

Tech for Railways and Metro

Unlocking mobility, life happens

Nov 11, 2025



Solutions for Railways and Metros

+44M€

invested in R&D
focused on Mobility
during **last four years**



Traffic Management

CTC | ARS | TMS | TPS | SCADA

+4.000 km

of High-Speed lines managed
with our technology

Automatic Fare Collection

TVM | BiBo | ABT | Gate | Mobile

+35M

daily transactions.

More than 70 transport operators
integrated in a single system (T-Mobilitat)

Open Digital Signalling

ASFA | ERTMS | AWN | SWOC

+15.000

SIL-4 balizes for Digital ASFA
and more than **600** on-board
units

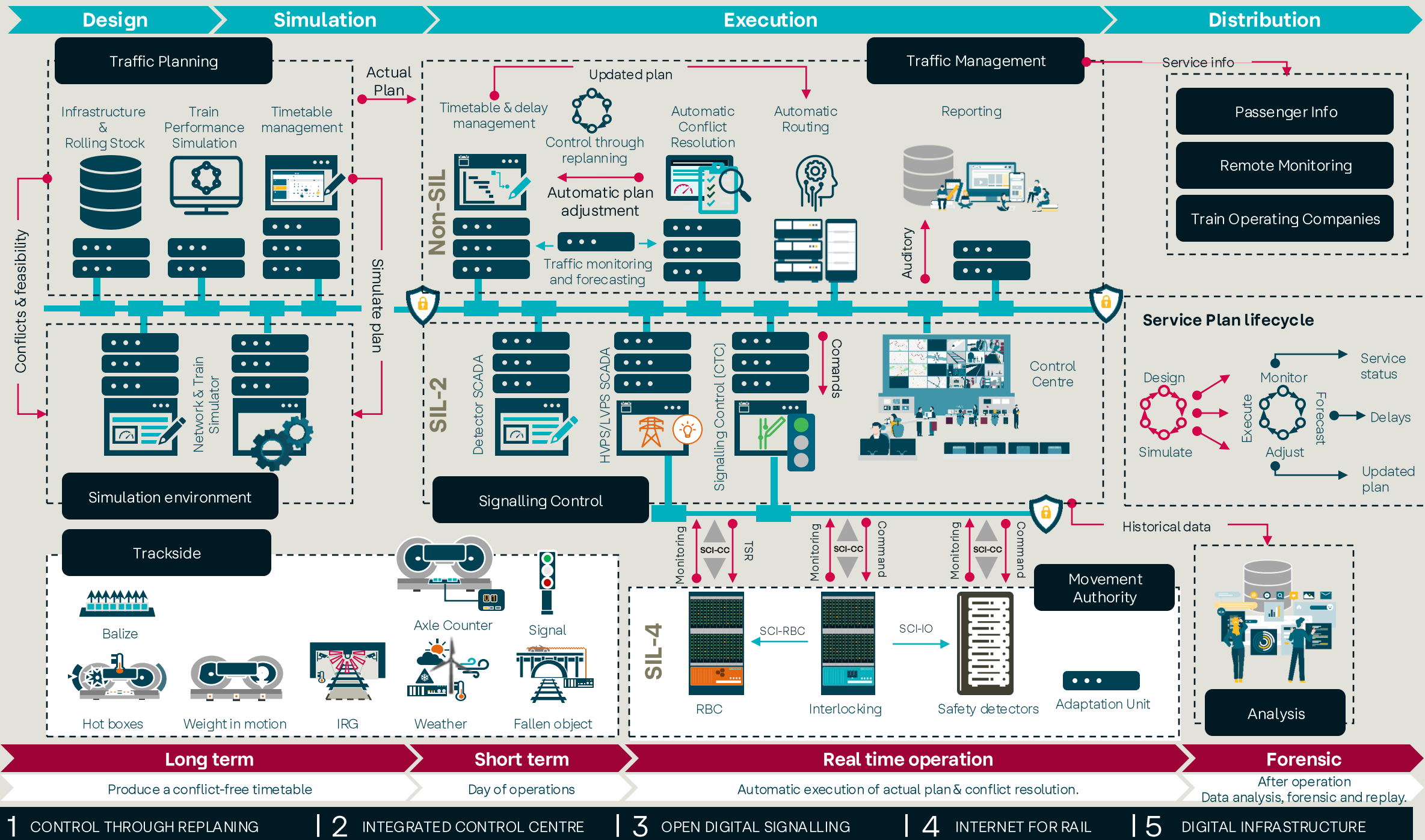
Telecommunications & Passenger Experience

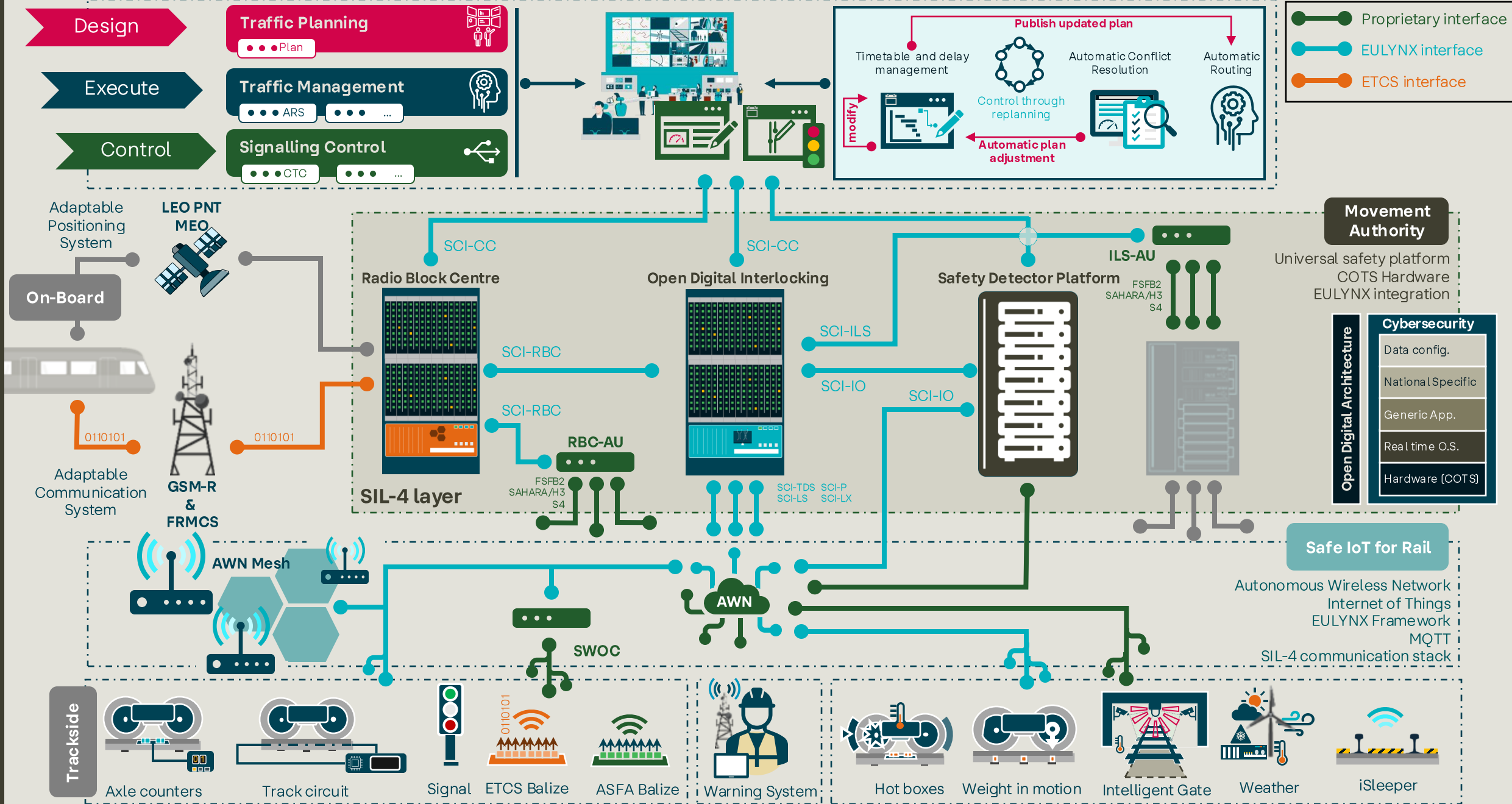
Satellite | iConnect | PIS | WoB

+3.000

Information points for
passengers.

Cloud | IoT | 5G | IA | Big Data | Edge Computing | Business Intelligence | Digital Twins | Deep Learning | Artificial Vision





Our dream: Open Digital Interlocking

EULYNX

Massive adoption of EULYNX

AWN

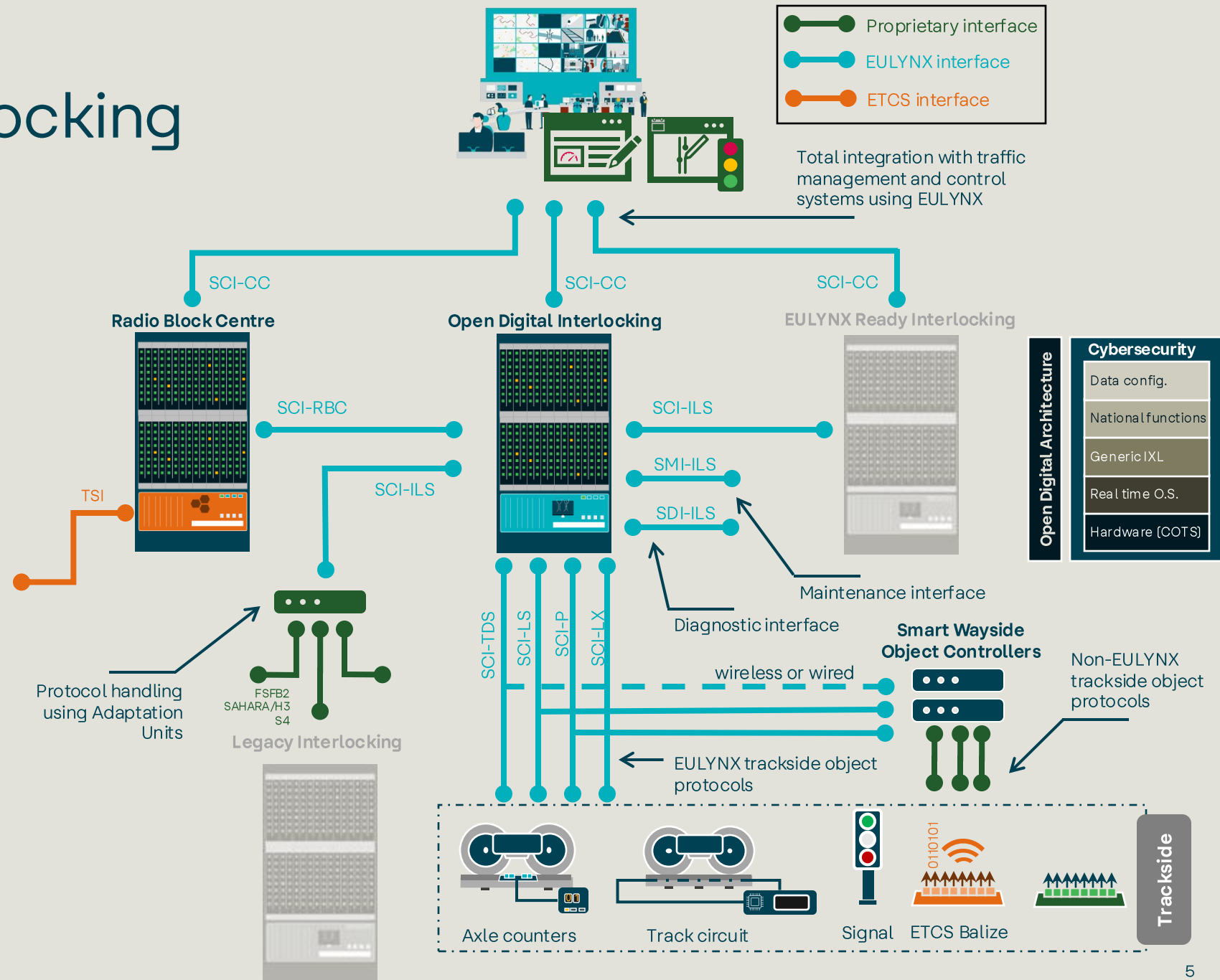
Direct integration with Awn enabling wireless devices, reducing cabling cost

Adaptation Units

Specific hardware and software for rapid integration of third-party interlocking

SWOC

Safety object controllers acting as EULYNX end-points to wrap non-EULYNX objects



Open Digital Radio Block Centre

Timescales

Minimize trackside and integration test from months to weeks

Full handover support

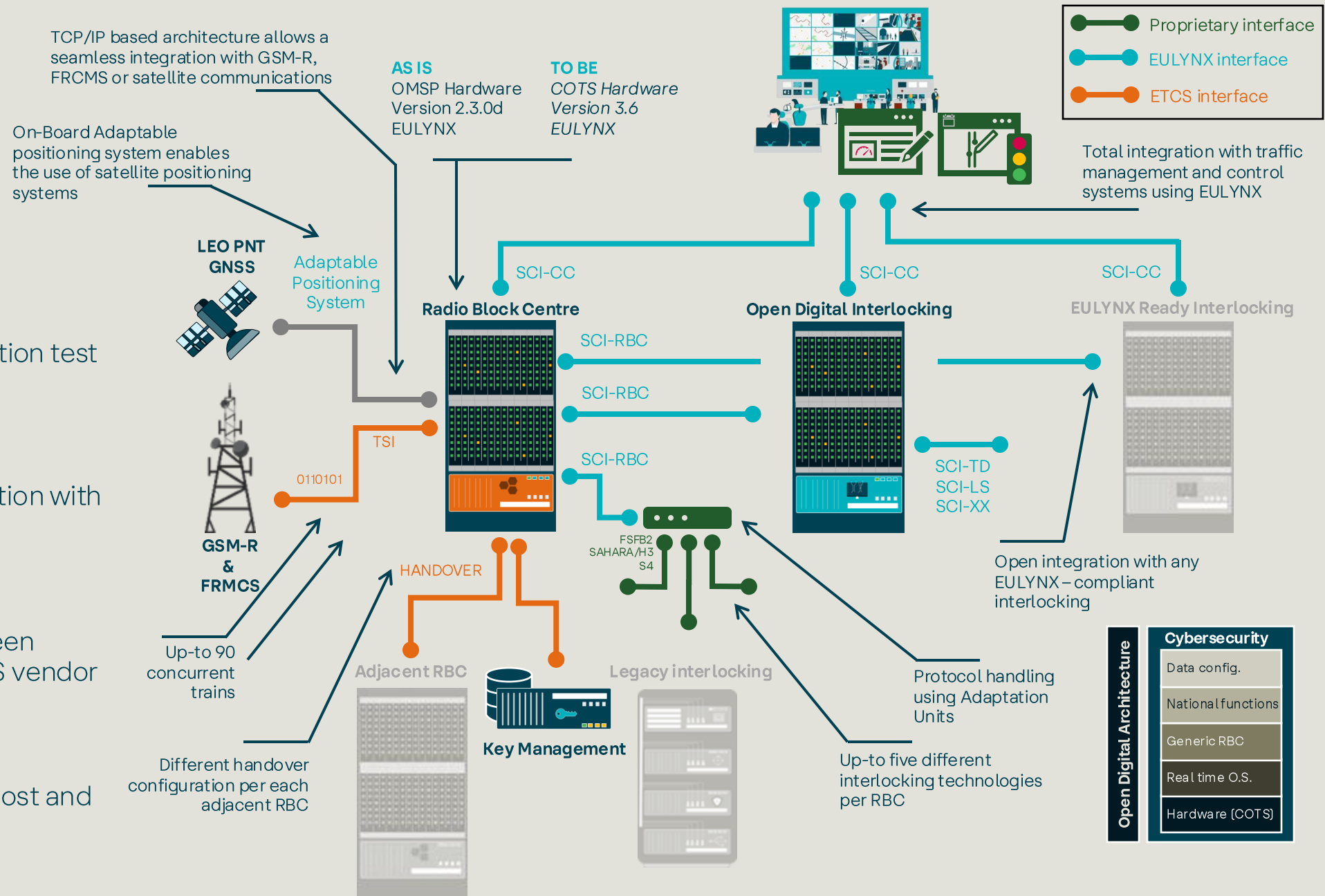
Reduce and simplify collaboration with other RBC vendors.

Break the tech jail

Eliminate dependencies between interlocking provider and ETCS vendor

Standardised integration

Open the integration, reduce cost and dependencies



Autonomous Wireless Network

Goal

To provide a **safe** and **secure** adaptable communication layer based on commercial of the shelf equipment

Internet of Rails

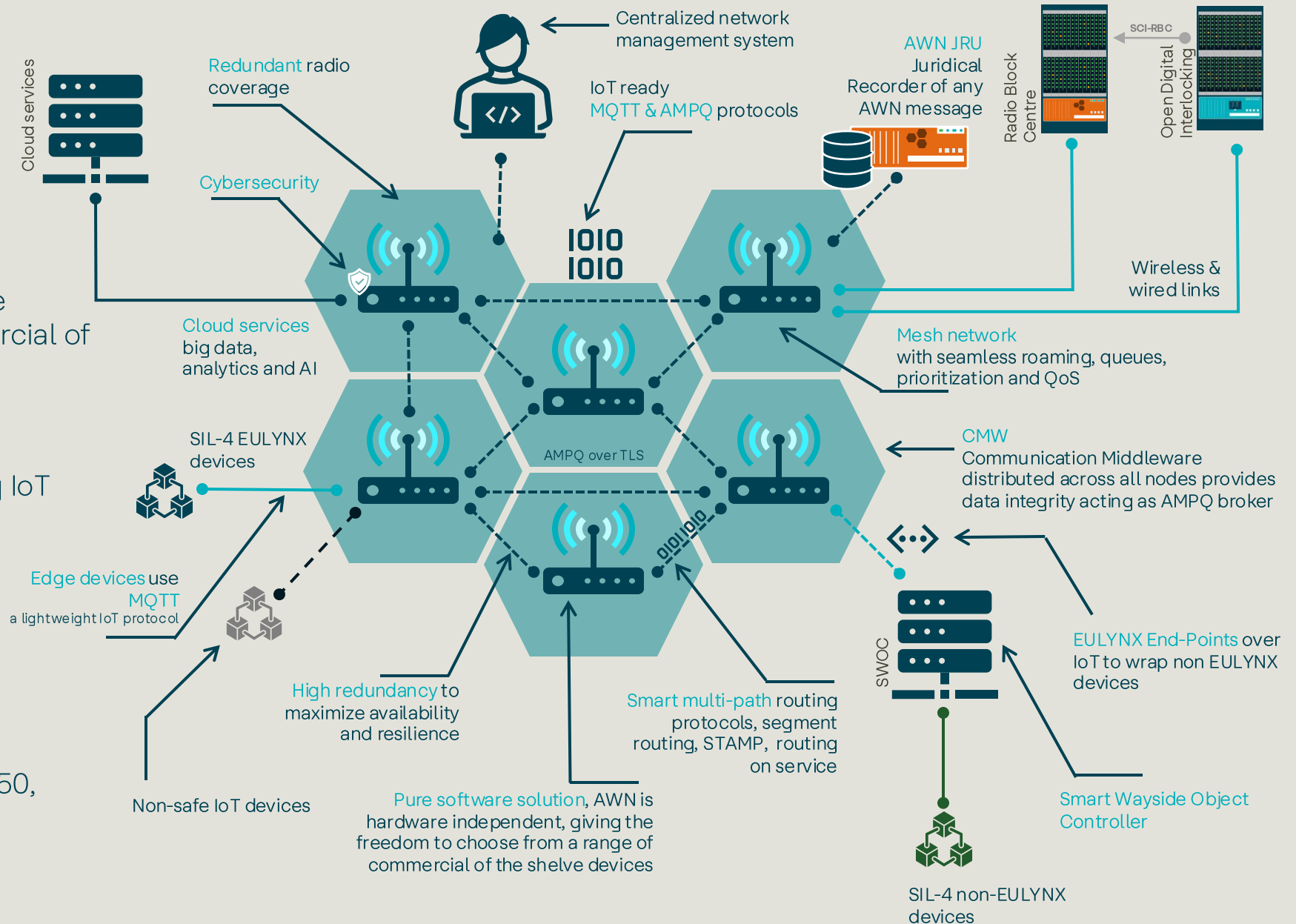
Creates the proper ecosystem bringing IoT standards to the rail

Digital infrastructure

Last mile **digitalization** enabler

Safety first

Designed for SIL-4 applications (EN50150, EN50155) and security (IEC62443)



Trackside IoT devices



Intelligent Railway Gate

Digital gantry equipped with several monitoring devices.

- LIDAR & RADAR to profile the train
- Cameras with AI to recognize plates and labels
- Temperature and weight in motion
- Train Detection



iSleeper

Electronic sleeper with easy installation to deploy sensors

- Flooding
- Track displacement
- Fallen objects
- Train detection (axle counter)
- Environment supervision

Direct integration with the AWN



Trustable Warning System

Safety zone warning for protection of track areas during maintenance or special zones like Level Crossings

Increased safety by broadcasting relevant information



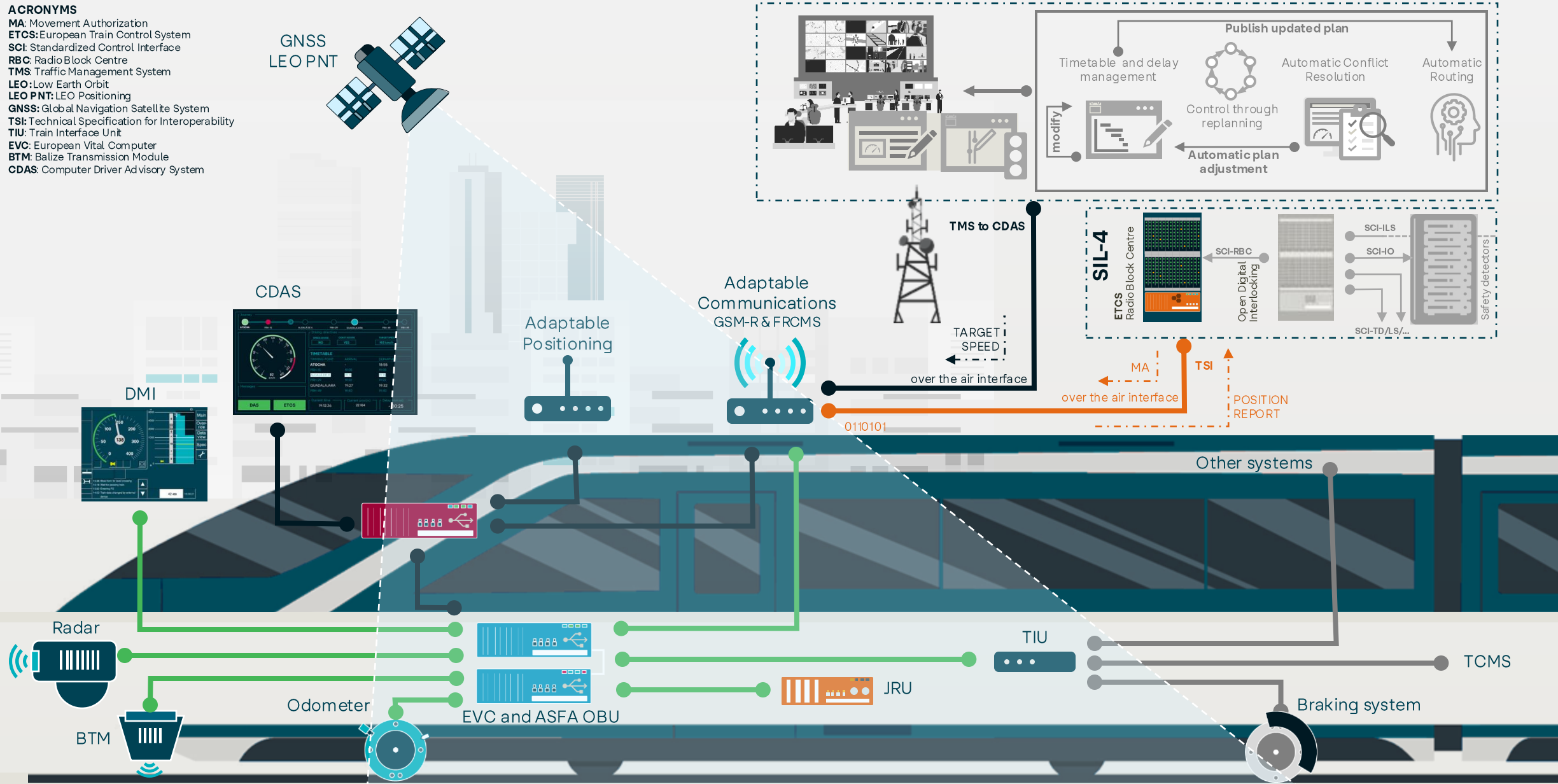
Smart Wayside Object Controller

Safe (SIL-4) AWN component to interface with non-EULYX vital objects

Creates EULYNX end-points wrapping trackside objects providing SCI, SMI and SDI interfaces

ACRONYMS

MA: Movement Authorization
ETCS: European Train Control System
SCI: Standardized Control Interface
RBC: Radio Block Centre
TMS: Traffic Management System
LEO: Low Earth Orbit
LEO PNT: LEO Positioning
GNSS: Global Navigation Satellite System
TSI: Technical Specification for Interoperability
TIU: Train Interface Unit
EVC: European Vital Computer
BTM: Balize Transmission Module
CDAS: Computer Driver Advisory System



On-Board IoT devices



C-DAS

A fully **connected DAS** system following **SFERA UIC** approach

- Optimized journey
- Energy efficiency
- Timetable

Adaptable Positioning System

Real time positioning (APS) actively combining satellite (LEO PNT or GNSS), radar, odometry... or inercial measuring units

Integrated with OTI provides precise composition length

Adaptable Communication System

Vehicle to Vehicle and **Vehicle to Infrastructure** communications using any channel

- AWN
- GSM-R
- FRCMS
- Satellite

Train Integrity

On-Board Train Integrity (OTI) ensures train integrity

Provides a rigorous control of the composition, train formation and dimensions

Ready to incorporate additional sensors

