From Demo to Integration into Operational Systems

ASTS security products

PROTECTRAIL foreground knowledge (incl. Sicily demo)

Security into the RFI Centralized Command and Control System (SCC) in Sicily
Centralized Command & Control System (SCC)

SCC is a centralized traffic control system for lines and area junctions.

SCC is based on 3 hierarchical levels:
- a Control Centre where all the Traffic Managers operate,
- some Maintenance Posts
- several Peripheral Posts
SCC systems are subdivided into 4 main subsystems:

- Traffic management and train regulation;
- Diagnostic and Maintenance;
- Passenger Information and Public Announcements;
- Basic Security (including video-surveillance)
Centralized Command & Control System (SCC)

Each operator desk of the Control Centre includes several monitors which allow for various MMIs to be activated at the same time, updated in real time with graphs and windows for the controls, data acquisition and insertion.
SCC Main Functions

- Automation of the control and supervision activities on lines and junctions of the railway network with automatic Public Information System/Public Announcement System (PIS/PAS);

- Management of maintenance procedures by using computer based systems and modern diagnostic systems;

- Management of basic security events and video-surveillance;

- Implementation of a new operational and prescriptive model of the organization and of the work procedures.
SCC Systems - Main Lines and High Speed lines

Control Centre

- High Speed Lines
- Main Lines
### SCC Systems (info from year 2010)

#### Lines and Junction

<table>
<thead>
<tr>
<th>Lines and Junction</th>
<th>Genoa Junction</th>
<th>West Coast Line (Tirrenica)</th>
<th>Venice Junction</th>
<th>East Coast Line (Adriatica)</th>
<th>Naples Junction</th>
<th>Bologna-Brennero Line</th>
<th>Palermo Junction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Centre</td>
<td>Genoa</td>
<td>Pisa</td>
<td>Mestre</td>
<td>Bari</td>
<td>Naples</td>
<td>Verona</td>
<td>Palermo</td>
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<tr>
<td>Trains/day</td>
<td>660</td>
<td>500</td>
<td>631</td>
<td>590</td>
<td>1150</td>
<td>400</td>
<td>490</td>
</tr>
<tr>
<td>Extension (Km) 1st phase</td>
<td>205</td>
<td>500</td>
<td>387</td>
<td>649</td>
<td>137</td>
<td>287</td>
<td>232</td>
</tr>
<tr>
<td>Relay Interlocking Stations</td>
<td>23</td>
<td>43</td>
<td>34</td>
<td>54</td>
<td>19</td>
<td>23</td>
<td>60</td>
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<tr>
<td>Stations with ACS</td>
<td>4</td>
<td>18</td>
<td>3</td>
<td>15</td>
<td>7</td>
<td>22</td>
<td>11</td>
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<tr>
<td>Control Centre Operators</td>
<td>16</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>19</td>
<td>20</td>
<td>20</td>
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</table>

### High Speed Lines

<table>
<thead>
<tr>
<th>High Speed Lines</th>
<th>HS Rome - Naples</th>
<th>HS Turin - Novara</th>
<th>DD Florence - Rome</th>
<th>HS Milan-Bologna (in progress)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Centre</td>
<td>Rome Termini</td>
<td>Turin</td>
<td>Florence</td>
<td>Bologna</td>
</tr>
<tr>
<td>Trains/day</td>
<td>23</td>
<td>16</td>
<td>440</td>
<td>n/a</td>
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<tr>
<td>Extension (Km) 1st phase</td>
<td>205</td>
<td>80</td>
<td>320</td>
<td>180</td>
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<tr>
<td>Relay Interlocking Stations</td>
<td>n/a</td>
<td>n/a</td>
<td>62</td>
<td>n/a</td>
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<tr>
<td>Stations with ACS</td>
<td>18</td>
<td>10</td>
<td>-</td>
<td>1 (MultiStation)</td>
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<tr>
<td>Control Centre Operators</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>4</td>
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</tbody>
</table>
### SCC Main Lines – relevant information

<table>
<thead>
<tr>
<th>LINE</th>
<th>Extension [Km]</th>
<th>Stations</th>
<th>Cameras</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCC West Coast Line (Tirrenica)</td>
<td>439</td>
<td>78</td>
<td>577</td>
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<tr>
<td>SCC East Coast Line (Adriatica)</td>
<td>649</td>
<td>80</td>
<td>472</td>
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<td>SCC Venice Node</td>
<td>387</td>
<td>69</td>
<td>412</td>
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<tr>
<td>SCC Genoa Node</td>
<td>205</td>
<td>52</td>
<td>207</td>
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<tr>
<td>SCC Naples Node</td>
<td>137</td>
<td>33</td>
<td>181</td>
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<tr>
<td>SCC Bologna-Brennero Line</td>
<td>287</td>
<td>56</td>
<td>250</td>
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<tr>
<td><strong>SCC Palermo Node</strong></td>
<td><strong>420</strong></td>
<td><strong>120</strong></td>
<td><strong>623</strong></td>
</tr>
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<td><strong>TOTAL</strong></td>
<td><strong>2524</strong></td>
<td><strong>488</strong></td>
<td><strong>2701</strong></td>
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</tbody>
</table>
The SCC has jurisdiction over the Tyrrhenian dorsal from Punta Raisi to Messina, including the closure of the ring node of Palermo and, on the Ionica dorsal, from Messina to Siracusa.
Integration of security into the Sicily SCC

- 13 stations and 4 electrical sub-stations equipped with
  - CCTV cameras (to complement existing ones)
  - Video analytics
  - Multi-technology anti-intrusion sensors extended to further restricted areas
  - Access Control
  - Centralized command and control to close and lock public areas at night
  - Rules engine correlating events to reduce FAR and enhance POD

The ASTS Security Management System (SMS) allows monitoring and control of security event through the supervision, control and monitoring of different security subsystems.
SMS - Security Management System – Main Features

• User-friendly web-based interface
• Animated graphical maps showing the status of all the security devices
• Automatic visualization of video streams in case of alarms (e.g. intrusions)
• Management of the emergency procedures
• Event-based alarm priorities and escalation management
• Single report for all the events (alarms and user actions)
• Sending Commands to Antintrusion/CCTV unit
Main Project Features

Extension of the CCTV system to areas not now covered

• Surveillance of the squares of the Stations and SSE with fixed cameras and speed dome, even with IR
• Surveillance of enclosed areas for the storage of materials
• Surveillance of underpasses with vandal-resistant mini-dome cameras
Surveillance of the station platforms with video analysis techniques (yellow line crossing, abandoned luggage, overcrowding)

- The VCA is the solution "full software" for the detection of dangerous events for the safety of rail traffic through the intelligent analysis of live images taken by cameras deployed in the monitored area.

- The image processing algorithms used performing video analysis, generating alarm when a security event occurs.
Main Project Features

- Magnetic Contacts
- Glass Break Sensors
- Active Fences
- Volumetric Sensors
- IR Beams
- Proximity Card Reader

Intrusion Detection and Access Control

- Installation of proximity card readers for access to stations and to the SSE
- Integration of volumetric sensors of technicians locals, already present within the TSS, with magnetic contacts, IR beams, glass break sensors
Main Project Features

• Automatic Procedures to close the station from remote (OCC) overnight
• Installation of engines for opening / closing doors (either sliding both swing) and gates Stations
Main Project Features

When the Station is open:

- The doors are open
- The Anti-intrusion System is OFF
- The Video Surveillance System applies filters

After the Station Closure:

- The doors are closed
- The Anti-intrusion System is ON
- The Video Surveillance System switches on the People’s Presence Detection Filter
SCC – Security in CEFALU’ passenger station, Sicily

Security HW

- Fixed, PTZ & IR Cameras
- Access Control Box
- Loudspeaker
- Volumetric Sensor
- Magnetic Contact
- Access Control & Electric Lock Systems
- Motorized automated door
SCC – Security in CEFALU’, Sicily

Security HW

- Fixed, PTZ & IR Cameras
- Access Control & Electric Lock Systems
- IR barrier
- Volumetric Sensors
- Magnetic Contact
Thanks you for your attention