

 **PROTECTRAIL (242270) - The Railway-Industry Partnership for Integrated Security of Rail Transport**

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**Next steps**

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 Paris, 4 May 2011 **THALES**

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 **Objectives**

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- Identify for the rail transportation security stakeholders, the threats to address in priority
- Translate these priorities in functional requirements and in technical specifications for the solutions providers
- Provide an integration frame of work for a smooth implementation (technical, but also procedures)
- Define the demonstrations to be integrated

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 **The challenge**

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- A systematic analysis of scenarios by severity, as described previously allows to catch all threats
- It leads however to a big list of theoretical solutions, which are often unrealistic
- Typical example is proposal to eliminate all buildings less than 100 meters from a track to prevent shootings on trains!
- The last word will belong to operators and other security stakeholders

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**PROTECTRAIL**

### A trade-off period

- PROTECTRAIL has gathered expressions of priorities from its operator partners and organizations
- These priorities result of a combination of identified threats and of situations experienced
- They will be combined with the systematic lists and with the items included in the proposal
- New issues pop-up, like impact of cyber-crime
- This is next weeks priority

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### A new technologies environment

- Whatever the conclusions of this trade-off analysis are, their implementation will be done in a completely new context
- Electromechanical systems are quickly replaced by computer based technologies
- New architectures, like SOA, are generalizing, even on-board, wherever the safety constraints allow
- PROTECTRAIL is preparing this revolution

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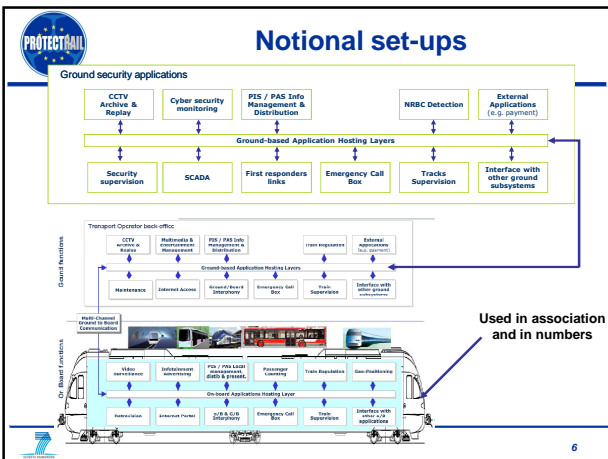
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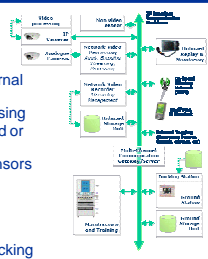
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**PROTECTRAIL**

## Capture video and processing

- On-board segment**
  - Video Acquisition with Analog (PAL, NTSC) or IP (MJPEG, MPEG4, H264) interface
  - Metadata generation, from video capture or external tags
  - Provision for IP camera embedded video processing
  - Replay or real-time stream view, using connected or wireless terminals
  - Video processing, including use of non video sensors
  - Monitoring of equipment health
  - Video-surveillance, Rear View
- Ground segment**
  - Downloading through IP backbone or using a docking station
  - Real-time view of selected onboard stream or replay of selected sequences
  - Indexation and research capabilities
  - Maintenance



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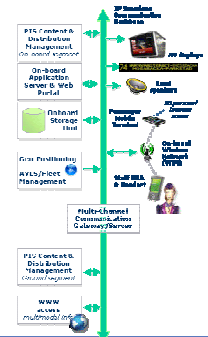
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**PROTECTRAIL**

## PI&C

- On-board segment**
  - Content processing
    - Static, dynamic & incidental
    - Merging ground and own mobile data (e.g. GPS or AVLS)
    - Distribution
    - Overhead display : current mode information (next stop, schedule...) and transfer information
    - Personal mobile terminal, allow access for on-board network or external network (if technically accessible): full multi-modal mobility information
  - Presentation
    - AV presentation + internal web portal
    - Multiplexing with entertainment & advertising
- Ground segment**
  - Content processing
    - Use operator static, dynamic & incidental information, as well as multimodal information
    - Merge data from multiple mobile units



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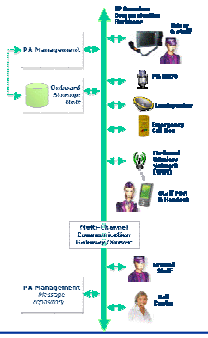
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**PROTECTRAIL**

## Passenger announcement & Interphony

- On-board segment**
  - On-board and board/ground communications
  - Staff & driver communication
  - Passenger Announcement
  - Emergency Call
  - Direct link with a ground operator
  - Event log to be maintained (Emergency calls, messages...)
- Ground segment**
  - Communication operators
  - PA management



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**PROTECTRAIL** Passenger Entertainment & Connectivity

- On-board segment**
  - Multimedia (video, music, games, services or other applications) broadcasting unit through a web based portal architecture
  - Video stream constraints on Ethernet network (Gbit)
  - Important issue on Digital Right Management, security (piracy and hacking) and payments
  - Dedicated seat displays.
  - Probably reserved to luxurious classes and sleeping cars
- Ground segment**
  - Content management, downloading of multimedia updates when a high ground/board bandwidth is available (stations, depot)

The diagram illustrates the architecture for Passenger Entertainment & Connectivity. It is divided into two main segments: On-board and Ground. The On-board segment includes On-board Administration, On-board Applications, Services & Web Portal, On-board Video Content, On-board Services, and On-board Services. The Ground segment includes Content Management, Multi-terrestrial Communication Gateway Server, and On-board Services. A central vertical line represents the communication link between the two segments, with a 'Multi-terrestrial Communication Gateway Server' at the bottom. Various icons represent different services and components, such as a train, a person, and a server.

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**PROTECTRAIL** Exploitation Services

- On-board segment**
  - Mobile/Remote Supervision and Control, alarm collection
  - Automatic Train Supervision
  - Regulation (Tram)
  - Ticketing / passenger counting
  - AVLS / Fleet Management
  - Ground/Board Narrow-band communications
  - Signaling (SIL 0 for Tram)
  - Road crossing management (Tram)
  - Geo-positioning – Chronometry
- Ground segment**
  - A seamless connection with every corresponding ground application

The diagram illustrates the architecture for Exploitation Services. It is divided into two main segments: On-board and Ground. The On-board segment includes Supervision & Control, ATP & Signaling, Signaling, AVLS / Fleet Management, Train Signaling, Road Crossing Management, Geo-positioning, and On-board Services. The Ground segment includes Content Management, Multi-terrestrial Communication Gateway Server, and On-board Services. A central vertical line represents the communication link between the two segments, with a 'Multi-terrestrial Communication Gateway Server' at the bottom. Various icons represent different services and components, such as a train, a person, and a server.

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