



# Human Factors in the COPE project

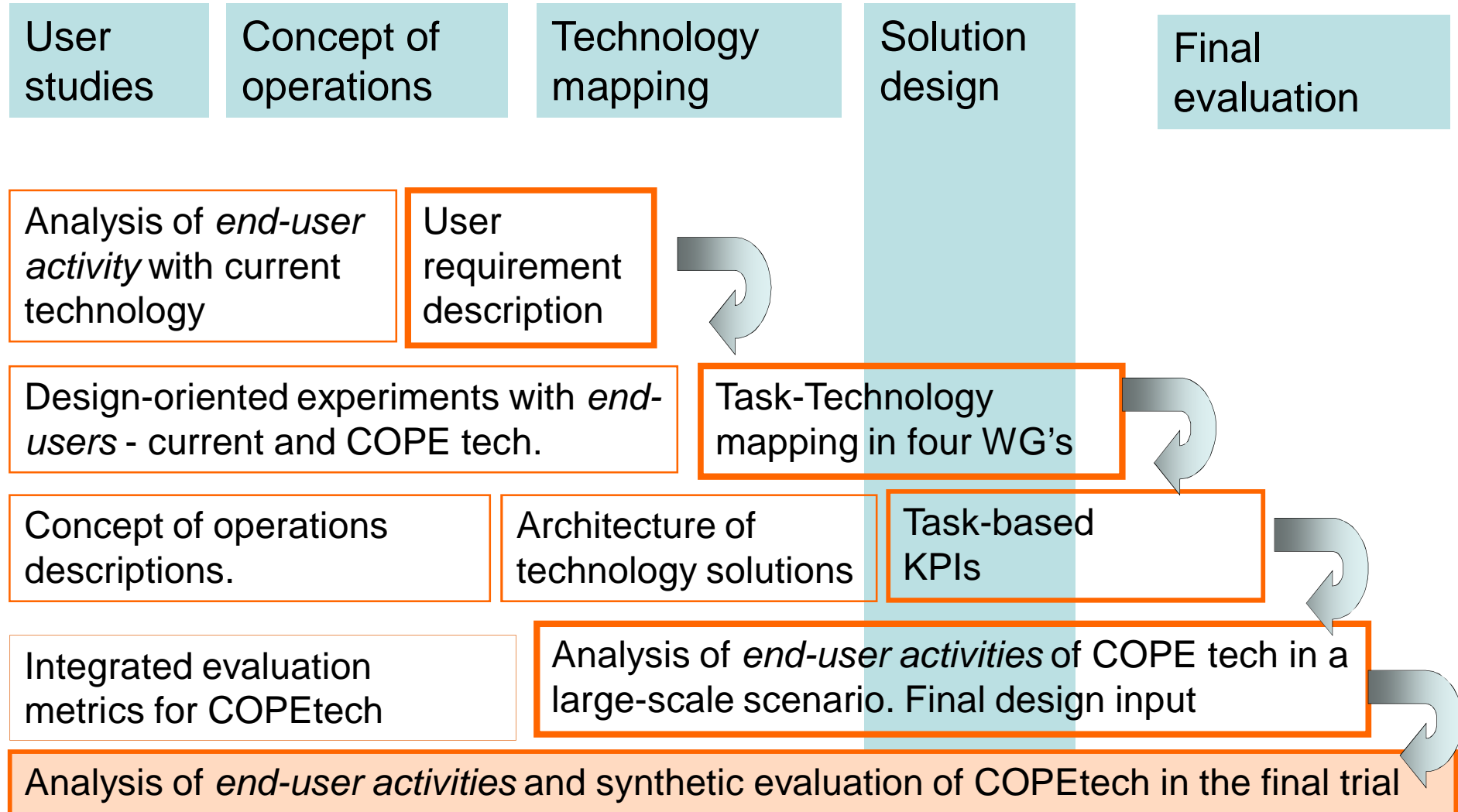
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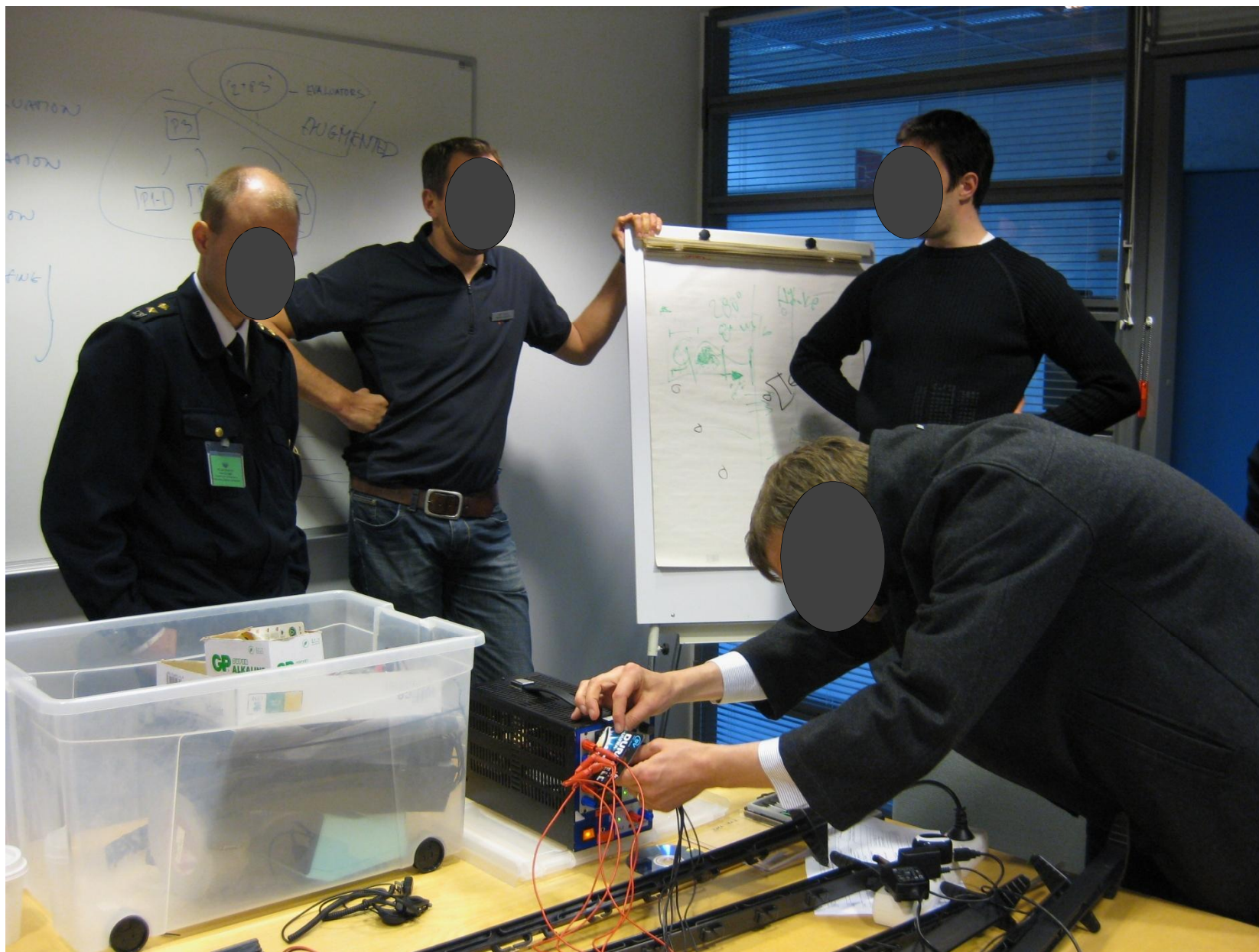
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TCD, Trinity College Dublin (Ireland)  
Emergency Services College (Finland)

<http://cope.vtt.fi>

# COPE-project followed a usage-centred design approach

WP





COPE technology developers, end users and HF experts constructing the first version of the WSN

# Human Factors (HF) data collection in the real-life trials



## TRAINING OF PARTICIPANTS







**TESTING THE USABILITY  
FEATURES OF SINGULAR  
TECHNOLOGIES**



**OBSERVING AND  
VIDEOTAPING  
COMPREHENSIVE ON-  
GOING ACTIVITIES**

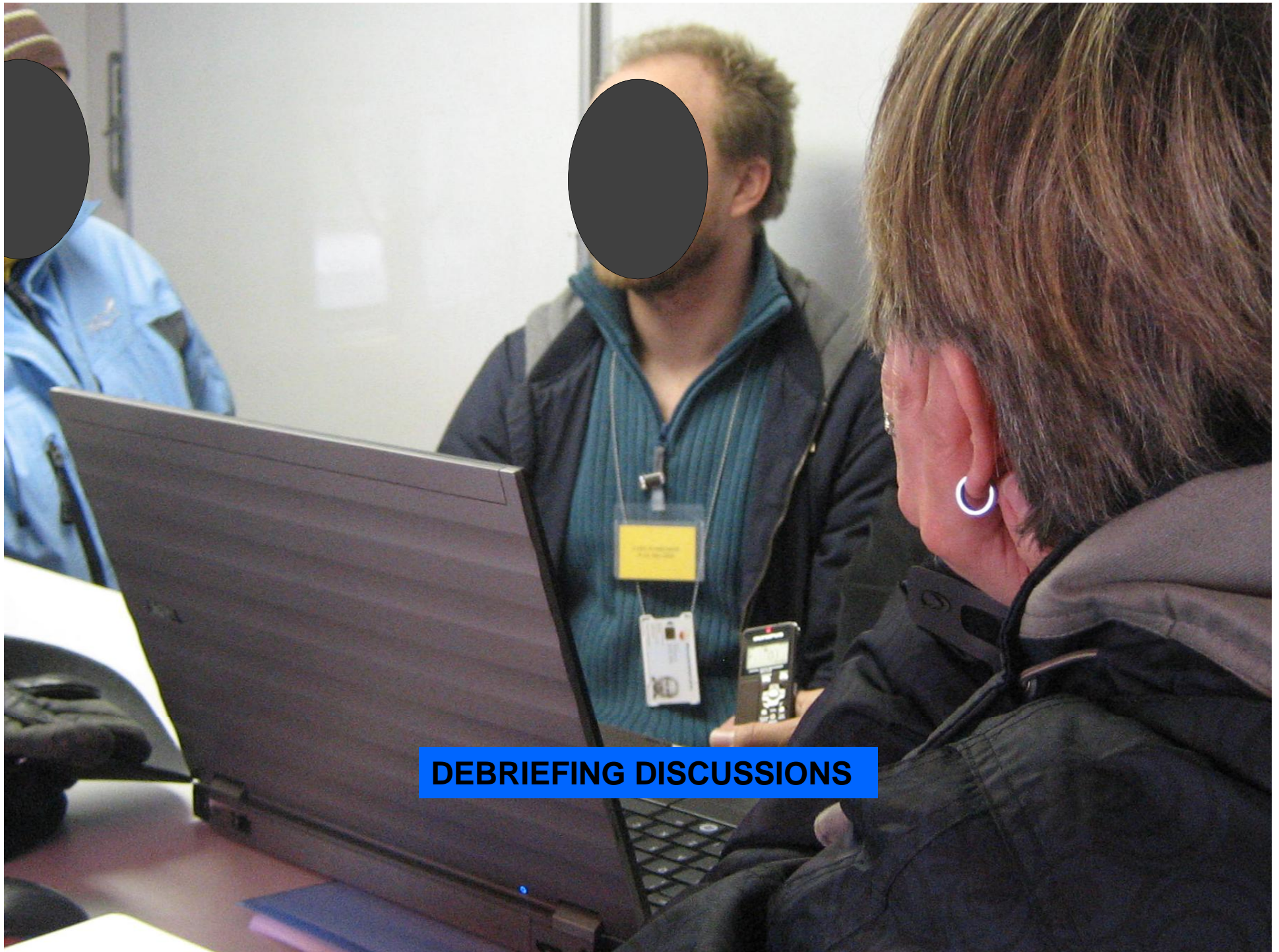




## EXPERT EVALUATIONS OF PERFORMANCE







**DEBRIEFING DISCUSSIONS**

# HF analysis of ER activity and of the forming of Common Operational Picture (COP)

- Forming of COP is one of the cognitive demands ER work. It takes place in the context of accomplishing well rehearsed tasks.
- COP is the emergency responders' on-line conception of the emergency situation which is as coherent as possible, and is supported by artefacts.
- ER activity and forming of COP was studied in realistic exercises by
  - describing the course of actions and decision making
  - defining successfulness of task performance
  - analysing communication processes during the activity
  - inquiring user experience concerning used technologies



# HF evaluation of the COPE technology concept

- Verification
  - Focus on the functionality and usability of singular technologies in different tasks against the requirements
  - Task completion and user experience (UX)
- Validation
  - Focus on the potential of the COPE concept in supporting COP
  - **Usability Case** method:
    - Claims concerning the innovative elements of COPE concept and their support for COP
    - Evidence of different exercises to test the fulfilment of the claims
    - Provides a possibility to synthesize data, and derive general results from successive design studies

# Sensemaking, Coordination, and Maintaining common ground in action

Intrinsic cognitive demands  
of ER work

## COP

Concept requirements

**Forming a model  
of the situation**

**Presenting a  
model of the  
situation**

**Sharing  
the model**

Concept solutions

**Actor's  
terminals for  
participation**

**Sensors for  
Extending  
human senses**

**Semantic structuring  
of information  
for abstraction of  
relevant information**

**Gateway and  
WLAN for  
availability of all  
information**

Managing tasks  
(C2, SC)

Enhancing visual  
perception

- Camera, infrared camera

Control of  
information load

Delivering of  
in time information

- Map (C2, SC)
- Tasks (C2, SC)

Visual presentation

- Map (C2, SC)
- Video (SC, visor)

Observing environment

- Hazardous materials (NH<sub>3</sub>)
- Weather

Alarming

- smoke diving duration
- new tasks

Retrieval of  
stored information (video)

Ad hoc  
communication network

Functional solutions

Locating objects

- personnel (GPS, inertia)
- resources, hazmat

EVIDENCE

PE



# Conclusions

- Potential of the COPE concept was shown in the project via a systematic evaluation process
- Gaining actual added value from COPE technologies in the future requires still more HF effort on
  - semantic structuring of information; forming of efficient ontologies
  - design of integrated human-technology communication systems
- Technology changes demands of work
  - ICT enables new concepts of operations in emergency response
  - new competencies need to be learned



## Thank You

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UTI Group (Romania)

GMV-Skysoft (Portugal)

CESS, Centre for European Security Strategies (Germany)

IGSU, General Inspectorate for Emergency Situations (Romania) ESC,  
Emergency Services College (Finland)

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