esri Ireland

Case study

Driving efficiency improvements in national road surveys

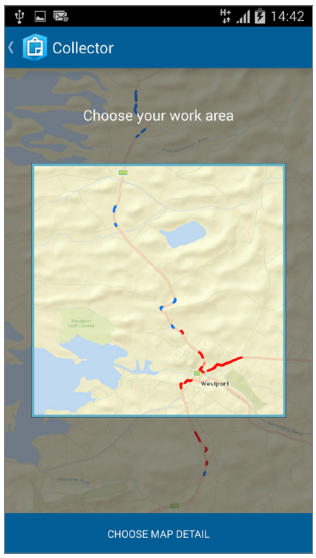
Transport Infrastructure Ireland

The Challenge

- Improve the efficiency of data collection in a key road condition survey

The Benefits

- 20% reduction in personnel needed for the survey
- Daily inspections increased from 7-8 to around 15
- Real-time oversight of project for senior managers
- Higher quality data to inform decision making



Transport Infrastructure Ireland (TII) has deployed a mobile ArcGIS solution to help it automate, standardise and accelerate its annual survey to assess the skid resistance of national roads throughout Ireland. It can now plan and undertake road surface inspections with 20% fewer people, while collecting better data to inform highway improvement programmes.

The Challenge

The national road network in Ireland is around 5,300 km long, incorporating multilane motorways and rural single carriageways. Every year, TII is required to undertake detailed inspections of around 1,000 locations nationwide that have been identified as potentially posing an increased risk of skidding in the future. While none of the inspection sites present an immediate threat to safety for the general public, TII has to complete its survey within four months, so that recommendations can be acted upon as part of proactive road maintenance activities.

Known as the HD28 survey, the skidding risk assessment used to be a very manual process, demanding a large amount of staff time. Inspectors would be given print-outs showing maps of the locations of inspection sites and would collect road observations and data on paper forms. Typically, they had a bundle of around 40-50 sheets of paper for a week's work and wasted lots of time in the field trying to find inspection sites, as well as grappling with paper in wet and windy weather. Many days of effort were also required in the office to plan inspections, print maps, report on the survey's progress, enter the collected data into central systems and file away the paper forms.

The Solution

TII completely transformed its paper-driven HD28 survey process using solutions from Esri's ArcGIS platform. Using Collector for ArcGIS, the organisation created a mobile app enabling inspectors to see the precise locations of inspection sites on digital maps, collect data in the field using drop-down boxes and upload it directly to Esri's ArcGIS Online. Critically, the solution works in online and offline modes, so it can be used in rural areas where there is no mobile coverage. TII also used Esri's Operations Dashboard for ArcGIS to create a live reporting interface for management at TII to monitor the progress of surveys.

Remarkably, TII was able to create this entire solution incredibly quickly, due to the "ease-of-use and flexibility of ArcGIS," according to Brendan Kennedy, GIS Manager at TII. "The mobile survey app and reporting dashboard were created and deployed in just one day by the TII in-house team, with no need for consultancy support," he says.

A key advantage of the ArcGIS-based solution is that the app can be used by employees on their own devices, including mobile phones not owned by TII. Users simply download the app and log in with a secure user name and password. "We didn't have to purchase and deploy tablets or make any other hardware investments, which kept the cost down," says Kennedy. "We can also flexibly introduce more people to the survey team from our regional offices, when necessary, to help us meet targets."

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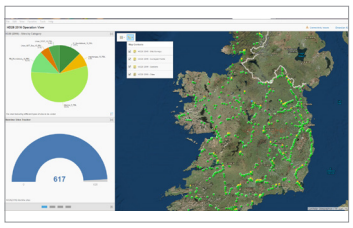

Dashboard showing the progress of the HD28 Survey Programme

Benefits

Efficiencies improved by 20%

As employees no longer have to manually plan their surveys and transfer their survey findings from paper to electronic systems, individual efficiencies have increased by around 10-20%. Indeed, TII estimates that six employees each save one month per year as they do not have to print, file, upload and manage hard copy forms and maps. “Due to staff changes, we have around 20% fewer personnel and yet can still complete the HD28 survey programme within the required timeframe,” says Tom Casey, Head of Pavements, Construction Materials & Innovation at TII.

Greater speed and flexibility in the field

Using the ArcGIS mobile app, inspectors waste less time trying to find sites and can complete nearly twice as many inspections in a typical day. “When the process was paper based, I would get through around 7 to 8 inspections per day; with the app I usually do around 15 inspections per day,” estimates Stephen Smyth, Senior Manager for the Pavement Asset Programme. As all the data inspectors need is always with them, on their phones, they can carry out surveys on a more flexible, impromptu basis, at short notice, when they are already in the area, without having to return to the office to collect the necessary paperwork, which significantly improves their efficiency.

Real-time oversight of survey programme

Previously, TII employees had to develop weekly reports on the status of the survey for senior managers. Now, however, real-time information is available on demand, online, allowing managers to monitor and manage the survey process more effectively. “We can identify regions where perhaps an additional inspector is needed to complete a job list and better allocate resources around the country to ensure that the survey is completed as quickly as possible,” Kennedy explains.

Better decisions about road maintenance

The GIS-driven process improves the accuracy and consistency of the survey data collected, which in turn helps TII to make better informed decisions about interventions and restorative roadworks. The organisation can incorporate skid resistance improvement works into other planned road improvement programmes in the same area, reducing the cost of interventions, minimising disruption for road users and maintaining the safety of roads for years to come.

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