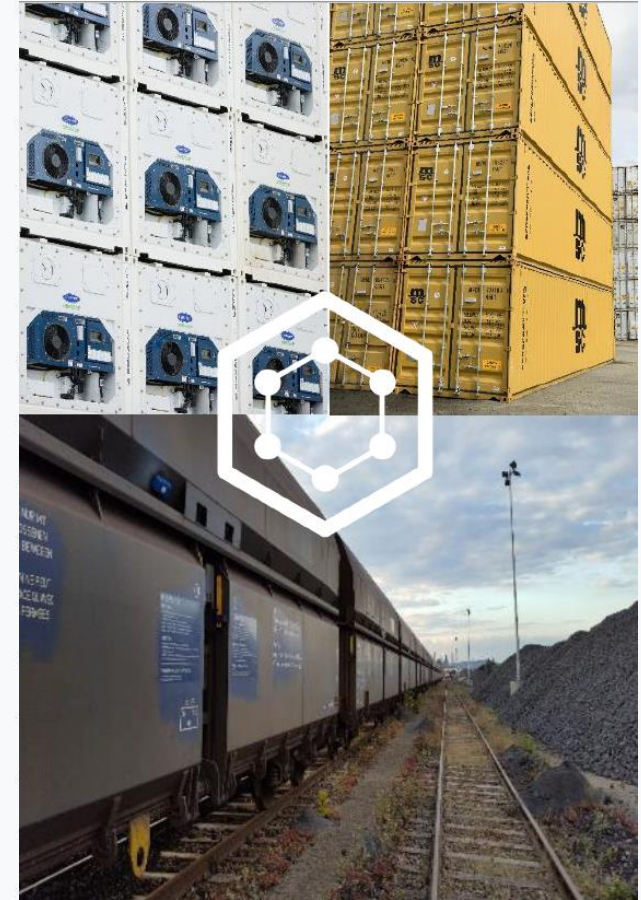


IPIC 2019

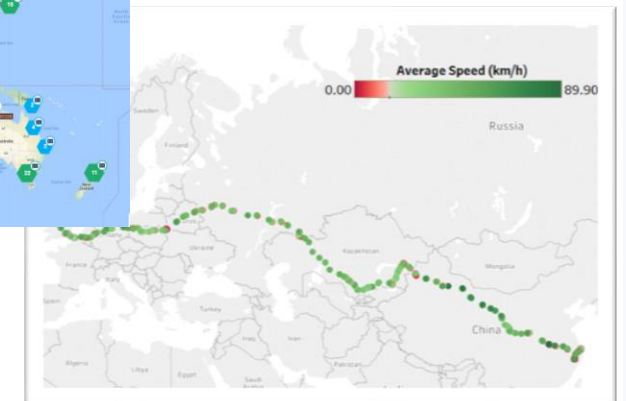
**INNOVATIVE IOT
SERVICES FOR A
RAIL FREIGHT
CONNECTIVITY**

9th-11th July, 2019



TRAXENS DIGITAL TRAIN SOLUTION

- Based on **Industry know-how and expertise**
- Designed to work **worldwide**, in severe environment and manage any type of assets
- Fast Time-to-Market: 2 years from design to implementation
- Designed for **multimodal** containers and already adopted by MSC, CMA CGM and SNCF Logistics
- Building a **turnkey solution** on existing not powered logistic asset



CONNECTED FREIGHT TRAIN

EUROPE'S FIRST FREIGHT TRAIN TO USE INNOVATIVE IOT-BASED SYSTEM



- STRENGTHEN EVERY LINK OF THE SUPPLY CHAIN
 - More reliable and **cost-effective** Rail Freight Transport
 - **Mutualization** of the energy consumption & solution cost
- EASY IMPLEMENTATION
 - Connect, Collaborate, and Scale
 - Composed of **smart devices capable of communicating with each other** using wireless digital network creating a mesh network
- OPTIMIZING OPERATIONS AND BETTER RAIL TRANSPORT SAFETY
 - **Automating train** preparation operations
 - Each box can be paired with **specific sensors** installed on the wagon

<https://vimeo.com/217955948/2811ddcdda>

5000 wagons equipped with TRAXENS-BOX
135 wagons equipped with Break Test Sensor in 2018



Performance, Reliability, Safety and Security
while optimising cost over the full life cycle.

DIGITAL FREIGHT TRAIN

DIGITAL ASSISTANCE TO ALL RAIL STAKEHOLDERS

Delivering **personalized journey information** and **strengthening the Supply Chain**, the Digital Freight Train offers Added Value for all stakeholders:

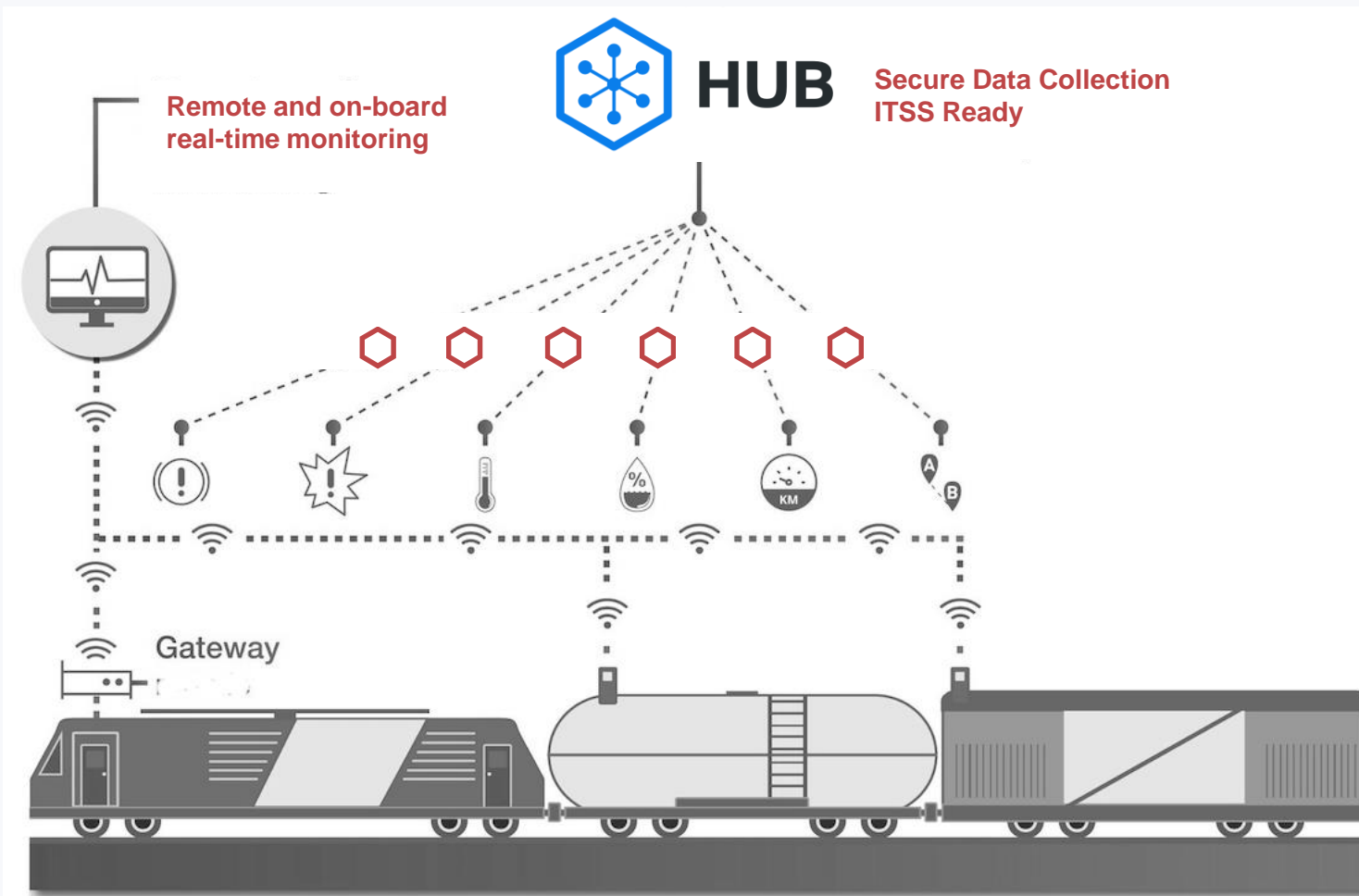
- Railway Undertaking Companies
- Wagon Keepers
- Cargo Owners / Shippers
- Car manufacturers

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.



EXTENDED REACH & ENERGY SHARING

TECHNOLOGY DEVELOPED TO BE EMBEDDED IN MOBILE PHONES CONTROLLERS, 5 PATENTS – PCT



Extended reach capacity on board trains allows messaging via GSM

Very low power communication through TRAXENS-Net Gateways

Enhanced Reach and power economy by sharing communication through the device having the best connection to GSM and the best battery

Cargo Monitoring by pairing a comprehensive range of secure, on-demand sensors to the smart wagon



DIGITAL FREIGHT TRAIN ASSISTANCE BENEFITS

NEW WAY OF OPTIMIZING WAGON FLEET MANAGEMENT

Data collection and analysis enables **optimization of wagon rotations**, offering a direct economic benefit:

- **Mileage monitoring**

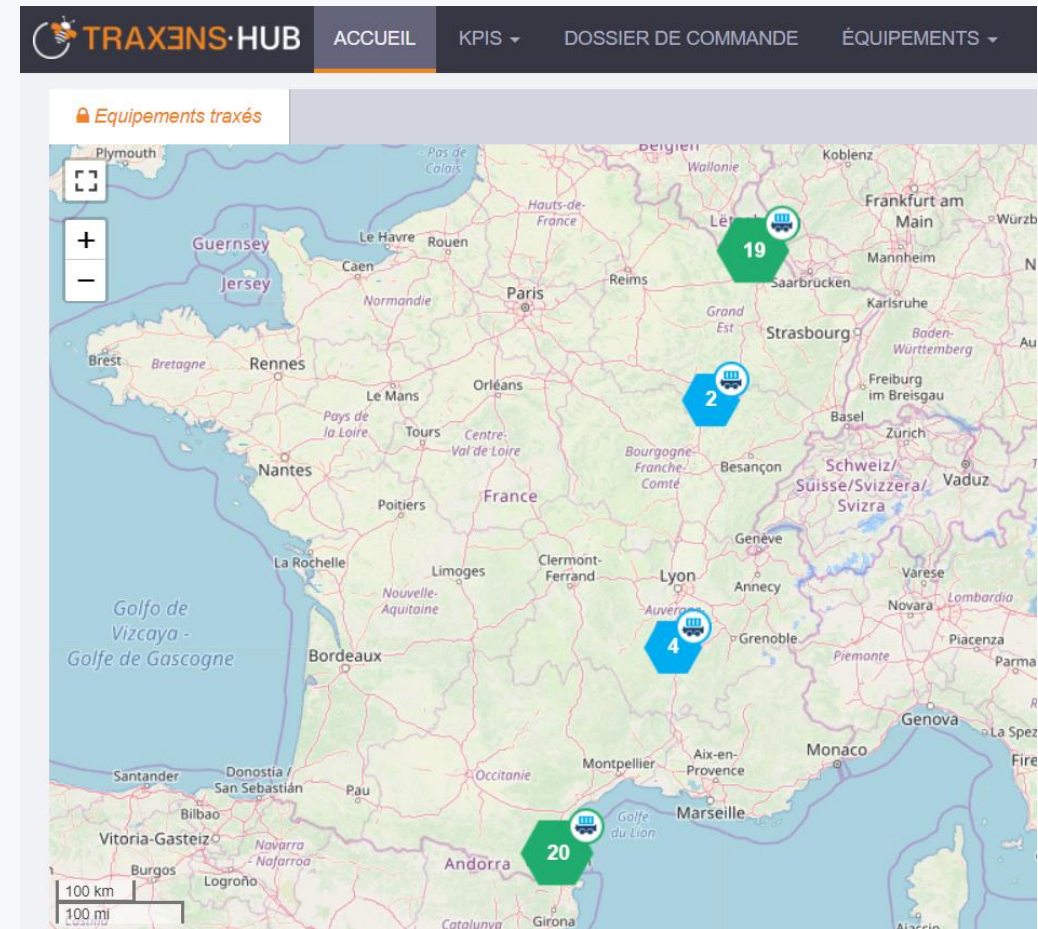
Whether empty or loaded, the distance travelled by the wagons is monitored, facilitating a preventive maintenance approach.

- **Maintenance**

Monitoring of critical wagon components and optimization of maintenance scheduling

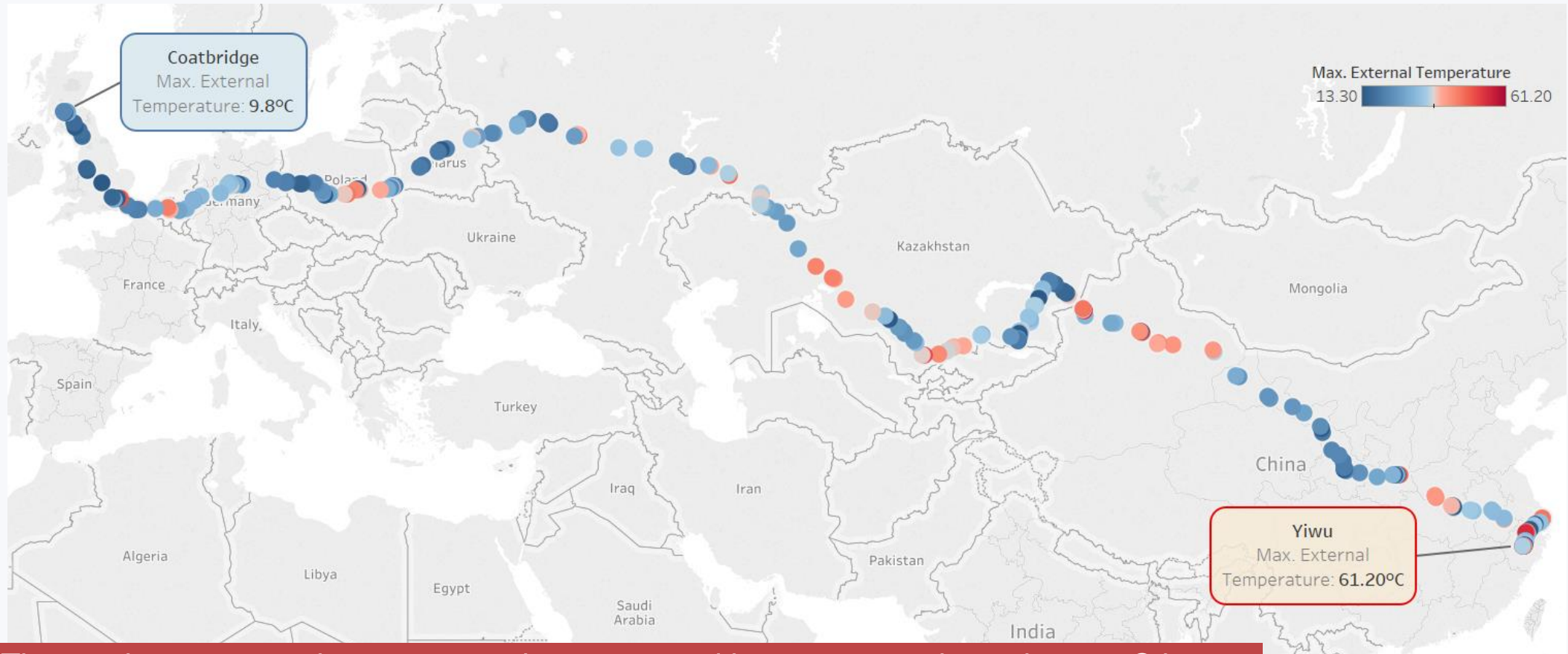
Online information on rolling stock behavior helps wagon Fleet Managers to:

- Improve Wagon **availability and rotation** for its traffics
- Optimize **maintenance engineering** and avoid “**over-maintenance**”



DOOR TO DOOR BENEFITS

Extreme External Temperatures



The maximum external temperature the wagon and its cargo experience is 61.2°C in July in Yiwu, China, while the minimum Maximum External Temperature was of 9.8°C in Scotland.

Q & A

Thank you for your attention

Florence DELALANDE – f.delalande@traxens.com

DIGITAL.FREIGHT.TRAIN@TRAXENS.COM