



Data into Information

The Challenge

The On-Train Monitoring Recorder (OTMR) on ScotRail's fleet of 86 Class 156 vehicles records a wide range of safety and service critical data and stores it on the train.

To obtain the data, ScotRail staff had to manually connect to the OTMR unit and download the data for review on a dedicated laptop.

Instrumentel was asked to design, install and support a remote monitoring solution to extract the data from the OTMR, correlate it with GPS data and provide access to it in real-time to multiple users.

ScotRail also requested the capability to expand the system in future with the ability to add additional analogue and digital inputs of interest when these were identified.

The Solution

Instrumentel designed a remote monitoring solution based around their proven Diagnostic Hub, which is in use on multiple fleets in the UK for condition monitoring.

Extraction of the OTMR data is completed multiple times per second and recorded in an encrypted form alongside the GPS location to build a rich picture of vehicle operation and performance.

Instrumentel's team of engineers identified the appropriate location for the Diagnostic Hub to be installed, configured for the requirements of each vehicle and securely transmitted the data remotely to servers for analysis.

The fleet fitment was completed in phases 'between the peaks' to minimise any impact on train availability, a testament to the design for install and maintenance approach applied by Instrumentel for every customer.

The Result

The fleet of vehicles were installed with Instrumentel's equipment allowing real-time access to a wealth of data for each vehicle. The data is displayed on Instrumentel's web portal Paradigm Insight which is available on any device with an internet connection.

All signals are analysed for any variance to their normal behaviour and alerts are notified to ScotRail via email. Instrumentel and ScotRail teams worked together to identify key events which might impact on drivers, maintenance teams and passengers.

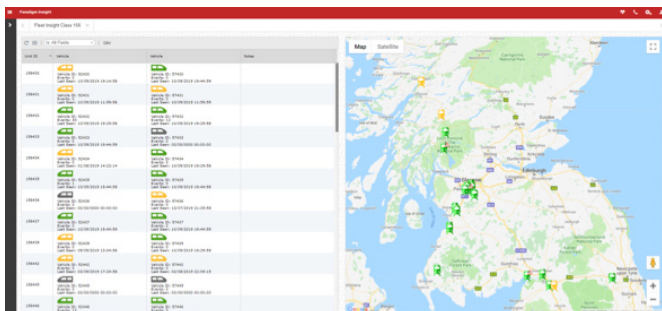
The data is now being used to determine the health of key assets on the vehicle such as the engine, battery and brake systems.



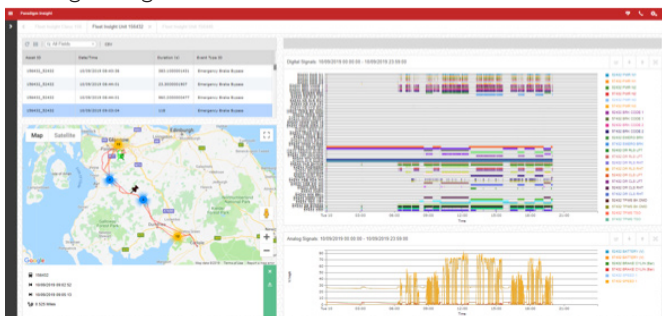
The Diagnostic Hub

The benefits being seen by ScotRail are:

- Real-time location of vehicles on the network
- Early warning of failures of key assets
- Reduced maintenance time for diagnostics
- Improved vehicle availability



Paradigm Insight Screen Grabs



Customer Comment

“Instrumentel delivered an effective solution which met challenging project constraints and timescales. The Instrumentel project and installation teams were extremely flexible, working in the environment of an operational depot. Productive and efficient working methods ensured the installation programme was delivered on time without impacting unit availability. The OTMR information is now being accessed remotely is being utilised to investigate faults earlier, minimising maintenance downtimes.”

Alasdair Thom
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