arches™

An Open Source Heritage Inventory and Management Platform

Arches is an open source geospatially-enabled software platform freely available for cultural heritage organizations to inventory and help manage their heritage places.

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Developed jointly by the Getty Conservation Institute (GCI) and World Monuments Fund (WMF) for independent deployment by any cultural heritage institution, Arches is a web-based platform that combines state-of-the-art software development with the insights and perspectives of heritage professionals from around the world. Institutions that deploy Arches can create digital inventories that describe types, locations, extent, cultural periods, materials, and conditions of heritage resources and establish the numerous and complex relationships between those resources.

Arches has been designed with the following overriding principles:

Purpose built: Arches has been specifically designed for the international cultural heritage field and can be used to inventory and manage all types of heritage places.

Economical: As an open source platform, Arches is available at no cost and allows adopters to share resources for software customization and maintenance.

Customizable: The software code is open, and the platform is structured in modules to be easily extended. It is capable of presenting its user interface in any language or in multiple languages and configurable to any geographic location or region.

Standards based: Arches incorporates internationally adopted standards for heritage inventory, semantic modeling, and information technology, leading to better practices in the creation and management of heritage data and facilitation of data exchange and longevity in spite of advances in technology.

Broadly accessible: Web-based for the widest possible access, Arches is user friendly, requires minimal training for most users, and is freely available for download from the Internet.

Arches has been designed to serve a number of purposes fundamental to the protection, understanding, appreciation, and management of heritage places. These include:

- identification and inventory
- research and analysis
- monitoring and risk mapping
- planning for investigation and research, conservation and management
- raising awareness among the public, governmental authorities, and decision makers

The Arches open source community adds and shares functionality to meet other needs of the heritage field, and in addition, the community provides support in the installation and use of Arches. For more information, visit the Arches project website **(archesproject.org)** where along with participating in the community forum, visitors can interact with an online demo, download the code, access documentation, review the project roadmap, receive project updates, and much more.
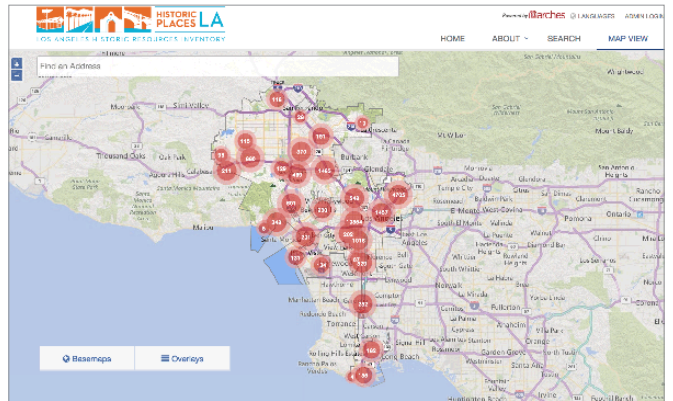
Map View of HistoricPlacesLA.org, powered by Arches v3.0, showing clusters that represent over 25,000 heritage resources identified to date by the City of Los Angeles.
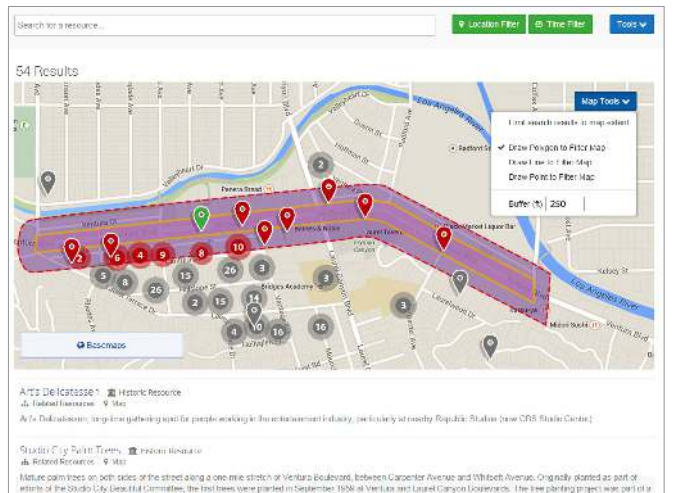
Using the **Location Filter** in Search to spatially query data by drawing an area on the map and specifying a buffer size. This may be used, for example, to identify heritage resources that would be impacted by proposed development projects.
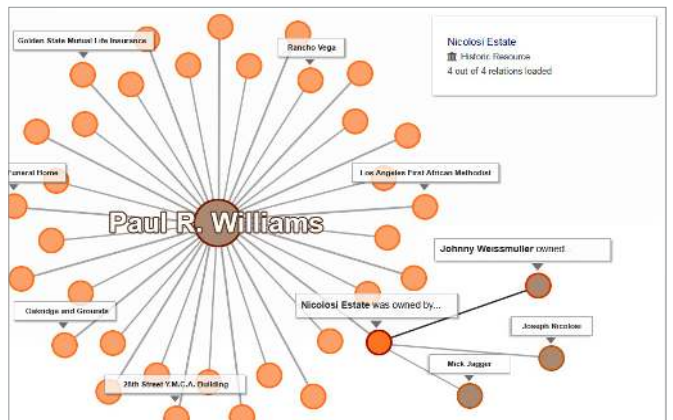
Related Resources graph, which reveals relationships between Arches resources, in this instance between an architect and heritage resources, as well as other persons related to those heritage resources (such as owners and occupants).

Visit: **archesproject.org**

Arches features...

...a modern, semantically-enabled, web-based platform with an easy-to-use interface.

Once Arches is set up for an organization, it is designed to be as intuitive as possible so that authorized users can enter, edit, and search data with little technical training. The platform automatically processes the data to comply with the latest semantic technology.

...robust geospatial mapping and processing.

Arches features the ability to draw, import, and edit resource geometries directly within the platform and provide for comprehensive spatial queries.

Arches can accommodate any basemap service such as Google, OpenStreetMap, and Microsoft. With version 4, a new tile server was added to manage and cache geospatial imagery, for example, satellite images, aerial photos, and historic maps.

Arches accesses and processes geospatial data based on the standards and specifications of the Open Geospatial Consortium (OGC). Compliance with the OGC standards will ensure that the platform is compatible with desktop GIS applications (such as Quantum GIS [QGIS], ESRI's ArcGIS, or Google Earth), modern web browsers, and online mapping services.

...highly customizable options for allowing and limiting access to data aligned with implementation requirements.

Arches gives organizations the ability to fine-tune access to the platform by providing security controls on a granular data field level based on individual or group permissions. For example, an instance of Arches can specify which particular users can edit which particular data fields or what visitors (if public access is allowed) can see what types of data.

...a standards- and semantic-based data architecture to promote data exchange and to ensure data longevity.

Arches uses the CIDOC Conceptual Reference Model (CRM) to structure relationships between data fields. Use of the CRM contributes to the independence of data from the Arches software, which will facilitate data migration to other systems in the future, and aid in the preservation of data over time. It also facilitates powerful and efficient searching within, as well as across, data sets.

Arches includes a growing library of ready-made and logically structured resource graphs suitable for the heritage field that can be customized to meet the specific data-field requirements of any organization. The new Graph Manager, available in v4, facilitates the addition of new data fields while automatically updating the user interface using a streamlined and easy-to-follow process.

...a powerful enterprise-level platform.

Arches is designed primarily to be used at an organization or project level and not as a desktop application. As a result, adopters will need to identify a server to host the Arches platform and as with any enterprise-level system, should expect to engage the services of a qualified information technologist to maintain it.

Institutions adopting Arches can easily configure the software to address their specific geographic, cultural, and administrative contexts. More in-depth customization is possible but would require expertise in the open source tools that have been used to build the platform. This expertise may be found within the deploying organization or supplied by local commerical service providers.

In order to comply with standards and ensure consistency, the use of Arches may require that both legacy and new data be processed before being incorporated in a new implementation.

It is also recommended that institutions prepare controlled vocabularies for documentation of the cultural heritage resources found within their area of interest.

Releases and Implementations

Arches version 4.0 was completed in March 2017. V4 includes numerous enhancements, including an installation wizard and various configuration tools. An Arches online/offline mobile data collection app is planned for completion later in 2017.

Arches has been implemented by organizations worldwide to document heritage places at different scales, including a project to record endangered archaeological sites across the Middle East and North Africa, as national-level inventories in Bhutan and the Philippines, and in the United States by the City of Los Angeles, Cane River National Heritage Area, and Queen Anne's County. Learn about featured implementations at: **archesproject.org/implementations-of-arches**

A number of other Arches implementations are in progress, for example, national-scale inventories in Asia and the Caribbean, city-level inventories in England, including Greater London, and to record ancient sites throughout Egypt. Given that the code is open source and freely available to download and install, deployments may well exist that the Arches project is unaware of. If you are aware of such an implementation, please let us know.

The Getty Conservation Institute

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