

Digitally Transform Field Operations

with the power of location intelligence



SURVEY 123

-
-
-



esri UK
THE SCIENCE OF WHERE™

HARNESSING THE POWER OF LOCATION

Location is at the heart of field activities. It sounds like an obvious statement, but field management often completely overlooks location.

Field managers and workers are likely to make decisions faster and deliver better customer service if they can access location intelligence in the field. This e-book explains how geographic information system (GIS) technology and a suite of field mobility apps work together to improve performance in the field. Five case studies show how organisations incorporated apps into workflows and describe the returns they gained.

Organisations use GIS to capture, manage, analyse, and display all forms of geographically referenced information and use focused field apps to improve field operations. Its ability to transform data into useful information has proved to be highly valuable to field operations managers in four operational areas: coordination, navigation, data collection, and monitoring.

Learn more at esriuk.com/field-operations.

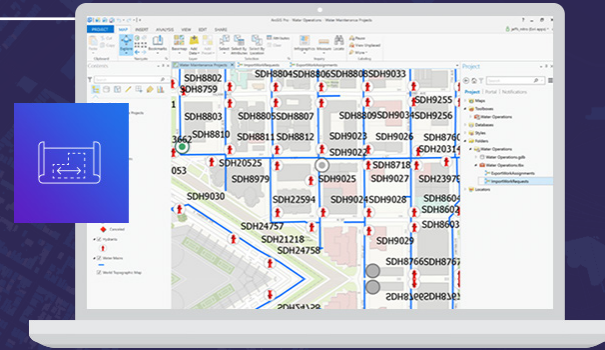


FIELD OPERATIONAL AREAS

Coordination for exceptional customer care

Daily operations need to quickly adjust to changing conditions including last-minute requests and unexpected resource unavailability and delays. A geographic perspective allows you to easily see the location of the worker nearest the call and quickly assign that worker to respond. This level of flexibility results in exceptional customer service and compliance with service-level agreements.

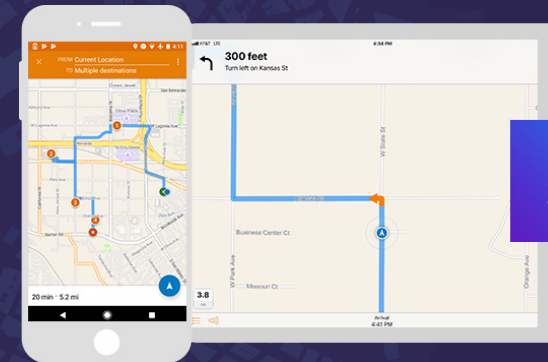
Workforce for ArcGIS helps you quickly put resources where they are most needed.

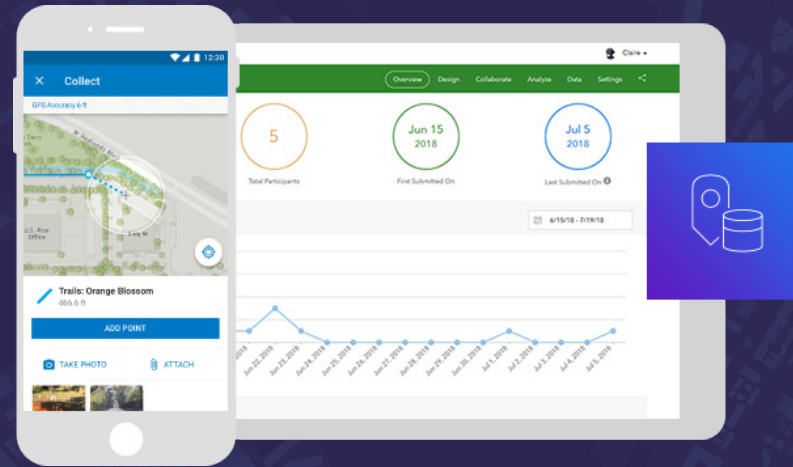


Navigation for timely service

GIS does much more than map point A to point B. For instance, users can add other layers of information, such as private road networks and asset locations, to street maps. GIS apps combine this data and calculate optimised routes that fieldworkers see on their mobile devices, even when disconnected. GIS recalculates delivery windows in real time based on traffic conditions, so drivers can give an estimated time of arrival (ETA), which keeps customers happy. GIS is the route optimisation tool of choice for organisations whose reputation and success are defined by on-time delivery.

Navigator for ArcGIS, StreetMap Premium for ArcGIS, and ArcGIS Network Analyst support routing with high-quality street data and give you tools for complex problem solving.



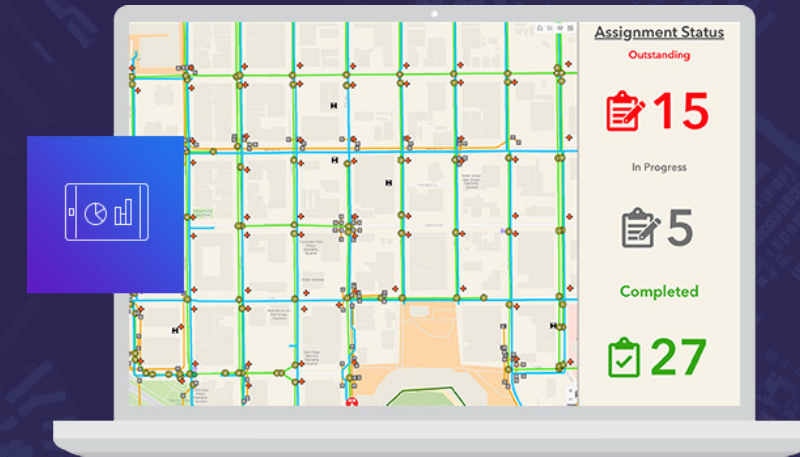


Data collection for accurate information

Built-in GIS capabilities in mobile apps ensure that location information is included in the data. This capability extends to other business data submitted via inspections, incident reports, or any type of form entered into your system of record. Understanding the location where field activities happen is critical for historical analysis, QA/QC, regulatory compliance, and coordination with other users.

Focused apps allow crews to capture, update, and analyse data accurately. Fieldworkers use these apps to create surveys, capture the answers, and analyse the results. Mobile apps provide fieldworkers with their organisation's maps, allowing them to locate assets and mark up the map with additional details. Drones offer an inexpensive way to capture field imagery, and by using a desktop app, drone-captured imagery can be easily turned into professional quality imagery products that you can use for mapping and analysis. Data generated by these apps can all be synced at the office and shared within the organisation and the public.

Collector for ArcGIS, Explorer for ArcGIS, Survey123 for ArcGIS, and Drone2Map for ArcGIS boost data accuracy and optimise geospatial analysis.



Monitoring for fast analysis and response

It is difficult to manage what you cannot see. GIS provides dashboards that enable real-time monitoring of events and key performance indicators (KPIs) so that you can make decisions at a glance. GIS-based dashboards show information as maps, charts, gauges, and other understandable visualisations. Combined with real-time GIS analysis, GIS dashboards help organisations focus on specific information by revealing exceptions, trends, and patterns that are relevant for decision-making.

GIS also supports tracking of field personnel. Managers and supervisors are able to view where workers are and where they have been through a mobile app that captures their location tracks. This helps them identify workers' last known locations, confirm the territory covered, and more effectively balance the allocation of workers to needs.

Operations Dashboard for ArcGIS helps users visualise and monitor data that is relevant to them. Tracker for ArcGIS enables monitoring of personnel to better manage what happens in the field activities.

APPS THAT COORDINATE FIELDWORK



If there is a serious flood, a prolonged period of drought or a fire, the Environment Agency needs to react quickly to protect people and the environment. Now the organisation is using a suite of ArcGIS solutions to collect, analyse and share information about incidents, as they happen, and respond rapidly and effectively.

The Challenge

During the course of 2015 and 2016, there were a series of devastating floods in the North of England, which endangered people's safety, damaged homes and the natural environment and impacted the regional economy. Environment Agency staff visited the affected areas where they took detailed notes and photographs to record and monitor the evolving situation on the ground. However, due to the manual and paper-based approach available at the time, this valuable insight had to be processed and analysed, increasing the time it took to reach the Environment Agency's incident control centres.


The Solution

Now, over 2,500 field-based employees use Esri's Collector App for ArcGIS to gather photos, videos, drone footage and flood outlines on their

smartphones or tablets. They can upload this data instantly to ArcGIS Online and ArcGIS Enterprise, where it can be viewed by all of the organisation's 10,000 employees. In the Environment Agency's incident control centres, around 500 office-based employees use Esri dashboards to analyse the data from the field, along with third party data from drone operators and the Environment Agency's existing master datasets, historic data and LIDAR.

The Results

Employees in the Environment Agency's national incident control centres now receive information from the field, far more quickly, enabling them to make a rapid appraisal of the extent and criticality of major incidents. Essential information is visible on Esri dashboards in seconds, allowing managers to make well-informed, real-time decisions and implement plans more quickly.

A photograph showing the lower legs and feet of a person wearing blue trousers and bright yellow rubber boots. The person is standing in shallow, rippling water, likely a flood. The background is blurred, showing what appears to be a metal fence or structure.

An integrated suite of mobile, desktop and online ArcGIS solutions enables rapid decision-making based on real-time evidence from the field.

APPS THAT IMPROVE EFFICIENCY



At the busiest airport in the Republic of Ireland, Dublin Airport, Esri's ArcGIS platform is being deployed as part of a wide-ranging digital transformation initiative to enhance the passenger experience. The use of ArcGIS on mobile devices, on interactive management dashboards and for complex analysis is leading to improvements in operational efficiency, risk management and safety throughout the airport.

The Challenge

To provide a safe and positive experience for passengers, the airport's employees need to work together to manage and maintain 35,000 assets, with a replacement value of €4 billion, as well as collect, share and analyse a vast amount of operational data.

The Solution

Dublin Airport decided to introduce geospatial information system (GIS) solutions and selected Esri's ArcGIS platform following a successful pilot. It then began to roll out a succession of mobile, desktop and web-based GIS applications to transform processes and build incremental business value.

Now, field-based employees use a range of ArcGIS mobile solutions to access, collect and upload information and photographs from mobile devices. Airfield inspectors use Collector for ArcGIS to check the condition of 1,700,000 m² of airfield, while maintenance teams use ArcGIS Portal to access asset information and download repair manuals in the field, to help them rectify faults more quickly. Other airport workers use Survey 123 for ArcGIS to record safety incidents, such as injuries to baggage handlers, and collect all pertinent details in real-time, on their mobile devices.

Dublin Airport also makes extensive use of Esri Dashboards to provide managers with a clear overview of the status of activities, in real-time.



The Results

The use of ArcGIS at Dublin Airport has created significant time savings, by making it easier for teams to collect, share, understand and act upon new information. When asset faults are identified on the airfield, detailed information and images can be collected swiftly using ArcGIS on mobile devices. The data is transferred instantly and digitally to the maintenance team, where jobs are prioritised and scheduled. Managers can then monitor outstanding and completed jobs on their Esri Dashboard, in what is an integrated and highly efficient end-to-end process.

Dublin Airport can now record safety incidents very promptly and utilise this information to drive health and safety improvements. For example, if an incident occurs on an escalator, employees can capture the relevant environment conditions and, where appropriate, add witness statements using Survey 123 for ArcGIS. This data can be analysed in ArcGIS, alongside historical data about previous incidents, to identify high risk areas, inform safety improvement opportunities and protect the company against erroneous claims.

APPS THAT EMPOWER EMPLOYEES WITH DATA

While AOC Archaeology is concerned with revealing and recording archaeology about people who lived thousands of years ago, its use of technology is right up-to-date. The company is using solutions from Esri's ArcGIS platform in the field, on desktops and online to deliver efficient, cost-effective and professional services for clients.

The Challenge

Demand for commercial archaeology services is rising sharply. Communities are successfully raising funds to explore their local heritage, while developers are increasingly required to provide archaeology reports as a precursor to gaining planning permissions. In addition, there are over forty large, multi-million pound infrastructure projects planned in the UK over the next five years, almost all of which will need to take archaeology into account.

To meet the increasing demand for its services, AOC Archaeology recognised that it needed to update its traditional methods of surveying sites, collecting and analysing data and sharing information. In particular, the company needed to transform its field-based processes, so that archaeologists would no longer have to take physical maps to sites, in all weather conditions and difficult terrains, and then type up their notes manually when they got back to the office. "Using paper-based systems alone is not viable anymore," says Laura O'Connor, Geomatics and GIS Manager for AOC Archaeology. "We needed better systems to help us respond to the growth in demand for commercial archaeology services, by delivering highly professional services for clients more quickly and cost effectively."



The Solution

To thoroughly modernise its processes and eliminate the need to use paper in the field, AOC Archaeology deployed a suite of solutions from Esri's ArcGIS platform.

Now, AOC Archaeology's consultants use Esri's Collector App for ArcGIS to record information about their site observations and archaeological finds, on mobile devices, during pre-development site walkovers. In tandem, the company's geophysical survey team uses Survey123 for ArcGIS to collect and share information about land access permissions, vegetation, crop growth and other issues that might impact archaeology projects. Both apps work effectively online and offline, allowing them to be used in remote locations including the Scottish Orkney islands.

All the data collected in the field using the

ArcGIS mobile apps is uploaded automatically to Esri's cloud solution, ArcGIS Online, where it is instantly visible to team members in AOC Archaeology's four national offices. ArcGIS Online also provides a flexible platform for sharing information about heritage sites, in an interactive format, with AOC Archaeology's clients, local interest groups and the general public.

The Results

The use of ArcGIS mobile apps has generated significant cost savings for AOC Archaeology, by improving the efficiency of its data capture processes. Archaeologists spend less time at sites, don't need to type up notes when they get back into the office and have easy access to all the information they need to produce reports more quickly.

"By improving efficiency, ArcGIS is helping AOC Archaeology to achieve cost savings of around 25% - and on big projects this can be many thousands of pounds."

-Laura O'Connor

Geomatics and GIS Manager, AOC Archaeology

APPS THAT MONITOR OPERATIONS



Covering an area of 1,051 km² from Hadrian's Wall to the Scottish border, Northumberland National Park combines natural habitats and biodiversity with fascinating archaeology and stunning scenery. The Park Authority's role is not only to conserve and enhance this precious environment, but also to help people understand and enjoy it.

When the organisation began to plan a major exhibition, it started looking for inventive new ways to help it engage more successfully with visiting members of the public. It decided to showcase the technology that it uses every day in the management of the park and took the bold decision to make its geospatial data and tools available for members of the public to explore for themselves.

The Solution

The Northumberland National Park Authority has been using geographic information system (GIS) solutions from Esri UK for a number of years. Field-based employees including park rangers, archaeologists, ecologists and farming officers have ArcGIS apps on their mobile phones, including Collector for ArcGIS and Survey123 for ArcGIS, which they use to collect a variety of GIS data while in the park. Back at the Park Authority's head office, employees manage geospatial data from field-based teams, GPS devices and drones, using ArcGIS Online web apps and dashboards, to gain insight into trends and evidence to inform conservation and park protection schemes.

Ed Hudspeth, GIS Officer, Northumberland National Park, says: "Rather than just telling members of the public about our use of ArcGIS tools to manage conservation projects, we decided to give them the opportunity to use it themselves. Esri's data visualisation tools are very easy to use, providing us with an ideal way to share our geospatial data with visitors."

Visitors could use an Esri Dashboard to explore data collected in the field by park rangers on their mobile phones using Collector for ArcGIS, including live data on the maintenance of almost 800 miles of paths including the Hadrian's Wall National Trail.

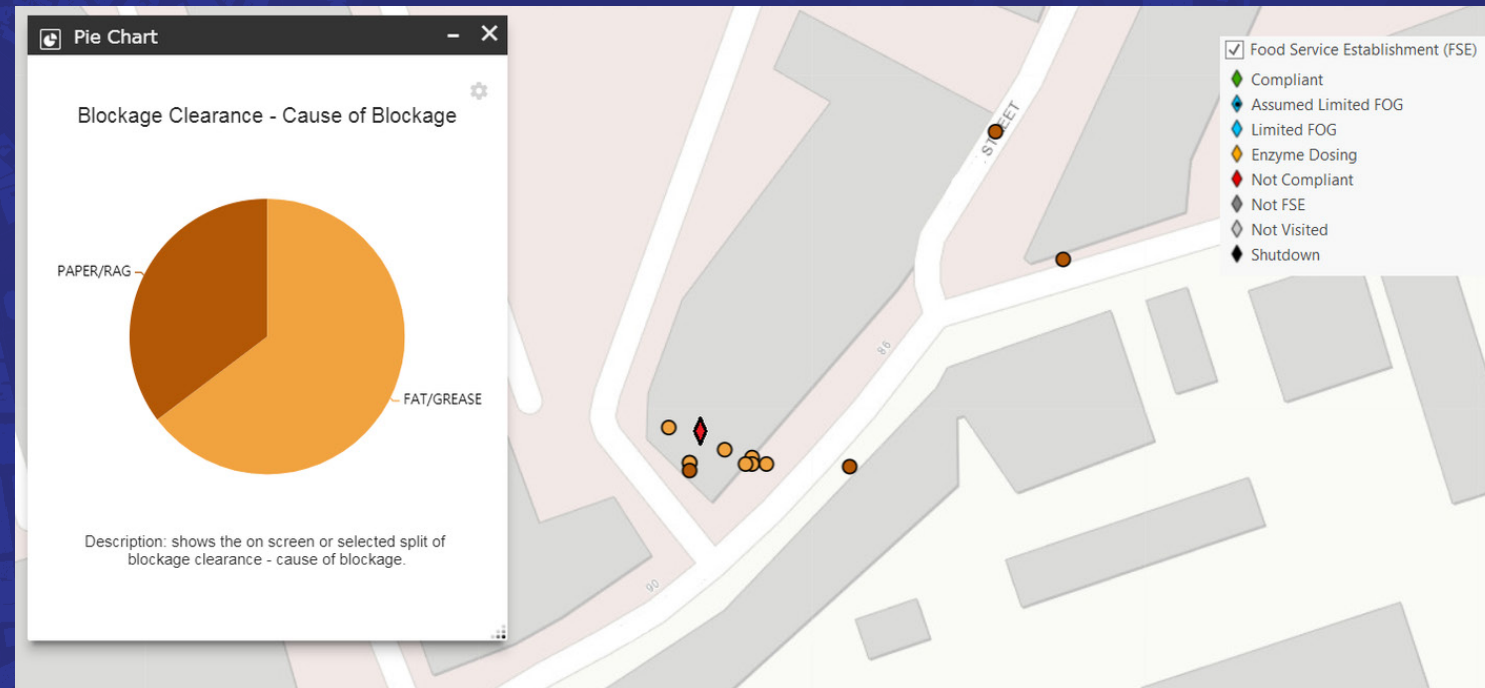
The Results

As ArcGIS was so successful in engaging members of the public at the exhibition, the Park Authority has been inspired to develop new public-facing GIS apps to expand the number of ways in which it involves local people in its work. "As an organisation, we learned a lot from the exhibition, especially using spatial data and tools to engage with the public," Hudspeth explains. "Since then we have started extending our data collection apps out to volunteers and exploring ways to allow the public to contribute to our spatial data in a meaningful way by crowdsourcing conservation data."

APPS FOR ACCURATE DATA COLLECTION



It costs up to £1 million a month to clear blockages in the Thames Water catchment area, many of which are formed from congealed fat, oil and grease (FOG). Now, Thames Water is tackling the cause of these fatbergs by using a range of ArcGIS solutions to encourage food businesses in London and the Thames Valley to dispose of fat, oil and grease more responsibly.



The Challenge

Every year, Thames Water clears about 80,000 blockages from its underground sewerage network, of which as many as 40% are caused by FOG. A significant proportion of the fatbergs that are formed from FOG waste in Thames Water's network can be traced back to 43,000 restaurants and food retailers in London and the Thames Valley. Many of these businesses do not have effective FOG disposal practices and are therefore in breach of UK regulations.

Given the enormous cost of clearing fatbergs, Thames Water decided to launch a proactive programme of education to make food businesses in London aware of their legal obligations and encourage them to dispose of their FOG more responsibly. The utility needed to be able to monitor the progress of this new Network Protection Programme, ensure a consistent approach with all food businesses and collect data to support any prosecutions as a measure of last resort.

"ArcGIS is an important tool that is helping us to change behaviour and reduce the amount of fat that is discharged into London's sewers."

-Lauren Makowski,
Network Protection Manager, Thames Water

The Solution



Firstly, Thames Water uses ArcGIS Desktop and the Data Interoperability extension for ArcGIS to analyse the locations of fatbergs and flooding incidents and identify hotspots where education initiatives should be prioritised.



The results of this analysis are then presented on ArcGIS Online in a visual format, allowing Thames Water's employees to see blockage incidents and risks on an interactive map, for the first time.



Twelve investigators are allocated batches of establishments, in the priority areas, and use Survey 123 for ArcGIS on mobile devices to record details about their visits to each individual business, collect data about current FOG management practices, so that this can be monitored over time and note details about what advisory letters they left with owners.



When investigators make follow-up visits, they use Explorer for ArcGIS to view existing records on mobile devices and Collector App for ArcGIS record any updates, such as the installation of grease traps.



If a blockage results in a flood or other issue, Thames Water uses the Workforce App for ArcGIS to direct nearby investigators to the affected area, so they can visit food premises nearby that may have directly contributed to the emergency.



Back in the office, programme managers use an Esri Operations Dashboard to get real-time oversight of investigators' progress, including the number of visits undertaken per premise.



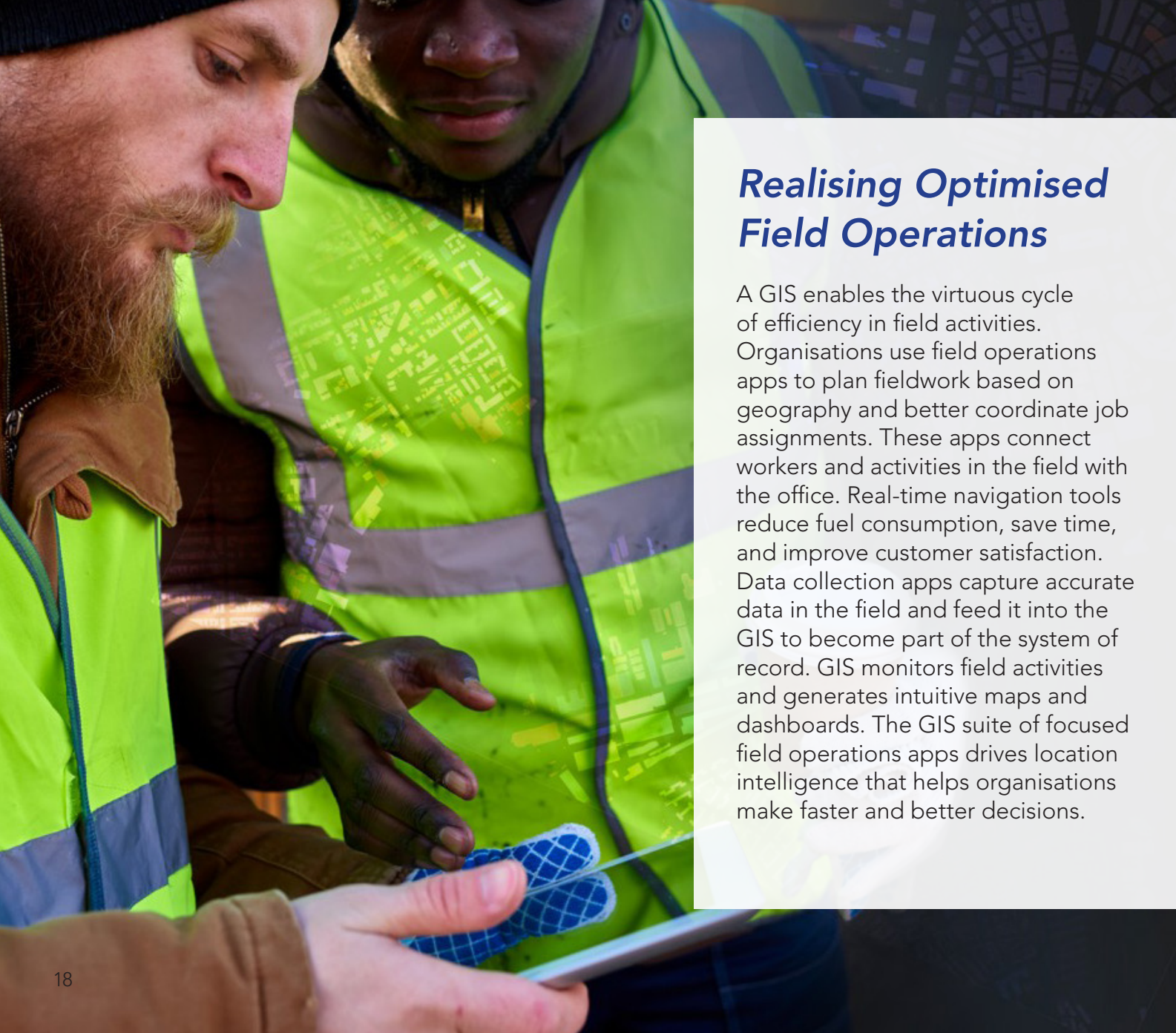
Finally, Thames Water's analysts use ArcGIS Desktop and the Data Interoperability extension for ArcGIS to model where food businesses have adopted better FOG disposal practices.

The Results

Using Esri solutions, Thames Water now has a complete, end-to-end process for tackling the mounting fatberg challenge in a highly efficient way. Investigators can work more productively in the field and collect consistent, accurate data that can be used as evidence in prosecutions if necessary. Furthermore, ArcGIS directs them to priority areas so they can focus their time and resources where they will have the greatest impact. Managers can monitor investigators' progress in real-time and manage the overall programme more effectively, while analysts can study how changes in behaviour have impacted changes in network performance and use this information to monitor the success of the programme.

"Esri UK's Professional Services team made us aware of the full range of capabilities of ArcGIS and showed us how we could make best use of out-of-the-box functionality in the ArcGIS platform to achieve our goals without custom development."

-Chris Hinton,
Asset Performance Insight Manager, Thames Water



Realising Optimised Field Operations

A GIS enables the virtuous cycle of efficiency in field activities. Organisations use field operations apps to plan fieldwork based on geography and better coordinate job assignments. These apps connect workers and activities in the field with the office. Real-time navigation tools reduce fuel consumption, save time, and improve customer satisfaction. Data collection apps capture accurate data in the field and feed it into the GIS to become part of the system of record. GIS monitors field activities and generates intuitive maps and dashboards. The GIS suite of focused field operations apps drives location intelligence that helps organisations make faster and better decisions.

About Esri UK

Esri, the global market leader in geographic information systems (GIS), offers the most powerful mapping and spatial analytics technology available.

Since 1969, Esri has helped customers unlock the full potential of data to improve operational and business results. Today, Esri software is deployed in more than 350,000 organisations including the world's largest cities, most national governments, 75% of the Fortune 500, and more than 7,000 colleges and universities. Esri engineers the most advanced solutions for digital transformation, IoT, and location analytics to create the maps that run the world.

Learn more at
esriuk.com/field-operations.

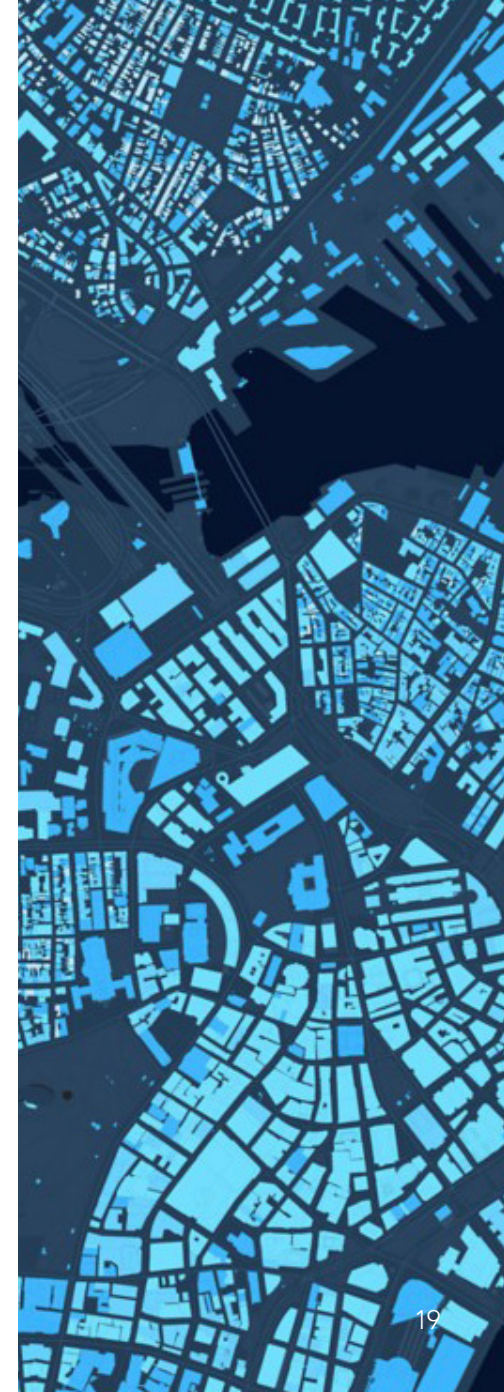
Contact Esri UK

Millennium House,
65 Walton Street,
Aylesbury, HP21 7QG

T +44 (0) 1296 745599

E sales@esriuk.com

W esriuk.com





Visit us at esriuk.com