





Projects

New vehicles

 <p>Marathon 111Ed Range PESA (Poland) - TCMS</p>	 <p>Uzbekistan Railways HS Power Heads Talgo (Spain) - TCMS</p>	 <p>Bilbao Tram Euskotren (Spain) - TCMS</p>	 <p>Kardemir Shunting Locomotive Tulomsas (Turkey) - TCMS</p>
--	--	---	---

Subsystems

 <p>EMU Hyundai Rotem (Turkey) HVAC Control</p>	 <p>DEMU HITACHI (UK) Galley Automation</p>	 <p>High Speed Train - AMTRAK Alstom (USA) Toilets Automation</p>	 <p>EMU CAF (Spain) RCM (Data Logger)</p>
--	--	--	---

Fleet refurbishment Traction control

 <p>UT 3500 FEVE (Spain) - TCMS</p>	 <p>Stuttgarter Straßenbahnen AG Voith (Austria)</p>
--	---

Services

Services offered:

- Manufacturing facilities and high-level testing to ensure the product's quality and flexibility
- Application software design and programming, in accordance with international standards
- Data monitoring service based on cloud technology for system maintenance
- 20 years of product availability, guaranteeing repair and maintenance service for 10 additional years
- Product adaptation to the client's specific requirements
- Systems engineering
- Commissioning service



**CUSTOMER
RELATIONSHIP
SERVICE**

by **Ingeteam**

Ingeteam



Automation Platform
for **Rolling Stock Control & Monitoring**

Ingeteam



INGESYS™ is a control and monitoring platform for rolling stock in the railway sector, compliant with railway standards EN50155 and EN45545-2.

The INGESYS™ platform responds to the automation and monitoring requirements of both trains (VCU, RIO, RCM, etc.) and onboard subsystems (HVAC, WC, doors, galley, etc.). It offers a modular architecture which can be configured by the user according to their automation requirements. The platform also includes a wide range of interfaces and the most extensive communication buses and protocols in the railway sector (RS232/485, CAN, MVB/WTB, ETHERNET TCP/UDP, ETHERNET/IP, TRDP, PROFINET, etc.). It offers the user different programming tools (IEC61131, C/C++, MATLAB) in order to optimise the time needed to develop control applications.



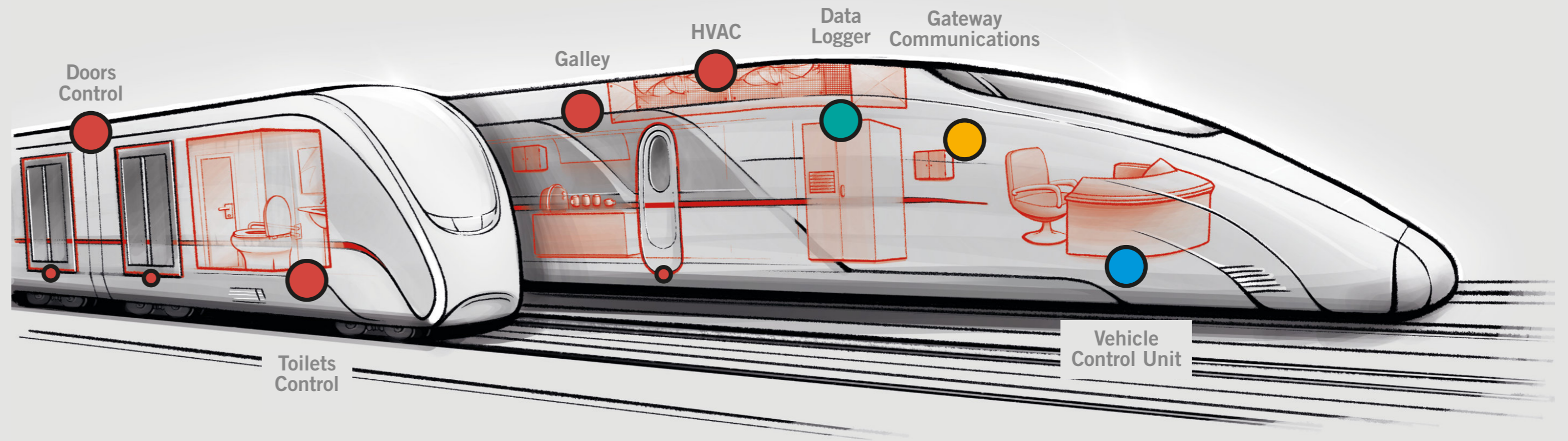
New Vehicles



Subsystems



Fleet Refurbished



TCMS Control



- Complete range of racks, power supply modules, processors and I/O modules
- Modular structure
- Redundant architectures (processors, comms, power supplies)
- EN50155 & EN45545-2 compliant
- I/O concentrated or distributed topology
- 30 years supply

RCM Datalogger



- Preventive monitoring and diagnostics system for optimising maintenance tasks
- EN50155 and EN45545-2 railway certification
- Wide range of digital or analog input signal acquisition modules
- Extensive range of communication protocols
- Centralised monitoring and analysis tool based on web technologies
- Alert levels by parameter and ALARM, PREALARM, ERROR status
- Actions as a consequence of exceeding thresholds (log generation, sending SMS/email, digital signal activation, etc.)

GW Communications



- Communications interfaces: RS232, RS485, CAN, MVB/WTB, ETHERNET UDP, TCP/IP, TRDP, ETHERNET/IP, CIP, PROFINET, WIFI, GSM
- Option to include local I/Os
- Compliance with EN50155 and EN45545-2 traction standards

IC2 Subsystems



- Control system designed for controlling train's subsystems
- EN50155 and EN45545-2 railway certification
- Wide range of digital / analog input and output modules
- Communication buses and protocols: RS485, CAN, WTB/MVB, ETHERNET TCP/UDP, ETHERNET/IP, TRDP, PROFINET, etc.
- IEC61131-3 compatible programming tools (C/C++ and Matlab/Simulink®)
- Built-in web server