The COPE Trial setup and Evaluation

Reinhard Hutter

Centre for European Security Strategies

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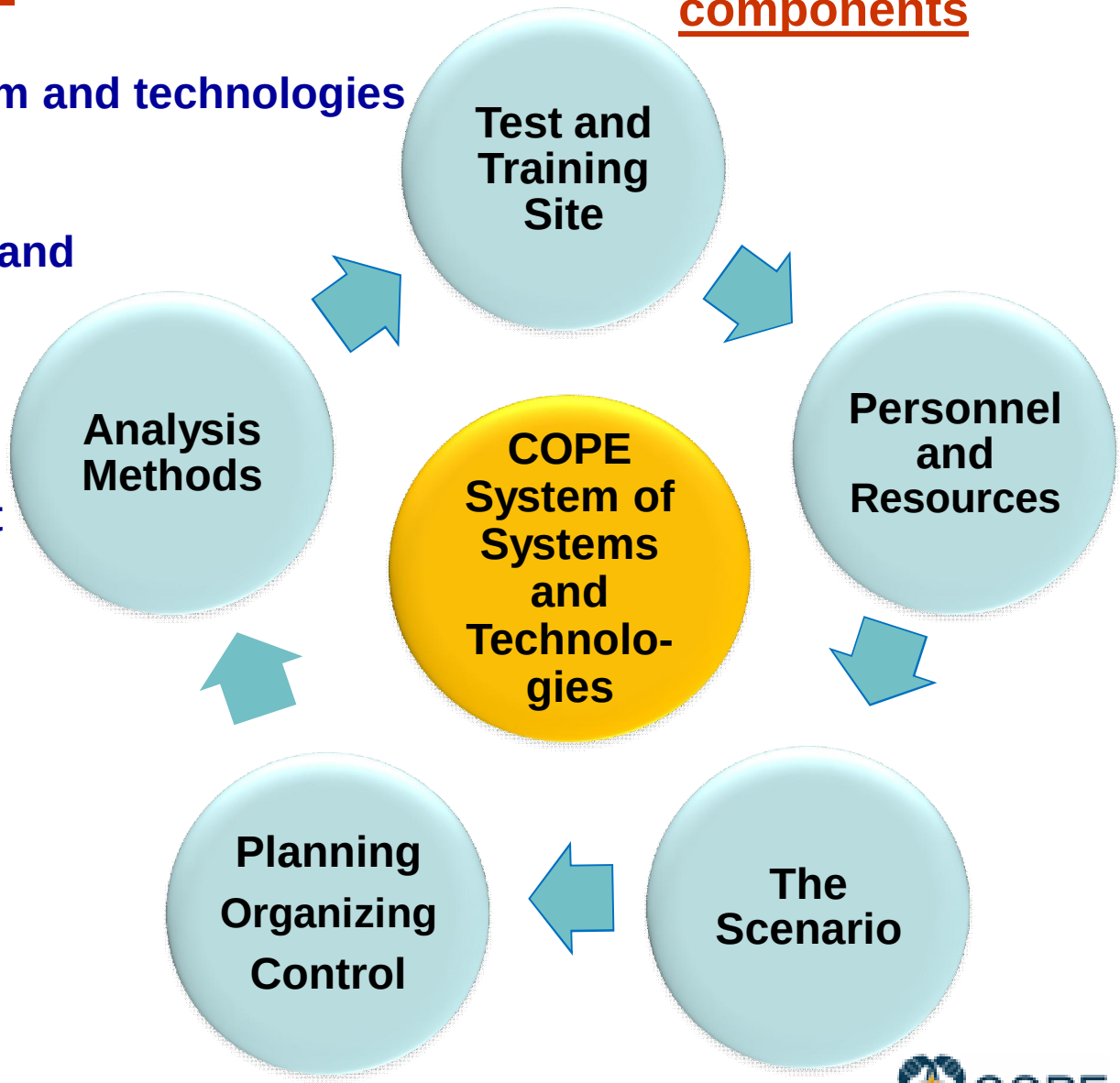
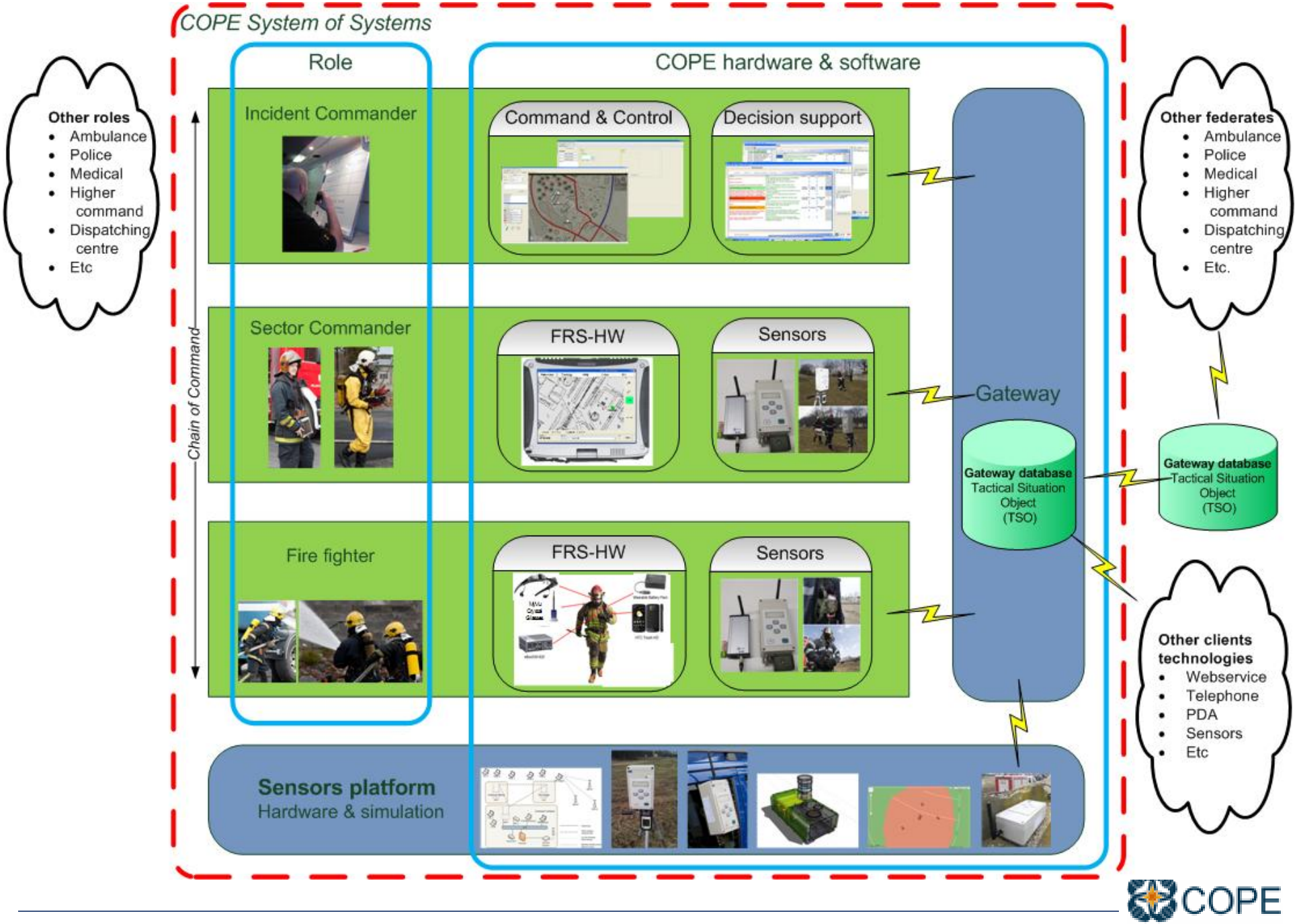
The trial main objectives

- Expose the COPE system and technologies to a realistic scenario
- Measure performance
- Measure their usability and acceptance (HF)
- Generate measurable information
- Perform detailed and final overall assessment
- Draw conclusions for the future

The main trial components



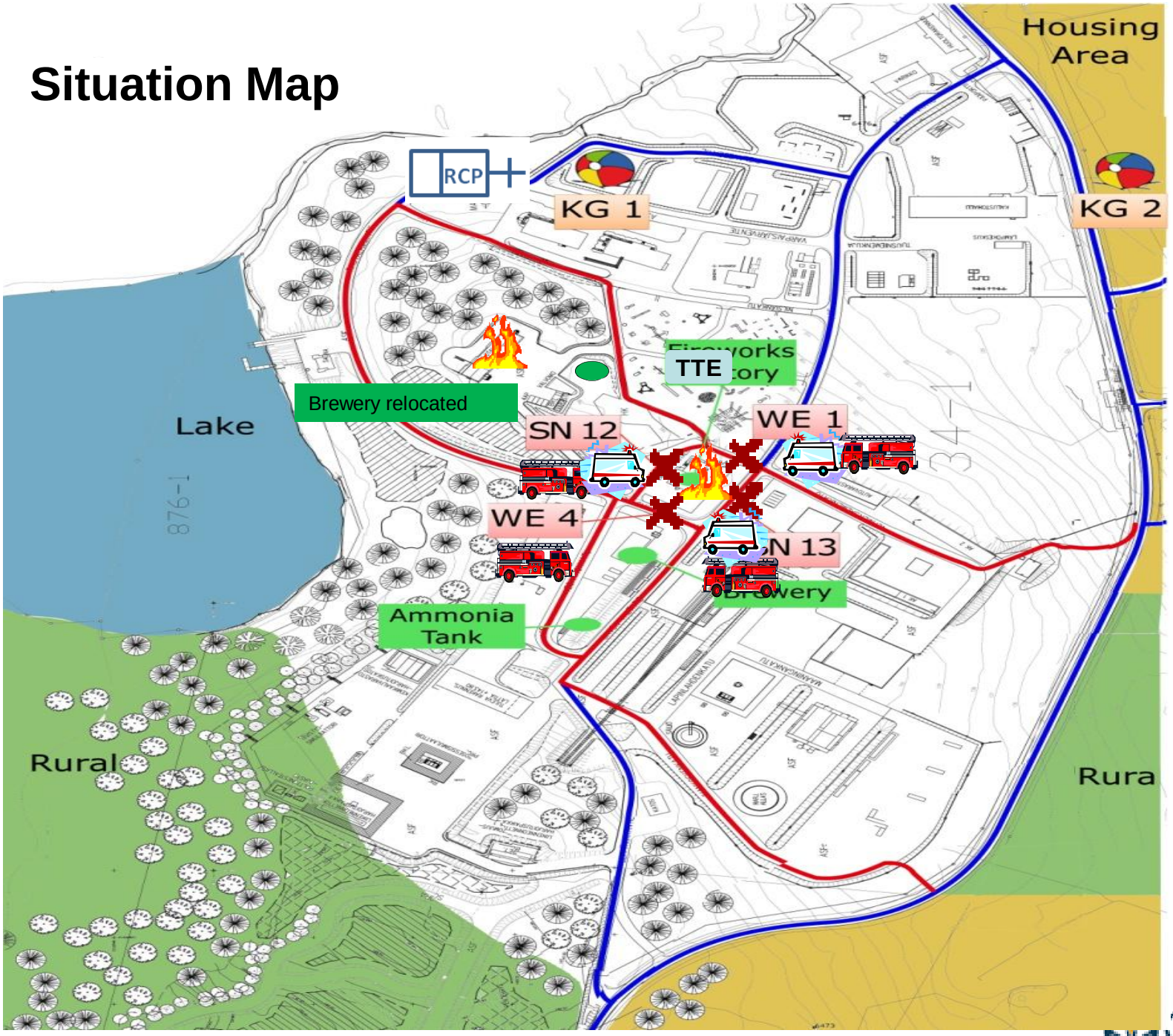

COPE System of Systems
Role
COPE hardware & software
Other roles
Ambulance
Police
Medical
Higher command
Dispatching centre
Etc
Incident Commander
Command & Control
Decision support
Sector Commander
FRS-HW
Sensors
Fire fighter
FRS-HW
Sensors
Chain of Command
Gateway
Gateway database
Tactical Situation Object
(TSO)
Other federates
Ambulance
Police
Medical
Higher command
Dispatching centre
Etc.
Gateway database
Tactical Situation Object
(TSO)
Other clients technologies
Webservice
Telephone
PDA
Sensors
Etc
Sensors platform
Hardware & simulation

COPE

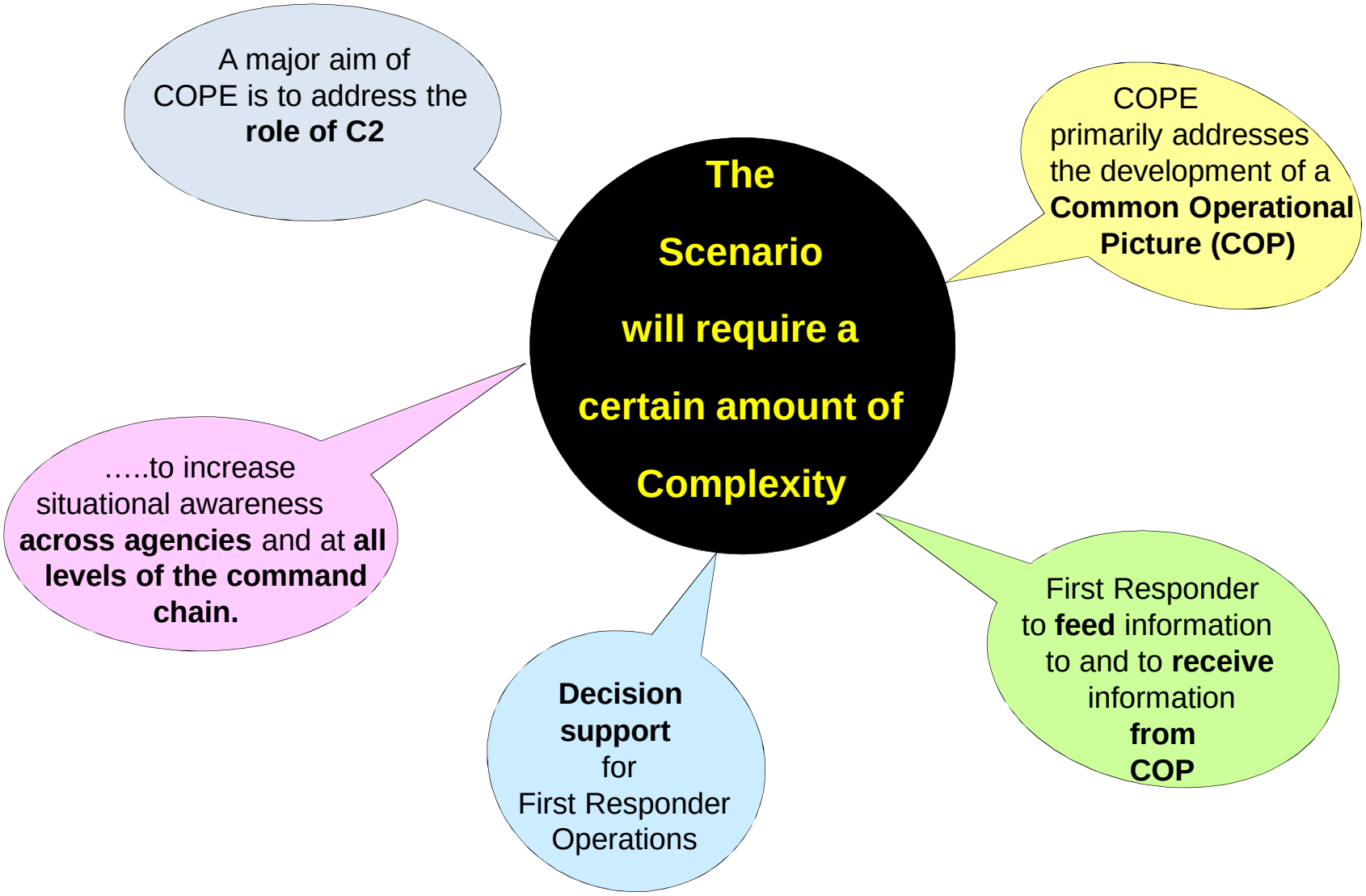
The Exercise Framework

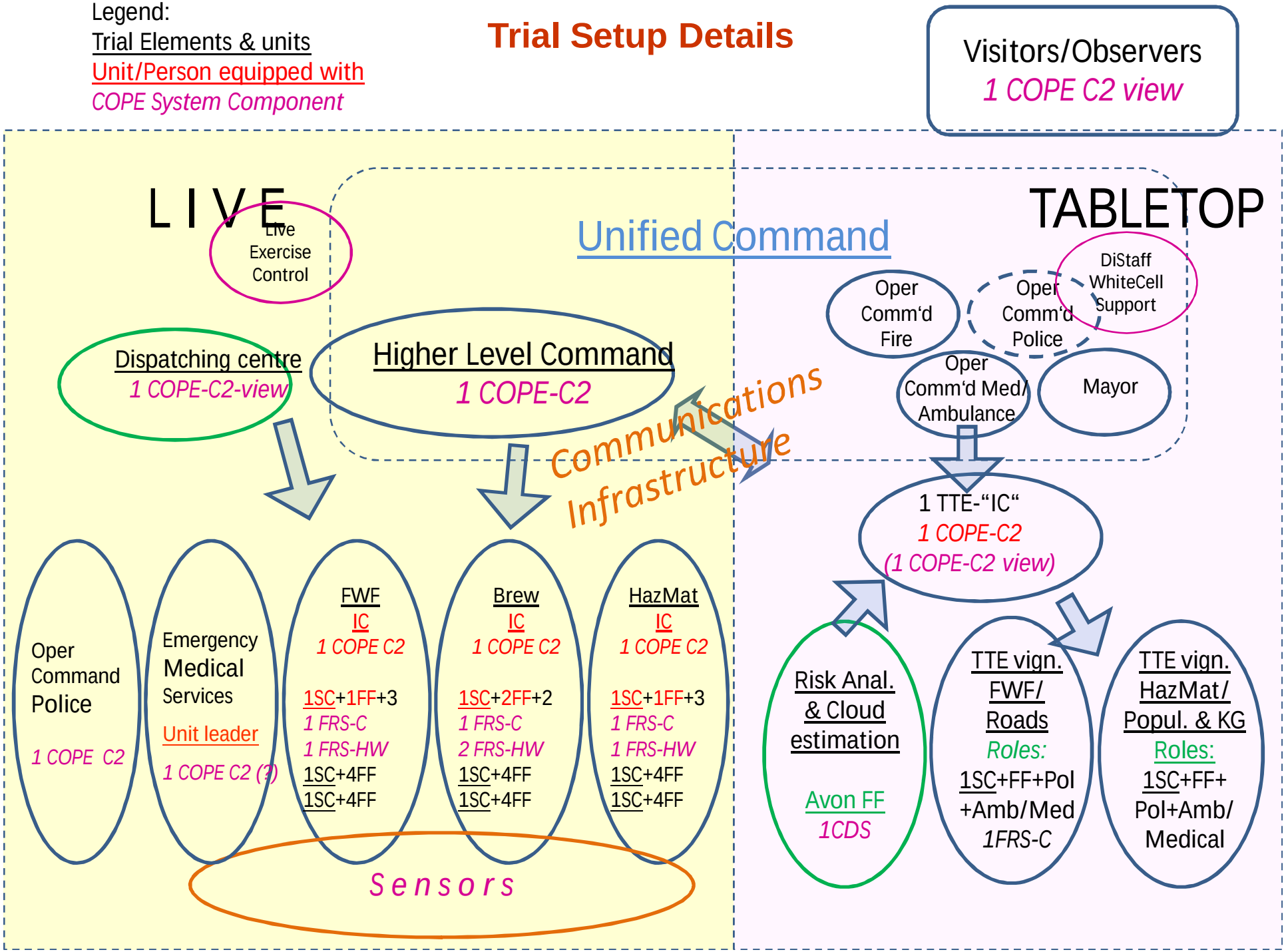
- A real emergency exercising training range
- 3 preceding test exercises
- >4 months planning lead time
- A very complex scenario close to real
- More than 80 participants
  - First responders 38
  - Visitors/ players 14
  - Team members 19
  - Supporting staff 15
- About 40 major technical components installed
- 3 days duration: 22/23/24 Sept. 2010
  - Instructions, briefings, rehearsal
  - The exercise scenario: ~3 hours real time
  - Debriefings, feedback and wrap up
- Multi-step evaluation

Situation Map

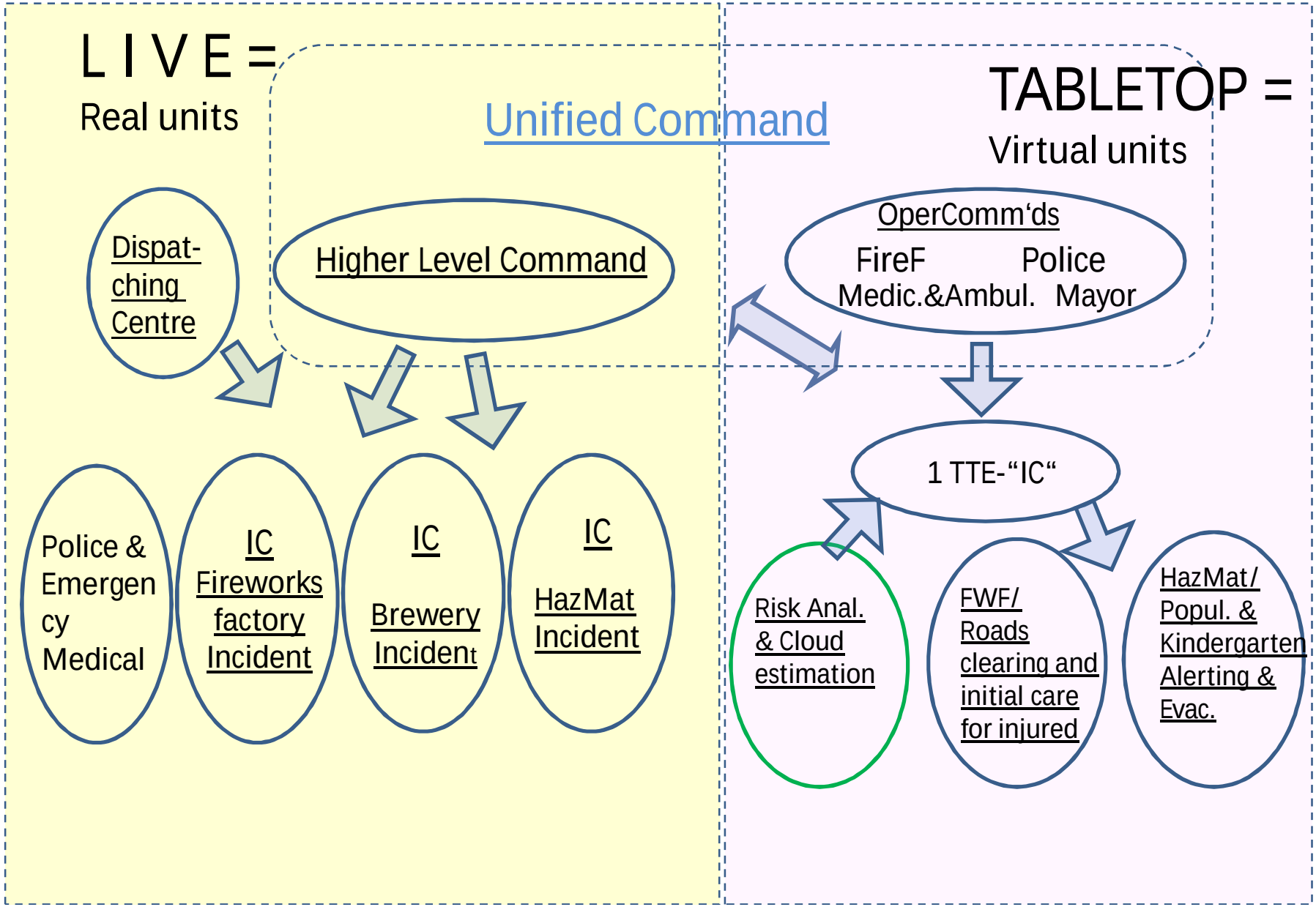


Why a complex Scenario?




Legend:
Trial Elements & units
Unit/Person equipped with
COPE System Component
Trial Setup Details
Visitors/Observers
1 COPE C2 view
LIVE
TABLETOP
Live Exercise Control
Unified Command
Dispatching centre
1 COPE-C2-view
Higher Level Command
1 COPE-C2
Communications Infrastructure
Oper Comm'd Fire
Oper Comm'd Police
DiStaff WhiteCell Support
Oper Comm'd Med/ Ambulance
Mayor
1 TTE-"IC"
1 COPE-C2
(1 COPE-C2 view)
Oper Command Police
1 COPE C2
Emergency Medical Services
Unit leader
1 COPE C2 (?)
FWF
IC
1 COPE C2
1SC+1FF+3
1 FRS-C
1 FRS-HW
1SC+4FF
1SC+4FF
Brew
IC
1 COPE C2
1SC+2FF+2
1 FRS-C
2 FRS-HW
1SC+4FF
1SC+4FF
HazMat
IC
1 COPE C2
1SC+1FF+3
1 FRS-C
1 FRS-HW
1SC+4FF
1SC+4FF
Risk Anal. & Cloud estimation
Avon FF
1CDS
TTE vign. FWF/ Roads
Roles:
1SC+FF+Pol +Amb/Med
1FRS-C
TTE vign. HazMat/ Popul. & KG
Roles:
1SC+FF+ Pol+Amb/ Medical
Sensors

COPE Trial Setup

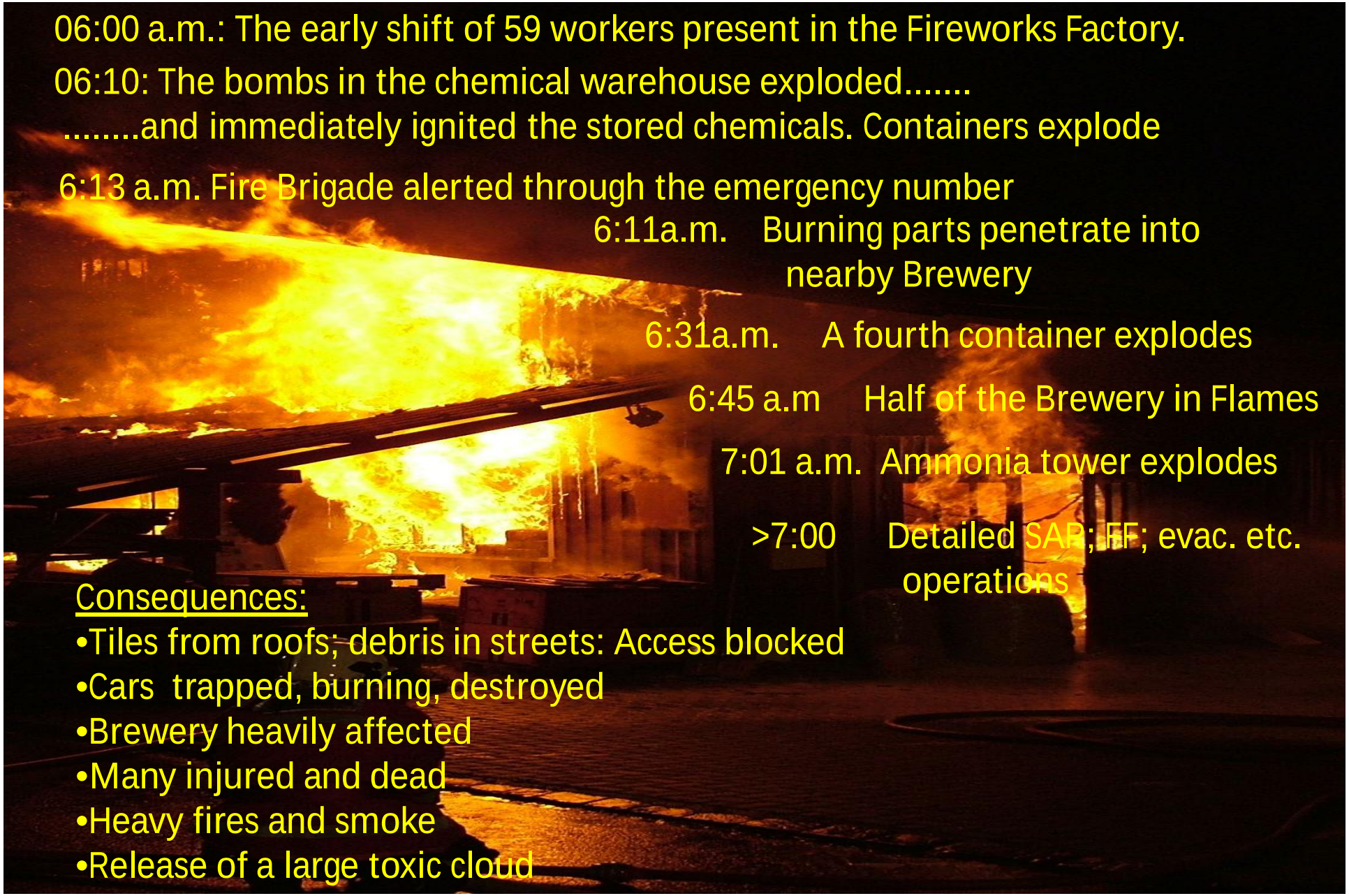


COPE

Exercise Roles

- Dispatching centre
- Unified Command (virtual)
- Incident Commands
- C2/CDS support: CSO&RA
- Sector Commanders
- Fire Fighter Command
- Ambulance Command
- Police Command
- Regional Politician / Mayor

The Disaster Scenario



06:00 a.m.: The early shift of 59 workers present in the Fireworks Factory.

06:10: The bombs in the chemical warehouse exploded.....
.....and immediately ignited the stored chemicals. Containers explode

6:13 a.m. Fire Brigade alerted through the emergency number

6:11a.m. Burning parts penetrate into nearby Brewery

6:31a.m. A fourth container explodes

6:45 a.m Half of the Brewery in Flames

7:01 a.m. Ammonia tower explodes

>7:00 Detailed SAR; FF; evac. etc. operations

Consequences:

- Tiles from roofs; debris in streets: Access blocked
- Cars trapped, burning, destroyed
- Brewery heavily affected
- Many injured and dead
- Heavy fires and smoke
- Release of a large toxic cloud

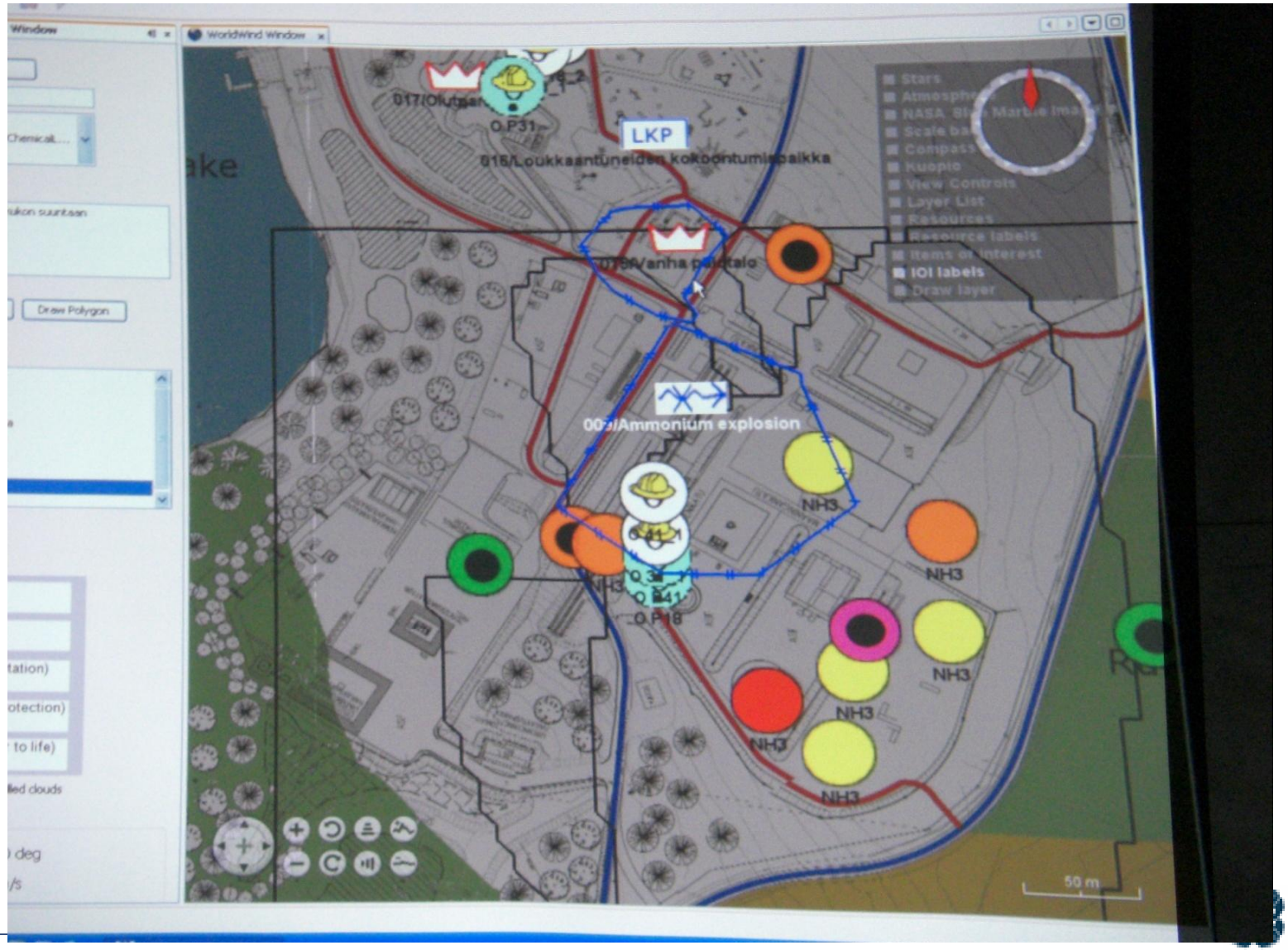
Main Course of Actions

COPE

Reality

Reality

The Common Operational Picture builds up

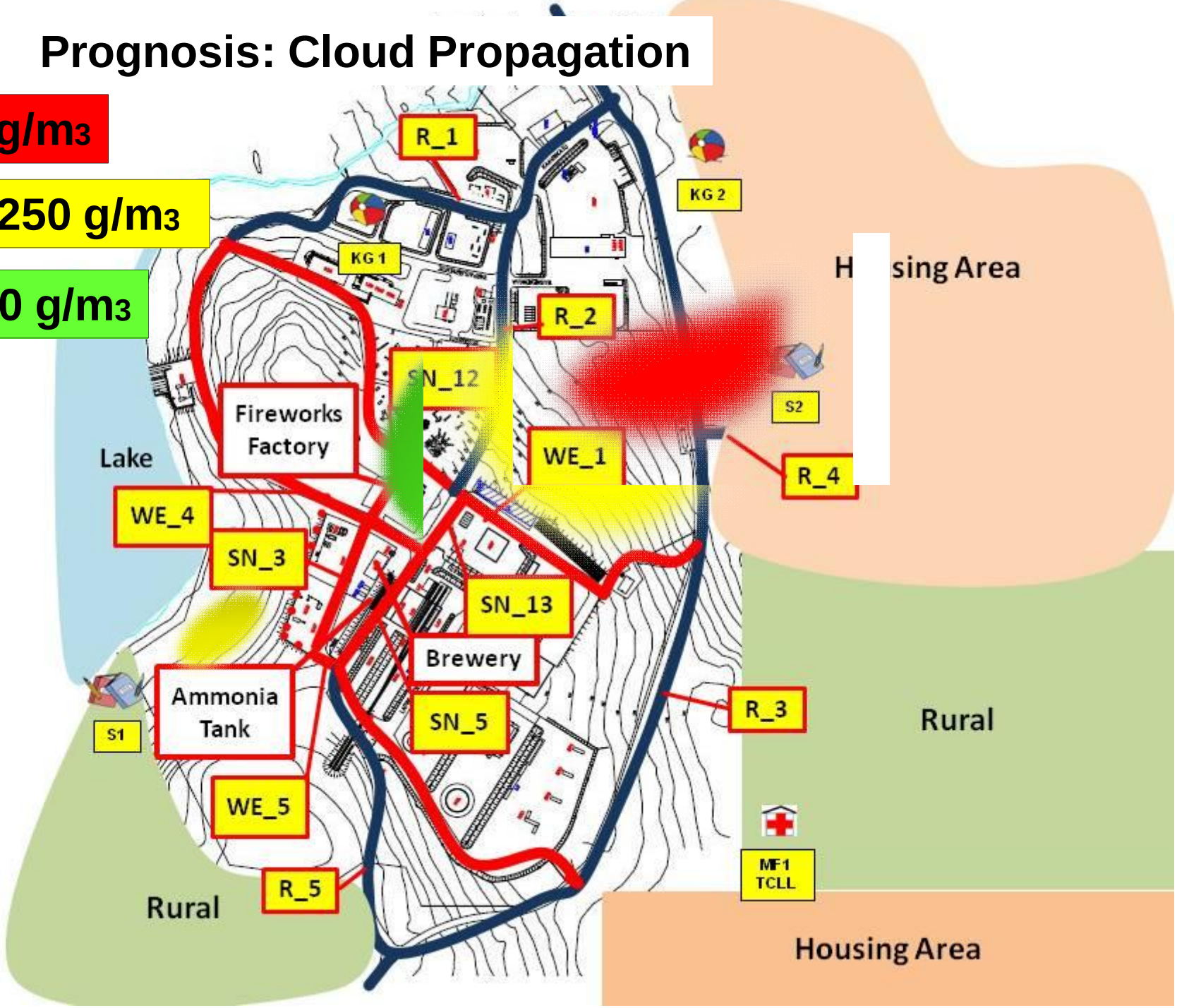


T+17 Prognosis: Cloud Propagation

250<x g/m3

100<x<250 g/m3

0<x<100 g/m3



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The Evaluation of Components and of the whole System

1. **Did it work?**
2. **How did it support the tasks?**
3. **How was it accepted & evaluated by the user?**
4. **Could results be measured?**
5. **How was the quality enhanced of the COP, the Common Operational Picture**
6. **Were the project goals achieved ?**
   - **Scientifically**
   - **Technically**
   - **Operationally**
   - **Budgetary**

The overall results of the trial

COPE

Object	Performance	Limitations
The overall COPE System	Performance hardly measurable; all components contributed to the COP as planned	Would need repeated training and exercising; Some local/temporary failures did not jeopardize overall success
The COPE Command & Control	Worked as planned; TSO & GIS very helpful	Overall integration performance to be better emphasized
The COPE Decision Support	Worked with FR familiar with procedures	should become an integrated function also for higher level C2
The First Responder System-Control	Worked correctly and to requirements	Some partial outage
The Human Wearables	Worked and sometimes disturbed;	To be integrated in human Wear
The Sensors/ SIPs	Worked to design	Customer adaptation if required
The Communication	Worked as designed	Had some minor interference and overload problems

The main conclusions

COPE

- The system is a technology demonstrator, not a turnkey operational product
- All components worked but all showed some limitations too
- The overall goal of the project was achieved
- The technical integration effort was underestimated
- The operational integration and training requirements, too
- Language and procedures of the host organization are different from those of other partners
- The size and complexity of the system and of the trial were at the edge of feasibility
- FRs were confronted with a huge amount of new technologies ...

COPE

Thank you !

hutter@cess-net.eu
www.cess-net.eu
http://cope.vtt.fi