WP 5 Technological solutions and ongoing research

Deliverable 5.3 - Future RTD needs

DEMASST
Mass transportation security

D 5.3 Future RTD needs

- Research areas should address
  - mass transportation security
  - unsolved challenges
- Research areas should be
  - of high potential
  - too immature to be included in phase 2 demonstration
  - Realistically achievable

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D 5.3 Future RTD needs

- May be based on existing solutions that need improvement on:
  - Costs
  - Performance
  - Ease of use (manageable by mass transportation personnel).
  - Low-interruption of passenger flow
- Security is a dynamic process and will need continuous improvement

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Sources of input

- Technological solutions and research areas identified in other workpackages in DEMASST
- Suggestions from IMG-S (Industry and research Management Group)
- A selection of research papers (IEEE etc)
- Research results by ESRIF (European Security Research and Innovation Forum)

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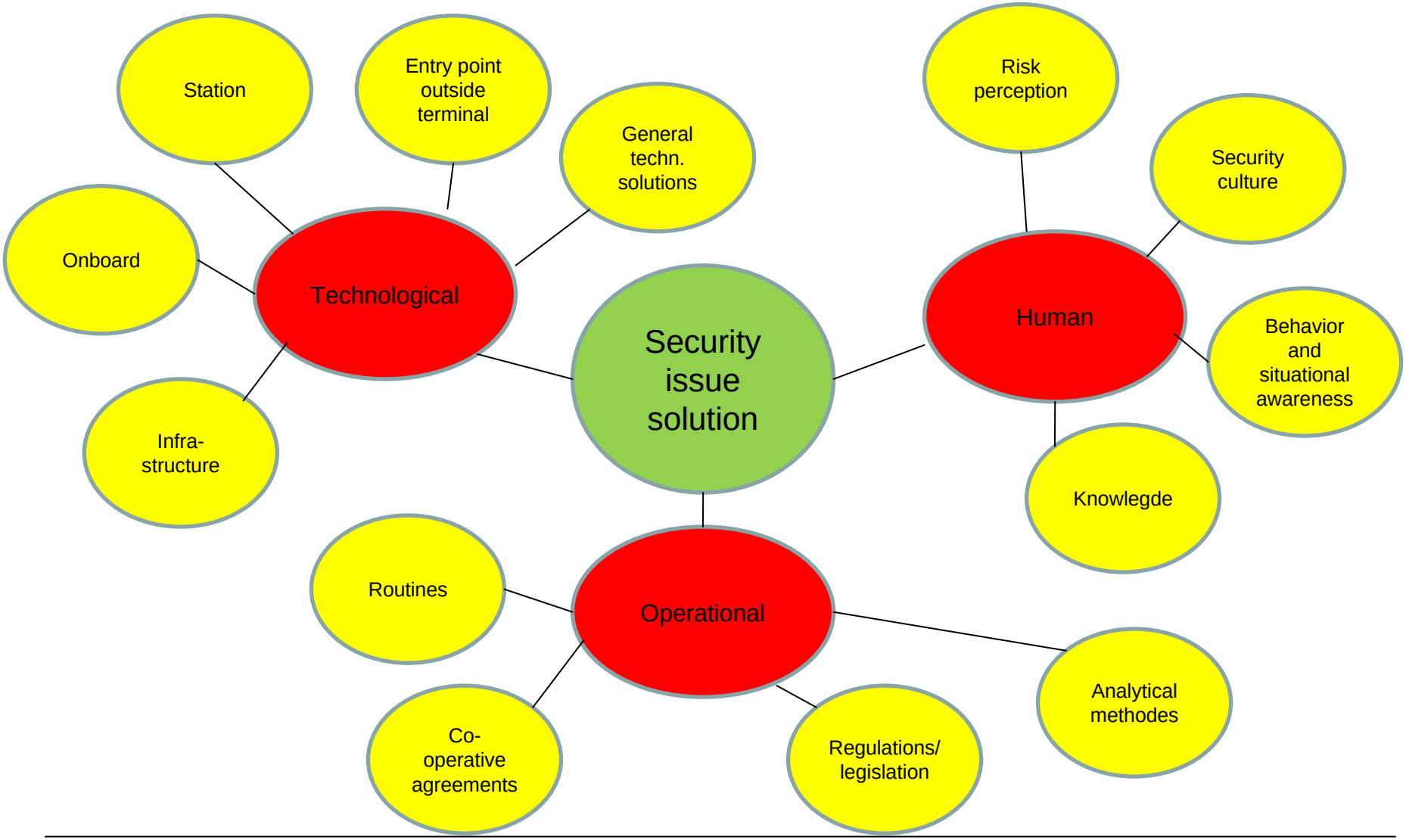
Structure of future RTD needs



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Detection – Human behavior

- Behavior detection
  - technologies for suitcase-carrying detection
  - technologies for loitering detection
  - technologies for proximity detection of persons
  - technologies for group splitting detection
  - technologies for detection of unattended luggage
  - technologies for detection of a hostile intent

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Detection – Human behavior

- Systems for tracking
  - Computer vision technologies to track persons in non overlapping sensors, based on appearance such as clothing (not being face recognition), (including multi-camera and PTZ camera tracking of persons)
  - Face recognition (non cooperative)

- Foreseen improvement
  - High efficiency/detection rate
  - Low false alarm
  - Real time
  - Variable light conditions

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Detection – Biological agents

- Detection of increased levels of biological agents possible in “real time”
  - Issues: efficiency and selectivity/false alarms
- Classification against a library of dangerous agents
  - Offline possible
  - Real time is a challenge

- Possible improvements:
  - Cost
  - Sensitivity
  - Selectivity (Better selectivity usually means more samples are needed)
  - Response time
  - Competence required to operate
  - Low maintenance
  - Continuous operation in real environment

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Detection - Explosives

- Low amount of explosive molecules in the air and large amount of other molecules
  - therefore difficult to measure

- Areas of improvement
  - Real time
  - Sensitivity
  - Selectivity
  - Cost
- Example technologies:
  - Mmscanners, THz scanner, RQN scanners, luminescent sensors based on Nanotechnologies, Quartz microbalance,.....

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Detection – Toxic chemicals substances

- Detection of chemical warfare agents
  - Mature in the sense of :
    - Detecting chemical warfare agents after release inside buildings.
  - Immature in the sense of :
    - Detecting chemical warfare agents prior to release. Success depends on concentration.
    - Classification against a wide range of substances.

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Detection – Radioactive material

- Many solutions already exist
- Improvement regarding
  - discriminations of normal radioactivity like medical treatments
  - cost
- We assume there are organizations that are able to build “dirty bombs”.

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Other security challenges

- DISASTER intervention:
  - Interoperability between installed sensors and equipment brought by first responders.
  - Rescue teams require up-to-date and comprehensive information on the disaster, as well as communications means with people trapped due to the accident in order to run efficient help and rescue operation.
  - Identification of the cause of the accident is usually time and budget consuming.
- Possible solutions:
  - Cheap and unattended devices (sensors) which could be triggered when the disaster happens.
  - Standardization on a semantic level

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Continuity of security services

- Terrorist attacks feature more and more multiple events:
  - Madrid
  - Bagdad market

- As a consequence the security system needs to continue to work after the first incident:
  - Resilient system (by design)
  - Automatic reconfiguration
  - Resilience towards cyber-attacks

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Technological and security cultural science

- Security culture: Some findings have reported that the security can be significantly affected by the attitudes by the personnel and the supporting security policies.
- Little research is done on how security culture affects security

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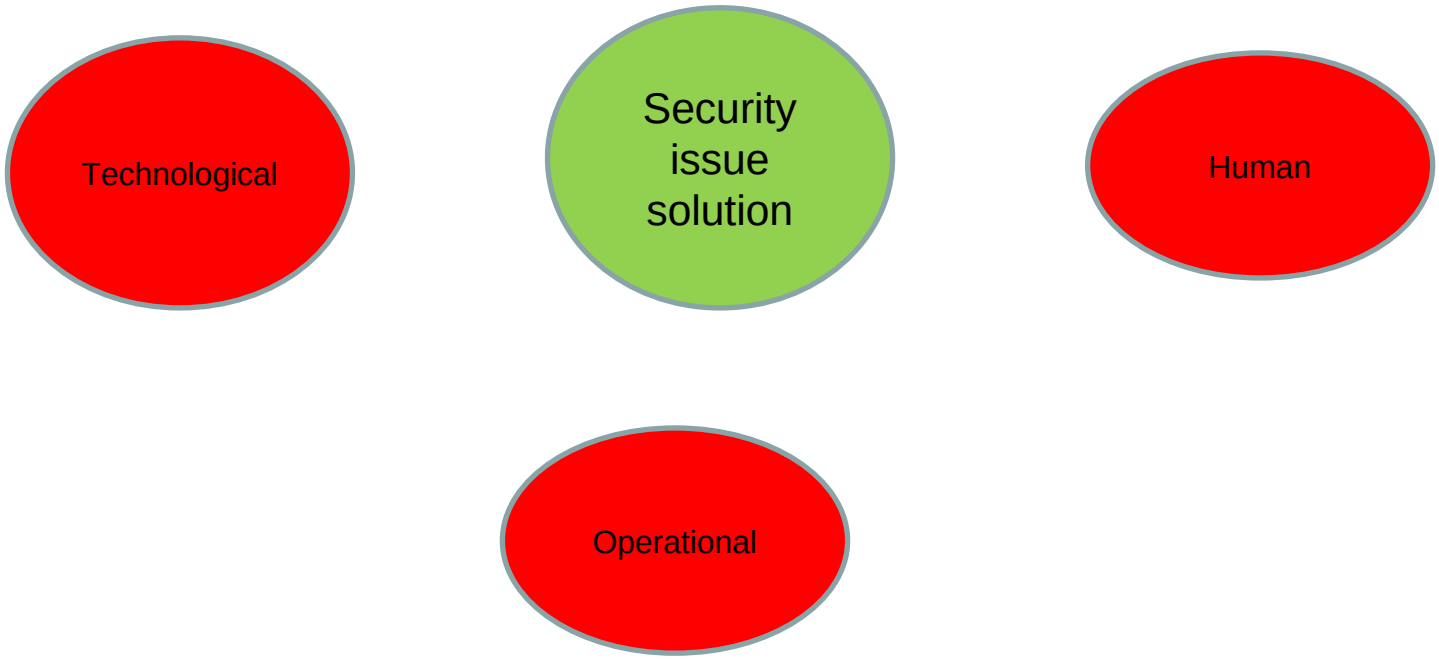
Systemic approach



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Thank you for your attention!

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