Directory

Data & Monitoring

Mistral Data

Mistral Data's Berth Maps – Creating Virtual GPS Berths for Granular Location Information

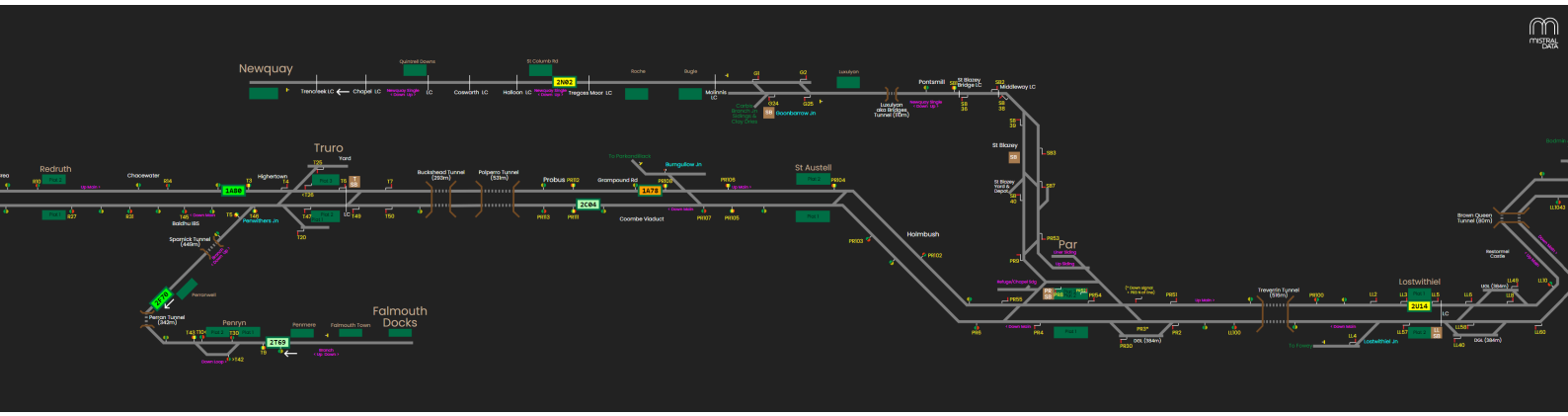
At Mistral Data, we bring together and enrich data created within multiple sources that manage railway operations, providing the context and information needed for train operators to run their services more efficiently, leading to quicker and better-informed decisions.

Mistral Data specialises in complex data integrations, and has experience with rail industry data, including both legacy rail systems and more modern real-time API-generated data feeds, whether that be operational, customer or commercial datasets.

UK train operators use network schematic products to track their services across the network. These products use TRUST and TD to show service location, through a network of berths – often associated with a signal. Unfortunately, these sources either rely on manual entry of location by signallers or can place a service within a berth which can be more than ten miles long.

Given the UK has areas without TD coverage, and several areas with long section berths, Mistral Data created Berth Maps in response to these market limitations, developing the industry first Virtual GPS Berths to show exact location of a service on a schematic map.

Virtual GPS Berths provide granular location detail by dividing real berths into virtual berths, defined by geofences for more detailed tracking by GPS. This allows a long TD berth to be split for example into track, bridge, track, tunnel, track, station – allowing signallers to make informed decisions, including when managing calls from level crossing users.



Cornwall Berth Map, showing Virtual GPS Berths in a region without TD coverage

Mistral Data Berth Maps Service List – listing all services for any selected TOC, based on live running time

Mistral Data Berth Maps is an easy to maintain application providing a view of real-time railway berth movements by GPS, TD and TRUST. It provides a view of all services, allowing controllers to spot any trains which are delayed or may conflict with other approaching trains, giving controllers detailed locations of all services.

Berth Maps is a comprehensive view of train running. Any user can track and search for a service in real time, view a customisable list of services to manage punctuality, or view historical movements using the replay feature.

Map creation is simple and flexible, using Adobe Illustrator templates maintained either by the train operator or as a service by Mistral Data.

Berth Maps is one of several products designed and developed by Mistral Data. The flagship product, Mistral, is a data-enabling platform that ingests, integrates and publishes data from a number of disparate rail industry operations and on-train systems.

It is a solution that originally enabled the real-time data exchange with multiple on-train seat reservation systems (SRS) and automatic passenger counting (APC) systems and has been further developed to become our strategic operational master system.

When working with such diverse data sources, it can be a challenge to integrate the data because it often has different formats, reference data, latency and schemas, requiring significant transformation and mapping before it can be processed, shared and interpreted.

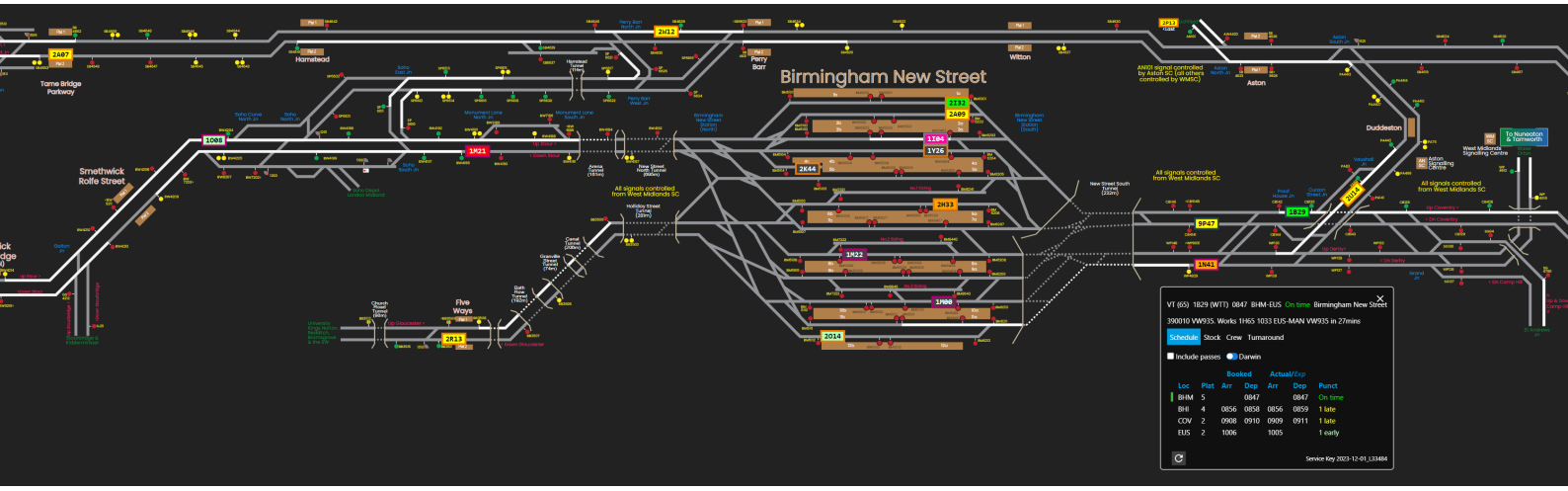
Mistral is required to source data from a range of industry and train operator-owned systems, as well as manage its own store of curated reference data. These sources vary significantly in their interface capability and the quality of data provided.

From a technical perspective, the complexity of integrating legacy sources into a modern data architecture, while ensuring both security and resilience has been a significant challenge. This variety has led to a sophisticated ingestion layer, capable of handling this complexity and resilient to failure.

Mistral creates value by integrating these datasets, and enriching them with context and version-managed reference data, together with business rules and logic to provide comprehensive insights. Mistral provides this enhanced dataset as a single version of the truth to any channel.

"Berth Maps provides greater visibility of train services for controllers than other mapping systems, particularly through 'virtual berths'. Virtual berths have enabled SWR to create Berth Maps for the Island Line using GPS data alone."

Chris Prior, Head of Train Service Operations Projects at South Western Railway



Berth Map at Birmingham New Street, with popup providing schedule, stock, crew and turnaround details

It enables the transfer and management of data in real-time between on-train and back-office / customer-facing systems, making data available for use in systems used in control and engineering as well as customer-facing channels like the website or customer app via the Mistral API.

Using the breadth of data sources consumed in Mistral, Berth Maps can present additional stock information like formation, facilities, orientation and real-time vehicle capacity as well as crew onboard and turnarounds for stock. It also uses network topology and track occupancy to infer between green, yellow, double yellow and other cleared aspects.

Knowing the exact signal aspects that a train receives provides visibility with respect to train delay investigations, informing exactly where a delay occurred and what may have caused it.

The enhanced data available, compared with other similar products provides operational staff with more data conveniently in the same place, allowing them to make decisions quicker, anticipate delays better and therefore reduce their impact.

South Western Railway adopted Berth Maps in 2022, using it across control, resourcing, delay attribution, station and performance monitoring teams. Chris Prior, Head of Train Service Operations Projects at South Western Railway said:

"Berth Maps provides greater visibility of train services for controllers than other mapping systems, particularly through 'virtual berths'. Virtual berths have enabled SWR to create Berth Maps for the Island Line using GPS data alone. Virtual berths break up long berth sections on the West of England Main Line and provide berths at stations which do not have accurate TRUST reporting. Berth Maps provides visibility to controllers of trains running in non-TD areas such as branch lines and depots. The maps also provide controllers with more granular details of stock and crews which enable them to make decisions faster than with conventional mapping systems. We have been very pleased with the approach to delivering the maps, the additional data provided on the maps and the innovation of using GPS data to create virtual berths."

For enquiries please contact:

Lauren McKenzie
lauren.mckenzie@mistral-data.com

Leo Smuga
leo.smuga@mistral-data.com

www.mistral-data.com

MISTRAL DATA