



TRAXENS

DIGITAL FREIGHT TRAIN



INNOVATIVE SERVICES FOR THE RAIL FREIGHT COMMUNITY

TRAXENS has developed the Digital Freight Train – and its high value-added services – to the entire railway system, turning conventional wagons into intelligent wagons in record time. Geolocation and arrival notifications, consignment transport conditions and status monitoring, digital assistance for loading/ unloading, wagon management and predictive maintenance... a whole range of services for a safer, more modern and more efficient freight railway system.

THE TRAXENS SOLUTION

KEY BENEFITS

THE DIGITAL FREIGHT TRAIN : CONNECTED DEVICE TECHNOLOGY AND A WIRELESS NETWORK DEPLOYED ACROSS THE ENTIRE TRAIN AND CONNECTED TO THE CLOUD

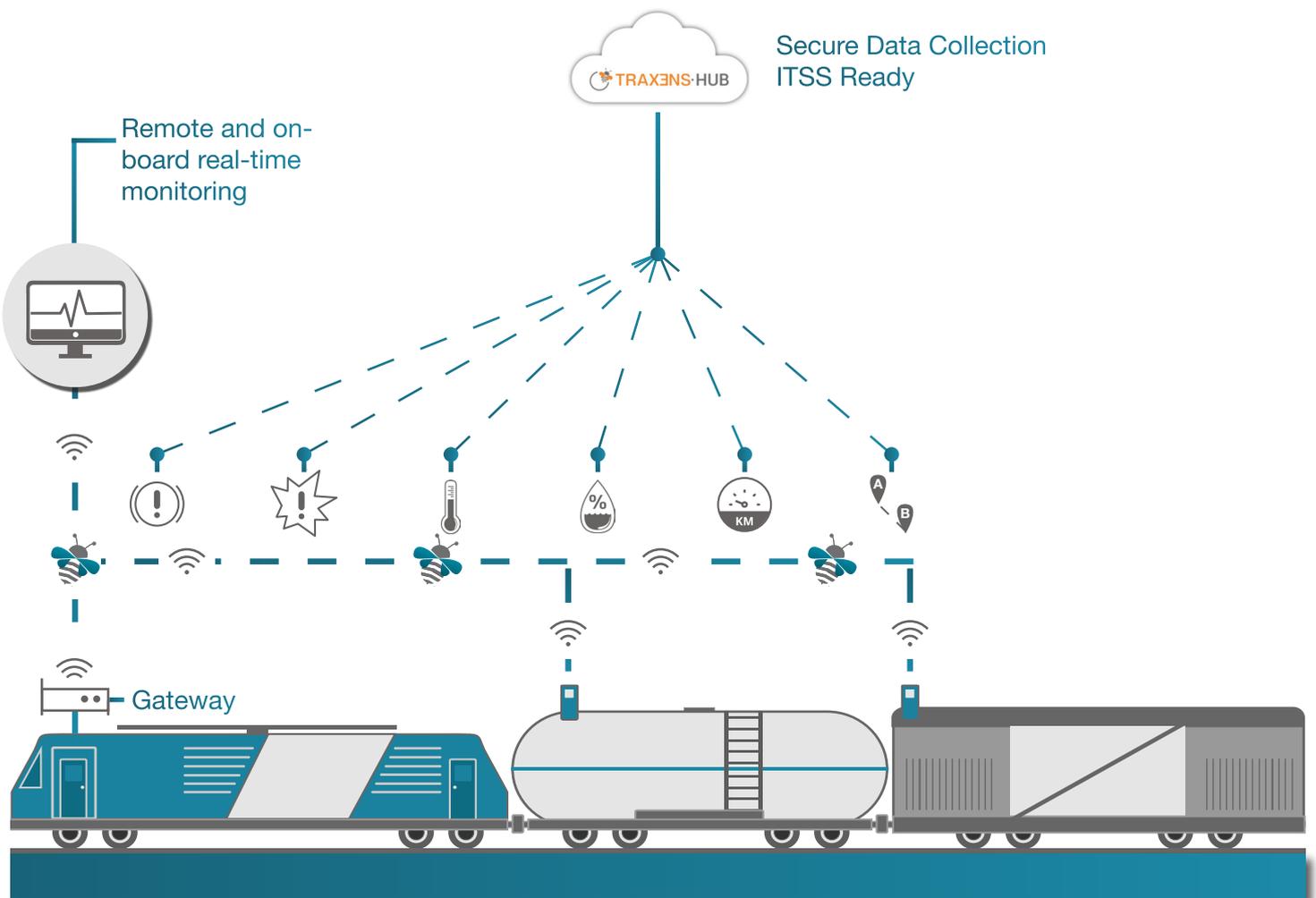
Leveraging our expertise in onboard intelligence, we have developed a shared network. The TRAXENS boxes connect to each other. Information is transmitted to the server by the box with the largest energy reserves and access to the communication network. This distinguishes our solution from other technologies available in the market, which transmit data independently for each wagon. The resulting network on the train provides services such as digital brake testing. As an additional benefit, energy is shared between boxes to enable use of lighter batteries onboard, reducing purchasing and acquisition costs.

OUR SERVICES STAND OUT FOR EASE OF IMPLEMENTATION AND SCALABILITY

-  Quick and easy to install
-  Adaptable system, compatible with all types of wagons, sensors and goods
-  Services available remotely and without border constraints
-  Data collection and transmission platform compatible with customers' and railway undertakings' IT systems

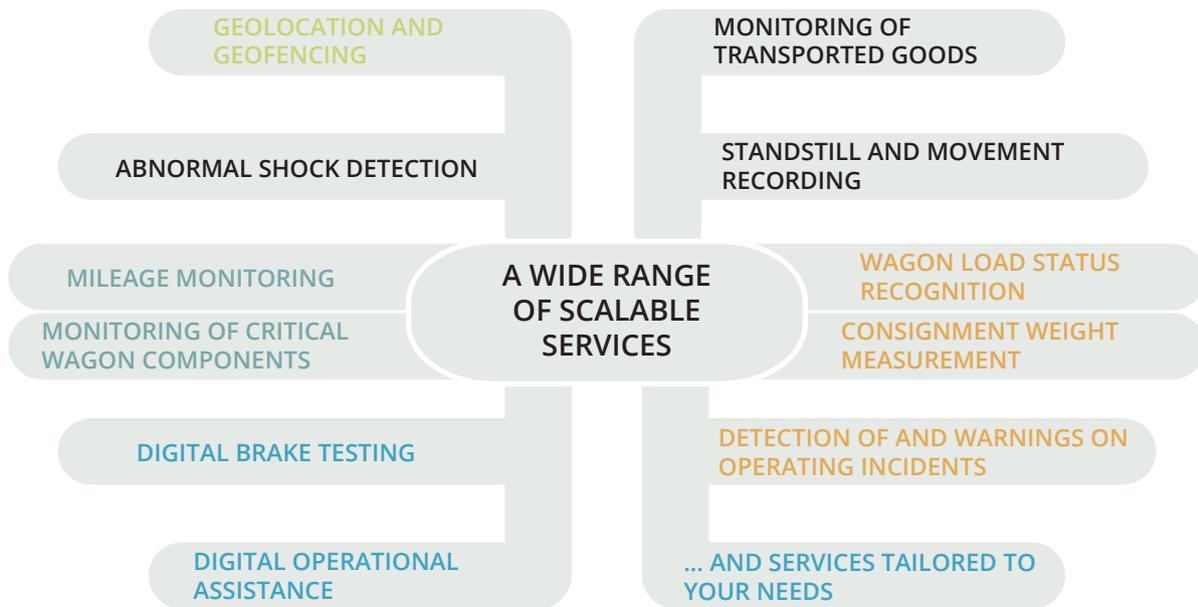
THREE TYPES OF EQUIPMENT AT THE CORE OF THE SOLUTION

-  The box is the real central unit of the digital freight train with a series of integrated standard services
-  Specific sensors judiciously arranged in certain places of the wagon make it possible to offer additional services
-  Tablets used by drivers automate certain production processes (braking tests, train configuration, braking sheet creation, etc.)



HIGH VALUE-ADDED SERVICES ...

CONNECTED DEVICES AND SENSORS ARE PLACED ON WAGONS TO CREATE THE DIGITAL FREIGHT TRAIN. THE DIGITAL TRAIN SENDS NUMEROUS USEFUL DATA TO RAILWAY FREIGHT STAKEHOLDERS. SERVICES CAN BE TAILORED TO MEET INDIVIDUAL NEEDS, COMPLEMENTING THE RANGE OF BASIC SERVICES PROVIDED WITH THE BOX



... THAT RESPOND TO YOUR NEEDS

DELIVERING PERSONALISED JOURNEY INFORMATION AND STRENGTHENING THE SUPPLY CHAIN, THE DIGITAL FREIGHT TRAIN OFFERS ADDED VALUE FOR ALL STAKEHOLDERS

FLEET MANAGER

Accurate mileage monitoring, information on abnormal shocks, axle monitoring... Online information on rolling stock behaviour helps wagon keepers to optimise maintenance engineering and - in particular - to avoid « over-maintenance ». The result : optimised wagon rotation and fleet management, with direct cost savings.

SHIPPER

On-time delivery and access to reliable logistics data are crucial for all shippers. By providing regular updates on wagon location, consignment condition and potential hazards (shocks, leaks, train stoppage, etc.) we are doing our part to improve rail transport services. What's more, automated brake testing is reducing the time taken to perform railway operations.

RAILWAY UNDERTAKING

As well as making rail transport safer, brake test automation helps to ensure that train schedules are reliable, and helps operators on the ground to work more efficiently. In the future, with transport schedules integrated into digital devices, railway undertakings will be able to advise shippers of the specific consequences of hazards on the route.

WAGONS MANUFACTURER

To roll out our solution in optimal conditions, and to limit the need to work on wagons that are already in circulation, we offer a «co-design» option for customers who wish to install TRAXENS solution during the wagon manufacturing process.

4 RELIABLE, REGULAR JOURNEY INFORMATION

At the core of our offer : high value-added : high value-added traceability services to optimise wagon use and streamline the supply chain.



Geolocation and geofencing

A web interface provides details of wagon locations throughout Europe. Customers can predefine geographic markers for each journey, and receive a notification when their wagons reach these points. The ETA (Estimated Time of Arrival) will be communicated when the wagons are handed over.

5 OPTIMISED CONSIGNMENT MONITORING AND PROTECTION



Monitoring of transported goods

We can provide sensors that record the temperature, pressure or humidity the cargo is exposed to, depending on how fragile it is.



Abnormal shock detection

You can choose to have access to timestamped data on shocks likely to affect consignments.



Standstill and movement recording

Receive daily updates on wagon time in and out of service.

3 NEW WAYS OF OPTIMISING MAINTENANCE

Data collection and analysis enables optimisation of wagon rotations, offering a direct economic benefit.



Mileage monitoring

Whether empty or loaded, the distance travelled by the wagons is monitored, facilitating a preventive maintenance approach.



Monitoring of critical wagon components

2 A POSITIVE IMPACT ON RAIL TRANSPORT SAFETY



Wagon load status recognition

This function helps to ensure that the braking system is adapted accordingly.



Consignment weight measurement

This service weighs wagon load in order to prevent overload.



Detection of and warnings on operating incidents

This service is of particular relevance for axles and braking systems. It enables preventive detection of in-service incidents to minimise hazards.

1 HELPING TO SECURE TRAIN PREPARATION BEFORE TRANSPORT

By automating a number of train preparation operations, the digital freight train consolidates and speeds up the various stages involved in train preparation. These time savings offer a direct benefits to customers, particularly when it comes to loading.



Digital brake testing

Digital brake testing saves time on train formation and makes production-related work practices more secure.



A digital assistant for wagon loading and unloading operations

For dry bulk cargo (cereals, aggregate, etc.), hoppers can be opened and closed remotely to optimise loading and unloading in industrial facilities.

TOWARDS A EUROPEAN STANDARD

An open solution and an obvious choice : wagons come from all over Europe, belong to different stakeholders and may be fitted with different sensors and modules, all in the same train. We are working on projects at European level with the aim of developing a common standard to ensure system interoperability, even with the possible future development of new alternatives. Our goal : to develop and promote the digital freight train at the largest possible scale.

ABOUT TRAXENS

TRAXENS was created in 2012 to bring the benefits of IoT (Internet of Things) and Big Data to marine transport logistics. Two of the world's largest shipping companies, CMA CGM and MSC are among TRAXENS' shareholders. The Digital Freight Train was developed by an alliance of SNCF Logistics and TRAXENS to combine expertise of the freight train industry with breakthrough technology.

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