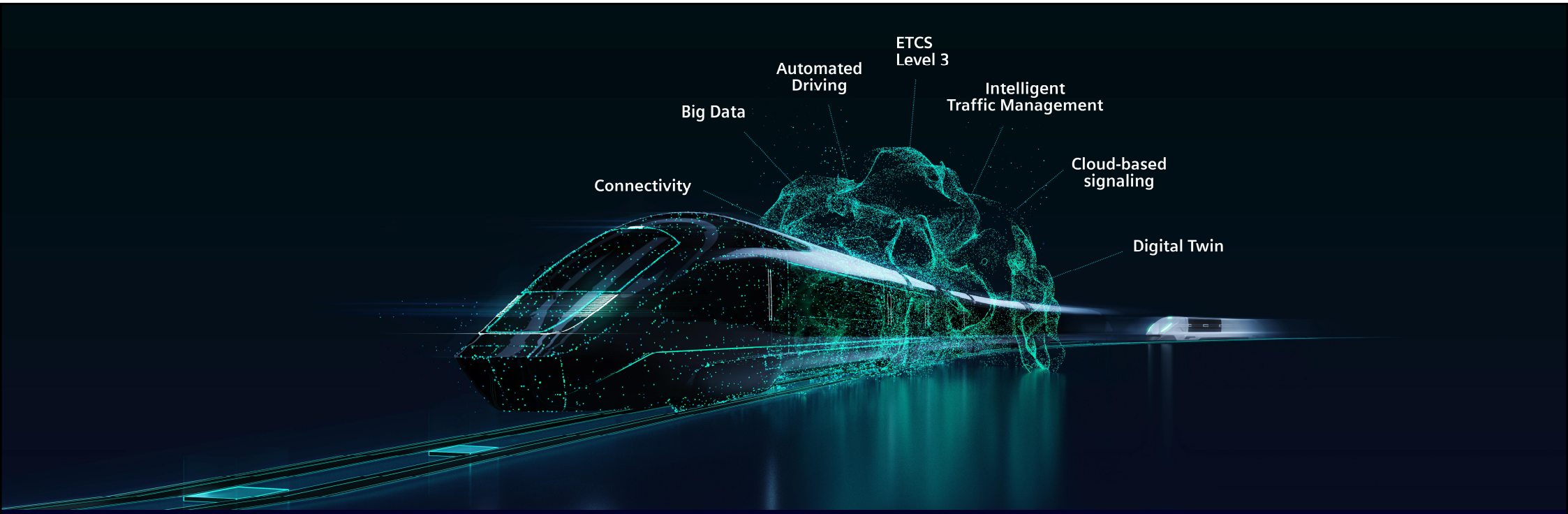

Mainline
Rail Infrastructure

Solutions for mainline, regional railways and yards

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We are the most diversified and vertically integrated mobility company

Michael Peter | CEO

Karl Blaim | CFO

Business Units

Rail Infrastructure
Products and solutions for Rail Automation and Electrification

Intermodal solutions (HaCon)
Apps and backend systems for passenger information, booking, payment and management of data, infrastructure and fleets

Turnkey Projects
Complete turnkey rail solutions integrating the entire portfolio and beyond

Rolling stock
Short-distance, regional and long-distance rolling stock, product and system solutions for passenger and freight transport

Customer services
Services for Rolling Stock and Rail Infrastructure, throughout the entire lifecycle

YUNEX Traffic
Solutions for Intelligent Traffic Management

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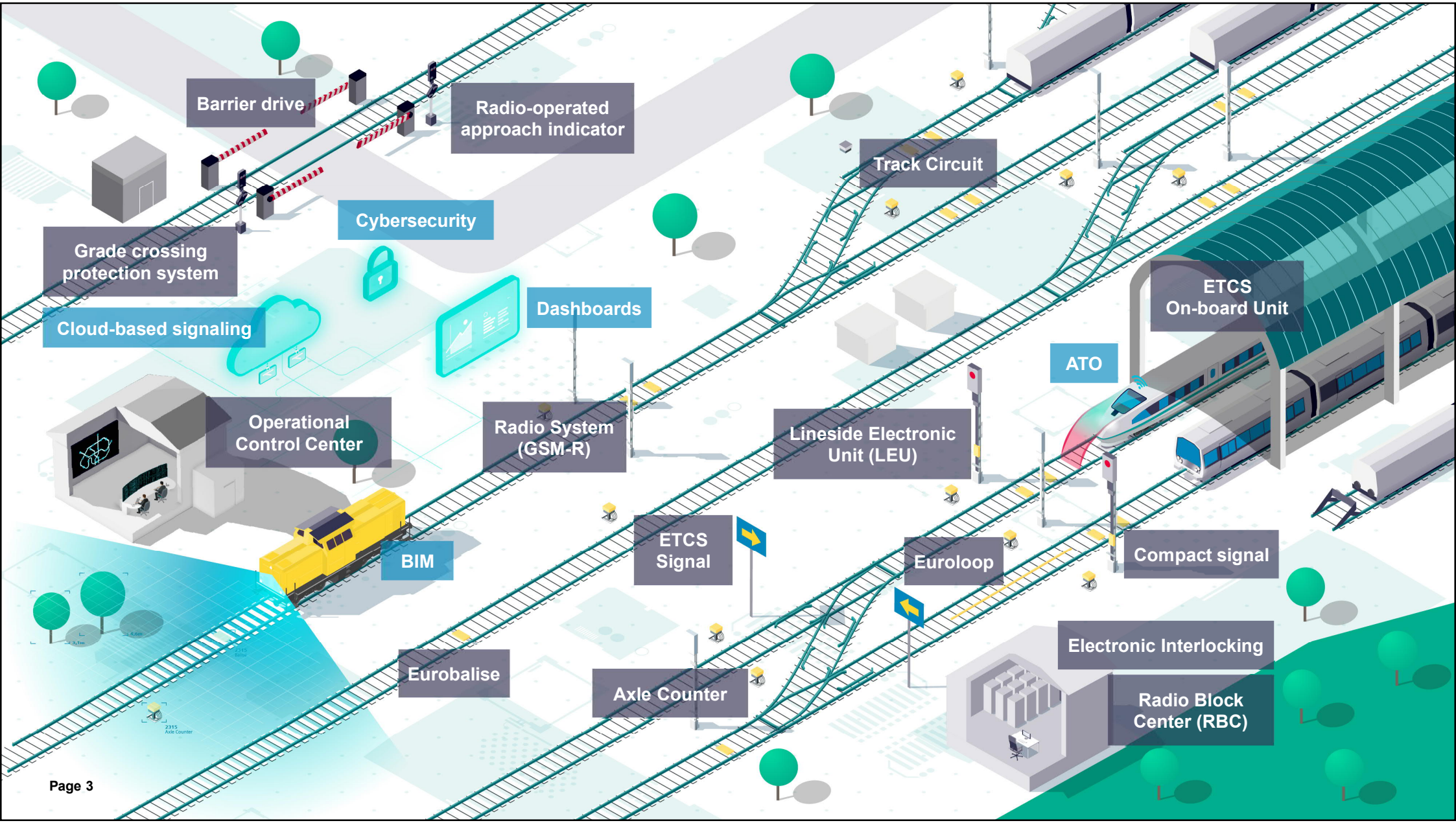
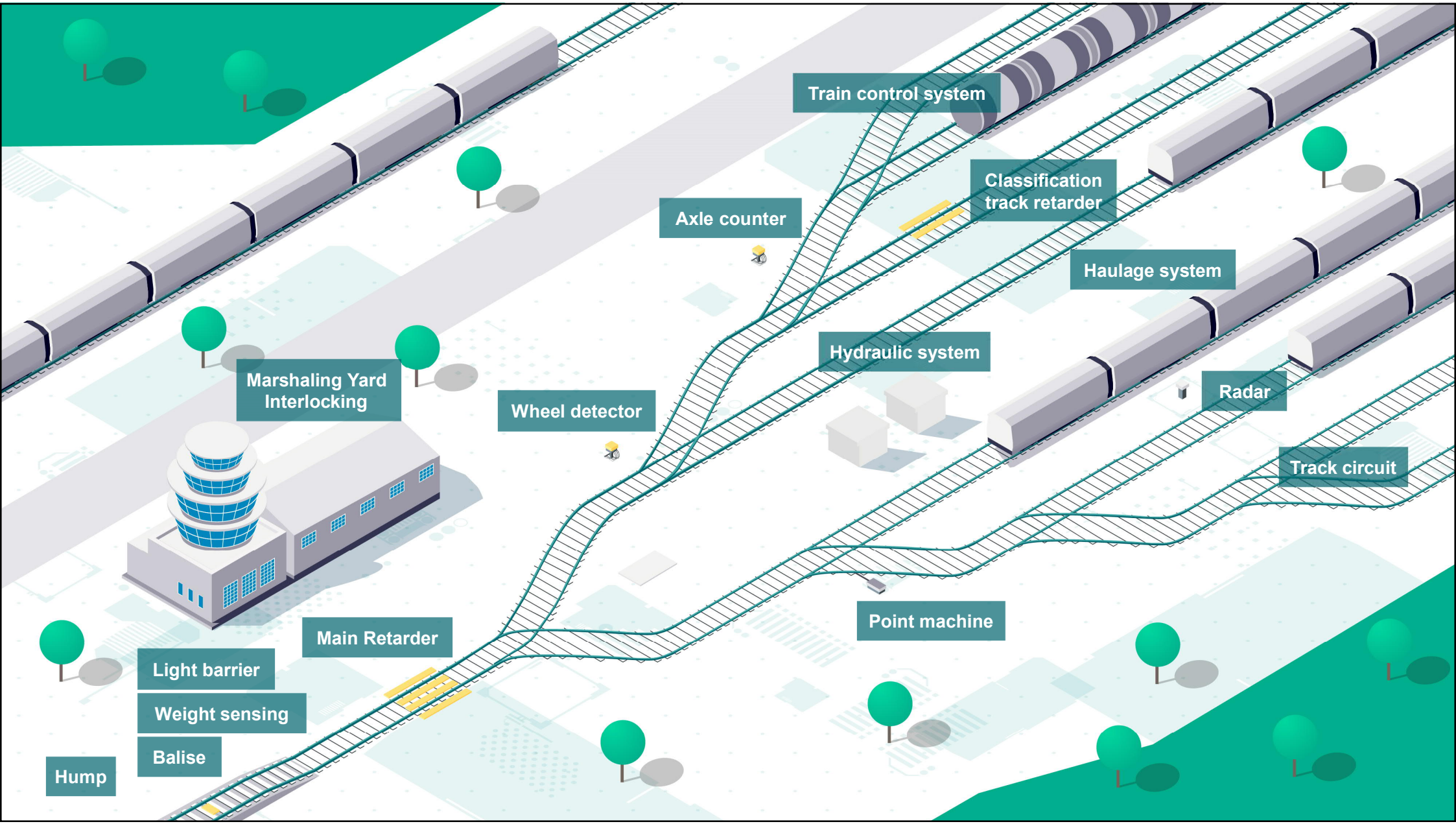
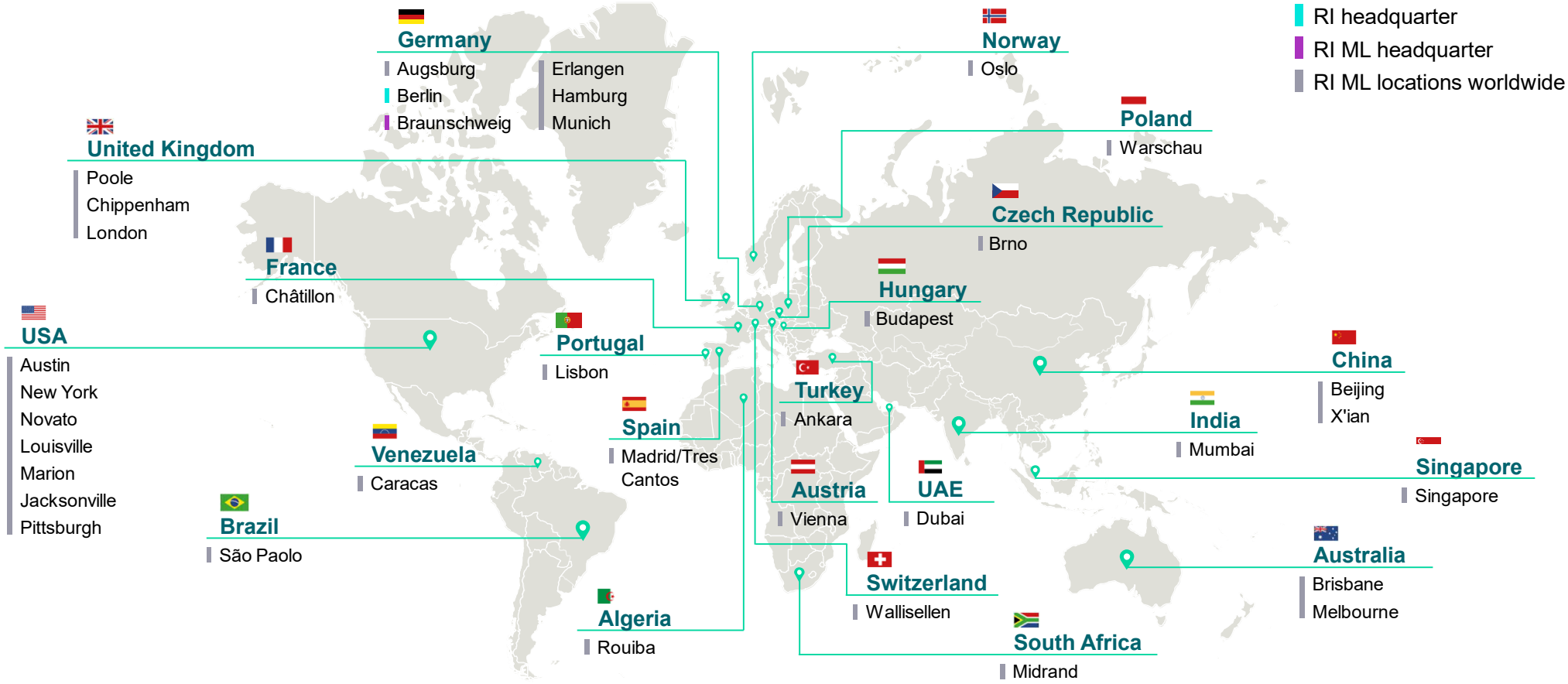

Barrier drive
Radio-operated approach indicator
Track Circuit
Cybersecurity
Grade crossing protection system
Dashboards
Cloud-based signaling
ETCS On-board Unit
ATO
Operational Control Center
Radio System (GSM-R)
Lineside Electronic Unit (LEU)
BIM
ETCS Signal
Euroloop
Compact signal
Eurobalise
Axle Counter
Electronic Interlocking
Radio Block Center (RBC)


Train control system
Classification track retarder
Axle counter
Haulage system
Hydraulic system
Marshaling Yard Interlocking
Wheel detector
Radar
Track circuit
Point machine
Main Retarder
Light barrier
Weight sensing
Balise
Hump

Siemens Mobility Rail Infrastructure - a global network



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Performance highlights
Our offer for a high-performance value chain

Our mission
We provide standardized, reliable and innovative railway signaling solutions. As technology leader, we strive for execution excellence and create true benefits for our customers along the entire life cycle. We transform the Rail Infrastructure business with next-generation signaling and intelligent solutions.

Our goals
- Network modernization requires smart migration strategies, standardized and future-proof solutions.
- Our innovative solutions enable increased capacity, more throughput and enhanced safety for railway operators.
- Sustainability is key in making railways the number one mode of transport: climate-friendly and competitive.
- The digital transformation of railways will increasingly leverage the usage of data and the application of new business models.

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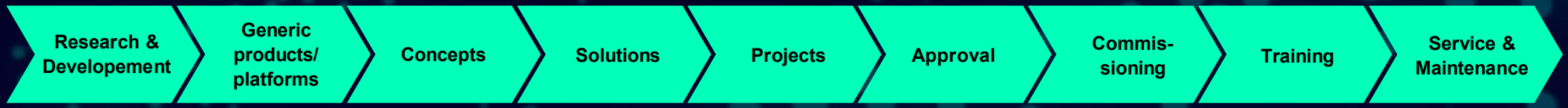
Performance highlights: We map the entire life cycle

Our standardized products feature a seamless system migration

Safe and efficient testing with our digital field-testing solutions (e. g. ETCS-live)

Digital solutions increase system performance whilst fostering sustainability

All-time highest quality and safety standards as an essential part of every milestone within a project's life cycle



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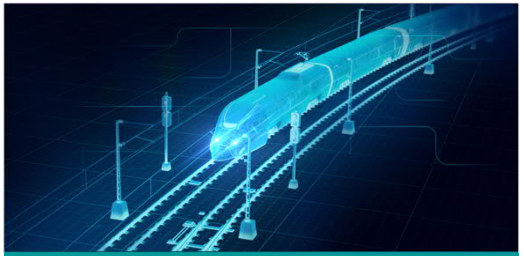
Our digital solution highlights

Signaling in the Cloud

- Highest Safety Integrity Level SIL 4
- DS3 (Distributed Smart Safe System) is our next-generation platform for railway signaling
- compatible with European standards and interfaces (Eulynx, Neupro)
- Substantial reduction of hardware components, increased availability, security and cost-efficiency
- DS3 ensures a resilient and sustainable rail future by transforming conventional hardware-based signaling to a cloud-based signaling functionality

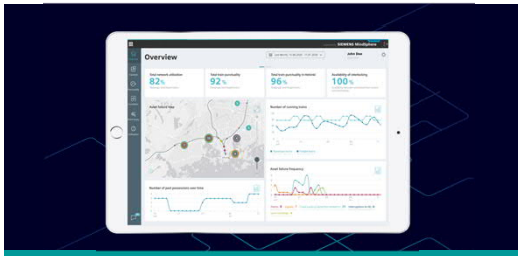


Building Information Modeling (BIM)

Our BIM services include:

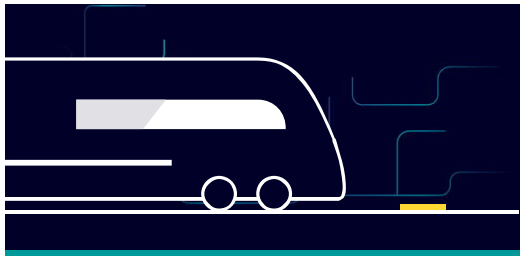
- Digital Track Capturing
- Data Preparation
- Preparation of 3D models
- Asset Lifecycle Management

- Virtual planning and testing before installation
- Data available for all stakeholders for the entire project
- improves collaboration, planning quality, and productivity for the entire project.



Dashboards

- Our System Performance Dashboard is a cloud-based solution for the in-depth analysis of you rail systems
- Data based on customer-specific KPIs retrieving information as function of your profile
- Identify capacities and bottlenecks in the network, optimize maintenance
- Enabling for rapid, strategic decision-making
- The more data, the higher the quality of diagnostics and the higher the level of automation that is possible.



ETCS Hybrid Level 3

- ETCS Level 3 Hybrid: based entirely on radio solutions
- Track vacancy detection is no longer carried out by the interlocking, but by the RBC with assistance of the train control unit (OBU)
- No trackside signals nor track vacancy detection required
- All trains (also non-ETCS) are known by ETCS trackside
- Hybrid Level 3: possibility of installation of level 3 equipment to supplement other levels (level 0-2)
- Other systems (e. g. ATO) can be integrated

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Our Portfolio

Wayside – Onboard – Yards

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Our portfolio

Wayside

Electronic Interlockings from the Trackguard product family control and protect train operations and set signals and points.

Train Control

Our Trainguard 100/200/300 OBU system is scalable and offers train control in different levels of automation.

Yards

Scalable solutions for efficient handling of depots, shunting and switching in freight.

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Wayside

- Electronic interlockings for controlling and protecting train operations
- Trackguard Westrace and Simis
- Also supplying turnkey electronic interlockings as preconfigured container solutions
- Controlguide systems enable monitoring, operating and automating control operations, radio block center as well as electronic and relay interlockings
- Standalone solutions to large-sized operation control centers
- Entire range of products for rail operations:
  - Switchguard for point operation
  - Clearguard for axle counting
  - Wayguard for level crossings
  - Sigmaguard for signal controlling

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Train Control

- The Trainguard 100/200/300 onboard unit ensures safety-related interoperable train operation - providing control and monitoring functions towards highly automated operation
- Worldwide proven ATP system with a total of more than 6,000 ETCS OBUs contracted
- Future-proof with the latest ETCS Baseline 3.6 (Baseline 3 Release 2) and ATO over ETCS solution in commercial operation
- Proven and highly reliable solution made in Germany comprising various subsystems, such as EVC and DMI
- Scalable solution for new vehicles and smart migration concepts for retrofit matching customer needs
- Various national train control systems can be integrated in Trainguard OBU (NTC/ Class B Systems)
- Maintenance free and smallest ETCS OBU on the market

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Yards

Control systems train formation yards
- Trackguard MSR32: Scalable control system for fully automated hump yards
- Trackguard Retarder: Precise and low noise retarding system

Control systems for flat shunting yards
- Trackguard MSR32 RaStw: shunting interlocking for automatic shunting
- Switchguard DPC: radio-based, decentralized control for points

Shunting and operating in train depots:
- Yard Management System (YMS) & combination of YMS and Trackguard MSR 32 RaStw

System for planning, disposition & management
- Yard Management Systems (YMS) in depots
- Controlguide ARKOS

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Mainline References

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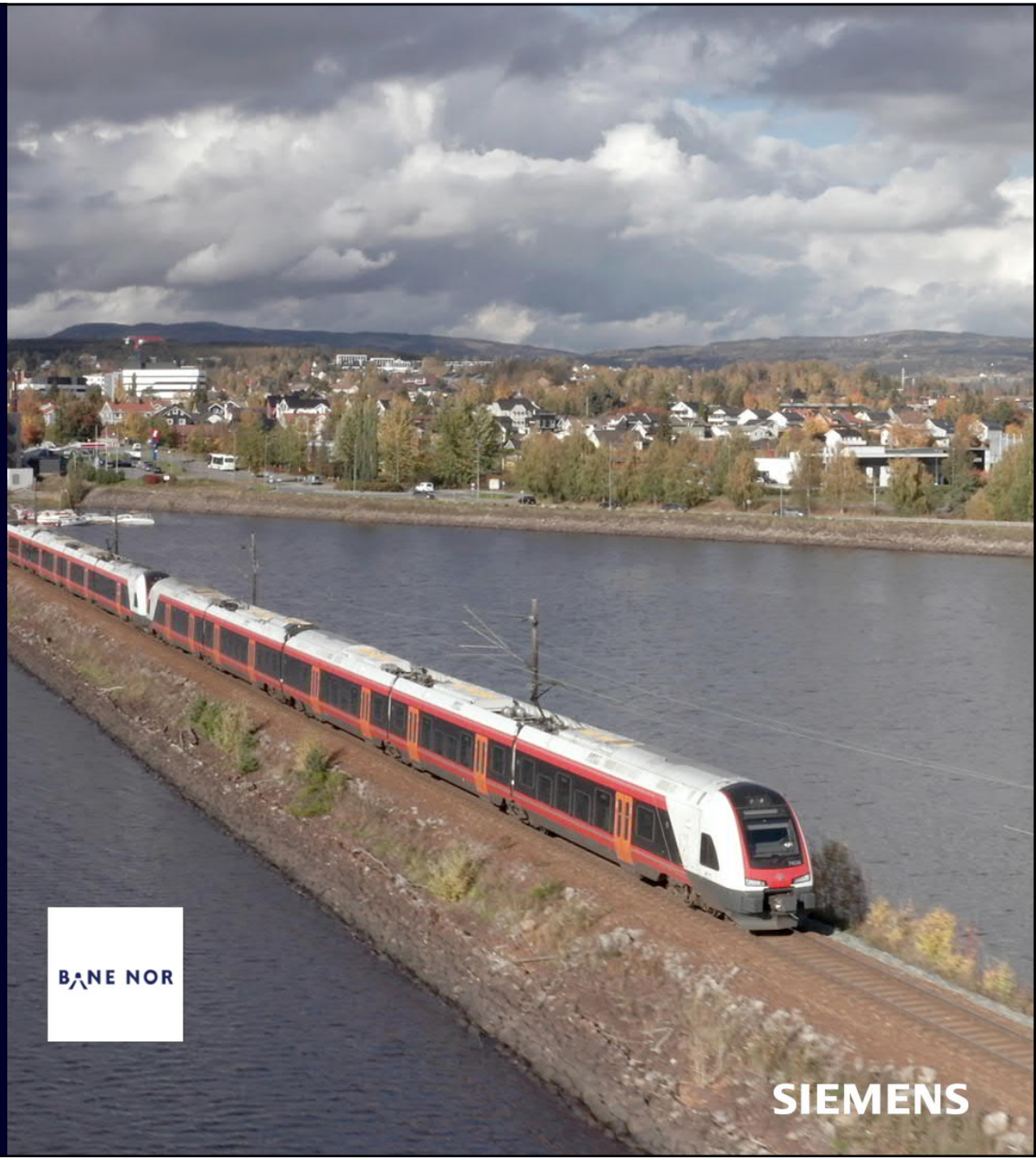
ERTMS Norway

- Transformation of the entire Norwegian rail network into a fully digitalized IP-based system
- Nationwide ETCS Level 2 system, features sections where ETCS Hybrid Level 3 is applied
- Digital Interlocking: centralized interlocking system with Simis W and Sinet IP-based wayside network communication system
- BIM: digital track capturing, data preparation, 3D modeling, paperless onsite activities
- 4,200 km of track, more than 350 stations
- First line Nordlandsbanen to start operation end of 2022
- Increased capacity, safety and reliability for Norwegian passengers
- Project completion in 2037, service contract until 2059



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Digital S-Bahn Hamburg

- First highly automated train operation (GoA2) for mainline rail traffic in Germany
- ATO over ETCS for line S21 between Berliner Tor and Aumühle
- Fully automated shunting at the station Bergedorf
- 23 km of track, 11 stations, 4 equipped vehicles
- Building block for the 'Digital Rail for Germany' program
- Allowing for higher frequency of trains and therefore enhanced capacity and reliability of the rail network

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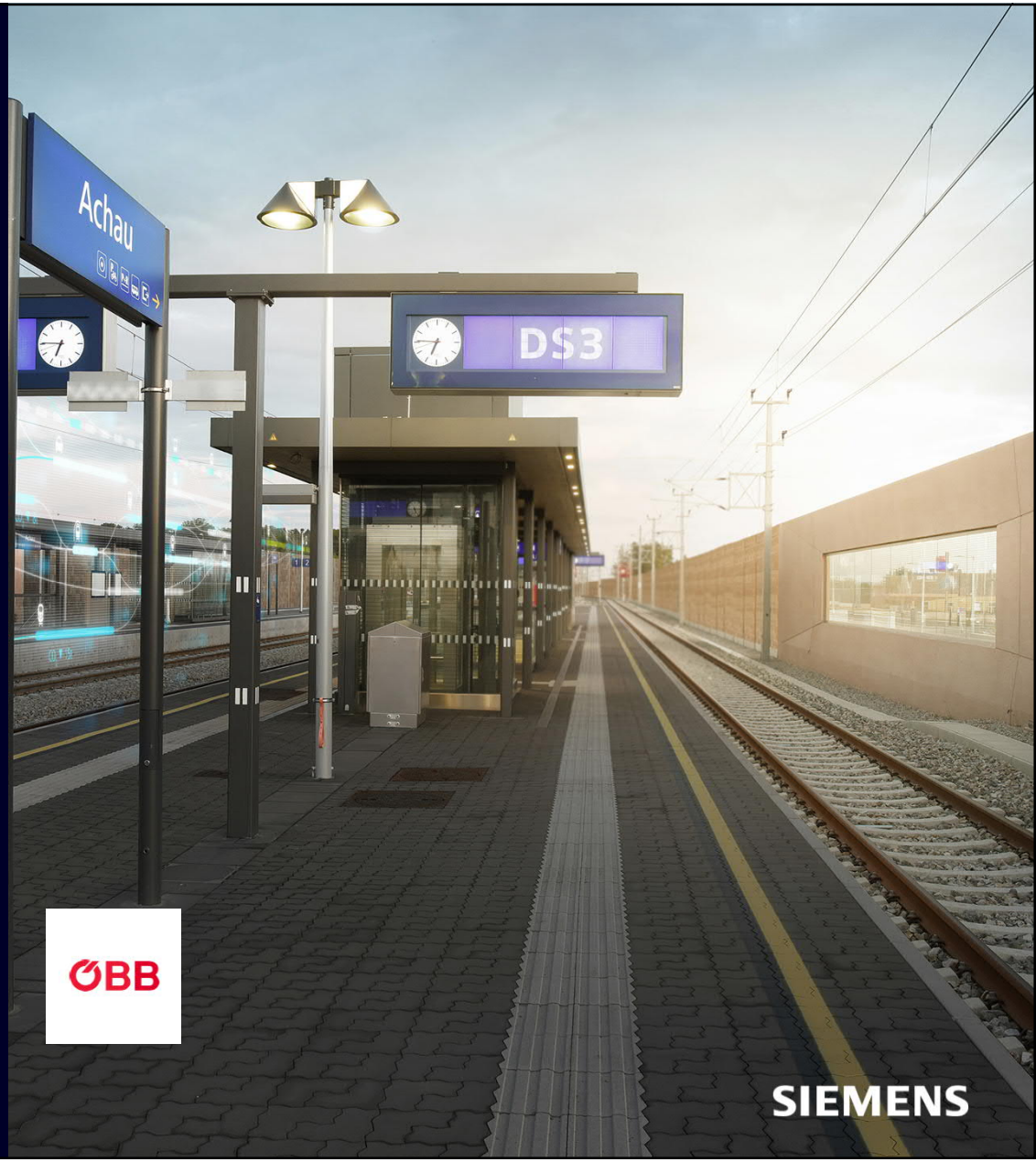
Achau: Interlocking in the cloud

- First hardware-independent Simis AT interlocking on the DS3 (Distributed Smart Safe System) platform in operation
- First approval of a digital SIL4 interlocking based on COTS multicore server hardware
- Software-based, security platform that serves as the foundation for secure rail applications in the cloud
- Unlimited scalability, centralized data and control allows for seamless network capacity increase and AI enabled data analytics
- Reduced lifecycle costs, increased network capacity and throughput



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VDE8 line Berlin - Munich

- First commercially used ETCS L2 project in Germany
- Installation of ETCS Level 2 which allows speed of more than 160 km/h
- Travelling time between Berlin and Munich was reduced from 6 to 4 hours
- New state-of-the-art safety and communication systems
- Increased punctuality
- Passenger numbers have doubled since its commissioning in December 2017

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Haramain Saudi Arabia

- Highspeed line between the cities of Mecca and Medina via Jeddah and Rabigh, shortening journey time to 2 hours
- 454 km of track equipped with ETCS Level 2 and Westrace interlockings
- Taken into operation 31st March 2021
- Major annual pilgrimage route, enabling enhanced passenger experience and independence from road traffic

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ETCS on-board units for SNCB

- ETCS Baseline 3 Release 2 for 305 Desiro AM08 commuter trains with Trainguard 200© OBU
- ETCS Level 2 reduces infrastructure costs to a significant extent and increases line capacity
- Most reliable series in the SNCB fleet that covers one third of their passenger service
- Full retrofit responsibility of SMO:
  - system integration
  - vehicle modification engineering
  - prototypes
  - re-authorization
- Key Management System included
- Complete series upgrade until end of 2025

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Thameslink: First commercial application of ATO over ETCS in mainline

- Up to 24 trains per hour on existing tracks means a huge capacity increase for north-south inner-city link of London
- 3,5 km installed ATO over ETCS Level 2 (Baseline 3)
- 115 Siemens Class 700 Desiro City trains equipped with ATO over ETCS technology

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Kijfhoek Yards, Netherlands

- Modernizing the largest freight rail yard of the country together with ProRail B.V.
- Kijfhoek railyard vital link between Rotterdam ports and major European industrial areas
- Solution by Siemens Mobility: Trackguard Cargo MSR32 automation solution
- Project completion in 2024, followed by 15 years of maintenance services
- Enhancing efficiency and reliability of operations
- Reducing life cycle costs

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The potential and value of modernization and digitalization are far from exhausted. Seize this opportunity today – with Siemens Mobility as a strong partner supporting you every step of the way!

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