



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

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# SP3 PRESENTATION FOR THE KICK-OFF



# AGENDA FOR SP3

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- **Scope**
- **Objectives**
- **Partners presentation**
- **Status of D.O.W.**
- **Deliverables**
- **Planning / milestones / dependencies / risks**
- **Summary of the threats and technologies addressed within SP3**



# SCOPE

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- **The scope of SP3 is to demonstrate the feasibility of solving the identified railway protection sub-missions.**
  - These sub-missions will focus on key fixed assets
  - Key fixed assets are: Stations and buildings; Structures; Tracks; Signaling, interlocking, command & control, power distribution; Communications and information systems; Rolling stock clearance; Staff clearance
- **Recommendations**
  - **Each sub-mission has to iterate from Prioritised Stakeholders Requirements (WP2.3), Attack Scenarios (WP2.3), Specifications (WP2.4&5), General Architecture (WP5.1) and Sub-Missions**



# OBJECTIVES FOR EACH SUB-MISSION

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- Objectives
  - For each sub-mission (WP3.x):
    - Selection of the appropriate protection (technologies) devices suite
    - Definition of the specific ICT architecture requirements to allow a proper information flow within the integrated sub-system
    - Definition, design and implementation of the data processing and fusion mechanisms
    - Design and set-up of control posts for crisis managements
    - All design must grant interoperability to allow SP5
- Outputs
  - Sub-Mission related Architecture
  - A set of in-laboratory proof-of-concept performance demonstrators able to demonstrate the feasibility of the protection sub-missions
    - Sub-systems technical and interface specs
    - Interoperability of different solutions



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission **Station and Building Control (WP3.1)**

- **Monitoring and control of the railway station assets, particularly buildings and the public sites within the precinct (railway tracks, passenger premises, short-term and long-term parking areas, office building, taxi and bus stations etc)**
- **Technologies**
  - **Intrusion Detection**
    - (radar, infra-red, fence sensors, motion detection)
  - **CCTV**
  - **Fire Detection**
- **Participants:**
  - **ED - 22 MM**
  - **TNO - 10 MM**
  - **BT - 1 MM**
  - **ALS - 4 MM**
  - **T3S - 15 MM**



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission Structures Control (WP3.2)

- **Monitoring and control of in particular tunnels, bridges, embankments and railway yards that have been defined as one of the security risk areas within the railway system**
- **Technologies to address:**
  - Intelligence (situational awareness)
  - Detection and Neutralization
  - Mitigation and Protection
- **Participants:**
  - **TNO - 17 MM**
  - **BT - 1 MM**
  - **ALS - 3 MM**
  - **ESL - 25 MM**



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission Tracks Clearance (WP3.3)

- **Monitoring and control of track clearance both by direct detection of the track status and by means of strict continuous surveillance of the railway line accesses**
- **Technologies**
  - Video-inspection of ballast
  - Dimensional measurement of the ballast (laser ranging techniques)
  - Gamma detection of explosive on or under ballast.
  - CCTV services
  - Array of cameras from the visible region all the way to Far IR
  - Active imaging technology (laser illumination)
  - Acoustic and radar sensors
- **Participants:**
  - **EPPRA- 17 MM**
  - **BT - 2 MM**
  - **ALS - 4 MM**
  - **T3S - 17 MM**
  - **ESL - 16 MM**
  - **KU - 8 MM**
  - **MERMEC-12 MM**



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission **Signalling and Power Distribution (WP3.4)**

- Protection of signalling and power distribution systems through monitoring technologies, track-side physical security and ICT protection of computer-based signalling devices and power distribution SCADA
- **Technologies**
  - Monitoring technologies, (signalling and power distribution systems);
  - Track-side physical security;
  - ICT protection of computer-based signalling systems.
- **Participants:**
  - ASTS - 36 MM
  - ED - 6 MM
  - BT - 1 MM
  - ALS - 3 MM





# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission **Communication and Information Systems (WP3.5)**

- Integrated secured communication and information systems
- Technologies:
  - Bandwidth monitoring
  - QoS monitoring
  - Emerging technologies
- Participants:
  - T3S - 35 MM
  - ED - 18 MM
  - BT - 2 MM
  - ALS - 4 MM



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission **Rolling Stocks Clearance (WP3.6)**

- **Monitoring and control of Rolling Stocks Clearance before and after service**
- **Technologies:**
  - **Access Control**
  - **Video Analytics**
  - **Audio Detection**
  - **Gantries (to be evaluated)**
  - **Integration of on-board systems (TCMS)**
- **Participants:**
  - **ALS - 17 MM**
  - **T3S - 12 MM**
  - **MERMEC- 8 MM**



# KEY WORDS ABOUT SUB-MISSIONS

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## Sub-Mission **Staff clearance and access right management (WP3.7)**

- **Monitoring and control of staff clearance and access rights management covering the driver cabin, the supervision of the driver during a journey, the logical access control to the information systems and to any sensitive building**
- **Technologies:**
  - Token with credential (like smart cards),
  - Biometrics (like facial recognition,
  - Fingerprint recognition
- **Participants:**
  - **SAG - 22 MM**
  - **ED - 8 MM**
  - **BT - 3 MM**
  - **ALS - 3 MM**



## PARTNERSHIP

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- **Alstom**
- **TNO**
- **MerMec**
- **Ansaldo STS**
- **Elsag**
- **Kingston University**
- **Elbit**
- **Eppra**
- **Thales**
- **Sagem**
- **Bombardier**



## STATUS/CHANGE WRT. D.O.W.

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- **No main change to be envisaged for the D.O.W.**
- **Improvements will be on technologies to better match with state of the art**
  - **Audio to complement video**
  - **Track video inspection techniques improved with dimensional measurement**
  - **Communication network technologies will be reviewed either for wired or wireless systems.**



# DELIVERABLES

WP	Title	Architecture	In Lab Demo	Validation
3.1	Stations and Buildings control	X	X	X
3.2	Structures Control	X	X	X
3.3	Tracks Clearance	X	X	X
3.4	Signalling and Power Distribution	X	X	X
3.5	Communications and information systems	X	X	X
3.6	Rolling stock clearance	X	X	X
3.7	Staff clearance and access rights management	X	X	X



# PLANNING

WP	Title	Lead	Start	End
3.1	Stations and Buildings control	Elsag Datamat	M9	M26
3.2	Structures Control	TNO	M9	M26
3.3	Tracks Clearance	EPPRA	M9	M26
3.4	Signalling and Power Distribution	Ansaldo	M9	M26
3.5	Communications and information systems	Thales	M9	M26
3.6	Rolling stock clearance	Alstom	M9	M26
3.7	Staff clearance and access rights management	SAGEM	M9	M26



# MILESTONES

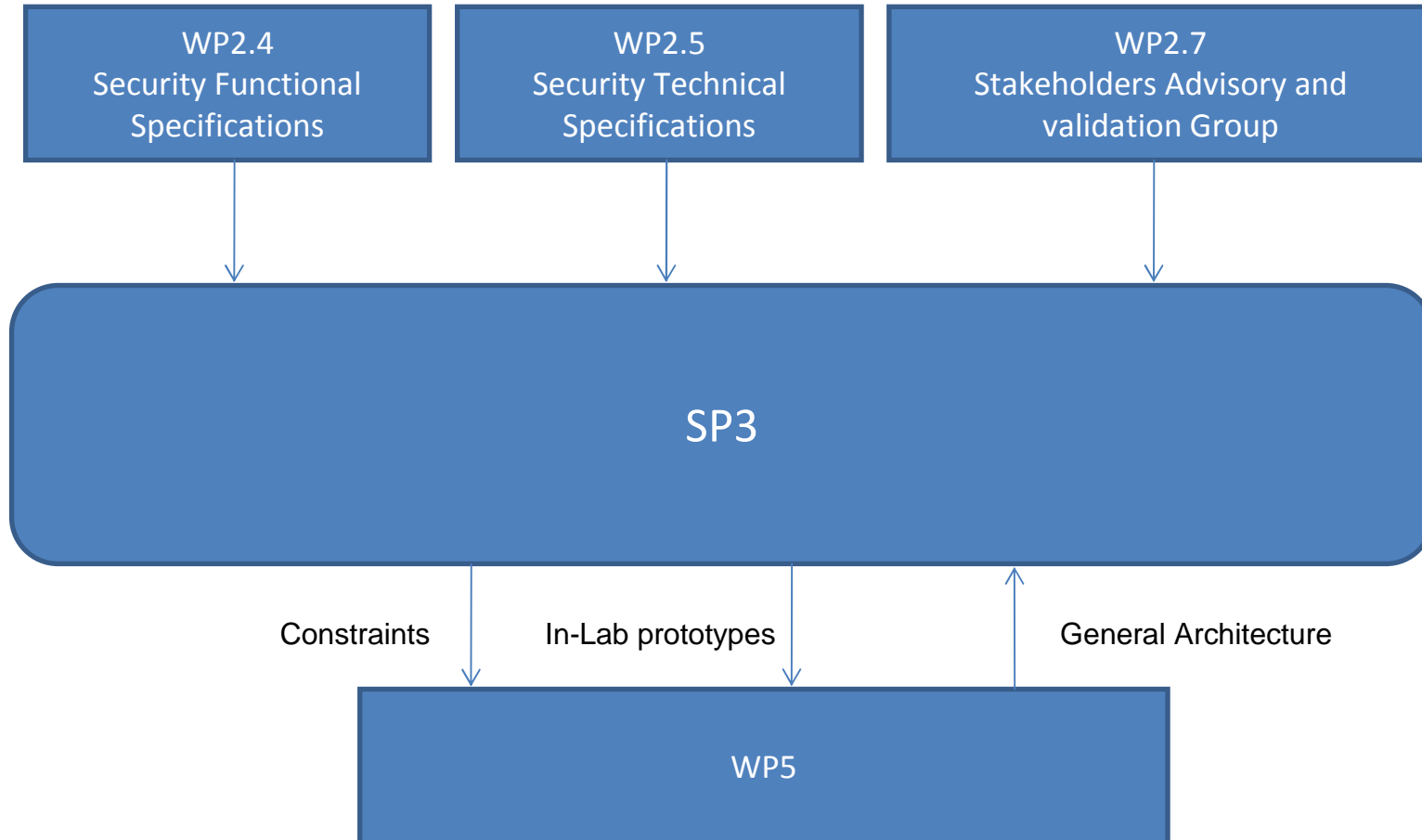
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- **SP3 Kickoff** **M6**
- **Prioritised requirements (WP2.7)** **M4**
- **Receipt of technical and functional specifications from SP2 (WP2.4, WP2.5)** **M6**
- **Delivery of architectures for each WP** **M8**
- **Delivery of lab prototype** **M22**
- **Delivery of validation report for each WP** **M24**
- **Integration (SP5)** **M23**





# DEPENDENCIES





## SUMMARY OF THE THREATS AND TECHNOLOGIES WITHIN SP3

Threats (terrorist, accident, natural disaster)	Technologies
Explosion Fire Release of hazardous material Collapse of infrastructure Collision Shooting Sabotage Violence (kidnapping, hi-jacking) Disruption in service systems Cyber crime	Monitoring and control including detection of behaviour Physical protection measures Software models for simulation and exercising Detection techniques ICT systems including protection measures Access / entrance control Decontamination technologies



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