ProRail Monitoring Platform

CGI

Eyes on hands off: a data-driven approach for predictive maintenance in rail asset management.

Dutch railway infrastructure company ProRail facilitates safe travel and sustainable transport, and every day enables a million passengers and more than 100,000 tons of goods to reach their destination by train, using over more than 7,000 km of track.

The mobility demand in the Netherlands is estimated to grow by another 30% by 2040 and capacity on the current network is tight. Without action the network will become increasingly crammed, and downtime due to maintenance requirements could lead to more major disruptions to services. New technologies improve insight into the mobility landscape and offer opportunities for a better and more efficient rail service provision.

Digital twins provide a centralised view of 'asset health'

With the introduction of performance-based contracts in maintenance about 15 years ago, ProRail and contractors installed several platforms to monitor assets and use data to plan preventive actions in maintenance. Even though these systems individually were fit for purpose, they missed the possibility to generate a common operational picture and a centralised view of the 'asset health'.
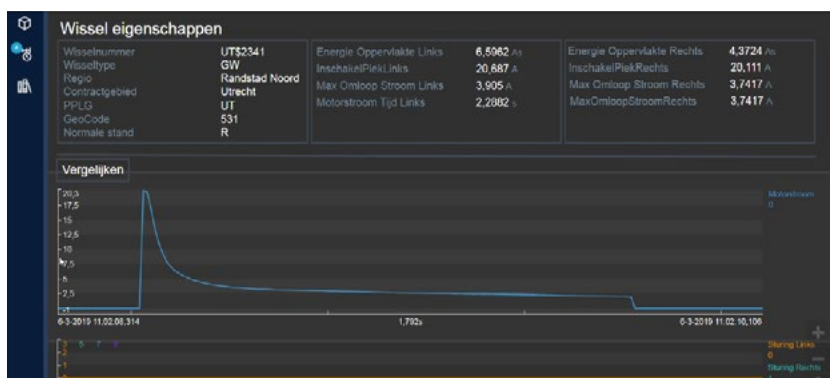
The challenge for ProRail was to centralise and share data amongst several stakeholders. The goal was to learn and navigate the operations, leading to more efficient predictive maintenance.

PMP Technology

The PMP platform is implemented using OSIsoft's 'PI' product. An industry standard solution, proven in multiple industries varying from chemical, water, energy and rail.

With PMP, CGI and OSIsoft delivered integration, hosting and real time data analytics, from over 3000 track switches, switch heaters and switches in the Netherlands, growing over time to include thousands of other assets.
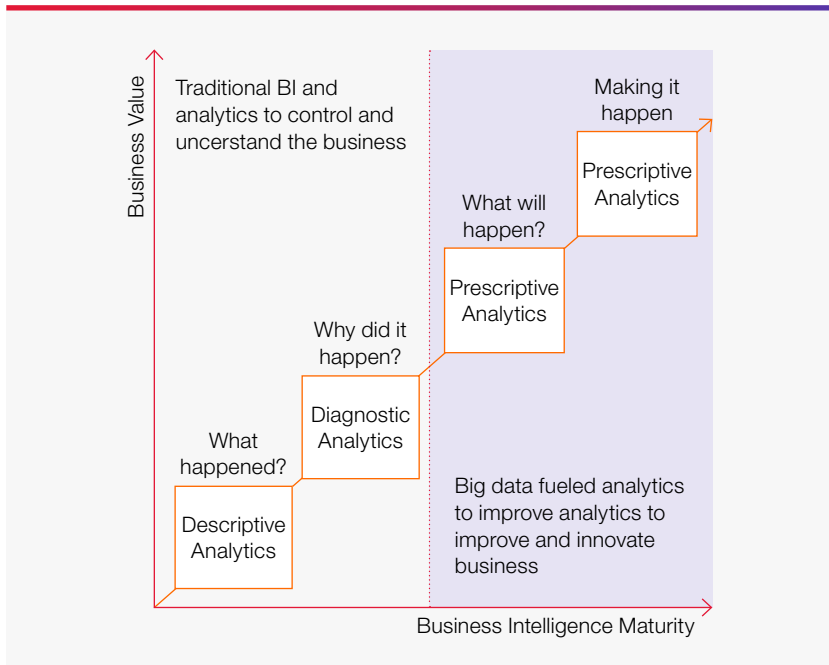
Preventing disturbances reduces costs and improves availability and reliability of the rail infrastructure. Centralising monitoring creates a digital insight in the 'health of assets', and as a result creates a digital twin based on the condition status of all parts of the rail infrastructure.

We installed the ProRail Monitoring Platform as a service within the CGI cloud and connected it to switch-monitoring solutions and switch steering systems for the switches in the Dutch Rail-Infrastructure. Data on motor current, timing of steering signals and switch heater systems are the first initiatives on the platform.

Key benefits

The PMP platform processes a tremendous amount of sensor-data in real-time and presents alerts on asset performance to support both contractors and maintenance specialists within the contractor and ProRail organisation in monitoring and analysing data.

With better data and analytics, ProRail is moving towards condition-based and data-driven maintenance.

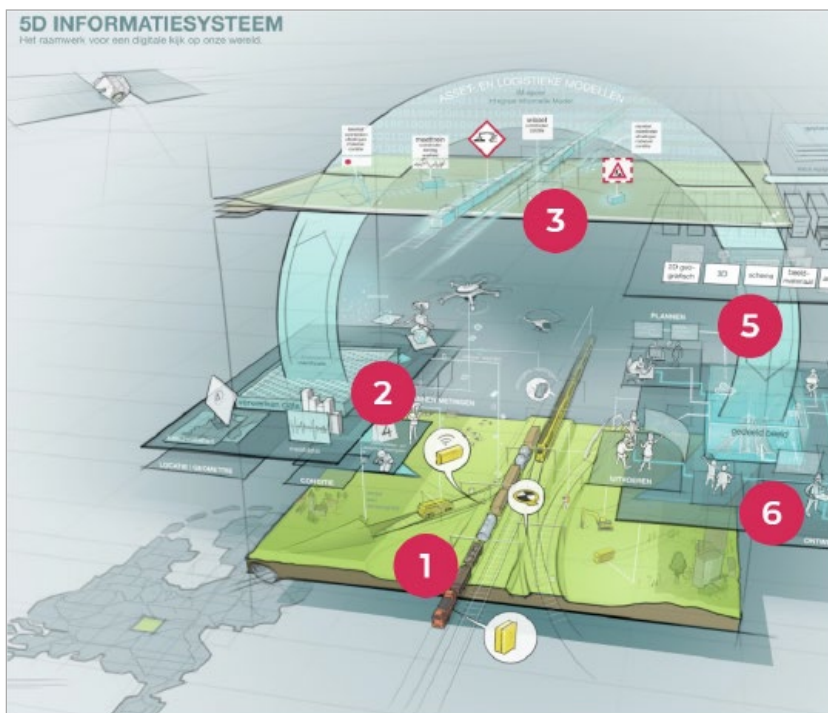**According to Juliette van Driel Product Manager at ProRail:**

"One of the key reasons for the project's success is that it re-used all knowledge from earlier initiatives on switch-monitoring and transformed this knowledge in business rules for real time monitoring. All centralised in one scalable platform for asset-monitoring, gathering data for an unprecedented diversity of assets. Varying from switches, to switch heaters and tunnels. This really contributes to the ProRail core ambitions in improving and sustainability."

"As our reliable systems integration partner, CGI has helped us with a proven solution in real-time monitoring to create a reliable and future-proof solution for our entire monitoring."

Juliette van Driel
Product Manager,
WTMS and Real-Time Asset Monitoring, ProRail

Highlights

- Centralised data-solution resulting in a digital twin for condition-monitoring (3).

- Through real-time monitoring prevent disturbances, reduce costs and improve availability (1).

- Centralise the monitoring of switch heater systems and have better insight of unnecessary use. This has a positive impact on sustainability and ProRail's ecological footprint.

- PMP shares its data via data connections with contractors, online dashboards for different users and comprehensive maps. The data is used to show the status of connected assets, create uniform information dashboards, and can be interchanged between contractors when contracts change (6).

- Sensor data is 'recorded' as time-series data in recording motor current use of track switches. The trending of motor current use for a switch is used to measure degradation (4).

- The PMP platform will be one source of information for both ProRail and rail-asset maintenance contractors. Enabling contractors to implement their own processes (3).

- Real-time analytics on streaming data triggers alarm and warning events to predict asset malfunctioning. Real time, 24x7 (2).

- Gathering historical data to learn and predict (5).

- Increased availability of the Dutch rail-infra network (1).

About CGI

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across 21 industry sectors in 400 locations worldwide, our 91,500 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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