



Roma,
4 octobre 2012

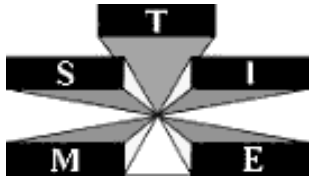


A robotic solution for Cbrn Defence, dedicated to critical infrastructures

J.P. Monet,

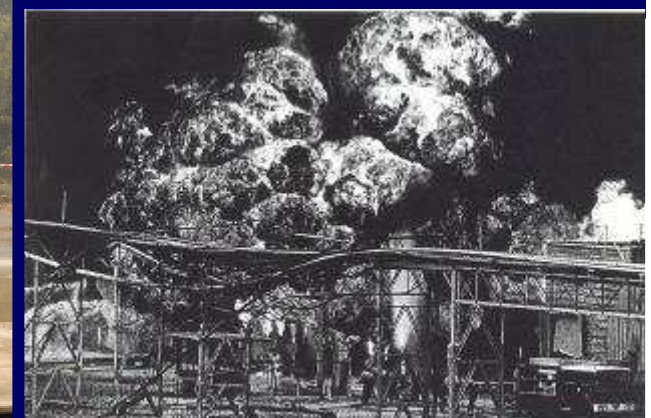
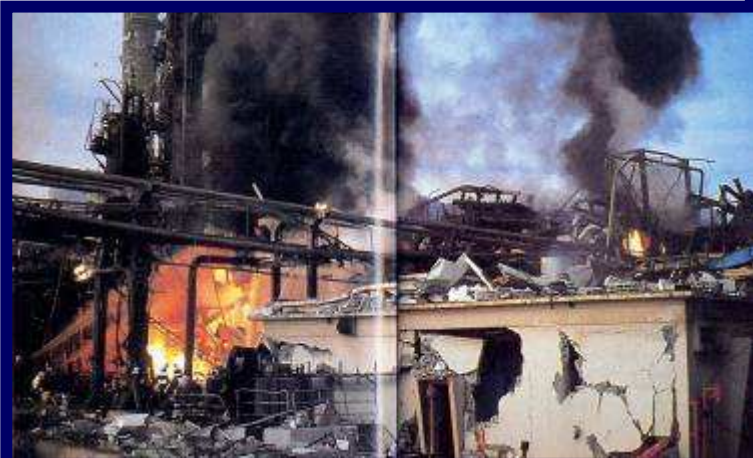
R. Aubrun, J.M. Denis, L. Verneuil.

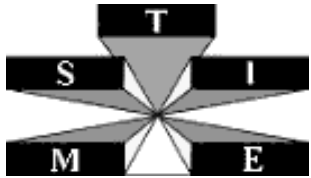




CONTEXT, BACKGROUND

- 2002 first step
- 2010 end of project 1
- 2011 new consortium





THE OPERATIONAL CONCEPT

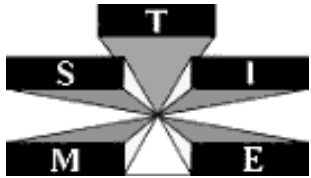
- **Inspection and reconnaissance:**

Immediately,
first measurements and images.

- **Detection and measurement:**
following a tactical decision.

- **Neutralization:** postponed
action interacting with the
source in order to neutralize

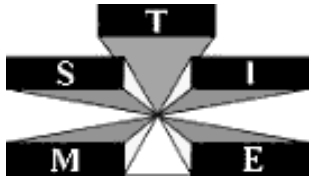




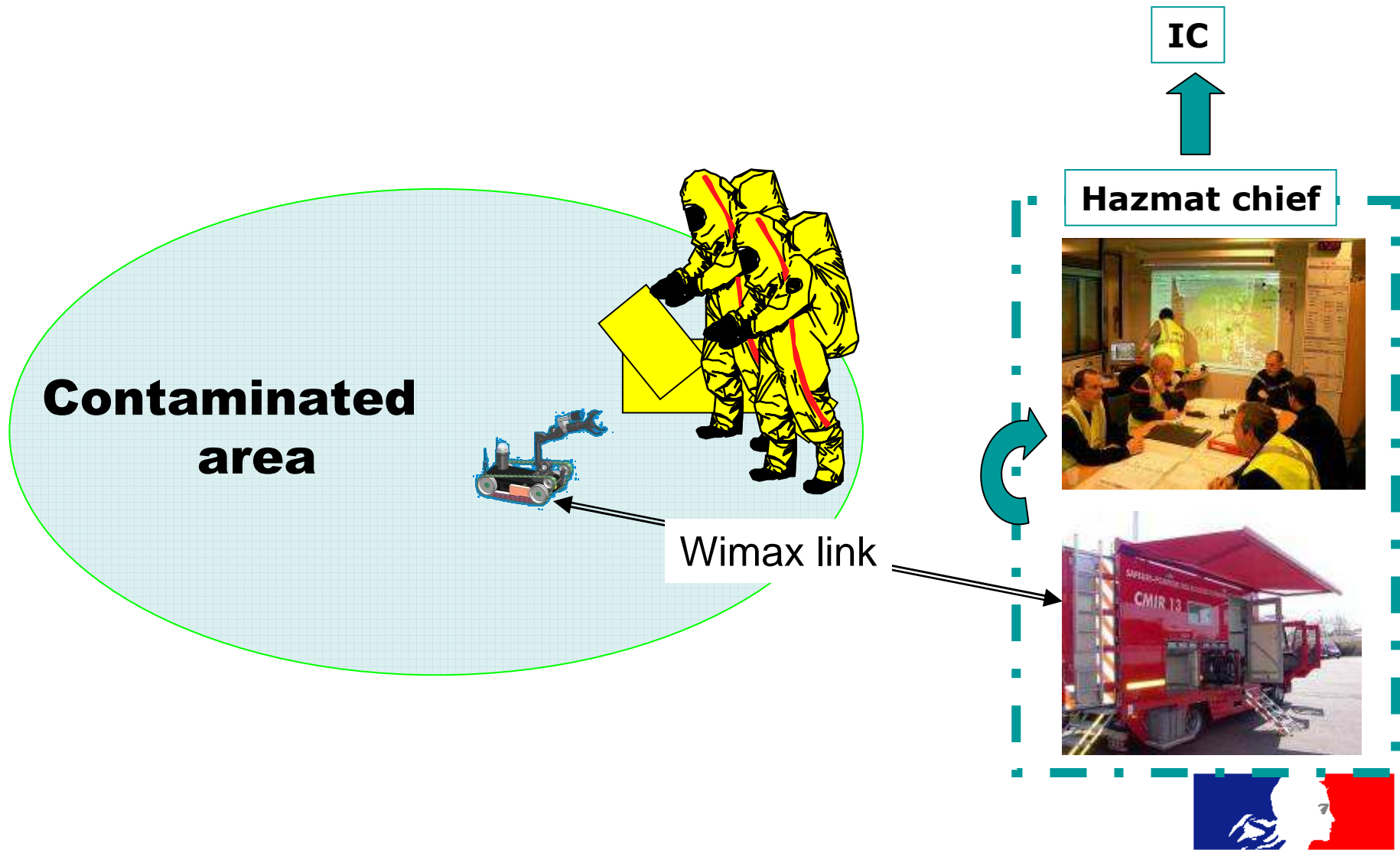
TOWARD A RANGE OF ROBOTS ?

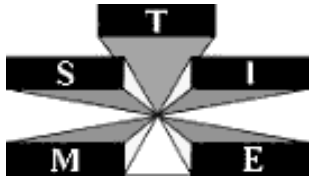
- **Lightweight**, around 1 kg, for inspection and reconnaissance operations. May be lost able.
- **Medium weight**, several tens of kilos, suitable for specialist missions
- **Heavyweight**, semi-automatic platform to follow one member or to support the Hazmat team



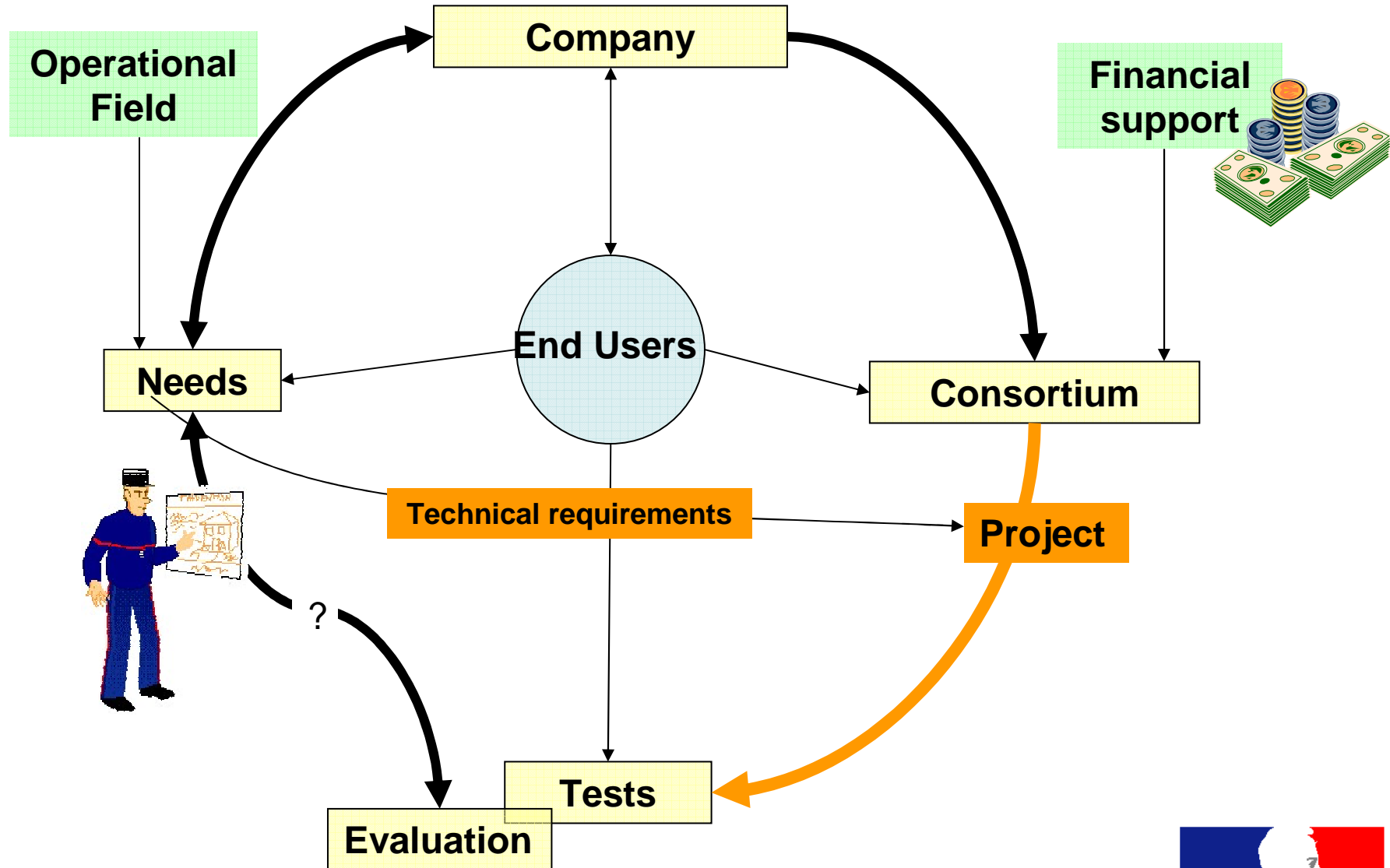


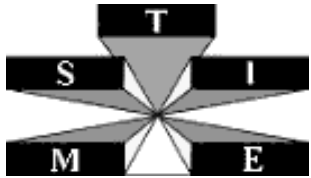
ON INCIDENT SCENE





PLACE OF END USERS





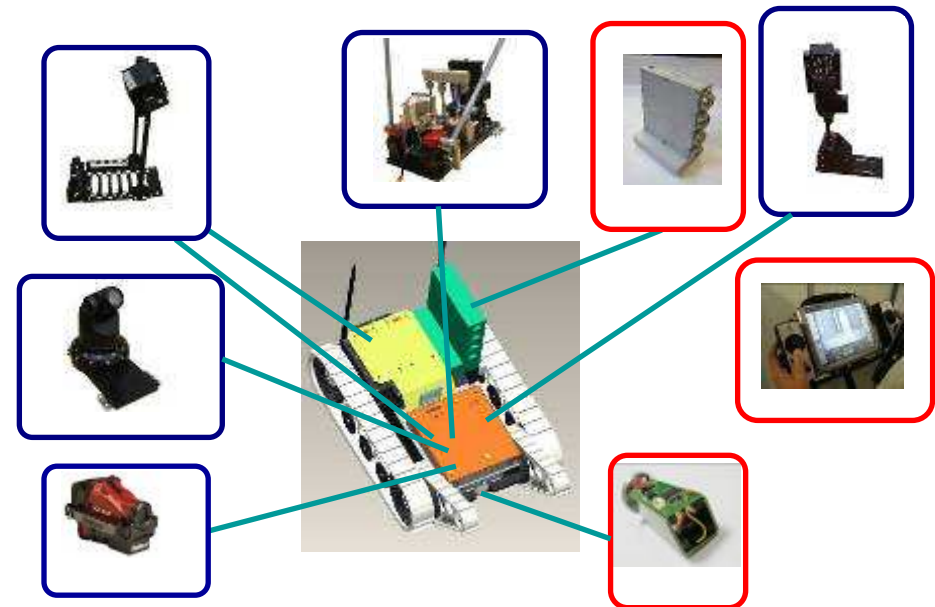
FUNCTIONAL APPROACH

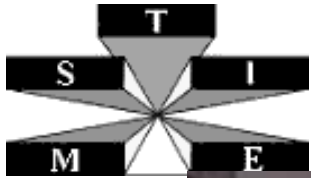
Linked to the platform :

- Geiger-Müller + Ex detectors

Plug and play system:

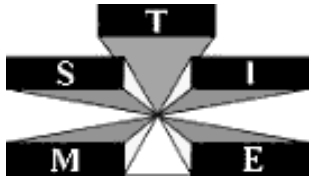
- Radioactive detectors
- Chem and Ex detectors
- HD + video Camera
- IR CAM
- Robotic arm
- Water high pressure gun
- Liquid and gaseous sampler





FUNCTIONAL APPROACH



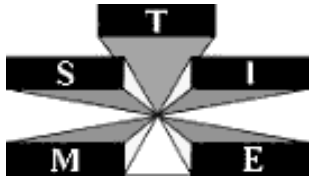


EVALUATION

2009, 2010, 2011,

- **Global performance test**
- **Chlorine field test**
- **Rail hazmat test**
- **Underground parking test**
- **Metro terrorist attack test**

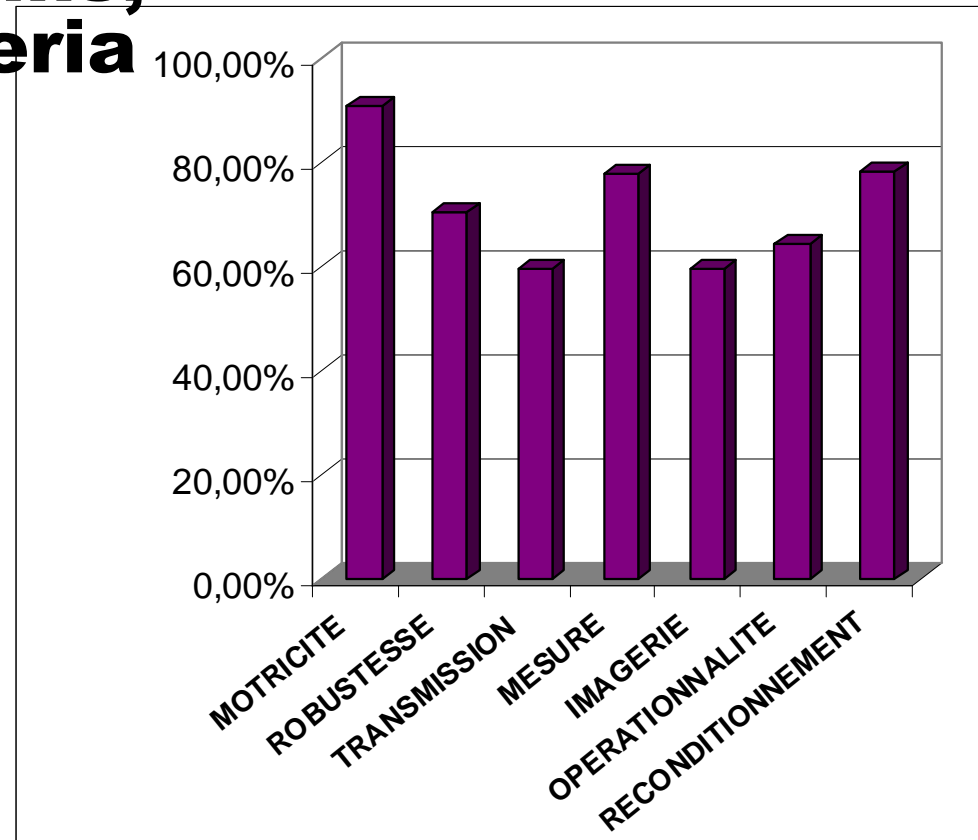


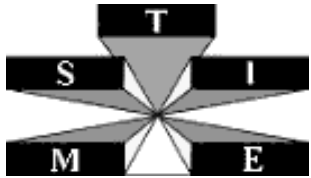


EVALUATION SKILLS

- **7 evaluation domains, gathering 105 criteria**

- **Easiness**
- **Roughness**
- **Transmissions**
- **Identification and Measurement**
- **Imaging**
- **Operations**
- **Logistics**





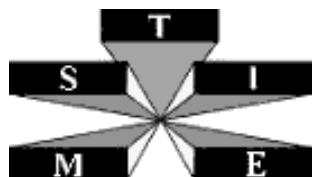
CURRENT EVOLUTIONS

- Increase heat resistance,
- Improvement of the human-machine interface,
- Optimized interoperability with other robotics appliances,
- Geographic localisation,
- Neutralization of LPG cylinders.



Is there an European future for civil protection and defence robotic tools ?





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