

Technical interoperability standards for EU railway automation

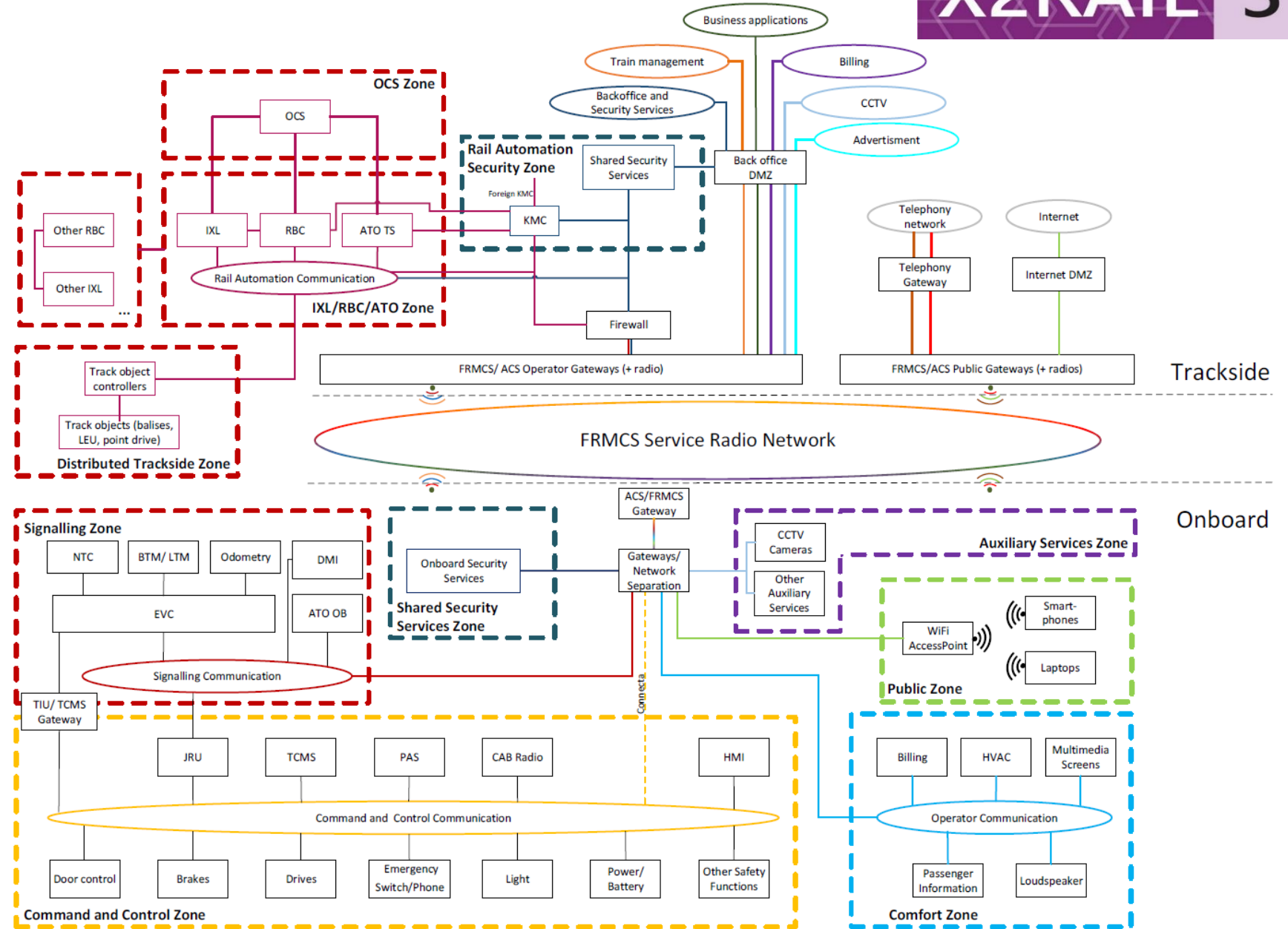
Markus A. Wischy, *S2R X2Rail-3 WP 8.3 Leader*, **Siemens Mobility**

ENISA-ERA – Online Conference on Cybersecurity for Railways
March, 17th 2021



Generic cybersecurity architecture

- For next generation products and new rail automation systems
- Incorporating FRMCS, ATO and Connecta topics (ERA CCS TSI 2022 & 2025)



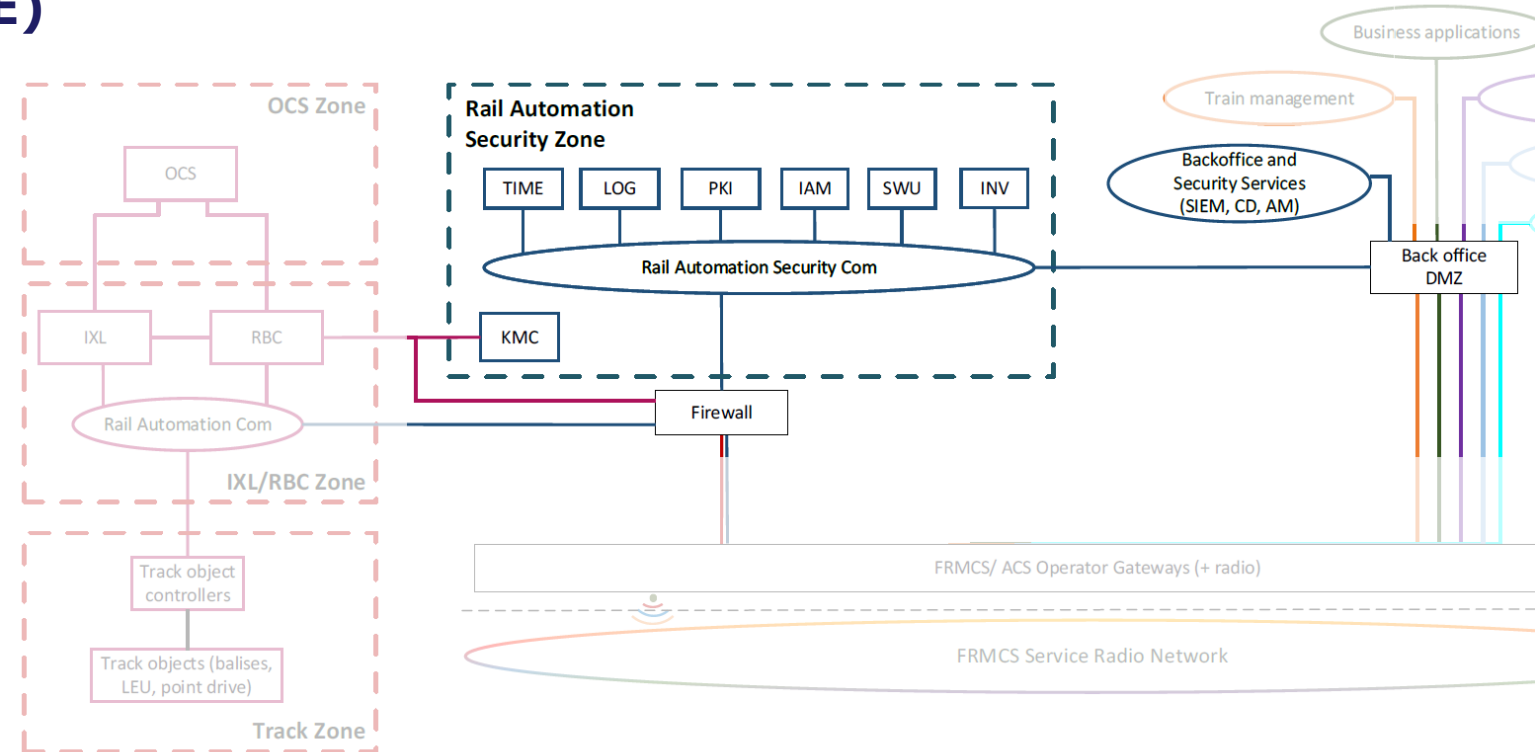
Security Environment for EU-Interoperability

Mandatory services

- System-wide time service (**TIME**)
- Central Logging (**LOG**)
- Security Incident and Event Management (**SIEM**)
- Intrusion Detection / cont. monitoring (**IDS**)
- Identity and Access Management (**IAM**)
- Backup (**BKP**)
- Asset Inventory (**INV**)

Highly recommended services

- Public key management (**PKI**)
- Central Software Update (**SWU**)



Shared security services: protocol selection criteria

- Protocol is an **international standard** (e.g. a published document)
- Protocol definition is **stable**
- **Widespread use** of protocol
- **Open source** implementation(s) are **available**
- Protocol supports **authentication** and **integrity protection** with cryptographic means
- Protocol supports **encryption** (when confidentiality is needed)
- Historic vulnerabilities and **availability of patches**

Selected protocols for EU-Interoperability

- System-wide Time Synchronization (TIME): **NTPv4** (RFC 5905)
- Central Logging (LOG): **syslog-ng** (i.e. syslog over TLS) (RFC 5425)
- Security and Event Management System (SIEM): **syslog-ng** (RFC 5425)
- Certificate Management (PKI): **CMP** (RFC 4210)
- Identity and Access Management (IAM): SCIMv2 over TLS (RFC 7655)
- Backup (BKP): **rsync over SSH**
- Remote SW Update (SWU): **OPC UA SC & HTTPS**
- Asset Inventory (INV): **OPC UA SC**

Protection profiles

Release of protection profiles

- JU review in December
- Published in March 2021
- Protection profiles for trackside components, on-board components and ACS components available



Horizon 2020
European Union Funding
for Research & Innovation

Shift2Rail

X2RAIL 3

X2Rail-3

Project Title:	Advanced Signalling, Automation and Communication System (IP2 and IP5) – Prototyping the future by means of capacity increase, autonomy and flexible communication
Starting date:	01/12/2018
Duration in months:	36
Call (part) identifier:	H2020-S2RJU-CFM-IP2-01-2018
Grant agreement no:	826141

Deliverable D8.2-3b
Protection Profile - Trackside components

Due date of deliverable	Month 24
Actual submission date	02-12-2020
Organization name of lead contractor for this deliverable	SMO
Dissemination level	PU
Revision	Final release

https://projects.shift2rail.org/s2r_ip2_n.aspx?p=X2RAIL-3

In 2021 and onwards

- Evaluation of protection profile with X2Rail demonstrators
- Dissemination to EU standardization bodies



Thank you!

X2Rail-3 publications

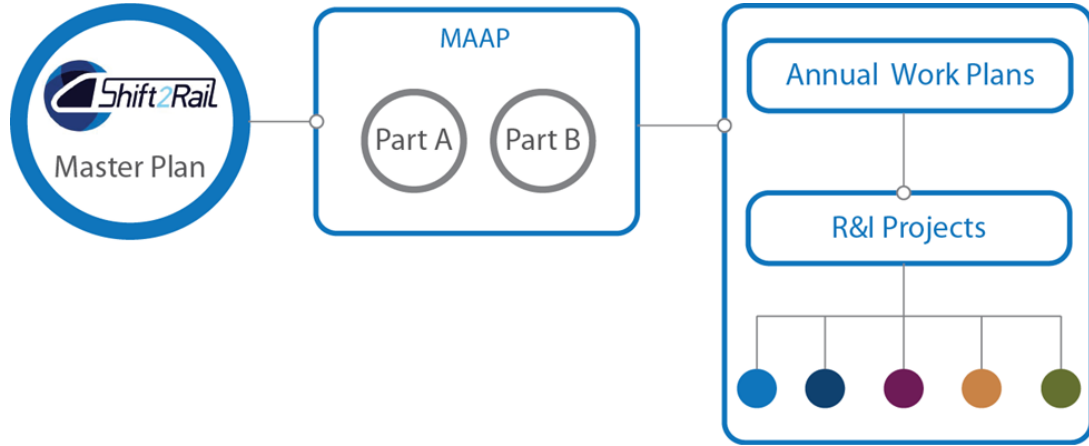
https://projects.shift2rail.org/s2r_ip2_n.aspx?p=X2RAIL-3

or Google „X2Rail-3“

AN OPEN and ACTIVE ORGANISATION



...opening up new Capabilities coming from emerging technologies or concepts!



The S2R Programme implementation

