Deliverable

Project Acronym: **LoCloud**

Grant Agreement number: **325099**

Project Title: **Local content in a Europeana cloud**

D5.4 Analysis and recommendations

Revision: Version 1.0, Final

Authors: **Jef Malliet (Provincie Limburg)**

Revision History

Revision	Date	Author	Organisation	Description
0.1	27/07/2015	Jef Malliet	Provincie Limburg	First internal draft
0.2	8/2015 - 10/2015	Kate Fernie	2Culture Associates	Revision / suggestions
0.3	23/11/2015	Jef Malliet	Provincie Limburg	Draft version
0.4	22/01/2016	Jef Malliet	Provincie Limburg	Draft version with cross-referencing, for review
0.5	17/02/2016	Jef Malliet	Provincie Limburg	Intermediate draft
0.6	26/02/2016	Jef Malliet	Provincie Limburg	Added conclusions
1.0	29/02/2016	Jef Malliet	Provincie Limburg	Final, added executive summary

LoCloud

Contents

LoCloud

1 Executive Summary

LoCloud, funded under the European Commission's CIP ICT PSP programme, has the overall goal of supporting small and medium-sized institutions in making their content and metadata available to Europeana by exploring the potential of cloud computing technologies. The project has provided a series of services including both stand-alone services for end-users and micro-services designed as plug-ins for end-user services. The overall aim has been to help reduce the technical, semantic and skills barriers faced by smaller institutions, which typically have limited access to either IT infrastructure or staff with the requisite skills in digital libraries.

In order to understand the needs and expectations of the target group better, eight use cases are described based on aggregators' experience with similar collection holders. For each type of collection, a scenario describes the typical features, a SWOT analysis, expectations and requirements.

This analysis of typical users further yields a number of common issues for which the services and applications developed in the LoCloud project are expected to provide solutions. Seven issues are described more in detail:

- Multi-purpose collection inventory
- Technical expertise, data models
- Data quality, standards and thesauri
- Local reference
- Language
- Money and continuity
- Work rhythm

The Services and applications developed in LoCloud were installed by the developers (described in deliverables 2.2-2.6 and 3.2-3.7). These were tested simulating their usage from the viewpoints described in the use scenarios in Section 3. The results were compared with the expectations and requirements from the use scenarios. Section 5 describes the required conditions for each service or application, before and during usage. Recommendations were then formulated for possible development and improvements for of each.

Finally, an overall evaluation is made of the intentions of the developed LoCloud Services/applications against the typical characteristics of the target user groups. The analysis reveals a tension between the needs and resources of small or medium local collection holders and what can be delivered by cloud services. Small and medium sized collection holders need good documentation that describes the applications in a readily accessible way, by referring to their own workflow and competences. In nearly all cases the typical users will need assistance and guidance, tailored to their knowledge and expertise (both technical and regarding their data content). For small collection holders to use

LoCloud

cloud services sustainability needs to be guaranteed to a considerable extent in order to convince them to invest their time and money. Cloud services for digital cultural content of the type developed by LoCloud will rarely be directly usable by small to medium sized collection holders, they require well-coordinated actions from several parties: there are relevant roles for Europeana and aggregators as well as for the users and the developers or those offering the services.

LoCloud

2 Introduction

LoCloud is funded under the European Commission's CIP ICT PSP programme. It has the overall goal of supporting small and medium-sized institutions in making their content and metadata available to Europeana by exploring the potential of cloud computing technologies. From the DoW[1]:

> *The main goals of LoCloud are: to continue to ease the task of enabling heritage organisations in making their contents accessible via Europeana, by using cloud technologies to provide services and tools which help to reduce technical, semantic and skills barriers; to facilitate aggregation of digital content from small and medium cultural institutions, to be made available to Europeana; to enable smaller institutions such as house-museums to contribute their content to Europeana; to explore the potential of cloud computing for aggregation, enrichment and re-use, with a special focus on geographic location.*

The project has provided a series of services that aim to help to reduce the technical, semantic and skills barriers faced by smaller institutions. A main objective has been to add over four million digitized items to Europeana while enabling the institutions involved to use LoCloud services to render their content more discoverable.

This report considers how well LoCloud has succeeded in meeting the needs of small to medium sized institutions, and makes a series of practice-oriented recommendations for the future development of cloud services*.*

The recommendations are formulated based on the following information and actions:

- Review of the Services and applications produced in the LoCloud project as described in project deliverables:
    - o D2.2: Modified MINT prototype
    - o D2.3: Modified MORe Prototype
    - o D2.5: Lightweight Digital Library Prototype (LoCloud Collections Service)
    - o D2.6: Crawler ready tagging tools
    - o D3.2: Geocoding Enrichment Services
    - o D3.3: Metadata Enrichment services
    - o D3.4: Vocabulary services
    - o D3.5: Historical place names service

---

[1] Part A of Annex 1 – "Description of Work" of Grant Agreement 325099 for the LoCloud project, p. 3

[2] Part B of Annex 1 – "Description of Work" of Grant Agreement 325099 for the LoCloud project, p. 5

[3] D5.3, 4.3.3: small and medium organizations indicate lack of financial resources as

LoCloud

- o D3.6: Wikimedia Application
- o D3.7: Report on services developed for local cultural institutions
- The results of the surveys and evaluations conducted in the LoCloud project:
  - o D5.2: Report on operational outcome and impact on Europeana
  - o D5.3: User impact study (end users and institutions)
- Relevant experience in the EuropeanaLocal and Europeana Awareness projects.
- Testing of the LoCloud services and applications in 'real-life' conditions: from the viewpoint of a local small or medium content provider.
- Verification of the documentation and training material produced within LoCloud, as provided on the website http://support.locloud.eu.
- Description of various real-life use scenarios and comparison with the requirements and the developed services/applications (see chapter 3).

As benchmark for the analysis the experience of provincie Limburg with Erfgoedplus.be were used. Erfgoedplus.be is a regional platform aggregating data from local heritage collections in two provinces in Belgium. At present it includes data from 475 collections, primarily aggregated from their inventory. The province of Limburg built it with a history going back to 2002. Erfgoedplus.be has provided data to Europeana regularly since 2010, where it is classified as a regional cross-domain aggregator. Provincie Limburg and provincie Vlaams-Brabant offer a full range of services through Erfgoedplus.be to local collection holders (the target group of LoCloud).

Chapter 3 describes a set of use scenarios typical for local small or medium cultural institutions that have heritage data to share with Europeana (the main target groups of the LoCloud products). Each scenario includes a description, a SWOT overview, expectations and requirements, and a summary of how LoCloud services/applications can be useful for them. The scenarios are generic models of relevant real-life situations.

In chapter 4 the user expectations and requirements are grouped and discussed under a selection of significant aspects. These are extracted from the use scenarios of chapter 3 and the survey results.

In chapter 5 the services/applications developed within LoCloud are annotated with recommendations and suggestions for their possible future development. These are based on the use scenarios of chapter 3 and testing of the applications in real-life conditions, i.e. using the applications as offered in the LoCloud platform and assessing their functionality from the viewpoint of a typical local collection holder.

LoCloud

3 Use scenarios

The target users of LoCloud are indicated in a general way in the project's goals[2]:

> *Make it easier for digital content emerging from small and medium cultural institutions, and also through collaborative crowdsourcing initiatives, to be made available to Europeana in order to increase the richness and representativeness of Europeana's record of local history.*

To understand the target group(s) of users, their competencies, expectations and requirements eight typical scenarios of local heritage collections are described. These cover the entire range of target users of LoCloud services as anticipated in the project's description of work.

The scenarios are examples of real-life situations, based on the experience in Belgium within Erfgoedplus.be. Although specific characteristics may not always be applicable to each similar collection, they apply to the majority of 'actors' for which the case is relevant. Elements in the description vary by country, because of other legal, administrative, financial or policy frameworks. It is not the intention to generalize the characteristics. However, we believe the SWOT analyses to be fairly consistent throughout Europe.

Following types are described:

1. Local history association
2. Local public museum
3. Local private museum
4. Local church committee
5. Private collector
6. Private heritage enthusiast
7. Local crowd –sourced heritage image bank
8. Local public library

3.1 Local history association

Typical features

A local private heritage collection is managed by an association, a group of volunteers who would like to share their knowledge about local history, local heritage and their collection of heritage objects. The collection contains publications, private legacy collections/archives, local archaeological artefacts,

---

[2] Part B of Annex 1 – "Description of Work" of Grant Agreement 325099 for the LoCloud project, p. 5

LoCloud

photographs/picture postcards, own local publications, old films, videos and audio tapes.

The status of digitization is only partial: part of the photographs have been scanned, some articles are in digital form. No complete inventory is available. Some parts of the collection are listed in MSExcel. Some descriptions are available in MSWord.

The association has its own website where the members provide some of their knowledge in html documents, including an online version of their newsletter, an agenda of their activities and contact information. The data and digital objects are kept on their own stand-alone computer or spread on the private computers of the members of the association.

Strengths

- Extensive specialized knowledge about specific local objects, events or sites.
- Competition among neighbouring associations, about who knows or "owns" more.
- Logistic support (room, computer network access) sometimes received from the local public library.

Weaknesses

- No idea about standards or data models.
- No technical knowledge or experience (databases, internet, XML, LOD).
- No idea about IPR for on-line information.
- No or limited participation in relevant professional networks.
- No money, very little income>

Opportunities

- Involved in local heritage policy through participation in municipal heritage council.
- Desire to share their specific knowledge.
- Need for recognition/attribution.

Threats

- Fear of others 'stealing' and misusing their knowledge.
- Fear of losing control, no trust in outside infrastructures.
- Fear of technical language and possible bad intentions of 'specialists'.
- Their own work rhythm, relying completely on volunteers' work.

They would like to:

- Increase digitization.
- Consolidate the preservation of their knowledge.
- Provide better access to their knowledge.

LoCloud

- Create a proper inventory.
- Keep digital objects in a secured digital archive.
- Receive recognition for their work, when sharing their data.

They require:

- Advice for selection of software.
- Advice and training concerning digitization.
- Advice concerning digital archiving.
- Easy publication channel.
- Participation in local/regional heritage portal.
- Uploading their data in Europeana, including regular updates.
- Cheap (free) services.
- Access to good authority lists to facilitate proper enrichment, including the possibility to add specific terms for their own collections.

3.2 Local public museum

Typical features

A smaller town promotes its identity for visitors through collecting documents, objects and knowledge about its history and by exposing them in a small museum. The museum holdings can include collections or archival legacies from personalities or institutions important locally, as well as crowd-sourced objects, stories or documents.

The museum has permanent staff who manage the collection and a summary inventory is available. They try to document their collection according to museum standards, and have a licence of a commercial collection management system. Their computers are connected to the town's network and servers, but the town's ICT department is not willing to assist with or maintain such specialized software.

Information about the collection is posted on the town's website. They sometimes have their own mini-site to describe temporary exhibitions or announce activities. The inventory or database is not online; there is only a general description of the collection and some of the highlights.

Strengths

- Some awareness about standards and data models.
- Specialized knowledge about specific local objects, events, sites or contexts.
- Often unique content, relevant for a wide local community and for visiting tourists.
- Good relationship and collaboration with local history associations.

LoCloud

- Logistic support (building, computer network access) received from the local municipal administration.

Weaknesses

- No technical knowledge or experience (databases, internet, XML, LOD).
- Limited access to technical support.
- No idea about IPR for on-line information.
- Very little income.

Opportunities

- Recognition from local politics and administration.
- Pride and identity, value of heritage for local community.
- Involved in local heritage policy through participation in municipal heritage council.
- Desire to share their specific knowledge.
- Need for recognition/attribution.

Threats

- Fear of others 'stealing' and misusing their knowledge.
- Fear of losing control.
- Fear of technical language, possible bad intentions of 'specialists'.
- Their own work rhythm, relying heavily on volunteers' work.

They would like to:

- Complete digitization.
- Have an inventory that can collect all the documentation available about each object.
- Increase standardization in order to improve museum status.
- Consolidate the archive of their documentation.
- Provide better access to their collection.
- Keep digital objects in a secured digital archive.
- Promote their collection and increase the visibility of the history of their location.

They require:

- Advice with selection of software.
- Advice and training concerning digitization.
- Advice concerning digital archiving.
- Easy publication channel of their database, linked to the municipal website.
- Participation in local/regional heritage portal.
- Uploading their data in Europeana, including regular updates.
- Cheap services.

LoCloud

- Access to good authority lists to facilitate proper enrichment, including the possibility to add their own specific terms.

3.3   Local private museum

Typical features

A local private museum or archive, managed by a person or an association of volunteers that have the ambition to run a proper museum, with an exhibition that can be visited by the public. Many House Museums belong to this group. The museum collection contains objects and documents concerning a certain theme or about the history of the location.

There is an inventory made with a proper Collection Management System, approximately according to professional museum standards (e.g. ICOM, Spectrum). A significant part of the collection is photographed or scanned and the images are connected to the object records in the CMS. The database and linked digital representations are stored on a local PC.

The museum has a website, or a single page with general information about the collection, visiting hours and contact information, possibly hosted on the website of the Municipality. Their inventory is not online, only a description of the collection in general and some highlights.

Strengths

- Some awareness about standards and data models.
- Extensive specialized knowledge about specific local objects, the specific theme of their collection.
- Often unique content.

Weaknesses

- No technical knowledge or experience (databases, internet, XML, LOD).
- No idea about IPR for on-line information.
- Little money.
- Very little income.

Opportunities

- Desire to show their collection on the Internet.
- Desire to share their specific knowledge.
- Need for recognition/attribution.
- Access to subsidies for heritage projects.

Threats

- Their own work rhythm.

LoCloud

- Fear of others 'stealing' and misusing their knowledge.
- Fear of losing control.
- Fear of technical language, possible bad intentions of 'specialists'.
- Fear of publishing: inheritance issues, fiscal uncertainty, theft.
- Danger of loss of data due to insufficient (use of) backup facilities.

They would like to:

- Complete digitization.
- Have an inventory that can collect all available documentation and knowledge about each object.
- Increase standardization in order to improve museum status.
- Consolidate the archive of their documentation.
- Provide better access to their collection.
- Keep digital objects in a secured digital archive.

They require:

- Advice with selection of software.
- Advice and training concerning digitization.
- Advice concerning digital archiving.
- Easy publication channel of their database.
- Participation in local/regional heritage portal.
- Uploading their data in Europeana, including regular updates.
- Cheap services.
- Access to good authority lists to facilitate proper enrichment, including the possibility to add their own specific terms.

3.4 Local church committee

Typical features

They are a group of volunteers managing the properties of a church, on behalf of the State or the church community which is the owner of the church goods: buildings, grounds, objects in the church, etc. The church furnishings include religious art objects (paintings, sculptures), sculpted furniture, prayer books, registers, religious artefacts, and often also historic non-religious artefacts or local community paraphernalia. Their responsibility is purely administrative, but often they are aware of the heritage value of the property they manage and are proud to act as its guardians. When a church has the status of protected monument, its interior is also covered by the protection and the furnishings need to be preserved with the building.

There usually is an inventory (list of objects), because it is an administrative requirement for the budget and financial report. In some cases the inventory has been enriched according to a more museum-like data model, with the help

of external expertise. The most valuable objects are described in third party databases or publications (e.g. exhibition catalogues).

They do not have a website of their own. Occasionally they may want to publish an overview of the history and the property of the church, e.g. on the occasion of a special anniversary of the foundation of the parish or the construction of the church. Municipal heritage services are often interested in showing the heritage available on their territory in a publication or a website.

Strengths

- Often unique content, not well known.
- Obligation of making an inventory, although not required according to professional heritage standards.

Weaknesses

- No idea about standards or data models.
- No specific knowledge concerning cultural heritage or art history.
- No technical knowledge or experience (databases, internet, XML, LOD).
- No idea about IPR for on-line information.
- Low budget, mainly for maintenance of the church properties.
- No income related to the heritage.

Opportunities

- Desire to show their valuable possessions.
- Need for recognition/attribution.

Threats

- Their own work rhythm.
- Fear of thieves discovering their valuable objects.
- Fear of technical language, possible bad intentions of 'specialists'.
- Fear of authorities.
- Support communities diminish and get smaller.

They would like to:

- Maintain an inventory complying with administrative requirements and in accordance with applicable requirements for valuable heritage in case of protected monuments,
- Gain better understanding of the value of their heritage,
- Keep data about the history of their church,
- Be part of initiatives that attract attention to the problems of reduced appeal of religion, hence the reduction of subsidized churches,
- Create some visibility for the importance of their church,
- Make and maintain an inventory in a durable manner,

LoCloud

- Advice with selection of software.
- Advice and assistance regarding cultural heritage and art history.
- Advice and training concerning digitization.
- Advice on external expertise that could help them.
- Easy publication channel.
- Participation in local/regional heritage portal.
- Cheap (free) services.
  Motivation to increase trust in the value of proper documentation and benefits of publication (e.g. as prevention against theft).

3.5   Private collector

Typical features

Private collectors hold collections with limited scope, e.g. legacy of an artist, many variations of a specific type of object, objects related to a specific craft or activity, etc They often actively increase their collection by visiting antique markets or flea markets.

In the best cases they have a self-made list or database in which they describe their collection (in MSExcel or MSAccess). Normally they have no knowledge of professional documentation standards but try to structure their knowledge according to their own needs and understanding. They usually have made their own authority lists relevant for their collection only.

They generally do not have a website dedicated to their collection, but can use the internet for searching new collection items or selling (auctioning) redundant items from their own collection.

Strengths

- Passion.
- Investment according to personal possibilities.
- Knowledge about the market of objects similar to those in their collection.

Weaknesses

- No idea about standards or data models.
- No specific knowledge concerning cultural heritage or art history.
- No technical knowledge or experience (databases, internet, XML, LOD).
- No idea about IPR for on-line information.
- No income related to the heritage.
- Not much interest in documenting, focus is on collecting.
- Poor metadata.

LoCloud

Opportunities

- Pride in showing collection.
- Interest in other similar collections.

Threats

- One-person initiative, vulnerable sustainability.
- Fear of publishing: inheritance issues, fiscal uncertainty, theft.

They would like to:

- Learn more about their collection.
- Compare with similar collections of other collectors.
- Find and acquire (or exchange) additions to their collection.
- Receive public support and recognition.
- Secure the future of their collection.

They require:

- Security inventory of their collection, for insurance and prevention.
- Motivation for making a proper inventory.

3.6   Private heritage enthusiast: collection of photographs

Typical features

Some people have a passion for photography and history/heritage. In their spare time during weekends or holidays they make targeted trips and make professional-quality photographs of the heritage objects they encounter. They wish to share their collections of pictures with their friends or anyone interested through the Internet, with cloud applications or social media such as Picasa or Pinterest. (semi-) professional photographers sometimes use other than professional agency channels to make their work better known to the broader public, e.g. through Wikimedia Commons. They are curious about the origin and history of the objects they document and search for relevant information. On the website they add this information to the pictures and assemble them in appropriate groups, creating some form of story.

The pictures are published in cloud applications like Picasa, Pinterest or Wikimedia Commons, and documented through simple comments or stories. They do not use professional metadata structures or standards for cultural heritage data. They may include free tags for easier retrieval. When the person loses interest, the collected pictures and knowledge may stay online for a while longer but are not maintained and will eventually disappear.

They can have their own www domain name, as an alias for their cloud space. Use of database features is very limited; their emphasis is on the photographs.

LoCloud

Strengths

- Passion.
- Nice pictures.

Weaknesses

- Low information content, not very reliable.
- Poor metadata.
- No proper data structure, no standards.
- Tagging too simple and arbitrary.
- Hard to export data and digital objects.

Opportunities

- Pride in showing collection.

Threats

- One-person initiative, vulnerable sustainability.
- Public DAM systems, uncertain sustainability.

They would like to:

- Provide continuity to their collection, ensure that it persists after they can no longer take care of it themselves.

They require:

- Awareness of and access to more professional data models.
- Awareness and better availability of controlled vocabularies.

3.7 Local crowd-sourced heritage image bank

Typical features

Local public institutions or tourism organizations with the task to promote the culture and heritage of a local region (often depending on a municipality or a collaborative project among municipalities) do efforts at crowd-sourcing of stories, photographs or other objects documenting aspects of local history. They organize websites where the public can contribute their objects and related memories. Such initiatives can collect unique material that otherwise would never become visible.

The websites are usually built with blog or DAM software, with little concern for long-term preservation. They are financed with project money, without proper business model or thoughts about sustainability. They do not rigorously follow professional metadata standards and often have equipped the website with their own locally relevant authority lists for tagging.

LoCloud

Strengths

- Interesting information/stories, unique objects.
- Potentially open for corrections by a community (Wikipedia model).

Weaknesses

- No proper data structure.
- Poor heterogeneous metadata.
- Information is not always correct, not verified.
- Requires constant monitoring and quality control.
- Requires regular updates to maintain interest of the users.
- Small participating communities.

Opportunities

- Involves the general public with their heritage, raise awareness, expand heritage communities.
- Collects hidden heritage and dispersed knowledge.
- Increases existing knowledge.
- Enrichment by collecting stray information.

Threats

- Built with project money, poor sustainability.

They would like to:

- Involve more people.

They require:

- Durable solutions: infrastructure, monitoring and maintenance.

3.8   Local public library

Typical features

Local public libraries often have a collection of local memorabilia, documents that are locally published or that describe locally relevant themes or subjects. This can include published or unpublished material, sound and video recordings, historic photographs or picture postcards, etc. Local public libraries are sustained with public money from the local municipal administration. Among their regular customers are schools and students, or persons who come to read newspapers or periodicals. The library also can offer space for meetings or offices of local cultural associations (such as genealogical or local history groups). In such case, these can benefit from the computer network facilities of the library. They are a good meeting point for

local cultural activities, e.g. temporary exhibitions or 'collecting days' like those of Europeana.

The library has a digital catalogue for its normal collection, but the local memorabilia collections are not often included in the catalogue, because the items are not available for lending and can be consulted only at the library. Sometimes there are lists (e.g. in Excel) with summary descriptions for parts of the collection.

The library has a website, usually hosted within the website of the municipal administration, with contact information and opening hours, a general description of its holdings and services, calendar of events, search in the catalogue, subscription and lending information and management, such as reservations, verification of availability, etc. The library users can access the internet on dedicated library computers.

Strengths

- Good meeting point for local communities.
- 'Local memory'.
- Internet access for library clients.

Weaknesses

- No good catalogue for the memorabilia collections.
- Not familiar with registering heritage object inventories and standards.

Opportunities

- Connection with local cultural (heritage) field: library customers, schools, and associations.
- Some support programmes, national and international, are available for improving computer literacy and internet connectivity through local libraries; e.g. Bill & Melinda Gates Foundation.

Threats

- Internet connectivity sometimes built with project money, poor sustainability.
- Public libraries under pressure due to digitization in society (e.g. e-books).
- Public libraries risk losing public support in many countries, because of budgetary savings in public services and increasing requests for economic justification of services.

They would like to:

- Involve more people.
- Find new lines of activity and functions.

LoCloud

- Support local cultural (heritage) communities, e.g. local history associations.

They require:

- Help with their heritage collections.
- Sustainable funding.
- Collaboration among libraries and with heritage institutions.

4 Shared features and requirements

4.1 Multi-purpose collection inventory

Local collections do not always have a good digital catalogue or inventory, which should be the source for metadata. The collection holders are very often not heritage professionals. Collection of physical objects, their preservation and access to them are the priorities. There is not much money or time to spend on digitization and documentation, which are secondary concerns for these collection holders (see D5.3, 4.3.3[3]). Although the collection holders have good knowledge about the context and the objects in their collection, they are not sufficiently aware of the requirements and practice of proper collection management. Assistance, guidance and support are needed to consolidate the documentation and collection holder's knowledge about their collection according to the professional standards and the guidelines required for sharing their knowledge in an aggregator like Europeana.

Concern for preservation of the collection comes before publication. The collection holders need comprehensive systems that can help them register their knowledge about the objects for preservation (condition, location, conservation needs, provenance, etc.) as well as making them accessible for sharing; systems that allow them to publish their knowledge alone are not their first priority. They need a system that can do both, they have no means to buy and maintain separate systems for the various purposes.

Tools and infrastructure provided in the cloud (particularly in a self-service environment) should be well described and in a manner that helps local collection owners to decide whether they need them and whether it is worth the investment of their time and money. Their functionality, benefits and usage must be explained in a clear manner, accessible to non-technicians and non-professionals.

LoCloud Collections is the instrument of the LoCloud package that matches these concerns (see D5.3, 4.3.3[4]). It is built to serve this multiple purpose of the registered data: collection management and publication. Before adopting the system, collection managers will want guarantees of sustainability. Their investment will not be made to be part of Europeana, but primarily for recording their knowledge for the long term. Collection managers want to feel in charge of their data at all times, and should be able to easily get their

---

[3] D5.3, 4.3.3: small and medium organizations indicate lack of financial resources as the second largest problem in the survey

[4] D5.3, 4.3.3: in the survey, LoCloud Collections results the application with the greatest benefit for small and medium organizations

information back out of the system if the service were discontinued or if they want to switch to another solution. This is properly provided for in LoCloud Collections.

4.2   Technical expertise, data models

Local collection holders rarely have sufficient technical competencies to understand the principles of databases, data models, data conversion and mapping, XML, Linked Data, enrichment, the Europeana workflow, etc. (see D5.3, 4.3.1[5]). In order to comply with the requirements of collaborating with Europeana, they will need reliable assistance from locally accessible support services. However, cloud instruments should be described in a sufficiently accessible manner to enable collection holders to decide whether they need them and what benefits can be expected (especially if services are not provided for free). Collection holders will not buy into a black-box system, they want to understand when and what kind of assistance to call for, to estimate how much it will cost them in the short and long term for both the cloud services themselves and the additional assistance.

Among the LoCloud applications, this applies especially to the services of the MINT mapping tool and the MORe repository, including all the services for data enrichment accessed in MORe. Several LoCloud services are also available through an API that allows for implementation and usage from within other collection management systems, but such implementation requires technical support and is not something that small and medium organizations are likely to do by themselves.

4.3   Data quality, standards and thesauri

Many local collection managers do not have a professional heritage background or are normally not involved with the relevant professional networks. They are not sufficiently aware of the sector's professional requirements and reference tools, including their current status or evolution. To be able to understand and comply with common quality standards, both regarding format and terminology, they would need to rely on advice or assistance from professional institutions or support services.

This applies in particular to the LoCloud applications, LoCloud Collections and Vocabulary services, and more in general to the MINT mapping tool. For LoCloud Collections, the users will mainly rely on the data models that are built in the system. They will most likely prefer to use the thesauri that are already present in the Vocabulary service, and might wish to add their own terms when

---

[5] D5.3, 4.3.1: the survey points at lack of technical staff and support as the major problem for small and medium organizations, where insufficient knowledge and understanding of metadata is the most important aspect

necessary. More advanced usage (like modifying the data model in LoCloud Collections, developing their own or a community thesaurus) requires knowledge and experience which local collection holders normally don't have and for which they don't have the resources to learn. The benefits of learning are too small in proportion to the costs. Therefore they will have to rely on institutions or support services that have such knowledge and experience for assisting them.

4.4   Local reference

The heritage in small and medium-sized heritage institutions or collections is mostly related to locally relevant places, people and events. In order to make quality data relevant for such local content and communities, the reference lists should contain or be able to be augmented to include such local places, people and events. Places in particular are indicated as extremely important by the small and medium organizations (see D5.3, 4.3.2[6]). The local collection holders and heritage communities, i.e. the main target group of LoCloud, are the best placed to contribute to these, as they are the experts regarding their content, but they lack technical expertise. To make this possible the thesaurus tools provided should have crowd-sourcing functionality to allow for contributions by specific communities with oversight by professionals.

The Vocabulary Service (in particular the management tool) and the Historical Placenames Service correspond to this concern.

4.5   Language

The small and medium organizations, managers of heritage collections are not often involved with the relevant international networks. They are not proficient enough in English to be able to work with internationally developed tools, if they are not made available in their own language.

For the LoCloud tools the reference language (web pages, documentation, support) is normally English. LoCloud Collections has been translated by project partners, and can be used in several other languages. This is important, because LoCloud Collections is perceived as the application that is closest to the targeted LoCloud users.

The language issue does not only concern the working language of the applications, but obviously also the language of the data. For usability it is therefore important that applications like the Vocabulary Services, Historical Place Names, Background linking, Vocabulary matching can link with data in as many languages as possible. It is usually not within reach of the potential users

---

[6] D5.3, 4.3.2: the survey among small and medium organizations geospatial data received the highest useful experience rating

of the services to make translations to their own languages or to upload or translate authority lists or thesauri in their own language. That would need to be done for them by the service developers, or by external experts who wish to provide support services in international context. Europeana is a good environment for supporting such tools because of its main mission to promote access, interoperability, and multilinguality.

4.6   Money and continuity

Small and medium sized heritage institutions and collections do not have large budgets (see D5.3, 4.3.3[7]). Often they rely heavily on voluntary work and funding. The content of the collection and knowledge about it are normally their main focus. Proper management, documentation, durability are second priority concerns. If small and medium sized heritage organisations are asked to invest time and money in those, it requires good argumentation of the benefits to motivate them. They will only be able to engage with services provided if they are cheap and reliable over the longer term. The services and their benefits must be easy to understand, they must demonstrate trustworthiness, and leave the users in control of their data.

Clients must also be able to understand for what parts they would need to invoke the assistance of third parties and how much that would cost them. They will want to understand who runs the cloud services and how reliable the service providers are. They need to know what to do in case things do not work as expected.

This obviously applies to all the services developed in LoCloud.

4.7   Work rhythm

The collection data that is available at the small and medium organizations is usually created and maintained with the help of volunteers, or sometimes by external consultants. In both cases the people involved are not working full-time at the institution or collection, but have their own time schedule for performing the work agreed with the collection manager. When they encounter doubts or problems with the data system, their work will be interrupted till they receive response from support. As this work is usually their only task, their time schedule would become unpredictably meddled if response is not received swiftly.

---

[7] D5.3, 4.3.3: small and medium organizations indicate lack of financial resources as the second largest problem in the survey

LoCloud

The data systems are not used on a daily basis. There is considerable activity when an inventory needs to be made, but maintenance and updating tend to be more periodic and rare activities. For example, an update of data for contributing to Europeana would typically be done once per year. Systems that are used directly by the collection managers themselves need to have a very low threshold, so they can be used without the need for re-reading elaborate instructions each time. It starts from log-in and account management issues.

This requires specific attention for the LoCloud Collections service, which is likely to be used more frequently for data maintenance.

Other LoCloud services specific for providing data to Europeana, mapping and enrichment have learning curves that are too steep for sporadic direct usage by small collection holders; the skills required would need to be re-acquired at each usage.

5   LoCloud services and applications

In this chapter each group of LoCloud services is assessed from users' points of view. Preconditions and post-conditions for usage are succinctly indicated, i.e. the issues users will need to know and decide before starting to use the services, and relevant things to consider once usage has started. Users will have many questions about why and how to use the services, before, during or after. Relevant questions are listed under Expected FAQ for each application. Following the analysis from the users' point of view there are some Recommendations for developers and service providers who would wish to implement, build on or offer the applications (or similar) for their customers.

5.1   General

Reference

This is about the LoCloud services as a package. All LoCloud services, documentation and support are accessible in the portal http://support.locloud.eu

Preconditions

- Understand own needs
- Decide which LoCloud services to use
- Decide who will be using the services, create users logins
- Find assistance for advice and difficult tasks

Post-conditions

- Maintain login instructions, account and contract management
- Determine updating schedule and procedures
- Follow up evolution of Europeana and cloud services

Expected FAQ

- Do I have to subscribe to each service separately? Why?
    - o   Why do I have to subscribe to use free services: Statistics; Support; Security; Administration?
- What happens to my data if I terminate a subscription?
    - o   In LoCloud - Collections?
    - o   In Europeana?
    - o   Will I lose my data? Will I lose my digital objects?
- What happens if I forget to pay?
- What happens to my data if the service ceases to exist?
- Who answers my request for information, support tickets, etc.?
    - o   Who do I contact if services are inadequate or I don't get suitable replies from support?
- Who manages the servers?

LoCloud

- Who follows up with the collection holders that use the LoCloud infrastructure?
    o E.g. for updates, reporting, contacts with Europeana, etc.
- Is there a general contact point (LoCloud 'administration')?
    o E.g. to negotiate the 'contract' with Europeana (DEA, harvesting, etc.)

Recommendations

- Create a login system that allows access to all LoCloud services through one login, or harmonize access codes with same ID and password for a user to access all services. Some applications require two logins, in sequence; this should be avoided or clearly explained.
- Explain very well what can be used without login, and which services require login.
- Connect relevant support / helpdesk directly to each service.
- The services, including support, especially those used directly by the collection holders, should be available in the language of the users.
- Provide a general overview of LoCloud services: collection managers must be capable to understand what services can be useful for them and what is required to be able to use them, besides the access to the infrastructure itself.
- Good documentation must be provided in a language understandable by the collection holders, small and medium organizations, and referring to familiar elements from their environment, including relevant examples and comparisons with alternative solutions. Such mainly non-technical documentation is needed for two purposes:
    o For deciding whether to use the LoCloud services and which to use.
    o For (installing and) using the selected services.
- User documentation must cover detailed and technical considerations, such as what support services come with the LoCloud package and what kind of support services needs to be organized at the client side by the clients, depending on their own capabilities. Three situations need to be considered:
    o Starting: configuration, uploading and first-time usage.
    o Updating: update and maintain content, improve quality, ongoing enrichment, sustainability plan.
    o Ending: provisions for eventual withdrawal or switching to alternative solutions.
- Sustainability of the services is an important factor for convincing people to use them: they will make considerable investments in learning the new functions and operation, and in adapting their own systems to connect with the services. Potential users need to be sure that the services will be

LoCloud

available for several years, without a need to make further unforeseen investments for adaptations or updates.

5.2 LoCloud Collections

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D2.5-Lightweight-Digital-Library-Prototype-LoCloud-Collections-Service
- http://support.locloud.eu/LoCloud%20Collections

Preconditions

- Decide on the purpose: inventory, publication, export
- Decide on website structure: static pages, graphical elements (logos, background images, colours, etc)
- Think about layout
- Think about collection / parts of collection
- Think about publication policy, IPR
- Decide data structure, thesauri

Post-conditions

- Maintenance
- Regular updating
- Keep track of what has been harvested by Europeana, and what has changed since

Expected FAQ

- What can LoCloud Collections be used for? What are the limitations?
    - How to comply with which standards?
    - Recommendations regarding file formats? Resolution of images?
    - Number of records? Approximately how many GB do I have to sign up for with my number of objects? How do I see that I reach the limit?
    - Long term archiving? Do I need to keep my own backup?
- Where are my data?
    - Can I get them (data and images) back out of Omeka? In what form?
- Why do I need to login twice? (LoCloud Collections and Omeka) What is the relationship between LoCloud Collections and Omeka?
- Why would I make more than one Digital Library?
- Why should I make a collection hierarchy?
    - Separate collection history, other data structure?
    - Published or not, curation (virtual collections)?

LoCloud

> o Can an object be assigned to more than one collection/ sub-
>   collection?

Recommendations

- LoCloud Collections is experienced by small and medium organizations as very useful (see D5.3, 4.3.3[8]), a cheap and reliable system for making and maintaining their inventory, from where the data can be published directly on the web. Some may be interested in just the publication possibility of LoCloud Collections, as a one-time project, with no later updates.
- The effort to maintain two parallel databases, one for collection management and one for publication, is too large. Therefore they will need LoCloud Collections to be equipped with a proper data structure adapted to the nature of their collection (Dublin Core is not sufficient for registration purposes).
- If the system does not come with a suitable data model built in, they will need to call expert assistance to help them create it in Omeka. Their understanding of data models is too weak to do this themselves.
- Better integration with other services: thesaurus applications, geolocation Quality enrichment starts at the source, when the user can directly select and link to the relevant concepts from a reference list. It is therefore recommended to expand the functionality of LoCloud Collections with plug-ins that enable usage of online thesauri, gazetteers or other reference lists, such as those accessed by the enrichment services in the MORe ingestion application.

5.3 MINT

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D2.2-Modified-MINT-prototype
- http://support.locloud.eu/MINT

Preconditions

- Understanding source and target data models, controlled vocabularies
- Understand how to export data
- Understand XML, understand the principles of XSLT
- Understand which target data model is best for the collection concerned
- Select the options to be implemented.

---

[8] D5.3, 4.3.3: in the survey, LoCloud Collections results the application with the greatest benefit for small and medium organizations

LoCloud

Post-conditions

- Know the LoCloud/Europeana workflow. E.g. what happens after MINT.
- Keep track of where is which (version of the) data.

Expected FAQ

- What can MINT be used for? What are the limitations?
    - o What can it do?
    - o What are the steps?
    - o What is the use of children organizations (or sub-organizations) in MINT?
    - o What is the real role of an administrator? (not from the software point of view)
    - o What is a typical users hierarchy in an organization/sub-organization?
- Where are my data?
    - o What is 'import', 'upload'?
    - o What happens to these uploads and imports in MINT? How are they kept there? Who can access them?
    - o Can an uploaded dataset be removed again?
    - o Can I add a schema?
    - o What if the OAI-PMH doesn't work? What are the conditions for success? Where can I ask for help?
    - o What do I have to do when I want to update a dataset?
    - o What are 'viewing rights'? What can be viewed?
    - o What is 'final publishing of data'? Where does the data go? Can I get it back?
- Login
    - o Who needs an account?
    - o How does this relate to other logins for LoCloud services?
- Transfer to MORe
    - o What is the relationship with MORe?
    - o What is required to publish from MINT to MORe?
    - o What is done by MINT, what is done by MORE?
    - o How does a MINT account connect to a MORe account?
- Who can use it? What kind of assistance do I need if I don't understand? What kind of assistance can I get from the related support services?

Recommendations

- MINT performs an essential step in the delivery of data to Europeana for cultural institutions with metadata in non-standardized native export formats. Usage of MINT requires specialized knowledge of the source and target data models for the mapping, and preferably also of the technology behind the mapping (XML, XSLT). This kind of knowledge is beyond reach

LoCloud

for small to medium collection holders, particularly because they would not use this type of application on a regular basis (estimated on average once a year, when an update of data is desired).
- The MINT service will therefore be typically of use for institutions providing assistance to collection holders, such as aggregators or expert hubs (see D5.3, 5.3.4[9]).
- Allow copying of a mapping XSLT for reuse (and adaptation) for other similar mappings.
- Document the limitations: not all data structures can be mapped with MINT.
- A users forum would be useful, where the users community can share mapping models and experience.

5.4   MORe

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D2.3-Modified-MoRe-Prototype
- http://support.locloud.eu/MORE

Preconditions

- Understand the Europeana workflow: harvesting – ingestion – publishing
- Know what each enrichment service precisely does, what its benefits are, what it requires from the source data, what its accuracy and reliability are in relationship to the source information

Post-conditions

- Keep track of the (versions of) datasets and their status
- Verify proper publication in Europeana
- Make updates

Expected FAQ

- What can it be used for? What are the limitations?
    - o   Why/when do I need to use MORe?
    - o   If I use MINT, what should I do with MORe?
    - o   Can I use MORe without using MINT? Under what conditions?
- What is the exact workflow?
    - o   What happens in the various phases?
    - o   What is a 'package'? What is 'harvest'? What is 'ingest'?

---

[9] D5.3, 5.3.4: the survey among aggregators indicates MORe and MINT as the most useful

- o OAI-PMH: what is a metadata source? What does 'editing the metadata source' do?
  - o Where do the data reside?
  - o Who has access to the data?
  - o What does 'publish' do? What happens with my data when I publish them?
  - o Is there a notification when Europeana harvests? Do I have to notify anyone when I publish something?
  - o What with updates of datasets?
- What is enrichment? How does it work?
  - o What does each service do precisely to my data?
  - o What are the benefits?
  - o Can they be configured by the user?
  - o How can I see the effect? Where is the result?
  - o How permanent is the enrichment?
  - o Can errors be corrected?
  - o How does this relate to the original records?
  - o Can I get the results back into my system?
- What when validation fails? Who can help?
- Is it the same validation as at Europeana?
- Who can use it? What kind of assistance do I need if I don't understand? What assistance can I get from the related support service?

Recommendations

- MORe performs like MINT a fundamental step in the process of providing data to Europeana (see D5.3, 5.3.4[10]). Usage of MORe requires good knowledge of the workflow involved and of the steps that are possible or required. It includes also several enrichment services that can be applied to the EDM once it is ingested in the repository.
- Clarification and consistent naming of the phases of the process is required: what is harvesting, 'received', ingestion, publishing, etc? What happens at each step? What is 'validated items (structural)' vs. 'validated items (schema)'? What is landing page (edm:isShownAt)? Publish – enrich – transform? Pending – ingested – published – withdrawn – rejected?
- Many of the enrichment services are currently still in beta or pilot phase. Communication with the service providers or developers is sometimes needed to use them. For independent usage in a cloud environment, with limited access to the developers, much more information needs to be provided.

---

[10] D5.3, 5.3.4: the survey among aggregators indicates MORe and MINT as the most useful

LoCloud

- Usage of MORe and of the enrichment services by the small to medium sized collection holders does not seem possible: the technical knowledge that is required to operate MORe is beyond their reach. Moreover, the usage frequency for their own collection would probably be on average once per year, which does not justify an investment in learning the required knowledge.
- The targeted users of the MORe service are therefore rather the larger cultural institutions, aggregators or expert hubs that can assist smaller collection holders. However, local collection holders will need to be involved on the content level: they will want to understand where their data is kept in intermediate steps and what happens to them. They will require information about what the available enrichment services do to their data and what enhancements can be expected from them. This is because local collection holders will have to take the decisions whether the enrichments are worth the investment whether this is of their own time or the cost of the assistance they would likely have to pay for.
- Care should be taken that the services for enrichment of data be made available in as many languages as possible. In the current phase, the services like Background linking and vocabulary matching work well only in English, because they link to mainly English resources.
- Avoid black-box enrichment. The users should feel in control of their data and the authority lists being used: for quality control, correction of errors, disambiguation, return of added data to the source.
- Many things can go wrong, in particular during the validation and enrichment processes. Care should be taken to provide as much feedback as possible through the error messages, in particular in a cloud environment.
- Once a dataset is 'published', the workflow should end for the user. Europeana should automatically receive notice about the availability of a new dataset, take appropriate action, and notify the user of the progress or conclusion of these final steps. The system needs to be able to register some properties of the dataset, e.g. whether it is a new dataset or an update of a previously harvested set.

5.5   Microservices

5.5.1   Metadata enrichment

(includes Background linking, Vocabulary matching)

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D3.3-Metadata-Enrichment-services
- http://www.locloud.eu/Media/Files/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions

LoCloud

- http://support.locloud.eu/LoCloud%20Enrichment%20Microservice

Preconditions

- Understand the benefits
- Understand the limitations, reliability
- Understand the requirements for source data

Post-conditions

- Verify accuracy
- Verify the effect in Europeana

Expected FAQ

- Where do the background links end up?
- Which data fields are considered?
- What happens when more than one vocabulary match is found (disambiguation)?
- How can I view the results?
- What is the accuracy?
- Can I correct false links eventually?
- Which external reference sources (thesauri) are used?
- Can I connect my own preferred vocabularies?

Recommendations

- Provide documentation suitable for collection holders, to help them make decisions, and to help them understand how their own data must be in order to obtain best results.
- Provide links to more external thesauri.
- Increase the number of available languages.
- Possibility to verify and correct the enrichment.
- Avoid giving the impression that the quality of the data is automatically improved by enrichment; create correct expectations.
- Avoid black-box processes; the users must feel in control of their own data and the authority lists being used for enrichment, otherwise they will not be able to trust the service.
- Stress the importance of data quality at the source.

5.5.2   Geolocation API + Geocoding Application

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D3.2-Geocoding-Enrichment-Services
- http://www.locloud.eu/Media/Files/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions
- http://support.locloud.eu/Geolocation%20Enrichment%20Tools

LoCloud

Preconditions

- Understand how Geolocation API can be used: Within the collection management system? In LoCloud Collections? As enrichment in MORe?
- Understand how Geocoding application can be used: Stand-Alone? Within the collection management system? In LoCloud Collections? As enrichment in MORe?
- Understand the benefits and the requirements for the source data in each.
- Understand the advantage of using the LoCloud services over other geo-location services
- Understand what assistance is needed to use them
- Verify if the geographical reference resources that are used can provide links to the relevant local geo-objects

Post-conditions

- Verify rendering in Europeana
- Understand how to improve accuracy (correct links)
- Understand how to add locally relevant locations if they are not provided

Expected FAQ

- How can I verify that locations are correctly identified via the Geolocation API?
- What can I do if I find a wrongly identified location?
- Is it better to use the enrichment services in MORe or in my own database? What are advantages / disadvantages of both?
- What happens with updates?

Recommendations

- Geographic enrichment is perceived as extremely useful by the potential LoCloud customers (see D5.3, 4.3.2[11])
- The Geolocation enrichment service in MORe requires better documentation in the MORe environment.
- A possibility to view results and correct ambiguities would be an important added feature.
- The Geocoding application can be very useful as a one-time geo-enrichment tool for legacy data. It allows enrichment at the source. The operations involved are however slightly beyond reach for collection holders, but need to be performed at least under supervision of a technical expert.

---

[11] D5.3, 4.3.2: the survey among small and medium organizations geospatial data received the highest useful experience rating

LoCloud

- An integration with geographic data elements in LoCloud Collections is recommended.
- Software developers may find it useful to build such integration into their products, but will require firm guarantees about continuity of the services.

5.5.3   Historical Placenames Service

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D3.5.-Historical-place-names-service
- http://www.locloud.eu/Media/Files/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions
- http://support.locloud.eu/LoCloud%20Historical%20Placenames%20Microservice
- http://tautosaka.llti.lt/en/unitedgeo/

Preconditions

- Understand the advantage of using Historic Place Names Service rather than Googlemaps, Geonames, iTouchmap or other similar services
- Understand the scope and coverage of the available place names

Post-conditions

- Contribute own knowledge to the HPN database

Expected FAQ

- What is the difference with other similar services? E.g. Geonames, Pleiades
- Can I add more information to a place name, e.g. history of the place, history of the name, hierarchical relationships?
- How can I add my own knowledge?
- What is the geographical coverage?
- Where do the data come from?

Recommendations

- Geographic data are recognized as very useful by the potential users (see D5.3, 4.3.2[12])
- The LoCloud target user group has excellent knowledge about local place names and their history, which is useful for enriching the service. They also have good knowledge about the historical context of the places,

---

[12] D5.3, 4.3.2: the survey among small and medium organizations geospatial data received the highest useful experience rating

LoCloud

which they would be eager to share, though this is currently not foreseen in the HPN service.
- An active strategy for collecting historic place names from all over Europe is also desirable to improve the representativeness of the available locations and names. Ongoing maintenance and updating is required. An international community may need to be built and maintained.
- Allow better and more extensive crowd sourcing. Adding terms is very hard now.
- Contributing databases needs to be better organized: who adds the data? How does it work? What are basic requirements of the data?
- Distinction/collaboration with other services: GeoNames, Pleiades (http://pleiades.stoa.org)
- The addition of fields for capturing such additional information in a user-friendly manner would be a valuable extension: dates, notes, description, relationships, hierarchy.

5.5.4   Vocabulary Service

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D3.4-Vocabulary-services
- http://www.locloud.eu/Media/Files/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions
- http://support.locloud.eu/LoCloud%20Vocabulary%20Microservice
- http://vocabulary.locloud.eu/

Preconditions

- Understand the need for using a thesaurus
- Understand the concept and structure of (multilingual) thesauri
- Have knowledge about available relevant thesauri in the collection's domain
- Decide which thesaurus to use
- Understand the advantage of using the LoCloud Vocabulary service

Post-conditions

- Thesaurus updates
- Careful with changes and deletes, they can disrupt existing links

Expected FAQ

- What is the advantage of this service compared to the vocabulary/thesaurus functions included in my commercial collection management system?
- Should I use existing thesauri or can I build my own?
- Can I add terms to an existing thesaurus?

LoCloud

- Can I link to other external thesauri? Or do they have to be uploaded first?
- How can I upload updates of a thesaurus?

Recommendations

- Links with vocabularies or authority lists are fundamental quality elements in the Linked Open Data context of Europeana and EDM.
- Description of the available thesauri (scope, domain, version, source, languages), to allow potential users to select the most appropriate one for them
- Explanation of the use of thesauri in LOD environments: importance of not trying to build your own, but try to use a common thesaurus
- Upload (and regularly update) some major reference thesauri
- Thesauri required in many languages
- Work needed (project? encourage crowd-sourcing?) on links between the thesauri
- The concept of thesaurus construction and the related standards (in particular SKOS) are matter for specialists and not very accessible for collection holders who just want a good thesaurus to use in their inventory. Collection holders are however required to contribute to improvement of the content of thesauri. Support and assistance are required for proper thesaurus management.

5.5.5 Wikimedia application

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D3.6-Wikimedia-Application
- http://www.locloud.eu/Media/Files/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions
- http://support.locloud.eu/Wikimedia

Preconditions

- The image content and data must already be in Wikimedia
- Verify the quality and consistency of the available metadata

Post-conditions

- Follow-up and keep track of updates, additions
- Verify the effect in Europeana

Expected FAQ

- How to proceed when I have added new objects in Wikimedia?
- What are the requirements of the data in Wikimedia for good quality in Europeana?
- How much work is needed to adapt the application to my data?

LoCloud

- Who can I ask for assistance?
- How can I improve the outcome?
- Is Wikimedia recommended as a way for publishing my work? Under what circumstances?
- Could the application be used also for other social media content, e.g. Picasa, Pinterest?

Recommendations

- Clarify the connection with MORe
- Provide documentation for content providers, including possible options and suggestions for makers and owners of the source metadata (e.g. avoid ambiguities, use of keywords/tags, minimum data elements) (see D3.6[13])
- Make recommendations for proper collection management in Wikimedia
- Clarify what adaptations may be required for potential contributions
- Document D3.6 explains that "this definitely needs to be investigated and suggestions need to be formulated for improving the results: e.g. minimum requirements for data in Wikimedia".
- Verify in how far a similar interface can be made for other much used social media resources, such as Picasa, Pinterest, and Instagram.

5.5.6   Crawler Ready Tagging Tools (CRTT)

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D2.6-Crawler-ready-tagging-tools

Preconditions

- A website where heritage objects are described, particularly useful for legacy data
- Requires good analysis of the available data and potential for extraction (data quality, minimum data elements, persistence of links, consistency)
- Expert assistance required

Post-conditions

- Crawling starts with the premise that the mandatory EDM elements should be captured, other elements can be added if the data is available. It does therefore not go very far in the direction of LOD.

---

[13] D3.6, 6 Conclusions: 'The main challenges in developing and operating such a service have to do mostly with the ambiguities of the harvested metadata. This is because of Wikimedia's lack of formalization (and enforcing of that normalization) of metadata.'

LoCloud

- The connection with MORe is not clear, and needs to be clarified or improved.

Expected FAQ

- Is it useful for my data?
- What is the effort and cost for implementing the CRTT?
- Can I re-use the extracted data for another purpose? E.g. for populating a database for my own usage.
- Can it help with preservation of my data?

Recommendations

- This is an experimental tool, a prototype. Further investigation is needed to understand the benefits and limitations, to make it ready for usage and user documentation. See deliverable *D2.6: Crawler ready tagging tools*. Clear indications of the limitations and future prospects of the tool are discussed in the document.

5.6 Support services

Reference

- http://www.locloud.eu/Media/Files/Deliverables/D4.1-Documentation-and-help-desk-including-guide-for-end-users-and-organisations
- http://www.locloud.eu/Media/Files/Deliverables/D4.2-Live-Support-Portal
- http://support.locloud.eu/tiki-index.php
- https://support.locloud.eu/qna/

Preconditions

- Clear indication of what can be expected from the support services, under what conditions (login, contracts, costs, etc.)

Post-conditions

- Replies should be provided within reasonable time

Expected FAQ

- Is there a place where I can find or post examples of usage, e.g. MINT mapping tables, useful thesauri, …?
- What kind of support is offered?
- What is the general Log-in for at the top of the Support Centre pages (it opens the wiki)? Who should/can use it and for what?
- What is the difference between Help Desk and Technical Support? (they have different log-in screens)
- Where can I ask for assistance or advice related to my data, e.g. about data models, mapping advice, validation errors, … ?

LoCloud

- Can I ask questions about LoCloud Services without or before subscribing? E.g. to help me decide.

Recommendations

- Connect application-specific support within the application better, without the need for separate login. Registered users for an application should have direct access to the relevant documentation and support.
- Reactions on support questions took on average one week. Local collection managers usually work in their free time or with freelance personnel hired for specific tasks. They require fast (24h max) response about things that don't work, or explanations about doubts.
- 'Questions & Answers' should be followed-up by the developers of the services. This is where entry-level questions would be asked, regarding whether and which services would be useful for which circumstances and user conditions. The developers and support service staff should be the backbone for a possible user community.
- Support should be available preferably in the language of the users, in particular non-technical support.

6   Conclusions

The goal of the LoCloud project has been to investigate and provide useful applications and services in the cloud that would facilitate participation in Europeana by small, local heritage collections. The analysis of the use scenarios against the LoCloud services suggests some knowledge gaps between the concepts and characteristics of cloud computing on the one hand and the requirements, expectations and abilities of typical small, local collection holders on the other.

Technicians anticipate the following properties of cloud services:

- User-friendliness
- Low cost
- Low technical threshold
- Low semantic threshold
- Low skills threshold
- Flexible selection of services offered

Local collections have the following properties:

- Multi-purpose collection inventory
- Limited technical knowledge and resources
- Limited awareness about standards and data models
- Need for continuity
- Fear of losing control
- Low usage frequency of available systems

To mediate between these two worlds the following general provisions are required.

6.1   Documentation

Potential users should be enabled to understand clearly what the services on offer do and what they cost. They must be able to position the functions of the services within their own environment/needs and to compare them with similar services offered elsewhere. Good step-in documentation must be provided that is accessible at their level of technical knowledge.

Such documentation should answer at least the following questions:

- **Why**: Why would I need these services?
- **What**: What do I get in terms of service and support?
- **How**: How does it work?
- **Where**: Where are my data?
- **What if**: Can I take my data back?
- **Who**: Who has access to my data?
- **How much**: How much does it cost?

LoCloud

- **Help**: What kind of external assistance do I need? Where can I get it?
- **How long**: What is the prevision of long-term availability of the service and conditions of use?

6.2   Assistance

Small, local collection holders will need assistance at all kinds of levels, not only technical. The real nature of the need is variable and cannot be generalized. Such assistance must be able to help and guide them through the usage of the services in the cloud. This can be a task of an expert hub or an aggregator, but it must be readily accessible through direct interactive communication, in a language (both in the sense of 'linguistic' and of 'domain slang') that they understand.

Assistance may be required in all phases of the (possible) usage of the services: from the decision before usage, through the setup process, to the actual regular usage and updating.

6.3   Sustainability

Potential users do not have large budgets available and they are often volunteers. Before engaging to use the offered services, they will want guarantees about their sustainability, so that their investments of money and time have a use in the longer term.

Providing data to Europeana is not (and should not be) a one-time action. The source data are often dynamic and in continuous evolution, due to new additions to the collection, progress in knowledge, changing condition of the objects, corrections, enrichments, enhanced expectations of the users, increased technical possibilities or any other evolution of the external environment. Data providers or aggregators must be able to keep track of previous versions of their data and replace them with new, updated versions.

6.4   Roles

6.4.1   For Europeana

If good services and products are offered to heritage organizations or memory institutions to make it easier for them to contribute their knowledge to Europeana, they should be backed and supported by Europeana itself. Users must be encouraged to trust the products and services. This will not happen if they are not referred to or recommended by Europeana.

This requires continuous follow-up by Europeana and possibly some form of promotion, like a Europeana label or listing in a Europeana list of 'useful products'. Whenever the requirements of Europeana are changed (e.g. regarding data quality, data models, technical solutions), the compatibility of the Europeana oriented services needs to be verified and eventually updated.

LoCloud

Either Europeana has to do this by itself or the third parties offering the services need to be informed and take swift action.

6.4.2   For collection holders

Using the services developed in LoCloud requires some specific awareness and action from the (potential) users. They must be aware of the qualities and limitations of their own data. They should formulate their expectations and compare them with what the LoCloud applications and Europeana can offer. They need to understand what they can do themselves and what they require assistance for. They will have to find assistance as required. They should consider the implications on the long term.

LoCloud Collections will probably be the most useful and directly usable of the LoCloud applications for the local and small collection holders. The other services are important as well, but most collection holders will probably not be able to use them without the assistance from other parties. They should however be informed about these other services, so that they can properly decide about their usage. They will also have to participate in the implementation, at least concerning the data content, e.g. verifying if enrichments are applied correctly and adjusting data according to feedback from the ingestion processes.

Usage of the authority-list and crowd-sourcing types of applications (geographic and thesaurus) is also important for the collection holders as content experts. However, they will require some technical or other expert assistance in order to be able to use them, according to their own capabilities.

6.4.3   For aggregators

The MINT and MORe applications are particularly useful for aggregators. Their usage requires knowledge and expertise that are only justified and can only be maintained with regard to regular usage, which is generally beyond the needs and reach of local small collections.

Automated enrichment is incorporated in MORe. While their usage and understanding can be considered as a technical action, verification of results and dealing with possible problems will often depend on the content of the data. For best results, aggregators need to have close collaboration with their data partners. Ideally they can provide the technical assistance and guidance required by their data partners, at least in relation to the ingestion, data mapping, aggregation and enrichment services.

6.4.4   For developers or those offering the services

The LoCloud services are mainly fairly small and detailed. They are best bundled in systems or packages from which the potential users can select what they need. Buying into individual microservices would be too difficult to

LoCloud

manage by small and local collection holders. This concerns the commercial conditions of usage as well as the access to the selected services. Logging into each application individually would have to be automated as much as possible.

Support needs to be easily accessible to users and provided at an appropriate level according to their expertise and in their own language. Answers and solutions should be offered swiftly, in order to maintain the trust of the users.

The applications and services offered should be kept up-to-date, at pace with the evolution of the infrastructure and requirements of Europeana.

6.5   Perspective

LoCloud has developed several services and applications that can be used in cloud context for helping small and medium sized heritage collection holders to share their data and knowledge with Europeana, and by extension with other similar initiatives. Some services and applications meet the needs of data aggregation (MORe) and mapping (MINT) and of creating data about heritage objects (LoCloud Collections). Others were built for enhancing the quality of the data, in particular through semantic and Linked-Data 'enrichment'. The LoCloud services and applications provide ways to perform enrichment on various levels: on the side of aggregation, through micro-services accessed from within MORe to add relevant external links to the aggregated data, as well as on the side of the data creation, to help content providers to directly make such links within their own data. The latter is particularly important as most experts agree that it is best to create data quality as close to the source as possible.

This report collects much of the experience from using the LoCloud services and applications within the project and provides detailed recommendations. One general key aspect emerges from the analysis: <u>trust</u>. Potential users need tools, storage, support and assistance that they can rely on in the long term. They invest a considerable amount of their limited resources in digitization and want to be certain that their investment creates value for the future.

LoCloud

7   References

D2.1 Core Infrastructure, Dallas, C., Gavrilis, D., Angelis, S., Makri, D.N and E. Afiontizi, 2014, LoCloud. Online: http://locloud.eu/Resources/Deliverables/D2.1-Core-infrastructure-specifications-including-Business-Process-Models

D2.2 Modified MINT prototype, Soufou, N., Drosopoulos, N., Tzouvaras, V. and A. Stabenau, 2014, LoCloud. Online: http://locloud.eu/Resources/Deliverables/D2.2-Modified-MINT-prototype2

D2.3 Modified MORe prototype, Dallas, C., Constantopoulos, P., Gavrilis, D., Angelis, S., Makri, D.N. and E. Afiontzi, 2014, LoCloud. Online: http://locloud.eu/Resources/Deliverables/D2.3-Modified-MoRe-Prototype

D2.5: Lightweight Digital Library Prototype (LoCloud Collections Service), Werla, M., Matela, M., Pecyna, A. and B. Betansńki, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D2.5-Lightweight-Digital-Library-Prototype-LoCloud-Collections-Service

D2.6 Crawler Ready Tagging Tools, Bergheim, S.R. and S. Slettvåg, 2014, LoCloud. http://www.locloud.eu/Resources/Deliverables/D2.6-Crawler-ready-tagging-tools

D3.2: Geocoding Enrichment Services, Zakrajsek, F.J., Vodeb, V., Stare, J., Grilc, A. and S. Runar Bergheim, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.2-Geocoding-Enrichment-Services

D3.3: Metadata enrichment services, Soroa, A., Otegi, A., Agirre, E. and R. Agerri, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.3-Metadata-Enrichment-services

D3.4 Vocabulary services, Benda, O., Holler, A. and G. Koch, 2014a, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.4-Vocabulary-services

D3.5. Historical place names service, Laužikas, R., Jaronis, J. and I. Vosyliūtė, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.5.-Historical-place-names-service

LoCloud

D3.6 Wikimedia application, Gavrilis, D., C. Dallas and D-N, Makri, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.6-Wikimedia-Application

D3.7 Report on services developed for local cultural institutions, Benda, O., Höller, A., Koch, G., Koch, W., Gavrilis, D., Dallas, C., Makri, D-N, Bergheim, S.R., Zakrajsek, F. J., Soroa, A., Otegi, A., Laužikas, R. and I. Vosyliūtė, 2014b, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.7-Report-on-services-developed-for-local-cultural-institutions

D4.1 Documentation and help-desk, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D4.1-Documentation-and-help-desk-including-guide-for-end-users-and-organisations

D4.2: Live support portal, Bergheim, S.R., Angelis, S., Makri, D-N. and D. Gavrilis, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D4.2-Live-Support-Portal

D4.3: Wikimedia application, Gavrilis, D., Dallas, C. and D-N Makri, 2014, LoCloud. Online: http://www.locloud.eu/Resources/Deliverables/D3.6-Wikimedia-Application