NEXTSTATION
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The New Challenges of Security
In Railway Stations

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Outline

- The EU CARONTE project in brief
- Railway stations security vulnerabilities & issues
- Attack tactics and threats directed at stations
- Key challenges of security in railway stations
The EU CARONTE project in brief

- CARONTE is a FP7 project but contributes to H2020
  - H2020 reinforces support to EUs security policies
  - EU Internal Security Strategy
  - Improving competitiveness of EU industries to address security gaps and prevent threats (incl. cyber-threats)
- Duration: September 2014 to February 2016
The EU CARONTE project in brief

11 Partners covering 8 Member States from North to South and from West to East and all transport modes
Railway stations security vulnerabilities & Issues

- Open architecture
  - Dense urban landscapes that may offer multiple attack points and easy escape
  - Diverse outdoor and indoor facilities, accessible at all hours
- Passenger density
  - The logistics of a passenger rail attack are comparatively simple
  - The measures used to secure airports are likely to be impractical with rail stations
- The assumption of “security by obscurity” no longer valid or acceptable
  - Many safety critical control systems/equipment rooms, which are computer-based, have access via train stations
**Attack tactics and threats directed at stations**

- **Common attack tactics**

  - **Bombing / Sabotage**
    - Statistically the preferred and the more common ways to carry out attacks
    - Difficulty to detect potentially dangerous individuals and explosive material

  - **Armed attack**
    - Brought back into the limelight following the Thalys attack (access from Brussels station)
    - Great density of travelers
    - Different security practices in place between countries stations (international trains)

More than 30% of attacks against the railway system concern Stations

Picture: AP Photo/Francois Walschaerts
Attacks directed at railway stations

- Madrid bombings of 11th March 2004
- London bombings of 7th July 2005
- Poland cyber-attack of January 2008

The attacker trespassed in tram depots to gather information needed to build the device

Source: SECURESTATION EU Project
Attack tactics and threats directed at stations

- Emerging cyber threats

- Cyber attacks on on-board and track-side train control systems
  Great emergence of computer based control systems such as ERTMS, CBTC, CBI...

- Electro-Magnetic attacks on the rail infrastructure

- Denial of service attacks by compromising the communication networks
  TCP/IP and other published industry standard protocols (often not secured)
The key challenges of security in railway stations include:

- Design security solutions as resilient as possible to any possible scenario
  Not according to existing or imaginable scenarios (since they keep evolving)
- Find mitigation solutions with acceptable costs, delays and need of resources
- Motivate and convince politicians about the value of transport security
- The vital importance of stations in business activity depends on their attractiveness
- Find a balance between safety and security (a security measure shouldn’t compromise safety): Integrate Safety and Security by design
- Think of immediate measures to take after the detection of threat (detection of a kamikaze or an armed person)
Key challenges of security in railway stations

- Define an organization approach to human and technology at a local level for crisis management

- Add cybersecurity awareness and cyber defense measures to the transport operators culture

- Reduce the growing cyber risks led by technology advance
  - Communication based train control / Automatic train supervision,
  - European standards: ERTMS/ETCS,
  - Migration to a computer based safety: CBI, ATC/ATP

- Consider security as a business issue, and not only as a technical issue

- Re-think Risk assessment methodologies (I.e. include motivation ...)
When these challenges are successfully met, it gives employees and passengers confidence in the security of railway stations and the global rail system.