

ARCHES

Building an Open-Source Community to Protect Heritage around the Globe

The city of Lincoln, England has a deep and varied history that stretches back over thousands of years. Among its many attractions: a nine-hundred-year-old medieval cathedral, a Norman castle built on the site of a former Roman fortress, and a twelfth-century bridge lined with sixteenth-century timber-framed shops.

But Lincoln is also a modern city, its population and economy rapidly growing. And so that its cultural heritage doesn't constrain new development—and development doesn't inadvertently harm its heritage—the city has partnered with the Getty Conservation Institute (GCI) to deploy Arches, a modern, open-source software platform purpose-built to inventory cultural heritage sites.

“Our current archaeological database is old now and was never designed to represent everything it contains,” says Alastair MacIntosh, Lincoln's city archaeologist. “Moving the data to the Arches platform will greatly increase its accessibility and discoverability, and help planners and developers address issues at an early design stage, saving everyone time and money.”

The seeds for this GCI-Lincoln partnership were sown in 2011 and 2012, when the GCI and World Monuments Fund (WMF) engaged with Historic England (HE)—then called English Heritage—to gather input on standards and best practices for heritage inventory systems during Arches' design phase. HE has continued to provide technical guidance to the Arches project ever since.

The GCI has forged relationships with many others through the Arches project as part of its ongoing effort to advance conservation practice and to preserve cultural heritage throughout the world. Its partnerships have involved scientific research, training, and the development of protocols and tools that help professionals in the conservation field. The Arches platform is among those tools.

For organizations responsible for protecting immovable heritage—archaeological sites, historic buildings and structures, cultural landscapes, and urban heritage—inventories are indispensable for making proactive, timely, and informed decisions to manage a range of threats to sites and to apply heritage-related laws and policies. Organizations deploying Arches can customize the software to meet their particular needs. Arches is also affordable; in keeping with the spirit of the GCI's mission of service, it is available free of charge as open-source software.



Lincoln Cathedral, at its center, was commissioned by William the Conqueror, built out of local limestone, and consecrated in 1092. Photo: retroimages



Origins

Arches was developed collaboratively by the GCI and WMF starting in 2011. It grew out of work begun in 2004 on a modern inventory system for the Iraq State Board of Antiquities and Heritage that led to developing such a system with the Jordanian Department of Antiquities called the Middle Eastern Geodatabase for Antiquities (MEGA)–Jordan, deployed in 2010.

“After hearing from numerous other heritage institutions around the world, we recognized the critical and common challenges around creating and maintaining modern inventory systems,” says Tim Whalen, the John E. and Louise Bryson Director of the GCI. “We saw it as a strategic investment in helping authorities around the globe to modernize the information infrastructure they need to protect heritage under their care.”

Because Arches was developed as an open-source software platform that can meet most of the needs of heritage—and with adopters able to pool resources for its customization and maintenance—implementing Arches can free up limited resources for documenting and protecting heritage. Such an approach limits the need to engage in software development, its associated cost, and the dependence on a specific vendor to support a proprietary software package.

A defining characteristic of the project has been the shared goal of building a collaborative open-source community around the software. From the inception of the Arches project, the GCI and WMF determined that a key to the long-term sustainability and growth of the Arches platform was increasing support of Arches by members of that community. From the first community meeting in the summer of 2012, the project team set out to create the infrastructure to attract new members, enable their collaboration, and amplify the work of individual contributors.

“We did this by creating an online forum, as well as a public repository for the Arches software code and the accompanying documentation that community members can access,” says Arches project team member David Myers, a senior project specialist at the GCI. “We are actively invested in expanding and invigorating the Arches community by sharing information and holding regular community

events around the world. Since 2012, the Arches community forum has grown to exceed four hundred members from across the globe.”

Over time, members of the Arches community have become increasingly active in responding to queries on the forum, contributing to the software codebase, and even volunteering to translate literature about Arches into a number of languages, including Arabic, Mandarin, Polish, and Russian.

As a result of these collective engagements, the Arches community has grown to include institutions and individuals representing the government sector, NGOs and philanthropy, academia, as well as commercial entities. Their involvement in the community ranges from deploying Arches, hosting the software, maintaining and extending the code, and Arches-related training to supporting the use of Arches by others. Among the approximately forty known organizations and projects that have deployed or are in the process of deploying Arches are national-scale inventories in Asia and the Caribbean, and county- and city-wide implementations in the United States and the UK. The Endangered Archaeology in the Middle East and North Africa (EAMENA) project based at the University of Oxford is also using Arches to record archaeological sites and landscapes across a twenty-country region.

Collaborations

The GCI has also sought to encourage adoption of Arches and extend the functionality of the software platform through strategic partnerships. This was the case with the Institute’s partnership with the City of Los Angeles on the implementation of Arches (known as HistoricPlacesLA) to manage and publish information collected through SurveyLA, another Getty-City of Los Angeles partnership. Other collaborative relationships have included the American Schools of Oriental Research to support its use of Arches in the protection and preservation of cultural heritage in Syria and northern Iraq. The GCI is also collaborating with the University of Hong Kong and Liverpool John Moores University to foster centers of capacity-building in applying Arches.

In its current collaboration with Lincoln City Council and HE in the United Kingdom, the GCI is making enhancements to the Arches platform based on the common needs of more than eighty local heritage authorities in England, each of which are responsible for heritage protection within their jurisdictions. This past May the Lincoln City Council launched ARCADE, its implementation of the Arches platform, to serve as Lincoln’s official historic environment record.

“What drives me in my job is managing the archaeological heritage of this city, and that’s best done by making informed recommendations and decisions,” says Alastair MacIntosh. “The Arches project has given us a world-class heritage database that will enable me to make better recommendations and decisions. It is really going to change how I use the city’s heritage data.”



Above: Officials from the City of Lincoln, Arches team members, and GCI leadership celebrate the launch of ARCADE. Photo: Phil Crow

Opposite: A GCI-WMF open-source community workshop on Arches in England in June 2013. Twenty heritage professionals from government agencies and academic institutions in Britain and Europe worked with the project team to provide feedback in advance of the release of version 1.0 of the system. Photo: Martin Newman

Sarah Harrison, Lincoln’s conservation officer, agrees. “I have a very interactive relationship with our historic environment record because that’s the evidence that tells me what’s important and why,” she says. “With our Arches-based system, I can feed information from my work into the database that enriches it and that the public can see. That increases appreciation of our historic environment going forward.”

HE has recently adopted Arches as a core information technology for use throughout the organization. As a first step, HE is implementing Arches to manage and publish the national maritime heritage inventory, which currently includes records for nearly fifty thousand sites such as shipwrecks and submerged coastal archaeology. HE is also deploying Arches to manage England’s official controlled terminology for the nation’s heritage sector, which is used by more than eighty local heritage authorities. At the same time, HE is working with the GCI to implement Arches as the official historic environment record of Greater London, expected to be launched in 2019.

“Shared understanding of cultural heritage sites is essential for their successful management—and for their enjoyment, too,” notes Gillian Grayson, head of Listing Information Services at HE. “Historic England has been really proud

to contribute to the development of Arches and believes it offers a fresh and readily applicable solution to the challenges of data management. It’s been a great international partnership that’s overcome real complexities.”

Through the Arches project, an information technology platform has been built to address the common as well as particular needs of cultural heritage organizations across the globe. By choosing an open-source software approach, the work of the project has moved well beyond software development and is building a collaborative community with ongoing improvements to the platform. The GCI has also established strategic institutional partnerships and other collaborative relationships to encourage adoption of Arches and extend its functionality, and has promoted the formation of independent and dispersed centers of capacity-building focused on Arches.

“Ultimately, our goal is for the Arches project to have a self-sustaining, open-source community comprised of a rich variety of institutions working collaboratively for the benefit of the international heritage field,” says Alison Dalgity, Arches project manager and senior project manager at the GCI. “We believe that the expanding adoption of Arches in England bodes well for achieving that aim.”