



infinitive
group

Case Study

Porterbrook, GTR & Network Rail - OTMR data

Porterbrook partnered with Infinitive Group to transform raw Onboard Train Monitoring Recorder (OTMR) data into actionable insights.

By building a robust data pipeline and delivering interactive visualisations in Power BI, Infinitive enabled Porterbrook to geospatially map operational safety events such as overspeeding, wheel slip, and harsh braking. The project not only unlocked hidden potential within OTMR data but also demonstrated how integrating train and track datasets can drive predictive maintenance, route optimisation, and proactive safety monitoring.



The Challenge

OTMR units capture critical data about train performance and safety events. However, the raw binary format of this data made it difficult to extract, transform, and analyse effectively.

Our Solution

Infinitive Group designed and implemented a sophisticated data pipeline using its prebuilt infrastructure.

This pipeline converted raw OTMR binary files into JSON, then into parquet and finally into CSV formats, ensuring flexibility in data processing. A linear interpolation script was then applied to fill gaps in the GPS data, using nearby data points to accurately estimate missing locations. This enabled the linking of operational records with geospatial information, adding a new level of context to safety events. The processed data was then visualised in an interactive Power BI dashboard, allowing users to explore and interpret the insights with ease.

The project was delivered using an agile methodology, with weekly and bi-weekly meetings ensuring continuous collaboration and alignment with Porterbrook stakeholders. This approach allowed the team to adapt quickly to new requirements and refine the solution to best meet user needs. The success of the partnership was recognised with the Highly Commended award in the Partnership Award category at the RIA RISE Awards.

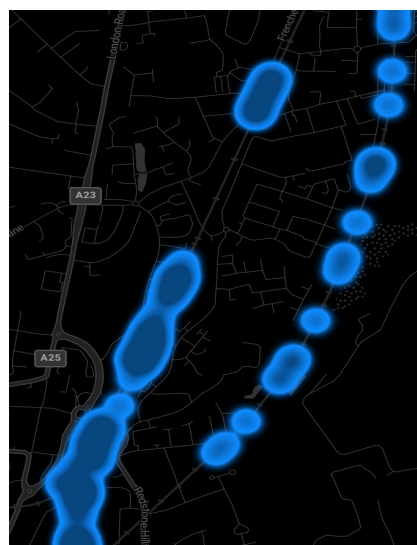
The project delivered significant business value by transforming complex OTMR data into meaningful intelligence. Porterbrook gained the ability to geospatially identify and analyse safety events such as speeding and harsh braking, which enhanced their ability to monitor and manage operational safety. Beyond this, the insights revealed broader operational patterns across routes and train units, unlocking new opportunities for efficiency improvements. Perhaps most importantly, the project highlighted the untapped potential of combining OTMR data with infrastructure datasets, opening the door to predictive maintenance, route optimisation, and proactive risk management.

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Desirable Business Outcomes

By creating a foundation for these future capabilities, the solution not only addressed Porterbrook's immediate needs but also established a platform for long-term innovation. The strong and agile collaboration between Infinitive and Porterbrook demonstrated how effective partnerships can deliver transformative results in the rail industry.