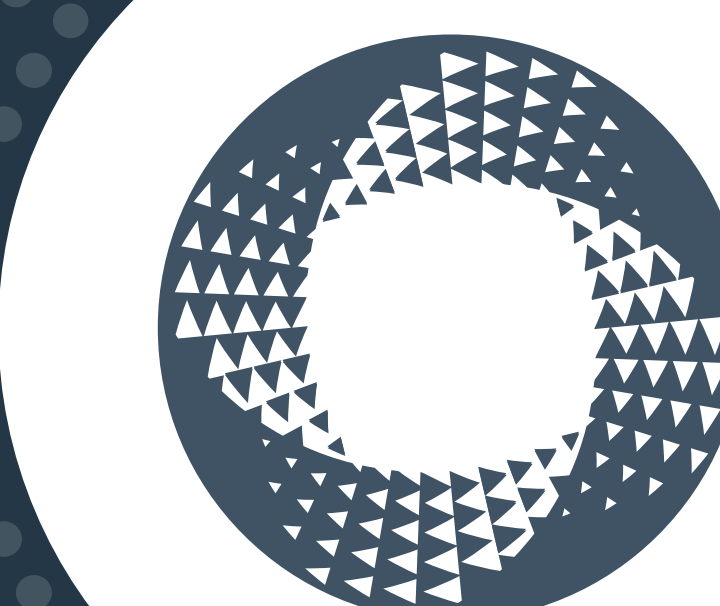


Rail Temperature Monitoring. Camera-as-a-Sensor Solution.

The Need

One of Australia's largest rail operators are responsible for transporting over 250 million tonnes of commodities each year. During hot weather events the rail operator holds the increased risk of the track buckling and derailment, posing a danger to operator and community safety and the environment. To prevent this from occurring, the rail operator imposes speed restrictions dependent on weather factors such as temperature. Speed restrictions can decrease by more than 40km/h once the ambient air temperature reaches 40°C.

To determine when speed restrictions need to be applied, weather data was previously sourced from government agencies such as the Bureau of Meteorology. The data was obtained from the closest weather station to each section of rail network. At times, the closest weather station was over 100km from very remote sections of the rail network. With this challenge the rail operator sought to segment their network into zones and undertake their own localised track and ambient temperature monitoring.



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Remote and reliable temperature monitoring for real-time, data informed decision making



The Solution

The Captis Solar was the chosen solution for the challenges the rail operator faced, with the unit providing a multiple sensor interface capable of connecting to ambient temperature and rail track temperature sensors at the same time. The NB-IoT cellular technology also enabled data to be transmitted from remote locations easily and reliably, while the IP68 rated enclosure could withstand extreme temperatures and weather conditions.

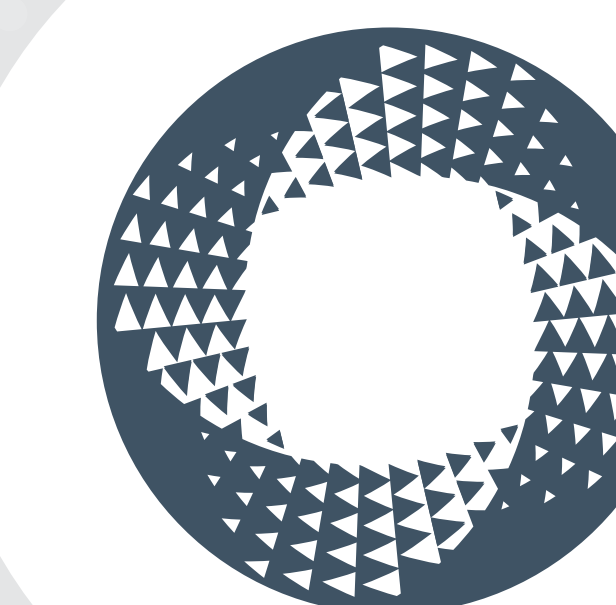
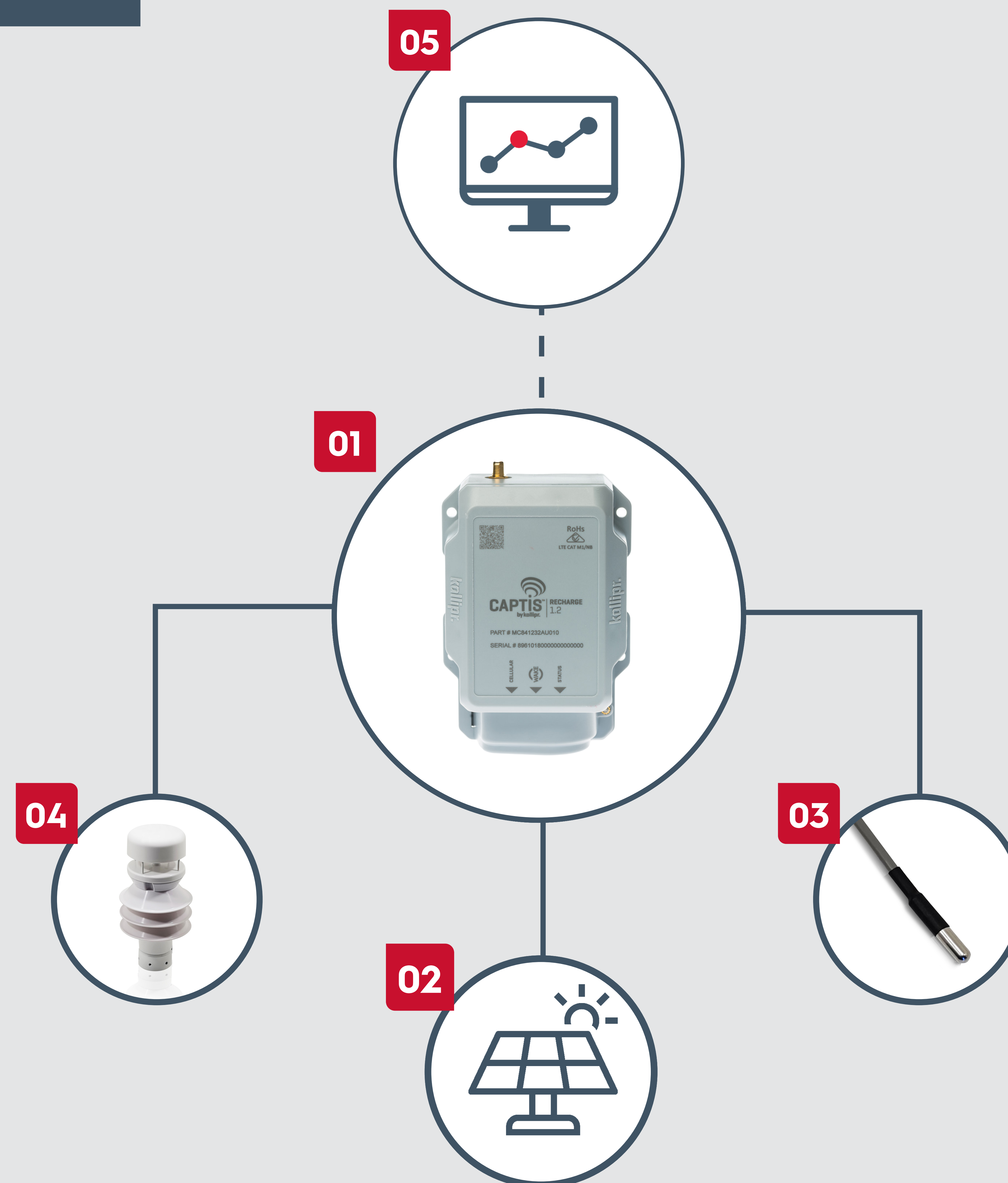
The Captis Solar's edge processing, alarm handling and rechargeable battery allowed for more frequent cellular transmission based on real time conditions. Several hundred Captis devices were deployed in

designated zones along the rail network and were configured to log data every 15 minutes and notify on a daily basis under normal temperature conditions.

When predefined temperature thresholds were exceeded, the Captis on board alarm capabilities enabled logging of data every minute and a transmission frequency of every 15 minutes. This provided real-time data to assist in decision making for applying network speed limits.

Solution Architecture

RAIL TEMPERATURE MONITORING



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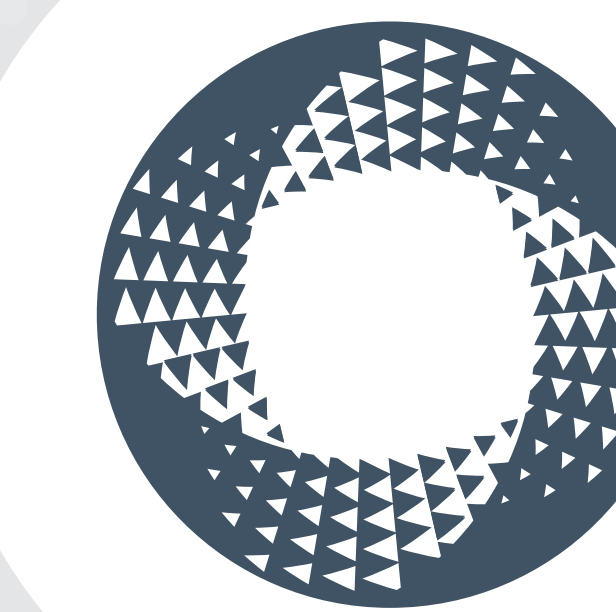
- 01** CAPTIS RECHARGE DATA LOGGER
The Captis Recharge includes added functionality to power the device via an external DC power source or Solar panel accessory, which recharges the internal battery.
- 02** SOLAR PANEL
IP67 rating with 19% Monocrystalline Cells.
- 03** DIGITAL TEMPERATURE SENSOR
Digital temperature probe has a wide measurement range of -30 to 120 degrees to cover any environmental demands.
- 04** WEATHER STATION
Simultaneously monitor multiple optional meteorological parameters.
- 05** MT COCKPIT IOT MANAGEMENT PLATFORM
IoT platform for remotely managing all your devices, giving you visibility and intelligence from data visualisation and reporting.



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Critical operational environments require specialist understanding



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Technology Stack

Cloud Platforms & Software Apps



On Premises



IIoT Platforms



Cybersecurity

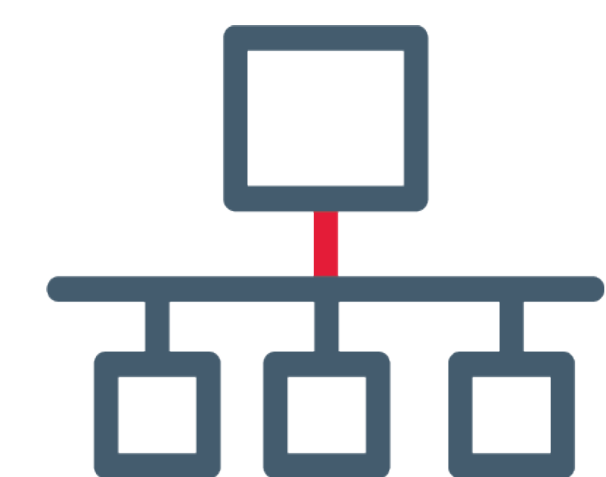


Visualisations



Analytics

Connectivity



Wired



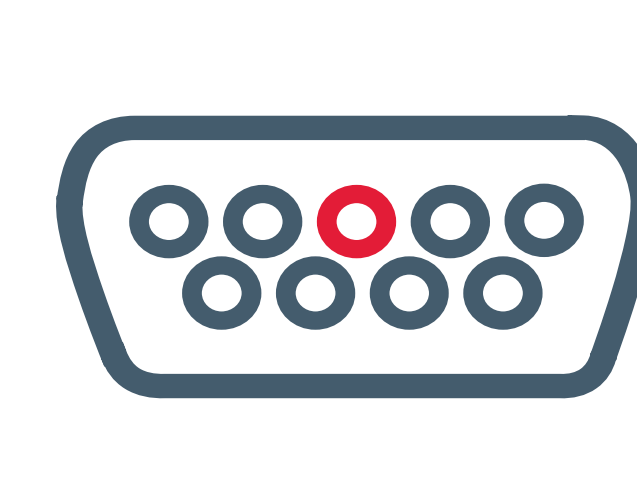
Wireless



Mesh Networks



Mobile

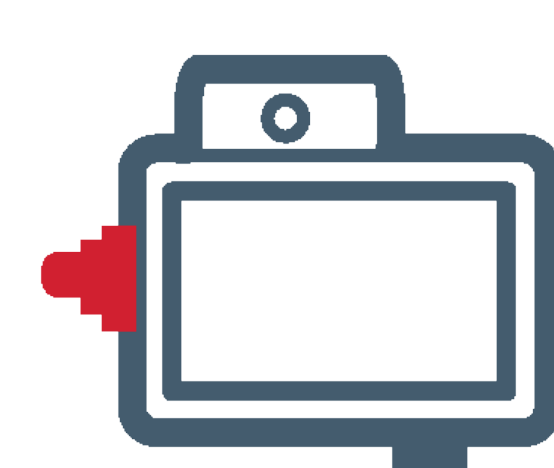


Protocol Gateway

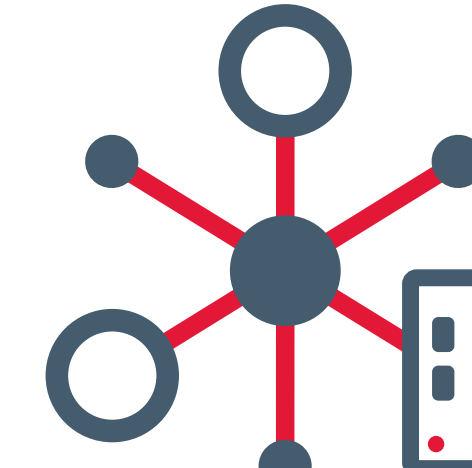
Camera, IoT Loggers & Edge Devices



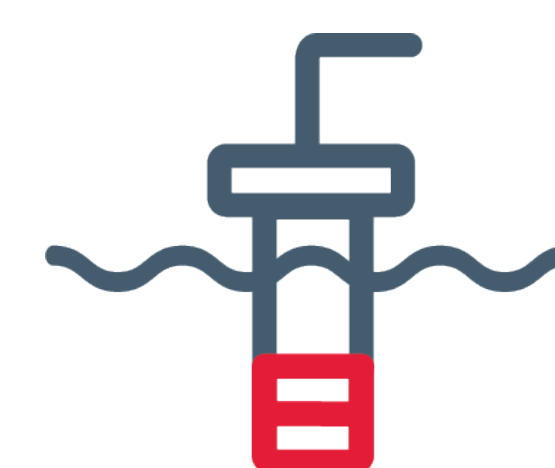
Intelligent Cameras



Data Loggers



Edge Computers



Sensors

Cybersecurity

Solutions | Support

Trusted Partners

Key Verticals



Resources



Power



Water



Transport



Smart Cities and Infrastructure

With a 30-year legacy of providing resilient industrial technology solutions, we're familiar with many of the challenges the industrial sector faces as it embraces digital transformation to better understand and manage resources, improve safety, and increase efficiencies.

Our experience connecting and protecting people, assets and the environment, combined with our industry leading technology portfolio, means we're the preferred partner for IIoT, industrial networking, cybersecurity, asset management and asset visibility, giving our customers digitally transformed critical operating environments that unlock data insights and business intelligence.



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