Next steps

jean-francois.sulzer@thalesgroup.com

Paris, 4 May 2011

Objectives

- 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

Paris, 1 - 3 February 2011

The challenge

- 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

Paris, 1 - 3 February 2011
A trade-off period

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

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.

Notional set-ups

[Diagram showing various applications and their interconnections, used in association and in numbers.]
Standardization has started

- A first survey has identified several standardization groups working on PROTECTRAIL related matters
- They include:
  - UIC forms
  - IEC TC9 WG46 documents
    - IEC 62580-1: General Architecture
    - IEC 62580-2: Video Surveillance/CCTV services
    - IEC 62580-4: Passenger Orientated Services
  - IEC 61375 (2-3 and 2-4)
  - MPI-2
- Investigations are under way and contributions considered

Way forward

- In-depth architectures definition and interfaces definition has started in the new environment
- Use cases are studied (luggage detector & video-surveillance)
- The frame of work will be ready when the priorities will have been frozen
- For this your contributions and your support are welcomed

BACK-UP
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

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 data, dynamic & incidental information, as well as multimodal information
  - Merge data from multiple mobile units

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
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)

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