

# CIMES



**Connected sensors**  
**Smart and connected**  
**solutions for mobility**  
**and infrastructures**

## Flexibility

Non-intrusive, Cimes solutions can adapt to any type of regulatory and technical environment, including the most restrictive: rail and air transport, load-bearing structures, etc.

## Stand-alone battery life

With a long-lasting battery, Cimes sensors offer an operating time of 3 years without recharge, thanks to their exceptional energy efficiency (Wake on-demand process).

## Safety and protection

Designed for demanding environments, Cimes connected solutions are fitted with high level protections: IP67, Atex, etc.

## Communication

Cimes solutions combine the power of local broadband (WiFi, radio, bluetooth) and the omnipresence of low-bandwidth global networks (Sigfox, LoraWan and GSM).

## Precision

Cimes connected solutions are based on measurements validated by advanced numerical models and a custom-made calibration.

# Connected sensors

The connected autonomous sensors developed by Cimes measure the characteristic physical parameters of your equipment, your vehicles, and your industrial or architectural infrastructures in real time.

The key: ultra-precise information to improve your performance, increase your profitability and safeguard your assets.

Cimes connected solutions provide new answers for the rail and road transport, heavy industry and civil engineering sectors.

### Crack Detection

- Detects the appearance and the propagation of a crack
- Non intrusive technology
- Alert threshold

### Monitoring of vehicles and rolling stock

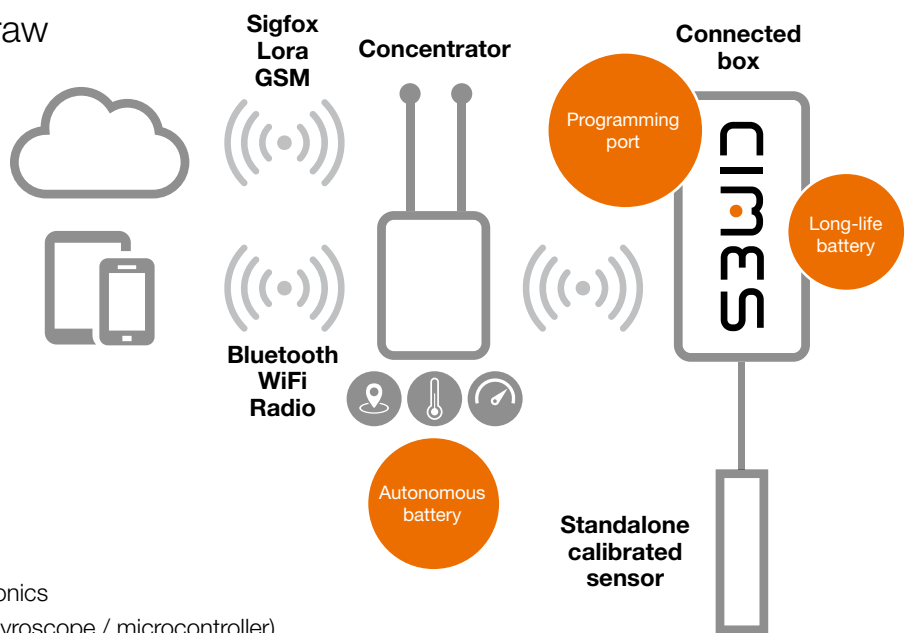
- Geolocation
- Itinerary plotting
- Load control
- Calculation of mileage under load and empty
- Calculation of downtime
- Creation of alert thresholds
- Creation of a lifetime profile



### Monitoring of immovable structures

- Monitoring of behavioural development
- Variation of loads
- Creation of alert thresholds

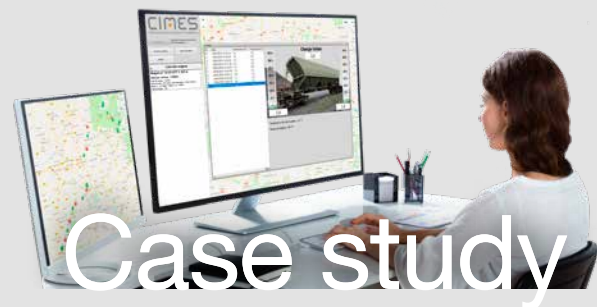
Cimes connected solutions draw on the expertise of our teams in numerical simulation and test engineering, guaranteeing a very high precision of measurements made, and taking into account all the environmental factors (temperature, speed of displacement, etc.)



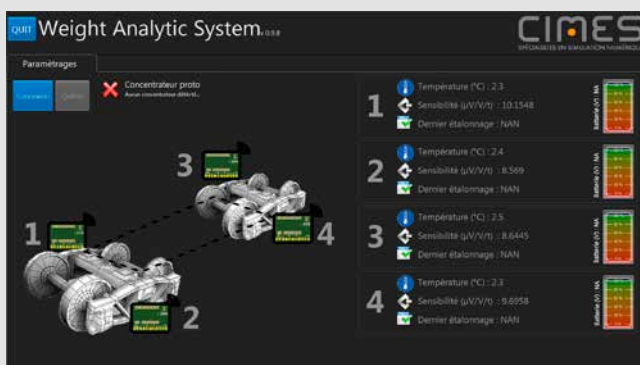
- Stand-alone long-term battery power supply
- Programming port
- High sensitivity sensor with integrated electronics
- Data concentrator (GPS / Accelerometer / Gyroscope / microcontroller)
- Data management applications (Smartphone / Tablet / Computer)

# Tailor-made solutions

Cimes connected solutions can adapt to all problems and all environments, from the simple installation of sensors to the implementation of complete systems for analysis of performances and for monitoring.

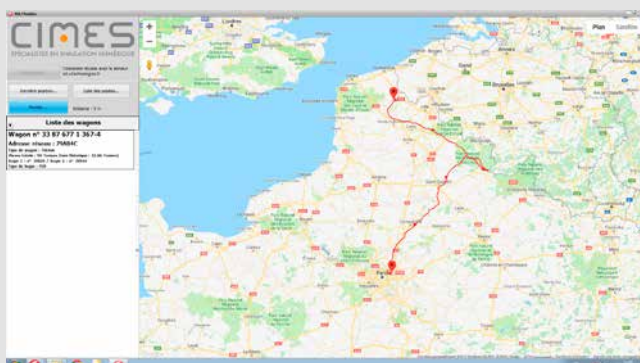


## Case study



### Technical details

- 2,4 GHz wireless autonomous module (sensor)
- Low energy consumption
- 2-3 years lifetime
- Precision (by sensor): 0,05 Tons
- Force range: +/- 100 Tons
- Lora & Sigfox communication



### Optimise the profitability of rail freight

Cimes connected solutions enabled the implementation of a stand-alone and automatic weighing system for freight wagons.

- Full integration with bogies (exclusive non-intrusive technology)
- Automatic and accurate weighing of wagons at regular intervals
- Monitoring of load alert thresholds
- Automatic data transmission on the cloud
- Geolocation of wagons
- Analysis of times and routes of empty loads



**Specialists in numerical simulation and test engineering, Cimes develops state-of-the-art connected solutions that measure, communicate and analyse loads, stresses, displacements and temperatures in real time on any type of structure.**

**Stand-alone, enduring, robust, non-intrusive and ultra-precise, they provide unprecedented solutions for the monitoring and performance of rolling stock, infrastructures and buildings.**

**Profitability, security, monitoring: increase performance with Cimes connected solutions.**

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