

# COLLECTING DATA FROM LORAWAN SENSORS ON HIGH SPEED TRAINS



**THALYS:**  
 "ACCORDING TO THALYS, KONTRON'S SUPPORT WAS EFFICIENT AND ON SCHEDULE DURING EVERY PHASE OF THE PILOT PROJECT."

## OBJECTIVES

- ▶ Enable data collection from the sensors while the train is moving
- ▶ Reduce costs of maintenance by providing maintenance servers with real time data
- ▶ Improve customer services by analyzing data from embedded satisfaction sensors

## KEY SUCCESS FACTORS / GOOD PRACTICES

- ▶ The embedded gateway allows radio communication at a speed of 300km/hour.
- ▶ The use of a standard and secure MQTT protocol allows the deployment of a strong and flexible mean of data distribution.
- ▶ A wireless connection with the IoT LoRa standard offers the availability of a vast range of sensors.

## CHALLENGES

- ▶ A larger number of train sets requires a centralized management of the gateways
- ▶ Dashboards and alerts have to be carefully designed for maximum operational efficiency
- ▶ The conformity of the installation to all railway standards is necessary in case of a deployment on the entire fleet.

## RESULTS

At the end of a successful 18 months pilot phase, Thalys is highly satisfied with their initial experience of Kontron's IoT gateway, especially with regard to the link-up with maintenance sensors as well as with Skiply client satisfaction terminals used for large-scale collection of client feedback. The Franco-Belgian corporation is considering additional functionality for monitoring both temperature and sanding system, which would allow huge savings in train maintenance.

## CONTEXT OF THE PROJECT

Thalys is operating in four countries, making more than 7 million passengers travel every year (2017 data). Thalys' primary objectives are to increase efficiency and flow, and further improve services and customer satisfaction.

A LoRaWAN-based network, frequently used in smart cities or industries, enables the interconnection of sensors in-

stalled in every train sets, regardless of their positioning, the train's speed or its location. The gateway installed in the cab transforms the LoRaWAN communication used by the sensors into MQTT – Message Queuing Telemetry Transport – a light messaging protocol ideally suited for making machines or sensors communicate in environments that could disconnect such as in trains.

The connection between the LoRa network and the remote servers from Thalys is made via the cloud thanks to an on-board IoT gateway from Kontron, certified to EN50155.

An internal 10cm antenna allows coverage of up to ten railcars. The private LoRa network brings the MQTT data stream from sensors to the remote servers. Thanks to the EN50155 certification of the gateway, Kontron can guarantee Thalys a functional stability in challenging environments and the necessary robustness on key parameters such as temperature, shocks and vibrations.



## GLOBAL HEADQUARTERS

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