THINK GIS

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WELCOME
RESPONSIBLE FOR CHANGE

'We are all responsible for creating the world we want to live in,' *writes Peter Wilkinson, Esri UK's Managing Director.*

We all know things have to change. Our world is increasingly threatened by human activity; biodiversity is in steep decline; and the unprecedented temperatures in Europe this summer are just another indication of the escalating and daunting climate crisis we face.

While the scale of the global challenge is almost beyond comprehension, we are all responsible for creating the world we want to live in.

Geographers are perhaps uniquely positioned to make a tangible difference. People like you and me, who work with geographic information system (GIS) technology have not only got a deep interest in the natural world, but also have access to the tools needed to monitor how our world is changing, understand the impacts and identify the most effective interventions.

Responsibility needs to be taken swiftly – not least because central and devolved governments in the UK are sharpening their focus on the natural environment. For example, in July 2023, DEFRA updated the guidance for 'Enabling a Natural Capital Approach' in policy and decision-making in England. More and more organisations are beginning to use GIS to categorise, map and understand their natural capital, including NHS Fife in Scotland. In the lead story in this issue of ThinkGIS, you can read how NHS Fife is working to improve its greenspaces for the benefit of nature, people and the economy.

Throughout this publication you will find many inspiring examples of organisations that are taking responsibility for biodiversity and implementing programmes to create biodiversity net gain. In Wales, for example, the Centre for Ecology and Hydrology is undertaking a detailed survey of biodiversity on behalf of the Welsh Government (page 10), while Oxygen Conservation is managing the revival and expansion of ancient woodland (page 4). Meanwhile, Denbighshire County Council is helping native species of wildflowers and trees to flourish in new locations (page 6).

The onus is on all of us to help make our day-to-day operations more sustainable. Many of Esri UK's customers are using their GIS systems to help them adapt, including Domino's Pizza (page 12) which is reducing carbon emissions at a new store in Hammersmith. EDF, in one of the UK's largest construction projects, is closely monitoring environmental constraints to minimise its impact on wildlife (page 11). I am also encouraged by the wide range of organisations in the rapidly expanding renewable energy sector (page 8) that are using GIS to help them make energy production more sustainable, as well as improve energy security.

The environmental changes that we are experiencing are leading to increased risks and creating new challenges that we all have to adapt to. Even understanding these risks though can be an enormous undertaking, and organisations are turning to GIS to help them adopt innovative new approaches. Forest Research, for instance, recently embraced citizen science to help it understand the impact of storm damage on forests (page 13), and AECOM has used 3D modelling highly effectively to visualise the locations of likely landslips in Scotland (page 5). Volunteers at Moffat Mountain Rescue are used to working in challenging conditions and are now using GIS to plan search and rescue activities in the harshest of natural environments (page 7).

If we really want to make a difference to our world, the responsibility lies not just with us but also with future generations. This is why I am particularly enthusiastic about new educational initiatives in England and Scotland (page 14). Children of all ages are helping to map the natural environments surrounding their schools, gaining GIS skills as well as a deeper appreciation of the value of the greenspaces all around them.

Whether we are the implementors of government policy or individuals living and working in our communities, it is clear we all have a part to play in protecting the world we live in. I, for one, am really inspired by how well the GIS community is standing up and taking responsibility for delivering a change for the better.

Peter Wilkinson
Managing Director,
Esri UK

NHS FIFE OPTIMISES LAND USE FOR WELLBEING AND BIODIVERSITY

Following a pioneering project to map and classify all of its natural capital across 45 sites, NHS Fife is now enhancing its greenspaces and managing them more sustainably.

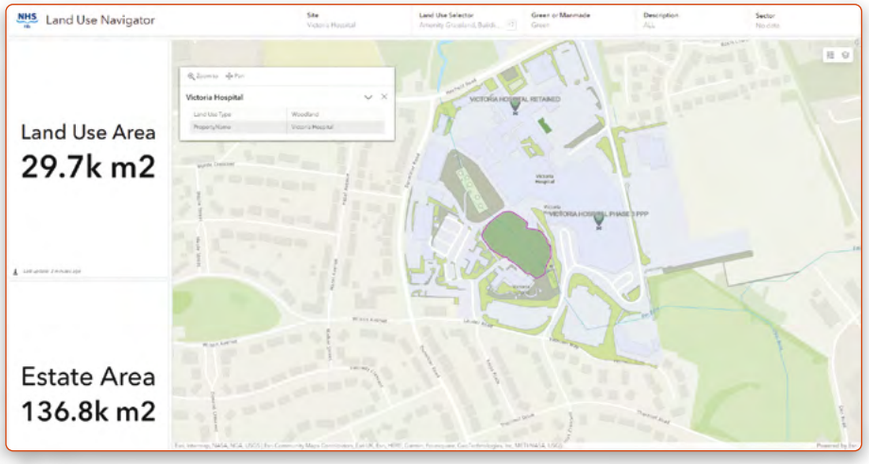
One of fourteen NHS Boards in Scotland, NHS Fife is responsible for managing a 130-hectare estate comprising ten hospitals, as well as medical practices, midwifery units, community clinics and dental health centres. Now, for the first time, the organisation has a detailed map of all 45 of these sites, which it is using to help it enhance its greenspaces for the benefit of patients, staff, local communities and the planet.

The estate map was created within just a few weeks using Esri's Sweet for ArcGIS data collection app. With this easy-to-use tool, two intern students working at NHS Fife were able to map every individual area of land very precisely and classify each location using sixty different categories, such as garden, shrubs, woodland, building, path and car park. The mapping project gave the organisation a comprehensive and accurate understanding of its land assets and revealed that 62% of its estate is, in fact, greenspace.

NHS Fife is now using its estate map and associated ArcGIS Dashboard to help it deliver its 2030 Greenspace Strategy. It is putting in place plans to develop gardens and outdoor spaces where patients and staff can relax, as well as create new meadows and ponds that will support and encourage greater biodiversity. NHS Fife will also use the estate map to identify suitable locations for community allotments, where groups can grow their own food, as well as pursue opportunities for generating renewable energy and promoting sustainable travel.

"It is vitally important to manage greenspaces well to improve public wellbeing and the environment. Esri UK has supported us in the creation of an incredibly detailed estates map that is already helping us to manage our land in a more beneficial and sustainable way."

Jimmy Ramsay
Head of Sustainability,
NHS Fife



NHS Fife Land Use Navigator shows available greenspace at Victoria Hospital site

62%
of NHS Fife estate is greenspace

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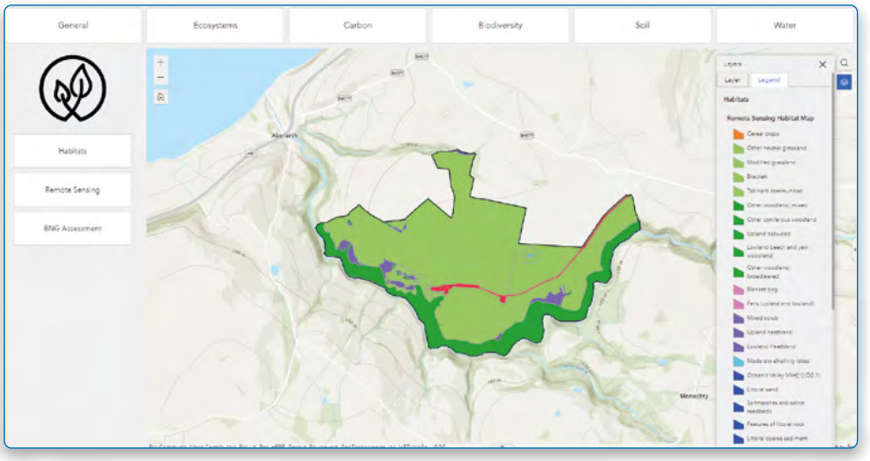
DATA VISUALISATION

OXYGEN CONSERVATION BREATHES NEW LIFE INTO ANCIENT WOODLAND

In a hidden valley in rural Wales, a new kind of conservation organisation is working to expand and regenerate a unique woodland landscape.



ArcGIS shows trees and carbon sequestration at Esgair Arth in Wales

"ArcGIS enables us to show the changes that have occurred and the impact we have made to improve things for the future."

Lara Salam
GIS and Data Visualisation Expert, Oxygen Conservation

Founded in 2021, Oxygen Conservation's goal is to deliver conservation at scale. By improving land management across large areas of the UK, the organisation's founders aim to deliver positive environmental and social impacts, generating a profit as a result of what they do, not the purpose. One of Oxygen Conservation's current projects is at Esgair Arth in Wales, where environmentalists are now working to protect and expand an ancient woodland that is home to a number of rare tree species.

Employees at Oxygen Conservation, as well as key stakeholders, are able to visualise the unique valley landscape at Esgair Arth using an online data viewer, created using ArcGIS Experience Builder. The data viewer provides easy access to a wealth of environmental data, enabling Oxygen Conservation to plan and implement the most effective conservation and agroforestry schemes. Encompassing tree planting, removal of dilapidated farming materials, creating space for natural regeneration, regenerative agriculture and ecotourism, these initiatives will enable the woodland to revive, expand and flourish once again.

Oxygen Conservation will use ArcGIS to monitor the progress of the conservation activities at Esgair Arth and measure the impacts of interventions over time. For example, the data viewer will visualise changes in the number of trees, allowing increases in the volume of carbon sequestered to be accurately measured. Esgair Arth is just one of ten sites owned and managed by Oxygen Conservation, and ArcGIS is used across this portfolio to ensure the sustainable management of almost 30,000 acres of land.

30,000
acres under sustainable management (approximately)

ANALYTICAL INSIGHTS

AECOM INVESTIGATES LANDSLIDE-PRONE TERRAINS IN SCOTLAND

Infrastructure consulting firm AECOM improved safety and efficiency during an assessment to better understand landslide behaviour in 2D and 3D.

Landslips and falling boulders were becoming an all-too-frequent occurrence along the A83 Trunk Road at a remote location called The Rest and Be Thankful in Scotland, where the Trunk Road transects Beinn Luibhean's southwest hillside. Transport Scotland therefore appointed AECOM to assess landslide potential and estimate landslide pathways and scale in this area.

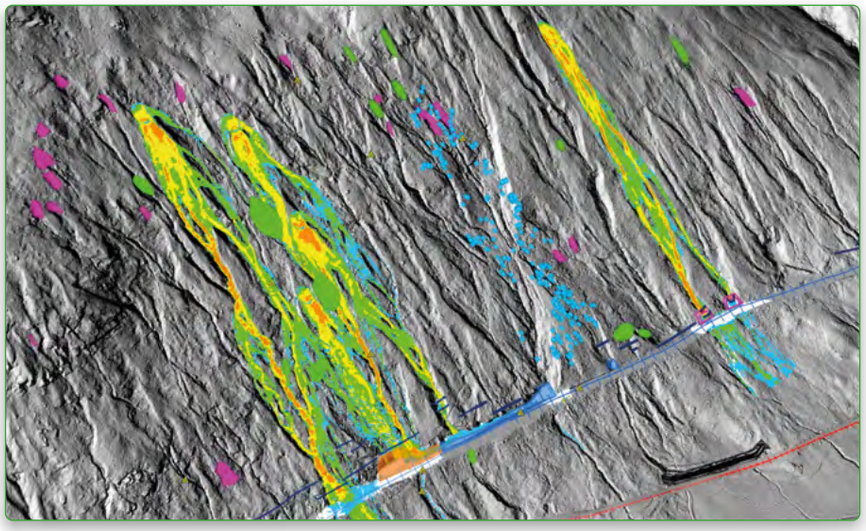
Conscious of the need to undertake this challenging project as efficiently and safely as possible, AECOM used ArcGIS to analyse the terrain in 2D and 3D and identify potential areas of instability from desktop surveys. Engineers could then plan their field visits to avoid areas where previous debris falls had occurred and take necessary precautions. This desktop analysis also reduced the number of field visits required by at least 50%, further minimising the risks of working at remote and hazardous sites.

When in the field, engineers surveyed the hillside highly efficiently using mobile data collection apps built with ArcGIS Survey123. AECOM estimates that it was able to complete field surveys five times faster using this digital solution than with its previous paper-based approach. All ArcGIS project data was accessible electronically on tablets, allowing efficient cross referencing during the survey and avoiding the need to carry multiple drawings. Data collected in the field was visible to the entire project team instantly on 3D web maps, helping geologists to more reliably pinpoint locations at risk of future landslips.

"ArcGIS helped us to better understand landslide behaviour across the hillside, and this will enable the optimisation of risk reduction measures in the future, ultimately leading to less road user disruption and better value for money."

Beth Mennie
Associate Director, Data, Geospatial and Analytics, AECOM

ArcGIS 3D Scene showing some of the potential landslide flow paths and rock boulder locations identified during the assessment



400%
improvement in efficiency in the field

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800+
surveys since 2020

FIELD MOBILITY

DENBIGHSHIRE COUNTY COUNCIL NURTURES NATIVE WILDFLOWERS

A local authority in Wales is improving the biodiversity of roadside verges and urban meadows, using mobile apps to help it find, propagate and plant native flowers and trees.

Recognising the need to enlarge and enhance Britain's wildflower environments, Denbighshire County Council has protected 1,820 km of roadside verges from over-frequent cutting, created 11 roadside nature reserves and established 140 urban meadows, covering more than 70 acres of land. It is now systematically enriching these habitats, by surveying existing flowers and trees, collecting seeds from native species, growing new plants and planting out the seedlings in other locations.

This entire, end-to-end process is being managed with three integrated survey apps, configured using ArcGIS Survey123. The first app allows biodiversity officers to collect data about sites and identify native species that are present, such as the rare black poplar tree. Then, a plant tracker app is used to record details about where seeds are collected and generate unique batch numbers. The third app is used within the council's plant nursery to label plant pots with batch numbers and monitor growing conditions, such as soil type, position in nursery and watering frequency.

Using the data collected from these three ArcGIS mobile solutions, Denbighshire County Council can identify the best growing conditions to improve the success of its propagation processes, by seed type. It can also trace the providence and origin of all the native plants that it has transplanted back into the environment. Consequently, if a pest or pathogen were to be detected in one plant, the council could easily find other plants originating from the same batch of seeds to help it maintain the health of the local countryside.

Denbighshire County Council's nursery propagation app, created with ArcGIS Survey123

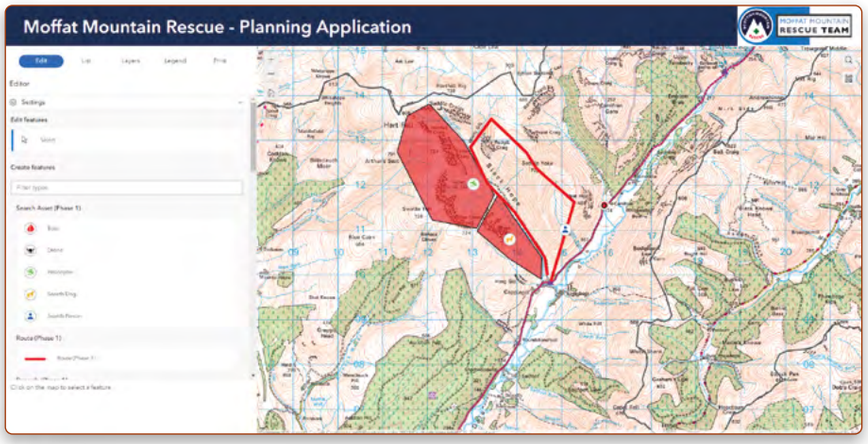
"Our three ArcGIS apps give us complete traceability of all plant material from source to final destination, helping us to enrich our wildflower meadows with species native to northern Wales."

Liam Blazey
Biodiversity Officer,
Denbighshire County Council

COLLABORATIVE WORKING

MOFFAT MOUNTAIN RESCUE IMPROVES PLANNING IN LIFE-SAVING SEARCHES

A Scottish mountain rescue team can now collaborate with other emergency responders and plan more effectively to help find people lost and injured in remote locations.



ArcGIS shows where searches on foot, with dogs and via helicopter will take place

When people get into difficulty and go missing in rural areas of Scotland, Moffat Mountain Rescue can be called upon to help coordinate a search across a vast area of over 400 km2. In recent years, it has helped to save the lives of dozens of walkers, cyclists and visitors who have become injured, ill or disorientated in harsh conditions. To support the invaluable work of this voluntary organisation, Esri UK has configured a search and rescue app using ArcGIS Experience Builder that allows team members to identify search areas and plan recovery activities more effectively.

As soon as an emergency search for a missing person is initiated, Moffat Mountain Rescue can use the ArcGIS app within its incident support vehicles to see up-to-date digital maps from Ordnance Survey, as well as maps of trails within Forestry Commission land and privately owned estates. It can then define and compare different search areas and plan successive search phases, often involving helicopters, drones, trained dogs and specialist teams.

Critically, the app helps Moffat Mountain Rescue to work effectively in collaboration with the Scottish Police, neighbouring search and rescue teams and other emergency responders. By using the ArcGIS solution, it can avoid duplication of effort and ensure that every likely location is properly searched, to help rescuers find and recover people more quickly. Following incidents, Moffat Mountain Rescue can also use the search data to evaluate the plans made and identify lessons learned to help volunteers find missing people even faster in the future.

"We now have a greater level of confidence that we are searching the right areas thoroughly and working effectively with our partners to find people who are seriously injured as quickly as possible."

James Coles
Team Leader, Moffat Mountain Rescue

400
km² to search for missing people

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RENEWABLE ENERGY SECTOR

ACCELERATING THE TRANSITION TO GREEN ENERGY

Throughout the renewable energy sector, organisations are using ArcGIS in a wide variety of ways to advance the generation and use of green energy.

The renewable energy industry needs to overcome many hurdles if it is to meet the UK Government's target to achieve net zero by 2050. One of the most complex challenges is finding suitable locations for new projects, such as wind farms, solar power and battery storage facilities. A growing number of organisations in this sector are now using Esri GIS technology to help them shortlist sites, not only where the conditions are right for generating or storing renewable power, but also where environmental impacts can be mitigated and costs can be minimised.

Other pioneering companies are beginning to use GIS beyond the planning phase too, to enhance efficiency during development, construction and maintenance processes. Some are using GIS to improve health and safety and reporting at operational facilities, while many are already using ArcGIS Dashboards, web apps and StoryMaps to transform communications with communities, stakeholders and employees. By expanding their use of GIS in these ways, renewable energy companies are advancing their projects and helping to accelerate the UK's transition to green energy.

STATKRAFT

The newly-formed team of GIS professionals at Statkraft UK uses Esri's ArcGIS technology primarily to help identify potential sites for onshore wind farms. Drawing on a vast amount of environmental, historical and landscape data, the company conducts multicriteria analysis of the UK to quickly identify and shortlist locations.

View Esri UK's eBook on GIS for the renewable energy sector ›

EXAGEN

Exagen develops large-scale, grid-linked battery storage systems in conjunction with solar farms in the UK and has integrated ArcGIS Online with multiple third-party systems. Its teams use ArcGIS web applications to identify the projects they are working on and to inform and analyse the data for better decision making.

OSPREY CHARGING NETWORK

The company behind one of the largest and fastest-growing networks of rapid electric vehicle chargepoints has recently expanded its use of GIS to improve data sharing. Osprey Charging Network now uses ArcGIS Online to make accurate, up-to-date data accessible to all employees, whether they are working in the office or using mobile devices in the field.

FLOTATION ENERGY

Flotation Energy is using Esri's ArcGIS system to support the development of the Green Volt floating offshore windfarm in the North Sea. With around 35 turbines, Green Volt is one of the most advanced oil and gas platform electrification and decarbonisation projects in Europe, reducing participating platform emissions by 85%.

JBM SOLAR

JBM Solar has significantly reduced the amount of time required to identify suitable land for largescale solar projects from 5-10 hours to 5-10 minutes. Using Esri's ArcGIS system, it has built a bespoke site searching model that automatically qualifies and highlights viable land parcels, within a designated distance from a substation with available grid capacity.

STOREGGA

A pioneer in the carbon capture and carbon storage sector in the UK, Storegga relies on Esri's ArcGIS system to integrate and analyse data, and gain an improved understanding of the best locations for new facilities. It is, for example, using ArcGIS Pro to help it connect emitters to carbon stores globally

H2Au

The start-up business H2Au is leveraging experience gained from the oil and gas and mineral sectors to help it prospect for natural hydrogen. Driving innovation in this emerging sector, the company is using ArcGIS to look for sites with the unique geological conditions that typically give rise to natural hydrogen accumulations underground.

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FIELD MOBILITY

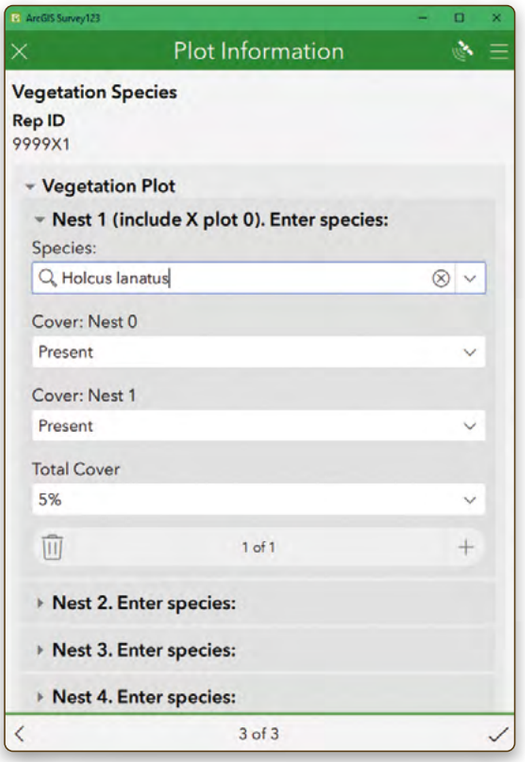
UKCEH SURVEYS THE HEALTH AND DIVERSITY OF WELSH LANDSCAPES

The UK Centre for Ecology and Hydrology (UKCEH) is leading a large-scale, detailed environmental survey, which will support sustainable land management in Wales.

As part of the Welsh Government's Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP), UKCEH is surveying soil, plants, insects, birds, water and landscape features at 300 distinct 1 km2 sample sites, dispersed across the whole of Wales. Over a four-year period, from 2021-24, it is collecting data on 9,000 botanical plots, 9,700 hedgerows and 300 river and pond habitats, to evidence how the natural environment has changed since the previous survey, undertaken in 2013-2016.

Thirty seven specialist surveyors appointed by UKCEH are using a suite of ArcGIS apps that enable them to view and capture different types of data in different ways in the field. Botanists, for example, use an ArcGIS Survey123 app to collect and accurately geo-reference 4,500 soil samples and record around 1,200 plant species. Ecologists view data from the previous survey on ArcGIS Field Maps, while other surveyors use a mobile app configured with Sweet for ArcGIS to record changes to trees and woodlands.

These mobile data capture solutions enable information and photographs to be uploaded directly from the field, with no manual intervention, saving around a week of time for each survey site. As a result of this efficiency gain, newly collected data can be analysed more quickly, giving UKCEH faster insight into emerging environmental trends. UKCEH is tracking surveyors' progress on an ArcGIS Dashboard, which will help it to manage the project and deliver, on schedule, the vitally important evidence needed to inform national environmental policies.



An ArcGIS Survey123 app for collecting vegetation data in the field

"Whether we are collecting soil samples, monitoring the presence of pollinators, recording plant species or editing woodland features, ArcGIS gives us the mobile apps to work efficiently in the field."

Claire Wood
Senior Geospatial Information Scientist, UK Centre for Ecology and Hydrology

147,000
individual plant records recorded

DATA VISUALISATION

EDF DELIVERS DATA ON DEMAND IN CONSTRUCTION MEGAPROJECT

In the large-scale, high priority construction of two nuclear reactors in Somerset, EDF is making sure that employees, contractors and partners share a single view of the truth.

An overview of part of the Hinkley Point C site in ArcGIS

Electricity provider EDF is currently building the UK's first nuclear power plant in more than thirty years at Hinkley Point C in Somerset. In this enormous and highly complex construction megaproject, there are 10,000 employees and contractors working across the 174 hectare site, as well as thousands of people working off site and a supply chain of partners extending all around the world.

With so many different teams and contractors all working together to deliver two nuclear reactors at the plant, EDF uses ArcGIS Enterprise to ensure everyone has access to the same single source of accurate information. Any approved user can access ArcGIS Enterprise to see the latest as-built site drawings and plan their jobs safely with an accurate knowledge of the wider construction project. A suite of ArcGIS-driven web apps, mobile solutions and workflows also delivers the right information to the right teams, helping everyone to access data on demand and perform their jobs as efficiently as possible.

Increasingly, EDF is using its ArcGIS system to help it visualise environmental aspects of the construction project and monitor environment data on emissions and light pollution. Already, the organisation uses ArcGIS Enterprise to make all employees and contractors aware of environmental constraints, such as bat corridors, and help everyone work together responsibly to safeguard the area's wildlife year after year, for the duration of the long-term build project

"ArcGIS helps different people, teams and contractors to understand the big picture and how they fit into it."

Jon Dolphin
GIS Lead, New Nuclear Build, EDF

10,000
workers on site

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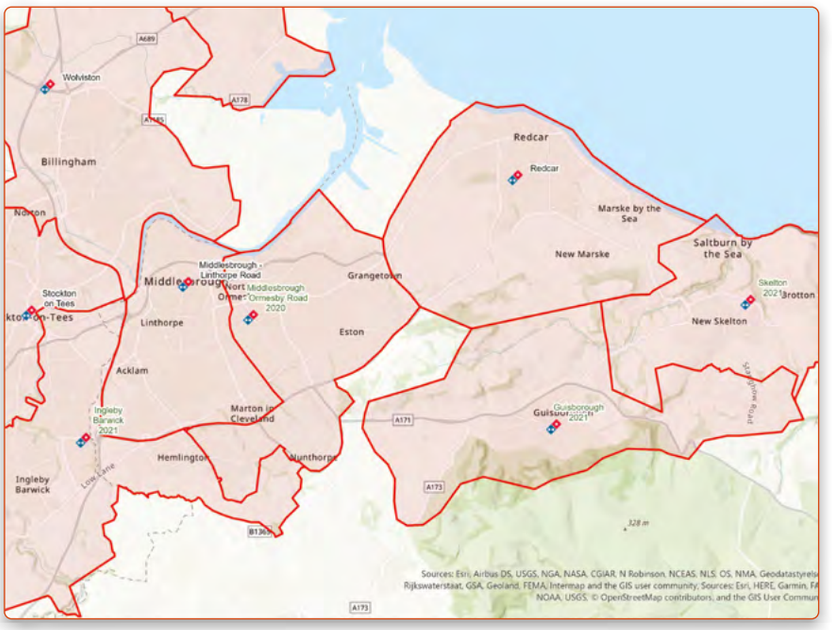
ANALYTICAL INSIGHTS

DOMINO'S PIZZA GROUP DELIVERS IMPROVED CUSTOMER EXPERIENCES

The UK's leading pizza brand is optimising the locations of new stores to help it deliver food faster, increase customer satisfaction and operate more sustainably.



Domino's Pizza used ArcGIS for data-driven network planning in Teesside, improving service and market penetration

Domino's Pizza Group already has 1,190 stores across the UK and over 70 franchise partners, so it has to plan and prioritise the development of new stores very strategically. Having recently migrated to Esri UK's Managed Cloud Service, the organisation now uses ArcGIS Pro and interactive web maps built with ArcGIS Online to analyse a multitude of factors including delivery distances, housing growth and the competitive landscape. It then uses this geospatial insight to ensure that new stores are sited in the right places to deliver the biggest improvements in customer experience.

One of the organisation's franchise partners in North East England used the intelligence gained from ArcGIS to better understand its local market and calculate the number of customer addresses within a six-minute and nine-minute drive of proposed new stores. It then expanded its business from three stores to six, shaving 1.5 minutes from average delivery times, reducing late orders down to just 7% and creating a 10% uplift in customer satisfaction.

With a better understanding of delivery distances between stores and customers, Domino's Pizza can also optimise its nationwide network of stores to reduce carbon emissions. Recently, the organisation used ArcGIS Pro Network Analyst to analyse cycle times on road and cycle networks and plan the development of a new store in Hammersmith, London, from which all deliveries will be made via pedal power. This store is expected to reduce carbon emissions by over a third and will provide a blueprint for the future of fast food delivery.

"ArcGIS is really important to us for network planning and optimisation, enabling us to help our franchise partners to deliver pizzas as quickly as possible and improve their customer service."

Neil Andrews
Head of Location Planning, Domino's Pizza Group

10%
uplift in customer satisfaction

22
million trees felled
in one night

COLLABORATIVE WORKING

FOREST RESEARCH USES CITIZEN SCIENCE TO VALIDATE MACHINE LEARNING DATA

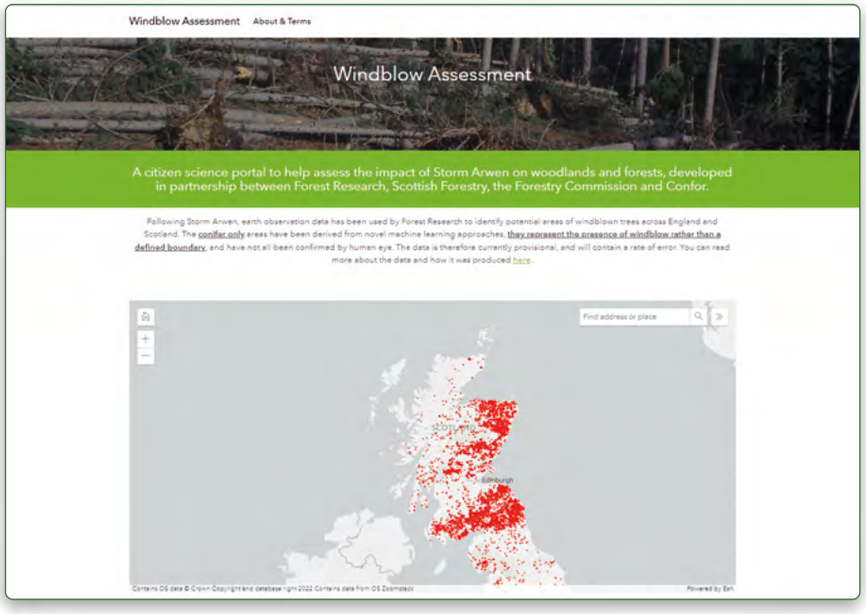
A storm that devastated forests across Scotland and Northern England has provided the catalyst for Forest Research to start using citizen science to improve forestry management.

In the aftermath of Storm Arwen, it quickly became clear that this extreme weather event had caused catastrophic damage to woodlands and forests in Scotland and Northern England. Forest Research used satellite imagery and machine learning techniques to get an initial picture of the devastation and estimated that 8 million trees had been felled in one night. The organisation has, however, since established that the true impact of the storm was even greater.

Through a new citizen-science approach, Forest Research has been able to validate its machine learning data across thousands of square miles of land and gauge the impact of Storm Arwen with far greater accuracy and confidence. It used ArcGIS Hub Premium and ArcGIS Survey123 to enable people to view, edit and verify the existing data using their smartphones, and soon discovered that 22 million trees had come down in the storm, over two and half times more than initially estimated.

Forest Research now has an ArcGIS portal and mobile data capture solution, and a proven citizen-science approach, that it can use to more accurately assess the impacts of future storms. With improved data about storm damage, it can help landowners to plan their clean-up activities and remove fallen trees to reduce the risks of disease, pests and wildfires. Better data also enables tree nurseries to calculate the number of young trees needed to replant areas devastated by storms and supports the sustainable management of Britain's forests and woodlands.

Forest Research's citizen science portal



"We were able to spin up a citizen-science portal using ArcGIS Hub Premium in less than a day to gather the accurate information the forest industry needed."

Tony Farndon
Head of Field Data Services, Forest Research

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EDUCATION

GOVERNMENT-BACKED BIODIVERSITY INITIATIVES ENGAGE NEXT GENERATION

Pupils will soon be using digital mapping tools to discover, study and enhance biodiversity within their school grounds.

The Department for Education is backing new schemes that will teach children about climate change, whilst simultaneously improving biodiversity across the country and equipping young people with valuable new digital skills. Through ground-breaking initiatives, pupils will map, monitor and enhance natural habitats on their school, college and nursery sites to combat nature depletion, learn about the need for climate resilience and ensure a more sustainable future.

The National Education Nature Park is being launched throughout England in autumn 2023, in a project led by the Natural History Museum, the Royal Horticultural Society and Esri UK. Pupils will use ArcGIS apps on tablets and smart phones to map the plants, trees, habitats, insects, birds and animals that they observe, recording not only what they see, but also what they hear, smell and feel at different locations.

The information collected in the field can then be viewed on ArcGIS Dashboards, enabling pupils and teachers to compare different areas within their school grounds and monitor the positive changes that they bring about.

Meanwhile, in Scotland, with support from Scottish Government, NatureScot has recently completed a highly successful pilot project, known as Nature Discovery Map Scotland, in which pupils at Scottish schools used ArcGIS solutions to conduct similar surveys. The ArcGIS apps and dashboards were created to be easy for young people to use, but nonetheless give pupils valuable experience of using digital mapping tools that equip them for future studies, jobs and careers. It is hoped that thousands of young people throughout the UK will soon be using the toolkit of ArcGIS solutions to make positive changes for nature.

Watch this video to learn more about the National Education Nature Park >

LEARNING SERVICES

NEW COURSE LAUNCHED FOR ARCGIS EXPERIENCE BUILDER

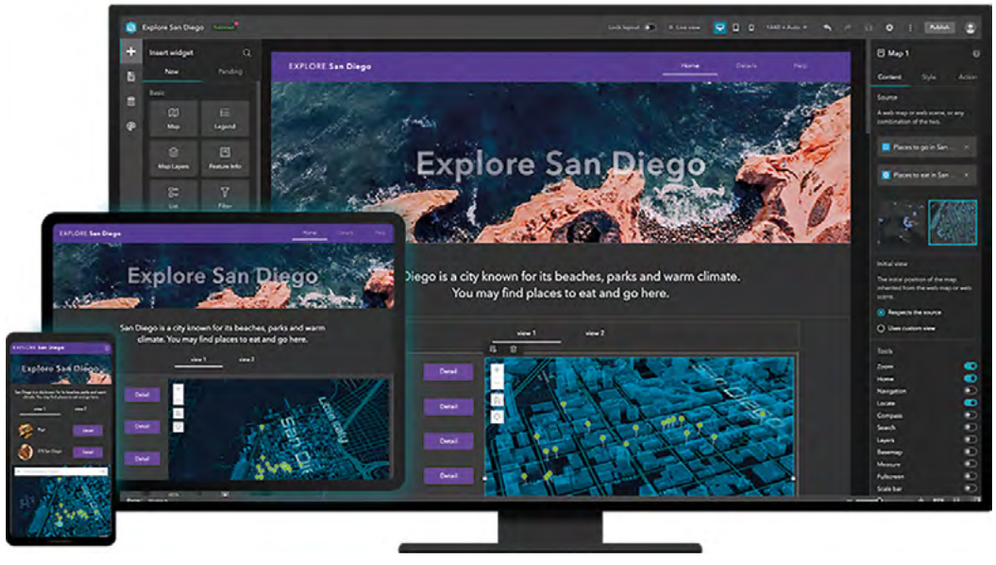
Data analysts and GIS professionals can learn how to create highly customised web apps that transform the user experience.

ArcGIS Experience Builder is a new solution from Esri that makes it easier for organisations to transform their data into innovative, customised web apps for use on any device. With drag-and-drop operations, ready-to-use tools and designer-made templates, it allows users to build attractive apps very quickly without having to write any code.

As ArcGIS Experience Builder is highly customisable, many data analysts and GIS professionals will find it useful to receive training on how to use it effectively to design bespoke apps and optimise the rich set of tools available. Anyone with experience of using ArcGIS Online can now take advantage of a new training course, delivered by Esri UK's Learning Services team, to help them configure widgets and design apps to meet the specific needs of their own audiences and purposes.

Called 'Building Web Apps with ArcGIS Experience Builder,' the course takes place online over two days. It is delivered live by an Esri Certified Trainer and is fully interactive, with delegates receiving help and feedback during exercises. All the software needed is provided within the virtual training environment, so the only thing that delegates need to bring is their professional curiosity. They will leave with the knowledge and skills to build better online and mobile apps that transform the experience of users, including employees, citizens, customers and other stakeholders.

Click here for more information ›



ArcGIS Experience Builder: a highly configurable solution for building web apps without writing code

THINK GIS

A digital twin of natural capital, created with ArcGIS SWEET to calculate net biodiversity gain across multiple sites

IN THE SPOTLIGHT:

DIGITAL TWINS

Whether you are re-developing a city, building new infrastructure, modelling the impacts of climate change or conserving a natural environment, a digital twin will help you find the right answers to complex real-world problems.

What is a digital twin?

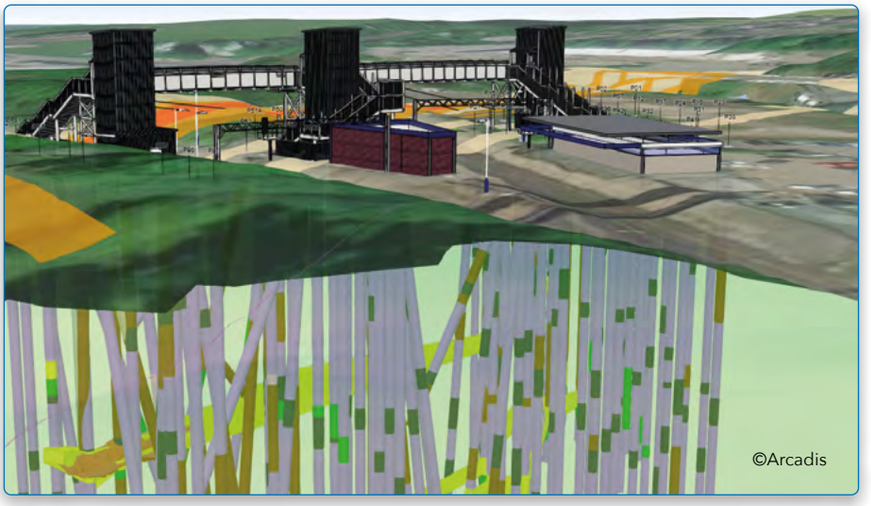
The expression 'digital twin' is commonly used to describe a digital model of any aspect of the real world, whether that is a building, a railway line or even a bolt that pins the track together. GIS technology is a digital twin system as it can be used to create a multi-layered geospatial, digital representation of the natural and built environment.

Why are digital twins important?

Digital twins are incredibly valuable for improving access to information, modelling real-world scenarios and streamlining workflows. They provide the insight that organisations need to help them understand and address complex challenges more easily, make informed decisions quickly and accelerate processes. Future digital twins could further improve efficiency by using machine learning and artificial intelligence to create semi-autonomous and autonomous functionality.

Where are digital twins used?

While digital twins are most commonly created to inform the engineering, construction and maintenance of new buildings, urban areas and infrastructure like roads and bridges, they are increasingly also being used in the natural environment. Digital twins can, for example, be used highly effectively to assess natural capital, understand risk and resilience, measure progress towards net zero and monitor sustainability goals.



A digital twin produced by Arcadis using ArcGIS, combining an above ground 3D BIM model with below ground 3D geological model to support a new pedestrian bridge over a railway line

Find out more here >

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