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# LoCloud: Local Cultural Heritage Online and in the Cloud



Cluj in the second half of the 20<sup>th</sup> century, from Biblioteca Judeeană O.Goga Cluj, image licenced by Public Domain Mark 1.0

## Introduction

LoCloud's<sup>1</sup> overall goal is explore the potential of cloud-computing services to help small and medium sized organisations in making their content online and accessible to users via Europeana<sup>2</sup>.

LoCloud is a network of 31 partners that includes a strong group of technical partners, national and regional partners who are both involved in testing the new services being developed and providing contact points with cultural organisations in their area (such as museums, public libraries, local archives, private collections and house museums). One of our project's goals is to add over 4 million digital resources to Europeana from the riches held by smaller cultural institutions.

## Collections in local cultural institutions

There is an enormous cultural content held by Europe's cultural institutions at local and regional level. Many of the institutions are small or medium in size but together they hold a rich diversity of content of all types – from images, film, news and archives to the buildings, artworks, and objects in local collections. The collections capture local industries, occupations, leisure activities, and the lives of people – ordinary, locally famous, and internationally renowned – who live in an area. The content is diverse in terms of the cultures, languages, peoples, and geographic regions represented and has great value both for local communities and for individual users.

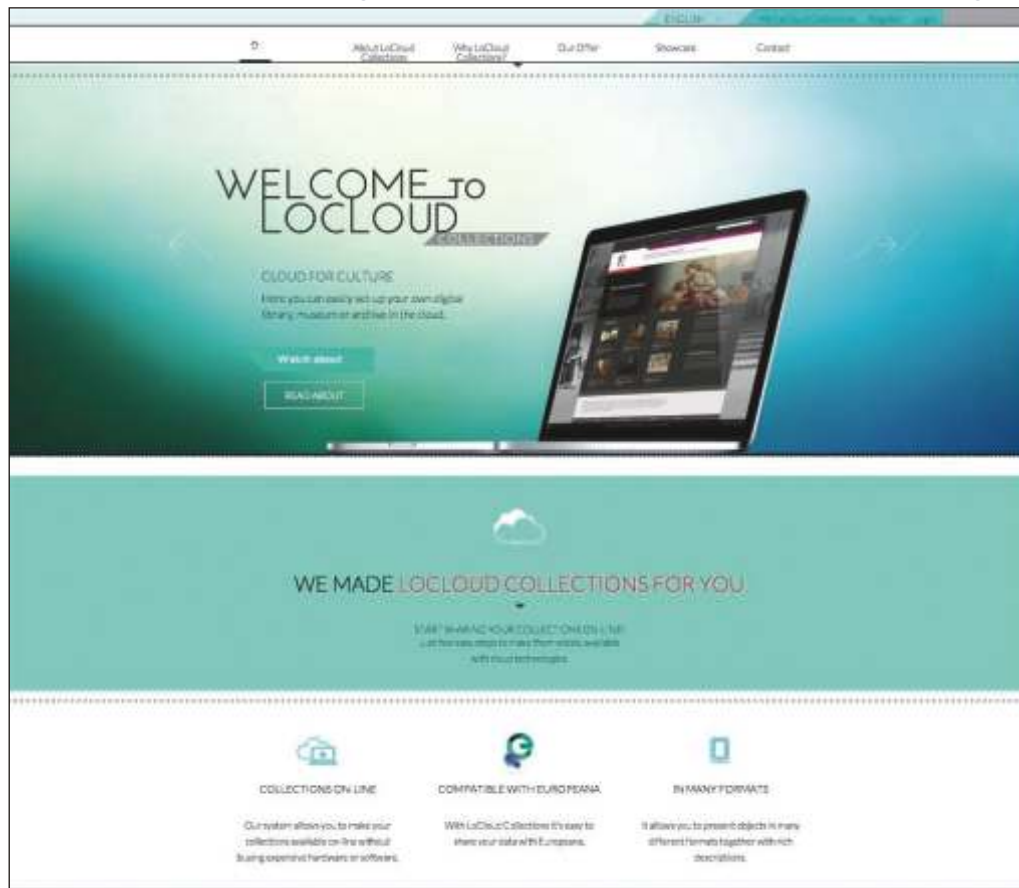


Cultural institutions are increasingly digitising their collections. Many local institutions are keen to make their content available online where it can be used creatively by schools, tourists, and the interested public. But starting out in digitisation involves purchasing equipment and software, and developing new skills amongst staff and volunteers. This presents challenges for cultural institutions large and small, as their budgets are limited, staff are few in number, and there are often limitations in the IT infrastructure and support that is available to them.

### Cloud computing

LoCloud received funding from the European Commission's ICT PSP programme to explore the potential benefits of cloud computing technology and to work on the development of cloud infrastructure (IaaS) and software services (SaaS) to benefit small and medium sized cultural institutions.

Services have moved online in recent years; more and more we are storing data and using software in the Cloud rather than installing it onto our computers or institutional servers. Adopting this



LoCloud collections home screen





approach has the potential to benefit cultural institutions by enabling them to access cost effective solutions that can be deployed quickly and easily, and access to unlimited storage and resources (including support) that are beyond the reach of many institutions.

For smaller institutions one of the main benefits of cloud computing is being able to access online tools with a very low barrier to entry. Storing content in the Cloud is something that is new to many smaller institutions. The idea can be a little scary, but the benefits include having access to more robust and better-supported solutions, and the amount of storage space available can easily be increased, as the collection grows, at relatively low cost. These are some of the areas that LoCloud has been exploring.

#### Services from LoCloud

In LoCloud we have developed a series of services to support metadata aggregation, microservices for metadata enrichment and content management<sup>3</sup>.

LoCloud Collections is designed to allow smaller cultural institutions to set up their digital library, museum or archive in the Cloud quickly without needing to buy expensive hardware or software. The service offers a professional system based on the well-known open source system, Omeka<sup>4</sup>. This is easy to use for cataloguing content (photos, scans, text documents, as well as audio and video materials).

LoCloud collections is not only a cataloguing system. It also includes templates for institutions to set up their own website; registration includes generating an individual URL for the site. The tools provided make it very easy to create an attractive site where the collection is searchable by users. Curators can also feature favourite items and create exhibitions using the system. Importantly in the context of Europeana, LoCloud collections automatically provides institutions the means of making their data available for remote harvesting via an API and the OAI-PMH protocol.

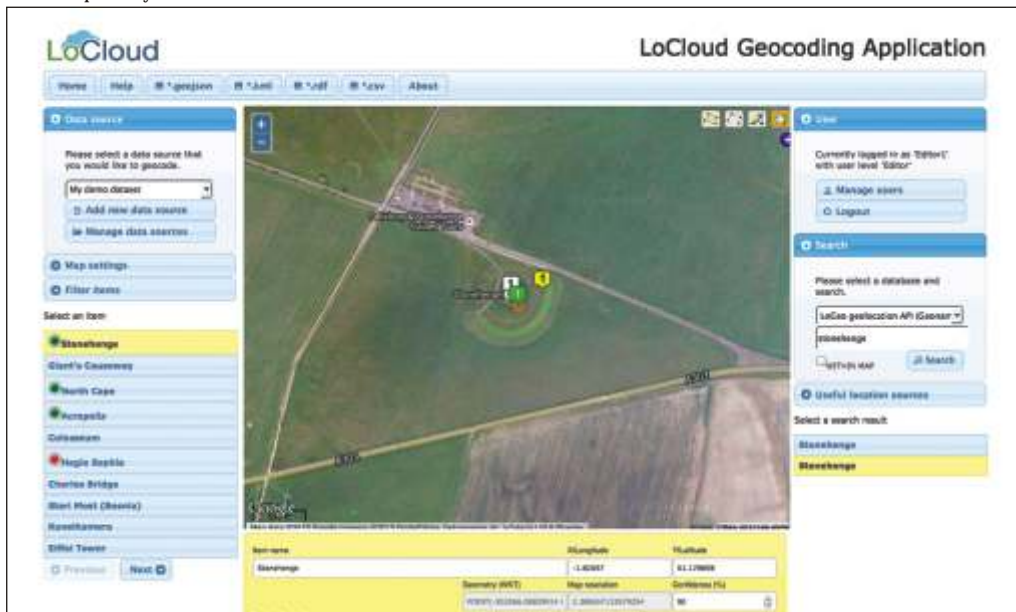
LoCloud Collections is maintained and developed by the Polish National Super Computing Center. The development has involved many of the project partners who have contributed to testing and specifying the system, and also by translating the LoCloud Collections user interfaces into many languages.



MORE repository tools



## MORE repository tools



## LoCloud aggregation tools

Many of the institutions that we are working with have existing systems for managing their collections and are able to export content metadata in a range of formats. LoCloud offers two services that can be used for harvesting this metadata: MINT<sup>6</sup> and MORE<sup>7</sup>.

The MINT tool, developed by the National Technical University of Athens, is widely used in Europeana projects. It provides a web-based platform that supports metadata harvesting, metadata mapping and ingestion. The LoCloud instance of MINT has been configured to support a series of standard metadata schemas: CARARE, LIDO, EAD, ESE, EDM, and Dublin Core. Institutions can use MINT to upload their metadata in its native schema, complete a mapping to one of the standard schemas, and then publish the content to MORE.

The LoCloud MORE aggregator provides a Cloud-based repository where cultural institutions can access microservices developed in LoCloud to enrich their metadata. Institutions can use MORE to harvest their OAI-PMH targets directly if their metadata is in one of the standard metadata schemas that the project supports. Content prepared in both LoCloud Collections and MINT is sent to MORE where it is then made available for validation, quality assurance and enrichment before being delivered to Europeana. MORE provides a framework in which the various microservices that have been developed in LoCloud are made available. These services include tools for managing vocabularies and historic placenames, tools for identifying geographic placenames and providing map coordinates, for enriching metadata by matching keywords to vocabulary terms available as linked open data and for creating links to contextual information





An exhibition created by SVeVID using LoCloud collections

Sve na SVEVIDU Zbirka Knjige Razglednice Časopisi Na karti **Izložba** Šta je SVEVID? Lajeti korišćenja

Anđelja Maurović: 110 naslovnica za 110 godina

Crtač po rubovima modernosti Izložba naslovnica knjige str. 1 Izložba naslovnica knjige str. 2 Izložba naslovnica knjige str. 3

Izložba naslovnica knjige str. 4 Izložba naslovnica knjige str. 5 Izložba naslovnica knjige str. 6 Izložba naslovnica knjige str. 7

### IZLOŽBA NASLOVNICA KNJIGA STR. I

pages in Wikipedia. In addition to these enrichment services, MORE offers tools that enable the metadata to be validated against EDM and its completeness checked. Once the work on the metadata has been completed, providing institutions can make it available for harvesting by Europeana and other portals via the MORE repository.

#### Accessing LoCloud services and microservices

The LoCloud Geocoding application, along with the Historic Place names and Vocabulary Service, offers user interfaces to enable direct use by cultural institutions. The Geocoding application allows institutions to upload a dataset and add map coordinates using Geonames and other map resources, viewing the results against a map base.

To promote the use of LoCloud's services and microservices by developers, APIs have been made available with documentation<sup>8</sup>. Our idea is to promote the exploitation of the services directly in collection management systems and other applications.

#### LoCloud and Digital Creativity

In LoCloud we are aiming to stimulate creativity amongst cultural institutions, developers, and members of the public.

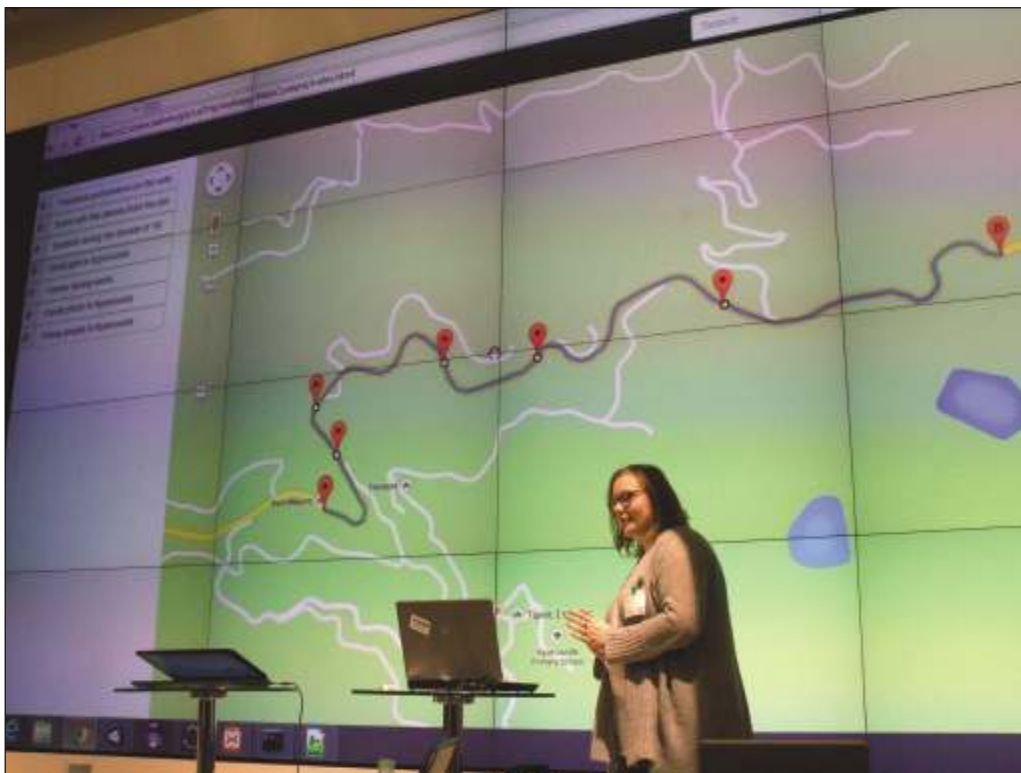


For institutions, LoCloud Collections offers a relatively quick and easy way of publishing collections and for creating exhibitions online. It can be used to showcase existing collections or to publicise the results of community digitisation campaigns.

LoCloud has made available a series of services (with documentation, APIs and code) via our [support portal](#) for developers to use in their own applications.

In February 2015, LoCloud invited developers to take part in a hackathon at the Google Culture Institute in Paris. During this one-day event, they were invited to come up with innovative applications for the cultural heritage sector using LoCloud Services and Europeana data. This event gave us the opportunity to introduce developers to the APIs of the LoCloud services, and for developers to work on their ideas in a very stimulating environment. The results were impressive. A number of developers focussed on geographically referenced content to create mobile applications showing content on the map such as LoTrips. The event also resulted in some interesting new applications repository managers.

At the time of writing, in the second half of 2015, LoCloud is running a competition<sup>9</sup>. The competition has two strands. “My Local Heritage” invites curators, volunteers, local historians,



Presenting LoTrips: a new applications based on LoCloud technologies





and students to explore a favourite place or an aspect of their local history through Europeana and to present their experience online in webpages, a blog or video. We are promoting the competition on a national level across Europe and are looking forward to seeing stories in many languages illustrated with great visual resources.

The second strand, “My LoCloud Services”, builds on our experience in the Hackathon and invites developers, aggregators, and individual cultural institutions to showcase their use of LoCloud services. We look forward to seeing some exciting applications and to presenting the finalists at our project final event.

### Conclusion

LoCloud has successfully developed a series of services and applications that are being used by cultural institutions and in our aggregator. We’ve seen some exciting and creative developments based on our technologies and look forward to seeing more in future.

### Acknowledgements

LoCloud started on 1 March 2013 and is a Best Practice Network of 32 partners, co-funded under the CIP ICT-PSP Programme of the European Commission. It runs for three years.

1. [www.locloud.eu](http://www.locloud.eu)
2. [www.europeana.eu](http://www.europeana.eu)
3. <http://support.locloud.eu>
4. [www.locloudhosting.net](http://www.locloudhosting.net)
5. <http://omeka.org/>
6. <http://mint-projects.image.ntua.gr/locloud>
7. <http://support.locloud.eu/MORE> and <http://more.locloud.eu>
8. <http://support.locloud.eu/tiki-index.php?page=Technical%20Documentation>
9. <http://locloud.eu/LoCloud-Competition>