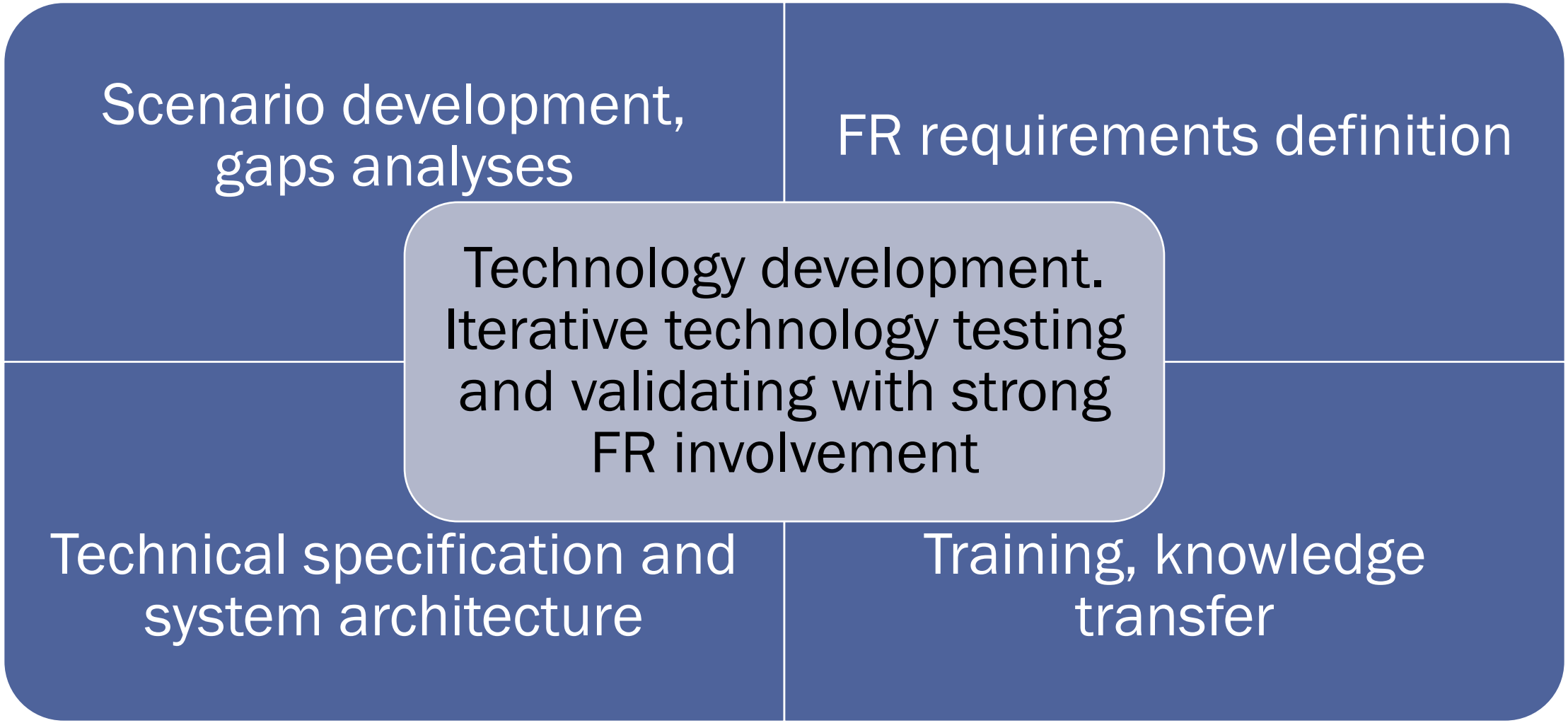
- Common operational picture (COP)
- COP in the field – COPTERM



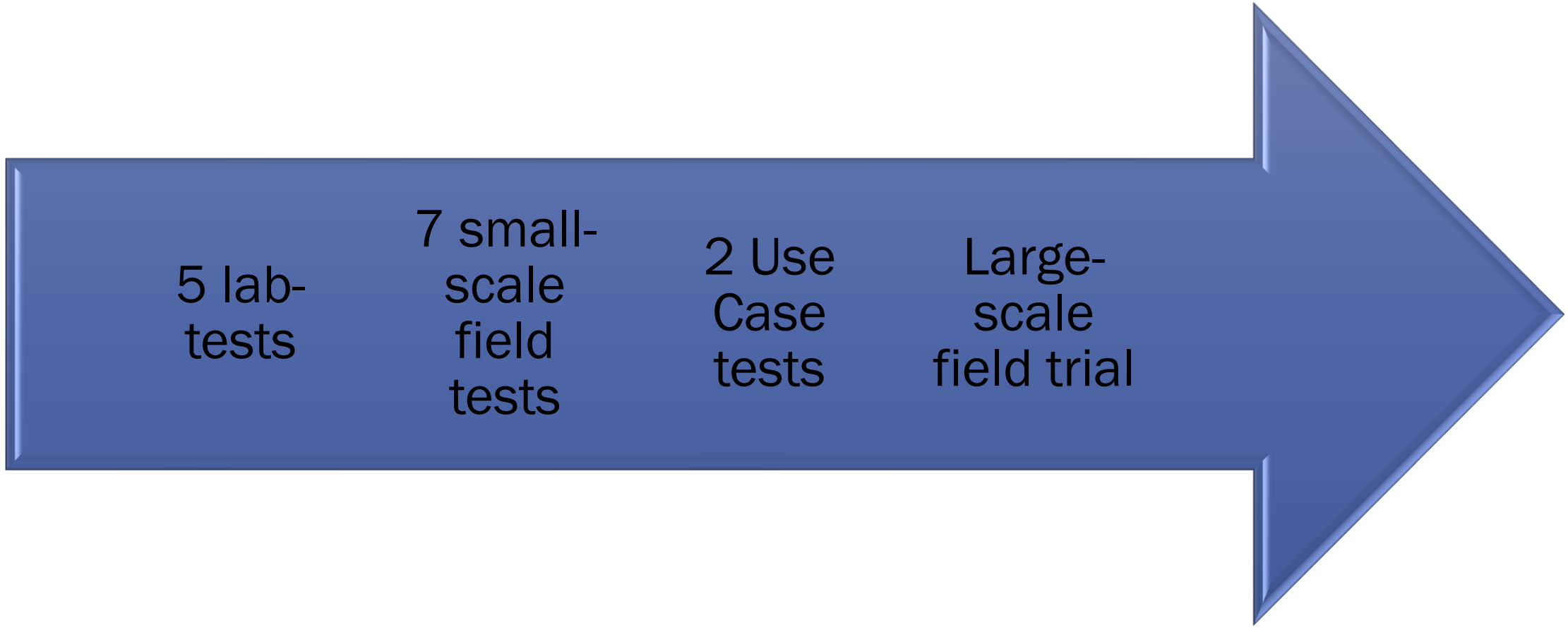
CURSOR in SaR mission



CURSOR structure



Iterative testing



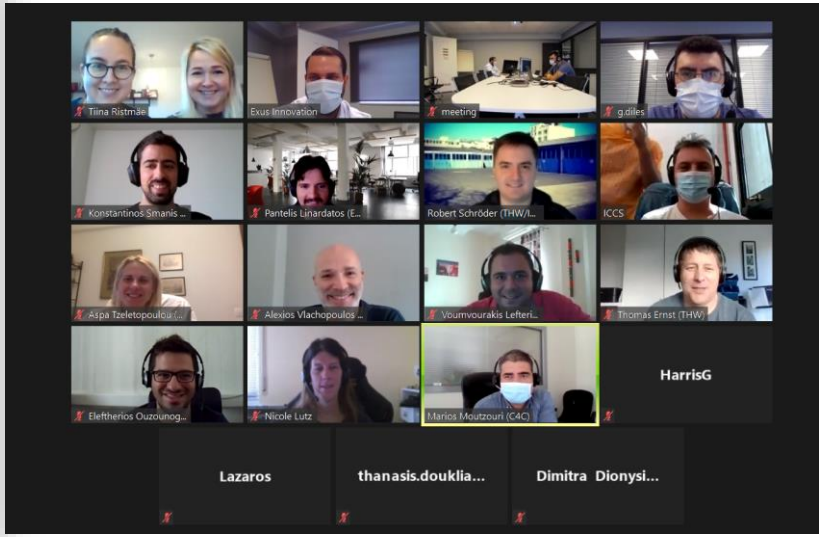
Lab tests

- Took place in lab conditions
- Due to Covid-19 restrictions online or remotely
- FR involvement

Challenges:

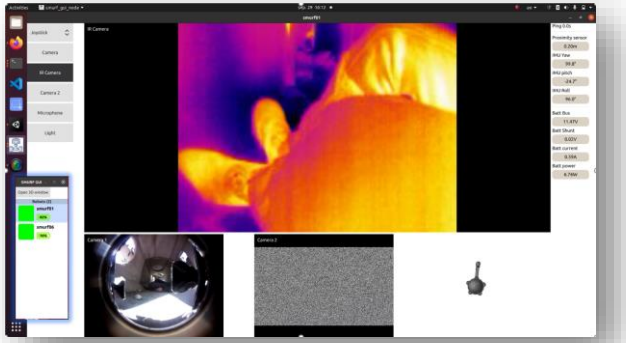
- Low maturity of the technology

Coarse Material Test Pile Milled Material



Field tests

- Realistic conditions, test scenario
- FR hands-on testing
- FR evaluation, suggestions for the improvements
- Training



Challenges:

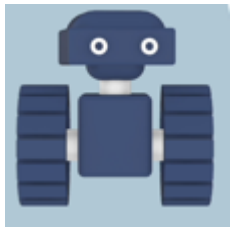
- Covid-19
- Low maturity of the technology, testing prototypes
- Testing and not demonstrating
- Providing the FR the required training

CURSOR Large Scale Field Trial

- Final CURSOR test
- November 2022, Athens, GR
- Testing the integrated technology in the field
- Training
- Validating the CURSOR technology in the realistic scenario

CURSOR Major outputs so far

- Active role of FRs at all steps
- Definition of scenarios, use cases, KPIs and system architecture
- Development and adaptation of a testing and validation process
- 2nd prototype components developed (SMURF, communication system, sensors, drones, geophones etc.) and tested in field conditionsd
- Collaboration with similar projects (FASTER, INGENIOUS, ASSISTANCE, RESPONDRONE)
- Early start with exploitation strategy development (KERs & stakeholder analysis)
- Developing new solutions for S&R deployments which address the FR needs



CURSOR
Accelerating Search and Rescue operations

Thank you!

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