

Creating movement for growth in the West Midlands

Transport for West Midlands

The Challenge

- Reduce the impact of congestion on the roads and public transport services in the West Midlands

The Benefits

- An up-to-the-minute, holistic view of entire transportation network
- Accurate data to inform initiatives to improve journey experiences
- The reliable transport infrastructure needed for economic growth
- Effective transportation planning for high-profiled events

In a highly ambitious and collaborative project, Transport for West Midlands has developed a state-of-the-art ArcGIS Dashboard that combines live transport data from 17 public and private sector partners with crowd-sourced information. Using this dashboard, the organisation, its partners and the police can now intervene quickly to minimise the impact of congestion, improve journey experiences and support the growth of the local economy.

The Challenge

In the West Midlands, a booming economy and a rapidly growing population are placing unprecedented pressure on public transportation services and the local road network. £4.4 billion is currently being invested in the region on a range of road, tram, bus and rail network improvements, which are expected to alleviate this congestion in the future. However, in the interim, construction traffic and building works for new rail stations and tram services are creating added disruption and exasperating the challenges.

In line with its strategy to create 'Movement for Growth', Transport for West Midlands (TfWM) wanted to help local authorities, public transport operators, Highways England and the police to better manage planned and unplanned transportation network disruptions. It aimed to support growth in the local economy, by making it easier for people and goods to move around the area.

The Solution

TfWM used Esri's ArcGIS Dashboard to bring together real-time transport data from seventeen local partners, including local authorities, commercial rail, tram and bus operators, Network Rail and Highways England. The organisation then used ArcGIS GeoEvent Server and FME Workbench to enhance and integrate this live data, as well as geocode railway stations and bus stops. TfWM also used the Waze Live Alerts Layer in ArcGIS to incorporate crowd-sourced data about slow-moving traffic and harvested information about disruption to tram services from Twitter.

According to Stuart Lester, Data Insights Manager at TfWM, "The development of the Esri solution was fast and agile. We had a trial version, incorporating crowd-sourced and third party data, up and running within just two months, which helped us to gain the buy-in and confidence of partners," he says.

TfWM's dashboard is now displayed on a huge screen at TfWM's new Regional Transport Coordination Centre and can be viewed online by TfWM managers from any location. The dashboard is also used by partners, in their own local operations centres including, Highways England, local authorities, transport providers and emergency services, giving everyone the same comprehensive overview of the status of all transportation services and roads, across the entire region.

By continuing to leverage the capabilities of ArcGIS, TfWM is now extending the functionality of its dashboard to enable it to generate automatic alerts about transport issues for the general public, using links to Satnavs, radio and TV channels, social media and subscription-based news services. All of the live information presented in the dashboard is stored in ArcGIS, and a trial project is currently underway to analyse this data using ArcGIS Velocity tool in order to gain insight into long term transport patterns and changes in commuter behaviour.

“Our dashboard gives us the real-time and analytical information we need to improve movement throughout the region and support economic growth, by enabling a proactive response to the causes of congestion.”

Stuart Lester, Data Insights Manager, Transport for West Midlands



Transport for West Midlands Regional Transport Coordination Centre dashboard, showing hot spot areas for congestion, any reported Road Traffic Collision and planned bus route changes.

The Benefits

A holistic view of the entire transport network

For the first time, all local authorities, the police and transportation providers have a holistic view of all transportation issues, on roads, railways, tram and bus services, across the entire region, all on one screen. Consequently, if a delivery vehicle obstructs road traffic, or a train service is delayed, all duty managers can instantly see the issue and anticipate the impact on other local roads and alternative public transport.

Better travel experiences, across all modes of transport

With instant access to live information via the dashboard, duty managers at TfWM's Regional Transport Coordination Centre, and other local operations centres, can react quickly to unplanned incidents, to improve the travel experience for West Midlands's 2.8 million residents. For example, they could guide partners to re-phase traffic lights to alleviate congestion on a diversion route or issue an alert to warn commuters about a cancelled train. “Travel disruptions are inevitable, but we can now intervene quickly to alleviate the situation and provide people with good quality, timely information so that they can decide when and how to travel to make best use of their time,” Lester says.

A reliable transport infrastructure for economic growth

The dashboard will help TfWM to support the local economy, by enabling it to reduce disruption from the £4.4 billion of infrastructure projects taking place in the region. In particular, it aims to make journey times more predictable, so that commercial vehicles can deliver components to just-in-time manufacturing plants on schedule, and reduce the cost of congestion for the region's businesses, which was estimated by INRIX, in 2018, as being £994 for every driver in Birmingham. “Our dashboard gives us the real-time and analytical information we need to improve movement throughout the region and support economic growth, by enabling a proactive response to the causes of congestion,” Lester says.

Effective planning for high-profile events

The insight that TfWM will gain, over time, from analysing live traffic data will help all seventeen partners, and the police, to put effective plans in place for special events, when COVID-19 travel restrictions are relaxed and large events can take place safely again. “The dashboard will play a pivotal role when Birmingham hosts the Commonwealth Games in 2022,” says Lester. “It will enable us to manage the impact of millions of additional visitors to the region, ensuring they have a pleasant travel experience, while minimising disruption for the people who live and work in the West Midlands every day.”

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