



## Wheel Slip Monitoring

### The Challenge

In order to prove the efficacy of a new sanding unit, Instrumentel were asked by West Midlands Railway (WMR) to monitor the performance of vehicles whilst braking and to monitor Wheel Slip Activity. 6 vehicles fitted with the new sanders and 12 'control' vehicles were to be monitored.

Wheel slip occurs on the lines as a result of adverse weather conditions and leaves on the line, causing a lack of traction. Proving whether a new sanding unit improves this is critical to the goal of maintaining timetable.

The train operator needed to know the vehicles and the areas of track which were experiencing the most Wheel Slip Activity (WSA) events to improve the operation of the trains on the network.

The system needed to monitor whenever WSA activity was recorded and also additional signals to provide the context such as speed, brake step brake cylinder and main reservoir pressure.

The data needed to be analysed and presented to the customer in a format which allowed them to target maintenance and take action to prevent failures in service.

### The Solution

Instrumentel designed a monitoring solution centred around the Diagnostic Hub which is capable of monitoring up to 32 signals continuously. The data is captured and transferred via a Remote Download Module to Instrumentel's servers for processing and analysis.

The unobtrusive installation was completed by Instrumentel's expert engineers without impacting service availability. Close collaboration with the maintenance team was needed to ensure the equipment was installed, commissioned and tested in time to release the vehicle for service.

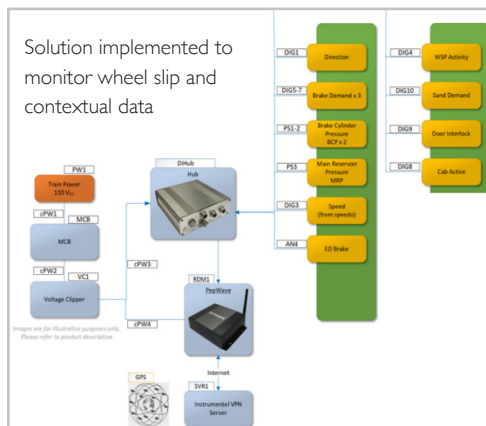
Once the data was being received remotely, it was made available in the format designed collaboratively with the customer on Paradigm Insight which is available from any device with an internet connection.

## Paradigm Insight Development

Once the data had been reviewed in Paradigm Insight, WMR wanted to develop Paradigm Insight to make the data as usable and actionable as possible and be able to share the data in an explainable format.

Instrumentel and WMR worked together to develop the software to allow the data to be easily accessed and readable. New tables, formatting of data and the inclusion of refined filtering has changed the way WMR and infrastructure owners will view their data for the better.

It will allow for more in-depth analysis and a deeper understanding of trends around Wheel Slip for the vehicles. Additionally the insight will help identify hotspots on the network for Wheel Slip Activity. In turn this allow WMR to start maintaining the necessary areas proactively instead of reactively, creating the base of a predictive maintenance schedule.



## The Result

The monitoring equipment provides usable, actionable information to allow targeted maintenance of vehicles and track resulting in:

- Improved vehicle reliability
- Improved vehicle availability
- Reduced long-term damage
- Reduced maintenance turnaround time

*“We are working together with Instrumentel to improve our experience of using Paradigm Insight. It will really help us view the data in the way we want it”*

Matt Cogle, Fleet Performance Manager

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