esri UK

Case study

Driving enhanced value from geospatial data

National Highways

The Challenge

- Optimise the use of geospatial data

The Benefits

- Enterprise-wide efficiency gains
- Increased value from geospatial data assets
- Faster responses to road traffic incidents
- Reduced total cost of GIS ownership
- Rapid delivery of decision-support tools

After realising the true value of its geospatial data assets, National Highways put geospatial data right at the heart of its business, creating a single, centralised spatial portal with the ArcGIS system. Now, geospatial data is used more extensively than ever before and employees have the real-time insight, accurate network models and innovative tools to work efficiently right across the organisation.

The Challenge

Through a ground-breaking asset evaluation initiative, National Highways valued its data at £60 billion and discovered that geospatial data was the most used and most critical data asset of all. This realisation quickly elevated the conversation about geospatial data to a senior level within the organisation, and National Highways began to consider how it could use geospatial data more effectively. Some of its key data sets relating to the national road network were inconsistent, and its use of a myriad of different systems for storing, editing and viewing geospatial data was hampering innovation.

The Solution

With its new appreciation for the value of geospatial data, National Highways took the strategic decision to centralise its geospatial data and services, creating a single 'Spatial Portal' for the whole organisation. It selected Esri UK's Managed Cloud Service and began to use solutions from Esri's ArcGIS system, including Esri's ArcGIS Enterprise and ArcGIS Online, to replace its many existing, disparate departmental geographic information system (GIS) applications.

As a critical part of this transition, National Highways used Esri's Sweet for ArcGIS app to help it consolidate road network data from several legacy systems and create one comprehensive digital model of the national road network. The organisation took advantage of the built-in quality checking capabilities of Sweet to create a single, accurate source of the truth that could be depended upon by all employees, across the business.

With support from Esri UK's Professional Services group, National Highways then used the ArcGIS system to build a wide range of apps, data models and other GIS services to enable employees to make better use of geospatial data as a part of their day-to-day roles. Chief amongst these solutions is a new operational system that helps 400 operational staff at National Highways to manage disruption to the road network. This pivotal solution uses ArcGIS Velocity to display multiple feeds of real-time data, from weather forecasts from the Met Office and the live locations of gritting lorries to crowd-sourced traffic data from WAZE and up-to-the-minute reports of road incidents.

National Highways has also used ArcGIS Hub and ArcGIS Survey123 to help it engage the public in a consultation called 'Route Strategies', about the future of the national road network. Individuals could explore the road network online and click on sections of road to comment on them. This use of ArcGIS Hub and ArcGIS Survey123 proved very effective within the consultation period.

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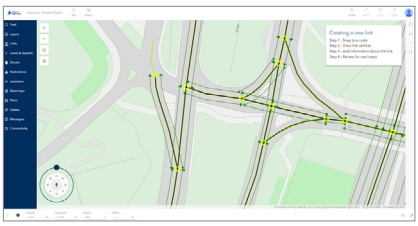
Jon Drea, Head of Data Science, National Highways



A view of National Highways’ new national road network model, which provides a single version of the truth for all employees

The Benefits

Enterprise-wide efficiency gains

Now, for the first time, all employees at National Highways have the same, accurate digital view of the road network, whether they work in planning, ecology, major projects or operations. Furthermore, this road network data is accessible to more people and is easier to use in a wider variety of projects, all of which improves efficiency throughout the business. “Around 4,000 people now use National Highways’ geospatial data,” says Jon Drea, Head of Data Science at National Highways. “This clearly shows how, in just two years, our ArcGIS system has become front and centre in how we work.”

Increased value from geospatial data assets

While National Highways already valued its geospatial data highly, the organisation is now undoubtedly gaining increased value from its geospatial data assets by using the ArcGIS System to develop new solutions such as the operational system and the public consultation hub. “ArcGIS is helping us to maximise the value that we gain from our geospatial data, by enabling us to use it in really different use cases, from analysing live traffic flow to engaging with stakeholders and strategic planning,” Drea says.

More information about road traffic incidents

Of the many new solutions that National Highways has introduced since migrating to the ArcGIS system, the operational capability has delivered significant benefits. It provides an accurate digital representation of the entire national network of trunk roads, together with real-time data on traffic, weather and road closures, equipping staff with more information about road traffic incidents. “We can continue to react to incidents in near real-time with more information available, which helps us to provide a better experience for road users,” explains Drea.

Reduced total cost of GIS ownership

Driven by the dual goals to ‘reuse and consolidate’, National Highways has, over a two-year period, replaced more than a dozen standalone GIS applications with ArcGIS Enterprise, reducing total GIS costs by more than 10% to date. More legacy systems are due to be retired in the near future and the upcoming replacement of a geospatial system for viewing survey data is expected to deliver an annual cost saving of £250,000 alone.

Rapid delivery of decision-support tools

One of the key advantages of National Highways’ consolidated approach to GIS is that the organisation can now use its central ArcGIS Enterprise system to spin up new apps, data models and decision-support tools very quickly, on demand. Providing an example, Drea recalls: “When Britain left the EU, we built a solution to model scenarios for traffic disruption around ports. We published a dashboard to show the impacts of the potential congestion, really quickly, which supported decision making and helped us understand traffic flow.”

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