

DIGITAL SOLUTIONS



Škoda Group is one of the leading European companies in the field of transport engineering with history stretching back for more than 165 years. The group focuses on producing and developing vehicles for rail and public transport. Its products mainly include suburban train units, low-floor trams, metro trains, trolleybuses, electric buses, hydro buses, electric motors, components, passenger coaches, digital solutions and complete drives for environmentally-friendly public transport.

Thanks to the ecosystem of production sites, plants, repair services and engineering offices, the top-notch work of more than eight hundred design engineers, chief project engineers and designers, and the millions of euros invested in its own research and development every year, Škoda Group has a product portfolio of modern vehicles that meet the latest European standards. The company pays a great deal of attention to the use of cutting-edge technologies for modern public transport and railway vehicles. Škoda is also developing railway vehicles and buses with alternative propulsion.

Škoda Group vehicles are in operation in the Czech Republic, Slovakia, Germany, France, Finland, Poland, Lithuania, Latvia, Estonia, Italy, Mexico, the USA, and more countries around the world.

Škoda currently employs over 10,000 people. In addition to the Czech Republic, Finland and Turkey production sites and technology centres, Škoda Group has branches in Germany, Italy, Austria, Belgium, Hungary, Poland and Ukraine.

Škoda Group is part of PPF Group, which invests in several sectors, from financial services through telecommunications and biotechnology to real estate and engineering. PPF Group operates in Europe, Asia, and North America.

Škoda Group provides comprehensive transport solutions for cities, intercity transport and mainline railways, and continues to work to ensure that traveling anywhere is comfortable, fast, sustainable, and safe.

Thanks to a wide range of door entry heights, low-floor cars and barrier-free entry are provided. Each car can have either one or two pairs of doors.





AUTONOMY

The Autonomy cluster brings together technologies for autonomous vehicles. The main goal of these technologies is to gradually replace drivers and make public transport options more efficient. The systems are designed with an emphasis on safe, environmentally friendly, efficient and economical vehicle operation.

AUTONOMY

ACS	ANTI-COLLISION SYSTEM
ATO	AUTOMATIC TRAIN OPERATION SYSTEM
SMART DEPOT	ECOSYSTEM OF AUTONOMY PRODUCTS
ISL	INTELLIGENT SPEED LIMITER
VEHICLE SECURITY	

ANTI-COLLISION SYSTEM (ACS)

ACS reduces the impact of collisions in depots and urban traffic. It uses a combination of smart sensors and HD maps with a virtual tunnel to detect people, cars and other rolling stock. The system is currently available in CWNB (Collision Warning No-Braking) mode.

KEY FEATURES

- | Detection and acquisition of information about objects occurring on the line.
- | Short-term motion prediction of dynamic objects.
- | Early warning to the driver of an imminent collision in CWNB mode.
- | Switch to CWAB mode thanks to automatic software update.
- | Precise visual localisation based on HD maps, GNSS and odometry.
- | Storage of information on significant events, including the ability to analyse and evaluate the system response.
- | Detection of adverse weather conditions impairing remote obstacle detection.
- | Sharing of system status information with TCMS.
- | Available in CWNB and CWAB modes (later in 2023).
- | Based on the proprietary HYPEX platform.
- | ACS is based on LiDAR, camera, GNSS and HD map data.
- | The use of LiDAR and camera enables obstacle detection at longer distances (up to 100 meters).

It will only be possible to implement the next development stage CWAB (Collision Warning Active Braking) by updating the software.



AUTOMATIC TRAIN OPERATION SYSTEM (ATO)

The ATO in the GoA2 category automates train control, optimises the timetable and reduces energy consumption. The system works on the basis of a positioning

system that receives data from GNSS and odometry. The system in the GoA2 category represents the first step towards fully autonomous vehicles.

KEY FEATURES

- | Automation category GoA 2 according to UITP classification.
- | ATO and Driver Assistance (DAS) modes.
- | In ATO automatic mode, speed limitation is in accordance with the track speed profile.
- | System response to train protection system commands.
- | Position subsystem based on own odometry.
- | Position information obtained from GNSS multiband satellite navigation and trackside balises.
- | Automatic stop in station with an accuracy corresponding to the quality of the position information from GNSS; typically ± 2 m.
- | Time and energy optimal driving according to the timetable and infrastructure operator command ability to speed up.
- | Electronic track map support with the possibility of user changes.
- | Provision of data for displaying assistant and operating information on the driver's display.
- | Provision of position information for other train subsystems.



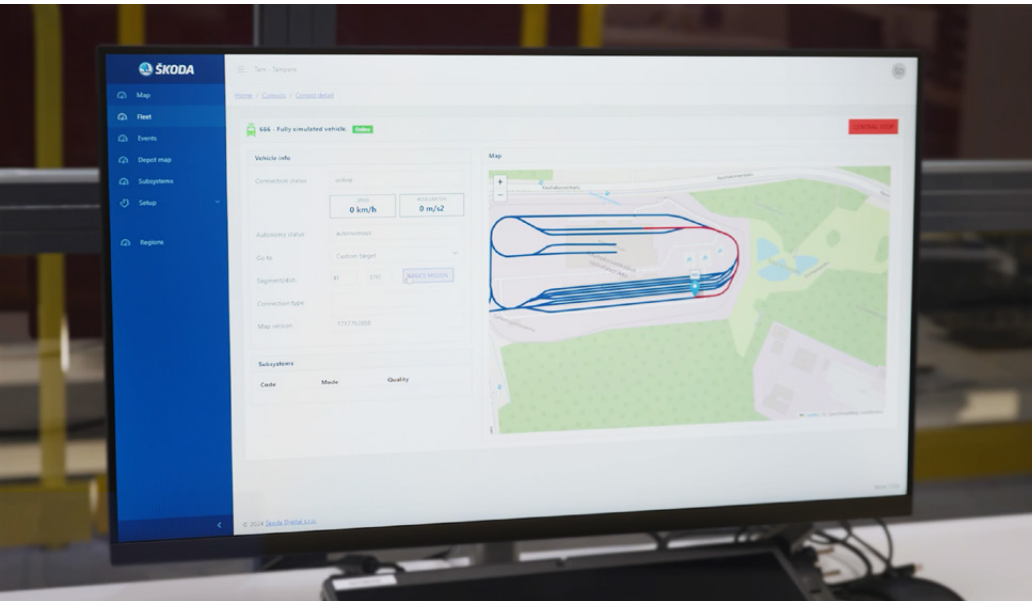
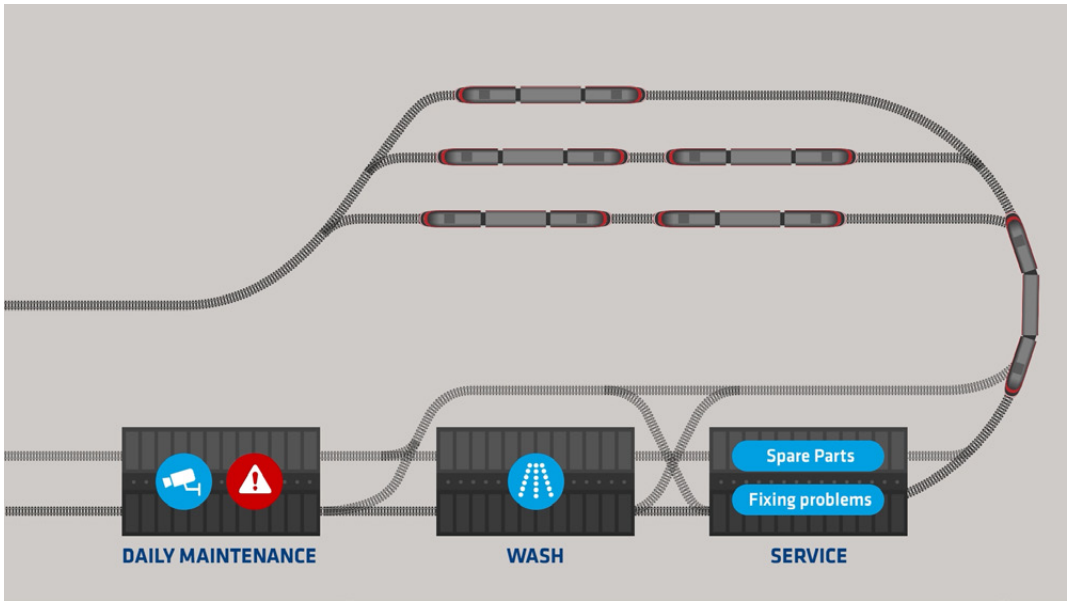
SMART DEPOT

Smart Depot is a family of products that includes automation and digitization of depot operations using automated vehicles and AI-based control technologies. The aim is to increase the productivity and efficiency of key tasks performed in

depots. The project introduces a group of products that together form an automated depot ecosystem. The products can be deployed individually or used together according to customer specifications and requirements.

PRODUCTS OF SMART DEPOT

- | Automatic Washing – Driverless operation in tram wash
- | Automatic Shunting in Depot – Driverless operation in Depot
- | Automatic Turning Loop (GoA2+) – assisted driving at turning loops
- | Automatic Turning Loop (GoA4) – automatic driving at turning loops
- | Vehicle Self-Surveillance
- | Safe Departure Assistant
- | Remote control
- | Fleet Management
- | Vehicle Visual Inspection



INTELLIGENT SPEED LIMITER (ISL)

Intelligent Speed Limiter improves the safety of rolling stock by automatically limiting the speed on certain sections of track to prevent derailments. ISL uses advanced hardware platforms and sensors to accurately determine position and

monitor the dynamic properties of the tram. The system is regularly updated, which includes data on speed limits and track conditions, allowing the tram to adapt its journey in real-time according to current conditions.

KEY FEATURES

- | Intelligent Speed Limiter provides geolocation data with an accuracy of approximately 1 meter
- | Protects against derailment due to exceeding the speed limit
- | No infrastructure intervention or the addition of balises
- | System ISL runs on HYPEX hardware platform
- | The system can be operated standalone or together with the ACS anticollision system
- | A map of the track with marked speed limits, which may have periodic (night-time restrictions) or time-limited validity (track repairs).
- | The system is designed to be effective even in vehicles with higher loads where vehicle dynamics may be more variable.
- | Optimisation of braking manoeuvre depending on vehicle adhesion conditions



VEHICLE SECURITY

Vehicle Security is both a set of production-ready solutions and under-construction concepts for increasing the security of vehicles and passengers. The product combines advanced technologies, including AI-powered hardware, AI methods, and computer vision techniques. We run Vehicle Security Server on our High Performance Computer System which allows us to manage all products (response time, distances, etc.) and enables V2X communication to external services.

KEY FEATURES

- | Track movement around the vehicle with the ability to trigger alarms.
- | Protection against vandalism.
- | Automatic lights on when motion is detected.
- | Safe Departure Assistant.
- | Monitoring of the vehicle interior using motion sensors.
- | Driver monitoring.
- | Detection of dangerous sounds (e.g. calls for help, screams).
- | Passenger counting.
- | Classification of objects inside the vehicle (trolleys, luggage).
- | Face detection.
- | Checking the interior before and after driving in the car park.
- | Video recording of incidents with the possibility of storing on a server.
- | Customizable vehicle responses (lights, sound).







VEHICLE TECHNOLOGIES

The Vehicle Technologies group brings together digital technologies and systems designed for vehicle operation. These technologies include control, communication, multimedia, camera and other systems. The functionalities of these systems ensure a smooth, reliable, pleasant, clear and comfortable ride for passengers.

VEHICLE TECHNOLOGIES

TCMS	TRAIN CONTROL MANAGEMENT SYSTEM
HYPEX-ES	HYPEX ETHERNET SWITCHES
HYPEX-ETBN	HYPEX ETHERNET TRAIN BACKBONE NODES
DPC-XX	DEVICE FOR VISUALISATION
UIC-GATEWAY	WTB COMMUNICATION NODE
OCI	ONBOARD COMUNICATION INFRASTRUCTURE
INTELO+DIN	SUBSYSTEM AND DATA COLLECTION CONTROL
MACS	MULTIMEDIA ADAPTABLE CENTRALISED SYSTEM FOR OMTS
WTB TRAINTESTER	WIRE TRAIN BUS TESTER
COMEX	COMEX ETHERNET SWITCHES

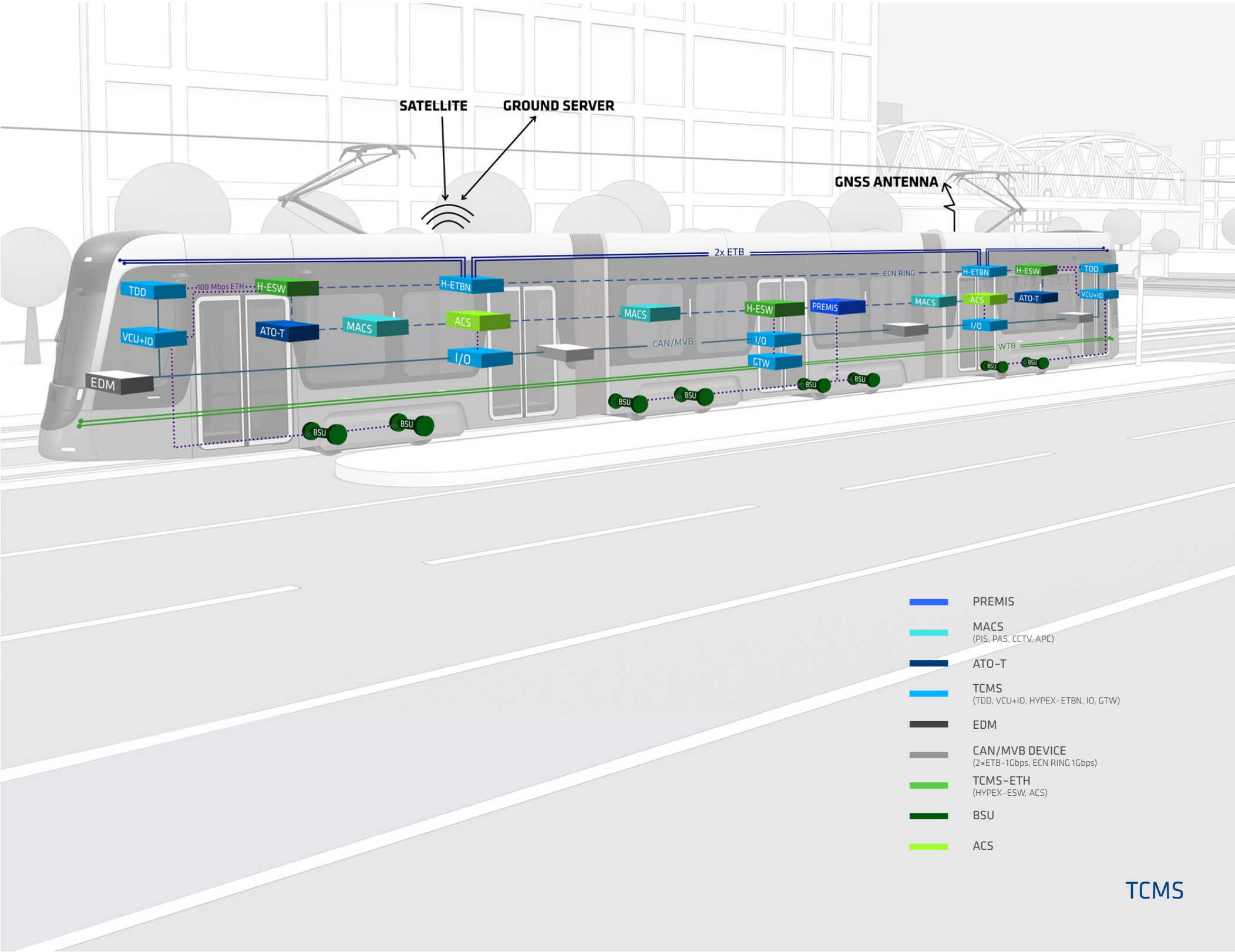
TRAIN CONTROL MANAGEMENT SYSTEM (TCMS)

TCMS is the basic system equipment of the vehicle, enabling the connection of Škoda Digital smart digital systems. The master control system is based on an Ethernet network and supports

wireless data transmission in 3G/4G, GSM-R and Wi-Fi networks. TCMS software can be implemented in all types of rail vehicles DMU, EMU, Diesel locomotive, Tram, Metro, Coach, Passenger wagon).

KEY FEATURES

- | Ethernet train backbone and consist networks compliant with IEC 61375.
- | Large variability of connection with other train systems.
- | Wireless data transmission in 3G/4G, railway GSM-R and Wi-Fi networks.
- | Based on HYPEX technology (required redesign can be achieved effectively and fast).
- | Possible integration of third party devices.
- | TCMS up to SIL2.
- | Processing and display units programmable in PLC and C/C++ languages.
- | Remote and local I/Os for analogue and logical signals.
- | Redundancy of critical components.
- | Predictive diagnostic functionality – PREMIS.
- | ATO – Automatic Train Operation mode.
- | Custom designed solution.
- | Own HW & SW design, development, production & maintenance.
- | Cost-effective solution.
- | Components can be utilised for several systems simultaneously.
- | Decrease of production costs in serial production.
- | Assurance of availability of spare parts in reasonable condition.



HYPEX ETHERNET SWITCHES (HYPEX-ES)

The manageable Ethernet switch supports a high-speed communication line up to 10 Gbps according to project needs, with an emphasis on cyber security. A multitasking system enables multiple functionalities

to be shared in a single physical switch – for example, the Ethernet switch and multimedia management. Based on the HYPEX modular platform.

KEY FEATURES

- | A powerful managed Ethernet routing switch.
- | A modular design with a variable number of ports and optional PoE support.
- | All models are based on a HYPEX modular platform and share the same HW and SW components.
- | Support for fault-tolerant ring topology with fast recovery time.
- | Up to 4 ports with bypass relays allow operation of the network even during multiple failures.
- | A powerful CPU for IP routing.
- | Support for configuration profiles controlled by HW configuration pins in the power connector.
- | A custom Linux-based system with a complete set of networking features to help implement cybersecurity requirements.
- | An integrated DHCP server with port-based address allocation to simplify end device configuration.
- | Integrated diagnostic features for detailed runtime network analysis.
- | Easily replaceable modules to help optimise life cycle costs.
- | Both rack and panel mounting options.



HYPEX ETHERNET TRAIN BACKBONE NODES (HYPEX-ETBN)

Ethernet backbone network designed for gigabit ETB and ECN networks. Robust HW developed with an emphasis on Cyber Security. HYPEX-ETBN – supports a circular topology with redundancy and a fast

recovery time. HYPEX-ETBN is available with an integrated manageable Ethernet switch for ECN networks. Based on the HYPEX modular platform.

KEY FEATURES

- | An ETBN – Ethernet Train Backbone Node designed for Gigabit ETB and ECN networks.
- | Full compliance to IEC 61375-2-5 and IEC 61375-2-3 standards.
- | A powerful communication CPU to ensure high routing performance with R-NAT and firewall.
- | TTDP protocol handles ETB inauguration and addressing.
- | Builds and maintains Train Topology Database with information regarding train, consists and vehicles.
- | An ETB interface realized by 4 gigabit Ethernet ports with bypass relays.
- | Integrated with a managed Ethernet switch for ECN ports.
- | On ECN supports fault-tolerant ring topology with fast recovery time.
- | Support for redundant configuration with two ETBNs in one network operating in active / standby mode.
- | A modular design with variable number of ports and optional PoE support.
- | All models are based on a HYPEX modular platform and share the same HW and SW components.
- | Integrated diagnostic features for detailed runtime network analysis.
- | Easily replaceable modules to help optimise life cycle costs.
- | Both rack and panel mounting options.



DEVICE FOR VISUALISATION (DPC-XX)

The UIC-Gateway is an important part of the equipment of railway vehicles according to IEC 61375. UIC-GATEWAY handles the inauguration of the corresponding train,

message routing, data copy processing, aggregation functions and server mapping services.

KEY FEATURES

- | Human Machine Interface technologies device type for rail vehicle visualisation.
- | The device is ready in versions with and without a touchscreen and with or without keys.
- | Display in sizes of 15.6“, 10.4“ or 8.4“.
- | Display and keys are equipped with LED backlight.
- | The device is designed for operation in harsh climatic conditions also ranging from -40 °C to 70 °C.
- | Made from branded components only MITSUBISHI, TRACO, HARTING, INTEL ATOM.
- | Shape and control are designed according to UIC 612.
- | Robust and precise workshop processing.



UIC-GATEWAY

The UIC-GATEWAY communication node represents an important component of equipment of railway vehicles operating according to international standard IEC 61375 and leaflet UIC 556. The motivation to comply with this standard is the benefit to connect various series of railway cars and high functional reliability.

UIC-GATEWAY addresses the UIC inauguration of the relevant train, message routing, processing data

copying, aggregation functions and server mapping services. Message routing is done between the WTB train bus and the MVB-CAN railway car bus.

The combination MVB-CAN offers features of the MVB link layer and CAN bus physical layer. The solution normally contains the redundancy of key components, including a physical WTB interface with the full redundancy of hardware components.

KEY FEATURES

- | Communication node between WTB train bus and and MVB-CAN railway car bus.
- | Compatible with international standard IEC 61375 and UIC 556 leaflet.
- | Key component redundancy or optional full redundancy.
- | Option allowing to connect/couple various series of railway vehicles.
- | Configuration database PDM (process data marshalling).
- | Optional communication interfaces, analogue and digital outputs / inputs.
- | Service and configuration application INTELO+ Viza.
- | Standardised cabinet RACK 3U.
- | Establishment of MTBF / MKBF and SIL/ RAMS safety levels.
- | Standards EN 50155, EN 50121-3-2, EN 61373, EN 50126, EN 50128, IEC 61375.



ONBOARD COMMUNICATION INFRASTRUCTURE (OCI)

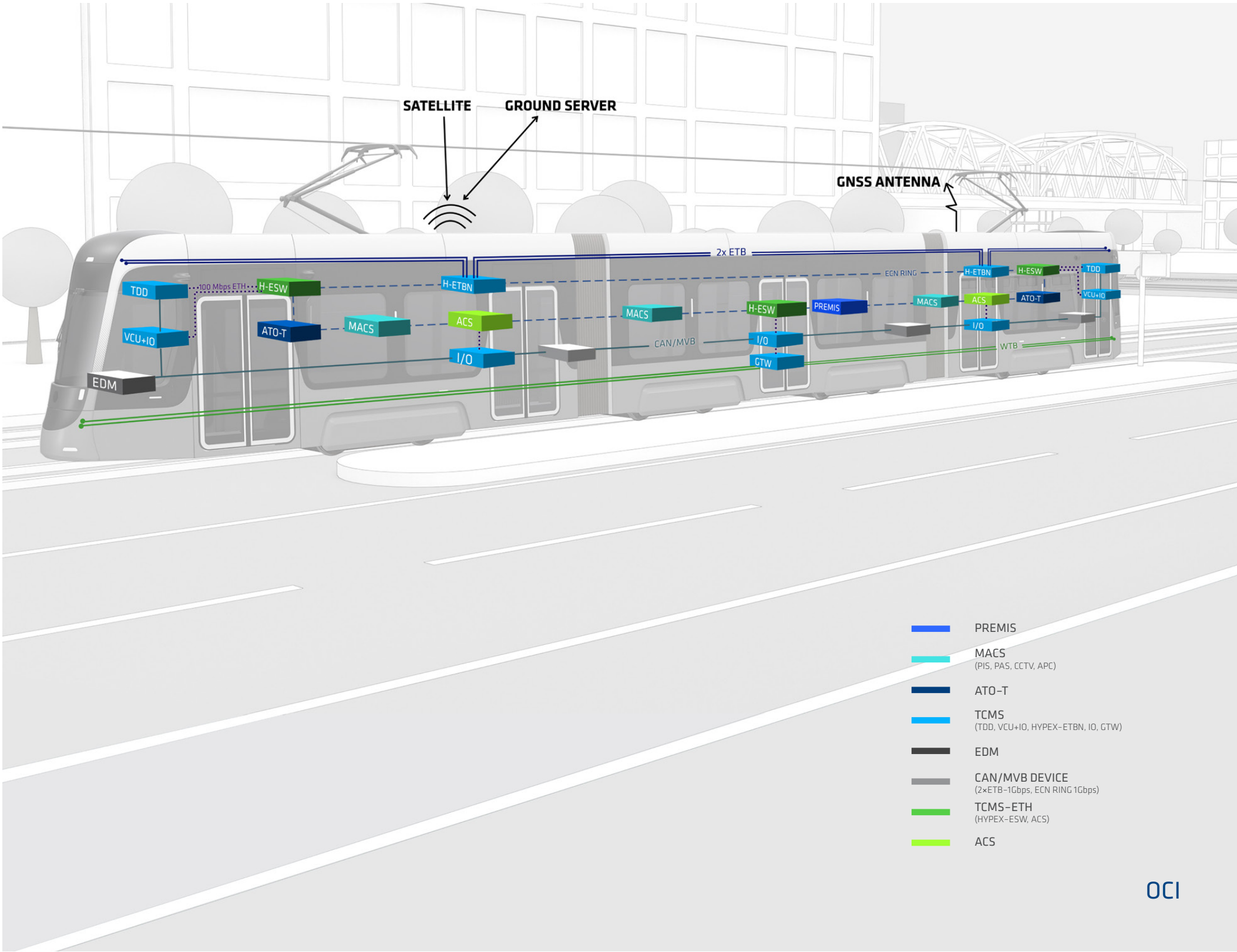
Complete on-board communication infrastructure based on Ethernet with support for CAN, MVB and serial communications. It ensures stable and fast data transfers between vehicle systems. The main advantage of OCI is that one physical network is used for multiple on-board systems.

KEY FEATURES

- | A complete onboard communication infrastructure interconnecting all subsystems.
- | One physical Ethernet network shared by TCMS and multimedia systems.
- | A VLAN, QoS, and firewall used to separate individual systems and implement cybersecurity requirements.
- | A fully redundant network topology with no single point of failure.
- | A Gigabit ring network on the consist / vehicle level. Bypass relays in Ethernet switches for further network resistance to failure.

This approach makes it possible to reduce the number of network elements and cabling, thus helping to optimise the initial costs and LCC costs. The benefits of using Ethernet are mainly the openness and simplicity of this platform compared to more expensive communication lines such as WTB.

- | A Gigabit train backbone (ETB) with two lines and redundant ETBN providing connection between train and vehicle network.
- | Full compliance with IEC 61375 series of standards.
- | All network components have a modular design based on the HYPEX platform.
- | WTB may be used for backward compatibility with older vehicles.



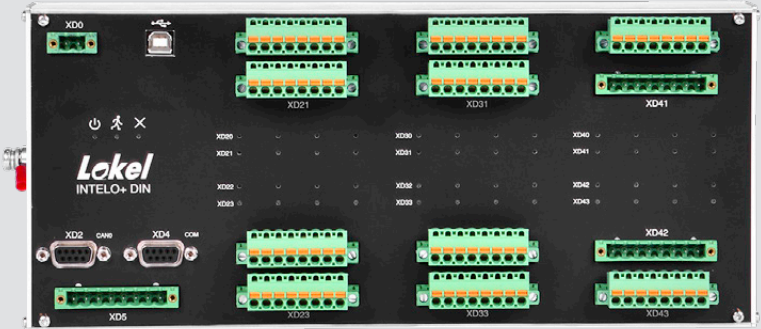
INTELO+ DIN

INTELO+DIN is a unit designed for the local control of subsystems such as door opening, heating and air conditioning, and anti-slip and wheel skid protection.

It can also be used to collect data required for the higher-level control system.

KEY FEATURES

- | Distributed system unit for local control functions and data collection.
- | Connection to a railway vehicle bus through a CAN open railway vehicle bus in CiA 301 or through an RS485 interface.
- | Designed for the following control functions:
 - | Pneumatic distribution cabinets, doors, stairs, heating and air-conditioning systems.
 - | Regulation of combustion engine and gearbox.
 - | Wheel slip and skid protection system.
- | Service and configuration of INTELO+ Viza application.
- | You may select the number and type of I/O signals based on control requirements.
- | Standard case design allowing installation to DIN ledge /rack.
- | Establishment of MTBF/MKBF reliabilities and SIL/RAMS safety levels.
- | Standards EN 50155, EN 50121-3-2, EN 61373, EN 50126, EN 50128, EN 45545, IEC 60571.



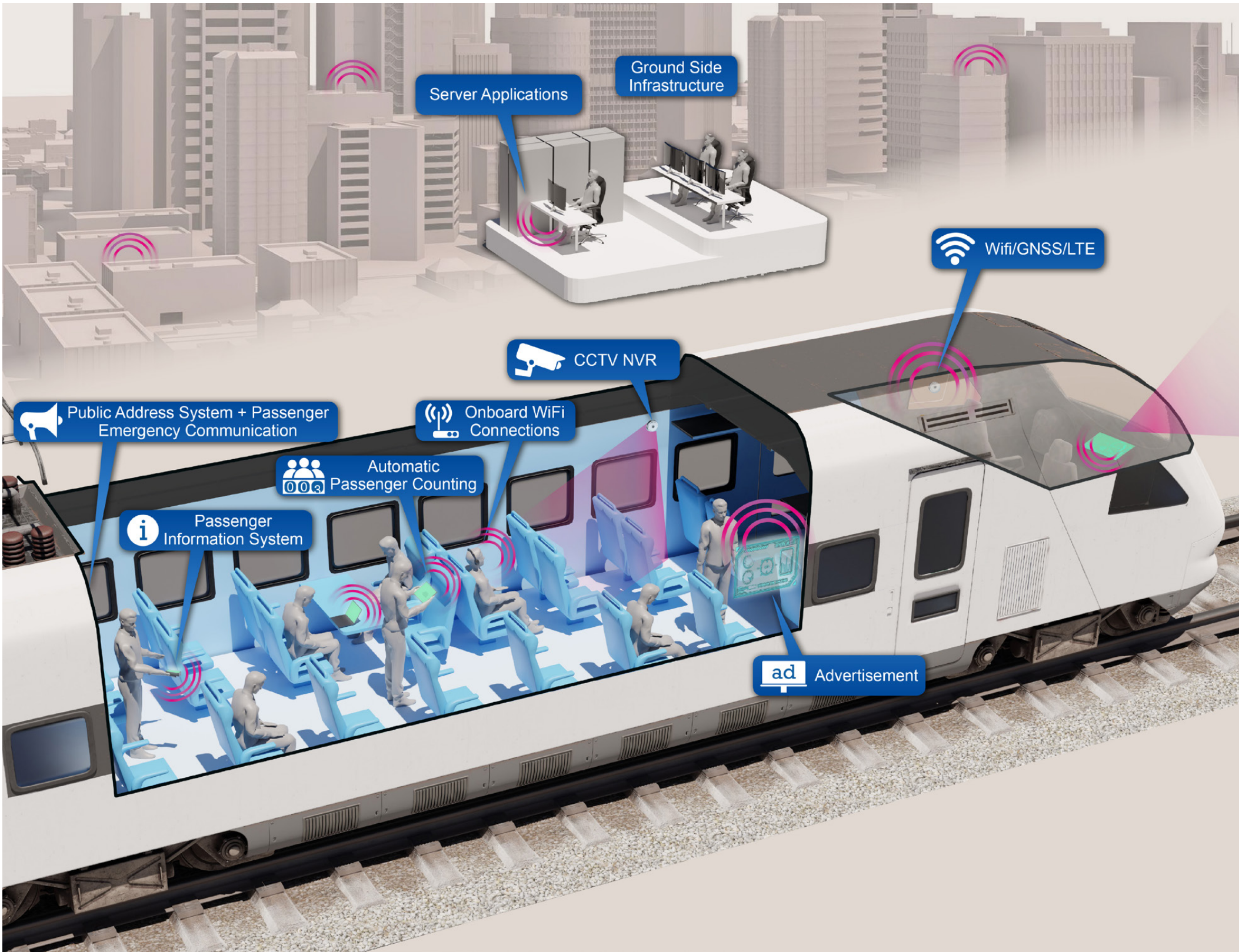
MULTIMEDIA ADAPTABLE CENTRALISED SYSTEM FOR OMTS (MACS)

Multimedia system suitable for all types of rolling stock. The system consists of an on-board part and a server part, and it can be connected to the customer's infrastructure, thus guaranteeing the possibility of deployment on the customer's entire fleet. MACS can cooperate with other vehicle systems.

Due to the work with sensitive data (camera recordings), great emphasis is placed on the security of the entire solution – Cyber Security. As we move towards an autonomous future, MACS will be applied, for example, in CCTV evaluation (weapon, injury, dangerous luggage, vehicle monitoring.)

KEY FEATURES

- | An onboard multimedia solution with an emphasis on remote management and control.
- | Targeting railway vehicles such as train units, coaches, trams and metros.
- | Easy extensibility of information presented without the need to change onboard software.
- | Stationary applications for:
 - | Data creation, modification and automatic distribution.
 - | Fleet management and monitoring (vehicle position, application and system status).
 - | Data acquisition, collecting and reporting (CCTV video records, passenger counting statistics).
- | Adaptable to existing stationary solution (modification of communication protocols and the provision of data import/export modules).
- | Ethernet interface between all components.
- | Communication protocols based on modern open standards (HTTP/MQTT/JSON) with support for public transport and railway specifics (VDV 301, ITxPT, TRDP).
- | Onboard components benefit from a modular ŠDIG Hypex platform.
- | Simple integration with other subsystems such as ticket validators and passenger infotainment.



WTB TRAINTESTER

The WTB Tester is a state-of-the-art diagnostic tool designed to streamline WTB communication assessments across any railway vehicle, regardless of the manufacturer. By simply connecting a standard PC (laptop) through the

Gateway to the WTB bus—utilizing common connections like the UIC socket on locomotives—WTB Tester offers unparalleled flexibility in testing devices compliant with the WTB standard.

KEY FEATURES

- | Reading and displaying static properties of connected car.
- | Customization according to customer needs
- | Possible test automation using a scripting language
- | Reading and displaying the data sent by the cars into WTB via R1, R2 and R3 telegrams.
- | Simulation of any car (which is in the portfolio), manage telegrams and automate feedback for dynamic testing.
- | Reading, decoding and displaying data received as MD.
- | Statistics on the frequency of MD communication.
- | Transmission of MD messages with specified content.



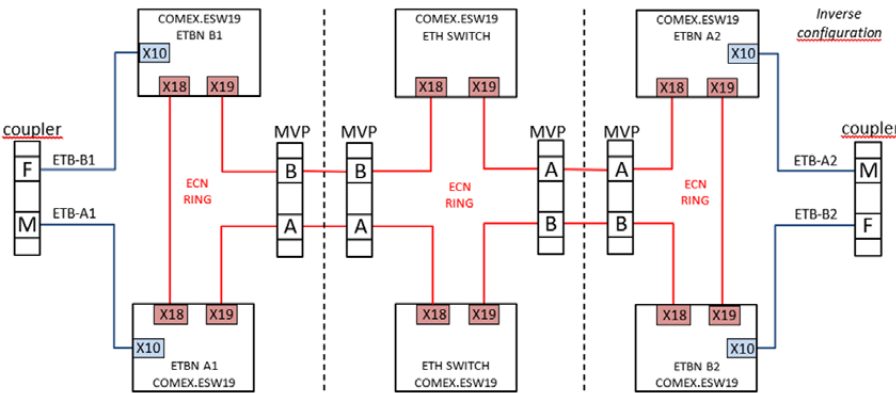
COMEX

The COMEX Ethernet switch is the ideal solution for rail vehicles with limited space for hardware. COMEX devices provide high reliability and speed by supporting a permissive ring network topology with fast recovery and a combination of 2.5 Gbps,

1 Gbps and 100 Mbps transfer rates. With flexibility and scalability, COMEX devices can be configured as ETBN routers with redundant ETB links and nodes, minimizing the risk of outages.

KEY FEATURES

- | A powerful managed Ethernet routing switch and ETBN – Ethernet Train Backbone Node.
- | Combination of 2.5 Gbps, 1 Gbps and 100 Mbps ports.
- | PoE support to power connected devices.
- | Next generation dual plane ETB topology without bypass relays.
- | Supports redundant ETB configuration without single point of failure.
- | Tunneling ETB traffic via ECN to optimize ETB cabling.
- | A powerful communication CPU to ensure high routing performance with R-NAT and firewall.
- | Support for fault-tolerant ring topology with fast recovery time.
- | Support for configuration profiles controlled by HW configuration pins in the power connector.
- | An integrated DHCP server with port-based address allocation to simplify end device configuration.
- | Integrated diagnostic features for detailed runtime network analysis.
- | Both panel and DIN rail mounting options.



DIWA

DIAGNOSTICS

The Diagnostics cluster includes technologies that enable the customer to gradually move from planned maintenance to actual maintenance and, consequently, to predictive maintenance. This approach ensures/impacts the optimisation of the vehicle service costs and LCC (Life Cycle Cost) of components.

DIAGNOSTICS

PREMIS – PMS	PREDICTIVE MAINTENANCE SYSTEM
PREMIS – VU	PREMIS – VEHICLE UNIT
BSU – XX	BOGIE SENSOR UNIT

PREDICTIVE MAINTENANCE SYSTEM (PREMIS – PMS)

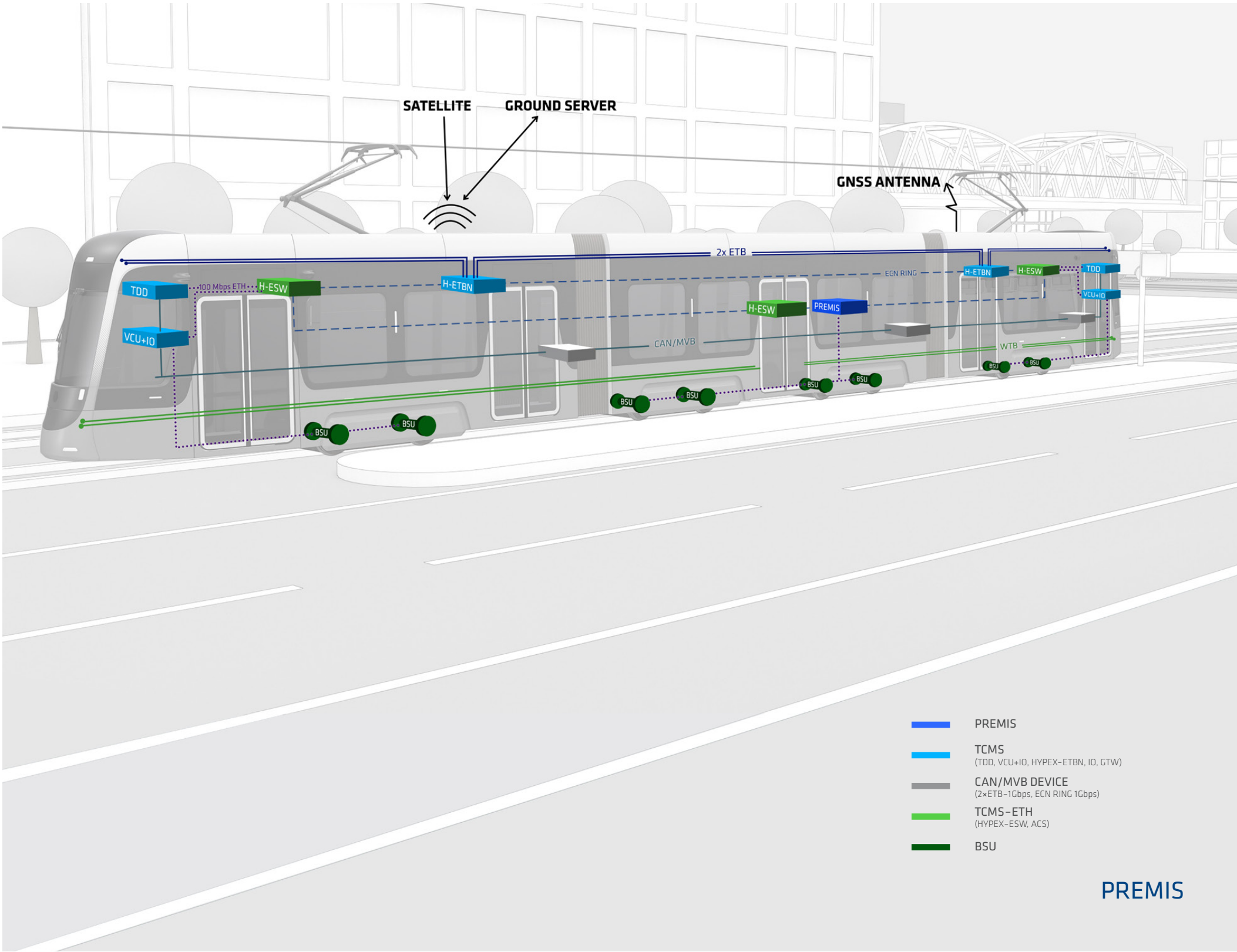
A diagnostics system that offers Remote Maintenance, Condition-Based Maintenance and Predictive Maintenance. PREMIS can reduce the financial and time costs of servicing. The system consists of an on-board computer, sensors and a server part that can adapt to the customer interface.

KEY FEATURES

- | A complex predictive maintenance solution consisting of a vehicle data gathering unit and data analysis, and cloud reporting applications.
- | Based on Škoda's own HYPEX vehicle platform and renowned industry grade cloud EAM and APM applications.
- | Applicable to both new vehicles and the customer's current fleet as a retrofit package.
- | Easily customisable per project based on the customer's requirements.

The diagnostics work by collecting smart data. A subsequent evaluation can verify RAMS parameters for individual components, allowing maintenance to be planned according to the actual condition of the components.

| Provides unprecedented operational and diagnostic data availability and opportunities for analysis, including anomaly detection, condition-based maintenance and fault prediction for all standard vehicle subsystems. It includes power supply, traction, brake, door, undercarriage, fire-extinguishing, air-conditioning, lighting, multimedia, passenger information and ATO systems.



PREMIS – VEHICLE UNIT (PREMIS – VU)

The PREMIS vehicle unit primarily provides the recording and gathering of data and their transmission to the cloud services of the PREMIS system during the connectivity window of the GSM/Wi-Fi technology. Modern and efficient IOT technology is used for connecting to the cloud system. Together with other SW compression, a high efficiency

of data throughput is achieved during the transmission to the cloud, so it is generally possible to transmit all useful data to the cloud with minimal limitations. That property is very important for the entire PREMIS system philosophy. This means taking all the data to be ready for any situation that happens to the vehicle.

KEY FEATURES

- | Vehicle part of PREMIS system, see PREMIS catalogue list.
- | Based on Škoda's own HYPEX vehicle platform.
- | Collects data and provides them securely to the cloud services using GSM/WiFi connection.
- | Provide data:
 - | Operational diagnostics events from TCMS.
 - | Elementary signal data from other subsystems for analysis in cloud applications or in vehicle unit itself.
- | Applicable for both new vehicles and customer's current fleet as a retrofit package.
- | Easily customisable per project based on customer's requirements.
- | Supported vehicle buses:
 - | Ethernet bus, using TRDP protocols by the IEC 61375, up to 27 ports.
 - | Optionally CanBus using CanOpen protocol by the DS301.
 - | Optionally can support "old" RS48X busses. 2x internal vibration sensors (digital).
- | Optionally supported HW inputs.
- | Unit is standardly combined together with Ethernet switch and MCG.



BOGIE SENSOR UNIT (BSU-XX)

The BSU-XX is a sensor that is part of the PREMIS diagnostics, making it possible to measure, record and analyse the vibration and temperature of moving parts of the

train with an impact on the optimisation of the maintenance plan. Thanks to a robust design, the BSU-XX can be placed on the chassis in any position.

KEY FEATURES

- Mechanical resistance to shocks and vibrations – meets category 3 in accordance with EN 61373.
- IP67 rating – in accordance with EN 60529.
- Temperature range: -40° C to +70° C, class OT4 IP67EN 50155.
- Supply voltage: 24 V DC or 48 V DC PoE (Power over Ethernet) with short-circuit, overvoltage and under-voltage protection.
- Compatible with a BSU-CONNECT-XX cabinet.
- Case constructed from black anodised DURAL material.
- 2× Ethernet interface constructed in accordance with IEEE 802.3 and galvanic isolation.
- 3× internal temperature sensors (1× digital, 2× analogue PT1000).
- 2× internal vibration sensors (digital).
- 2× inputs for external temperature sensor (analogue PT1000).
- 1× input for external vibration sensor (frequency range 10 Hz ÷ 15 kHz, sensitivity 10 mV / m/s², measuring-range ± 100 m/s²).
- Production variants with cable gland or connector meeting the MIL-DTL-5015 standard.





CYBERSECURITY

Skoda adheres to cybersecurity best practices and standards and supports operators with the necessary skills and security. Skoda provides solution proposals to help implement a secure cyber framework for transport systems,

maintenance and surveillance. These solutions address the specific needs of the rail environment and include features for detection and recovery in the event of cyber threats.

SAFETY INTEGRITY LEVEL 1–4

The applications and products in the Safety Integrity Level enable Škoda products and systems to deliver a higher standard

of safety and reliability from design through to operation and maintenance.

SERVER APPS

Server App allows you to easily connect your rolling stock to a computer for efficient overviews and fleet management.

Get detailed monitoring and diagnostics in real time, optimizing your operations and maintenance.

HOMOLOGATION

Our homologation service provides comprehensive support to customers during the approval process of digital systems for rolling stock, ensuring that all technological innovations meet the

necessary regulations and standards. With our expert team and extensive experience, we are capable of efficiently guiding your projects through the homologation process to successful approval.

SIMULATOR

Our simulator, primarily designed for application development, provides a realistic environment for testing and optimizing new technologies. Additionally, we offer its use for training new drivers and

train operators, ensuring their preparation for real-life situations and enhancing their safety and efficiency.





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