Case study

Enabling everyone to explore England's rich archaeology

Historic England

The Challenge

- Make Historic England's aerial imagery, as well as mapping derived from them, more accessible to the general public

The Benefits

- Improved public access to specialist resources
- Tailored apps for specific projects
- Deeper understanding of archaeological sites
- A positive response from the public

Historic England is the custodian of millions of precious archive resources ranging from the very first balloon flights to the latest photography of England's highstreets and every photographic image, map and illustration you can imagine. The organisation has now embarked on a journey to digitise, standardise and share its archaeological data and images using ArcGIS, to help more people discover and explore England's rich archaeology.

The Challenge

For over thirty years, Historic England, its predecessor organisations and other heritage bodies funded by it have been identifying, mapping and recording England's archaeological sites using aerial photographs and, more recently, airborne laser scanning (lidar). In addition, Historic England has amassed over 6 million oblique and vertical photographs recording England's changing landscape over the past century.

Recognising the huge value of these resources, Historic England wanted to find a way to share its vast archive of archaeological mapping data and images in a way that would be accessible to everyone. First, however, it had to overcome the formidable challenges posed by digitising, standardising and consolidating resources that were in a myriad of different digital and paper-based formats.

The Solution

A long-time user of products from Esri's ArcGIS suite of geographic information system (GIS) solutions, Historic England began by using ArcGIS Pro on the desktop to clean up its historic data. ArcGIS Pro was particularly effective at processing old computer-aided design (CAD) files, eliminating errors and inconsistencies to create a standardised output. "Using desktop GIS software gave us a way of quality controlling our data in a way that was impossible in a CAD environment," says Simon Crutchley, Remote Sensing Development Manager at Historic England.

Next, the organisation explored ways to visualise and share its data and maps. It began by creating an ArcGIS StoryMap with ArcGIS Online to enable people to explore Historic England's aerial imagery of Capability Brown gardens. The StoryMap highlighted all sites associated with the renowned landscape designer across England and allowed people to click on individual locations to access more information. "The Capability Brown StoryMap became a proof-of-concept for how we might use ArcGIS to provide all our digital maps and imagery to a wider public," Crutchley says.

The organisation went on to create the ground-breaking Aerial Archaeology Mapping Explorer app (AAME). Built using ArcGIS Web AppBuilder, this solution provides easy access to all the mapping and interpretation work carried out by Historic England's Aerial Survey team, in one place, to a standardised level, for the first time. It includes a query tool and allows users to zoom into specific archaeological features, such as camps along Hadrian's wall. Clicking on these features brings up details about the type of camp, its age and how it appears today with hyperlinks to more historical information.

Esri UK | Millennium House
65 Walton Street | Aylesbury
Buckinghamshire HP21 7QG
T 01296 745500 | **F** 01296 745544
E info@esriuk.com | **www.esriuk.com**

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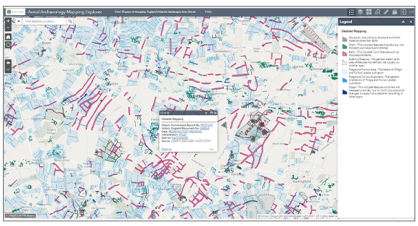
> Simon Crutchley, Remote Sensing Development Manager, Archaeological Investigation, Historic England



Historic England's Aerial Archaeology Mapping Explorer created with ArcGIS Web AppBuilder

To complement AAME, Historic England subsequently created another app with ArcGIS Web AppBuilder, called the Aerial Photo Explorer app (APEX), for sharing original photographs. Currently, around 400,000 specialist oblique photographs and 50,000 vertical photographs of archaeological sites are available via APEX, in full resolution. The organisation aims to steadily share more of it 6 million images using APEX and future solutions built with ArcGIS Experience Builder.

The Benefits

Improved public access to specialist resources

Anyone interested in local history can now use AAME to gain easy access to over thirty years of mapping and interpretation carried out by Historic England and other organisations grant-aided by it. People can also explore over 450,000 images using APEX to find out more about historic sites. "The combination of the desktop and web-based ArcGIS software made a real difference; we could not have got to where we are without using them," Crutchley says.

Tailored apps for specific projects

Using ArcGIS, Historic England can quickly build tailored apps that make data and imagery relating to specific projects available in an accessible and meaningful format. For example, Historic England used ArcGIS Web AppBuilder to create a dedicated interactive map of Cannock Chase in Staffordshire, one of the best-preserved First World War sites in England. The map enabled Historic England to share lidar imagery and other data with a large number of local volunteers who were involved in a project to assess the remains of camps where 500,000 men trained before heading to the front line.

Deeper understanding of archaeological sites

Together, AAME, APEX and Historic England's project-specific mapping apps are helping people to better understand archaeological sites, by making a wide range of resources more accessible to more people than ever before. "A collection of photographs on its own doesn't constitute knowledge," Crutchley explains. "It is only by bringing together imagery, mapping and reports and presenting it all geospatially on an interactive digital map, that we can help people gain a deeper understanding of the archaeology of England."

A positive response from the public

The public response to Historic England's ArcGIS apps has been incredibly positive. When, for example, AAME was launched, the story received 33,560 news page views and generated 37 pieces of media, making it Historic England's best ever website news story to date. Then, in the first three months alone, it received over 137,000 views. "The success of the launch showed us that people were interested – not just in the historic environment, but in maps specifically," Crutchley says. "People are interested in England's historic places if they can find information easily in an accessible form, and that's what we've been able to deliver in the Archaeological Mapping Explorer."

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