Coordination of Digitisation as a Prerequisite for Digital eExhibitions

Sanja Haling
Sweden

Culture heritage information has been created for a long time and is constantly changing. Today, digital technologies have opened for new possibilities to link together different collections in a way that goes beyond physical limitations and can reach a much wider audience than ever before. New technological possibilities also make it possible to develop an integrated digital approach in the analogue exhibitions. The technology has provided cultural heritage institutions with tools for creating digital stories and for actively engaging users in the digital cultural heritage area. In a certain way, the current movement from exhibition of real artefacts at the museums to creating digital exhibitions online where users can be more active is a paradigm shift so important that it is even comparable to the one that occurred under the 18th century, when curiosity cabinets were abandoned in favour of a more academic approach to the artefacts and eventually development of more scientifically based collections.

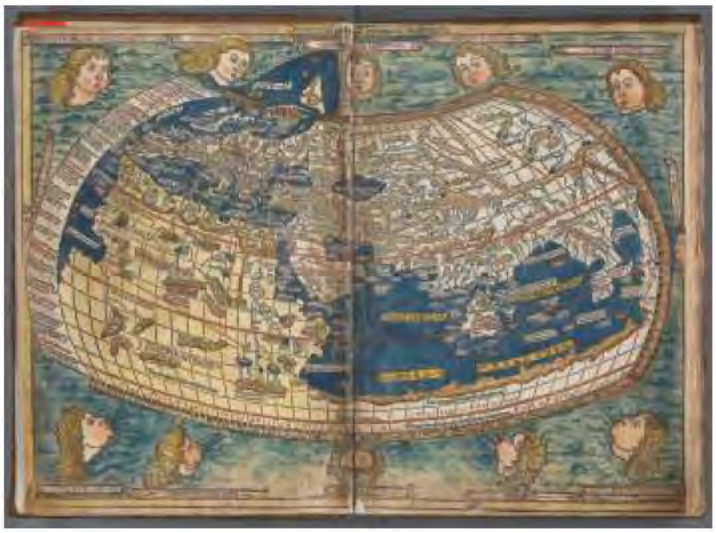
However, working with digital cultural heritage, every now and then it seems as though professionals at the cultural institutions sometimes experience current technical development more as a limitation rather than the other way around. It often takes a lot of resources to prepare digital exhibitions. Why is that so? Even if a lot of everyday work at cultural heritage institutions today is facilitated by technical systems, the quality of the information still depends on how it is described and presented by people who are working with collections. Of course, there are processes that could be carried out much faster digitally. Interoperability of information in different cultural heritage domains can be facilitated by distributing data as open and interlinking it with semantic technologies, but still there is a long way to go to create those connections in an easier and more qualitative way. Cultural heritage information is still created and digitised mostly from the various documentation of the collections with descriptions that are following analogue documents, which have been made in accordance with classification and descriptions structures appropriate at the time of creation of those collections.

Consequently, this means that objects and documents that originally could have been part of the same collection or same institution today can be fragmented across different technical systems at one organisation or even across several types of organisations. This is currently a major obstacle to visibility and usability of the information. This means that information of the same type could be described according to different domain specific metadata descriptions, with associated metadata standards and routines in one institution and at the same time, the same kind of digital cultural heritage information can be managed with completely different procedures and standards at another institution. A map could, for example, be provided with descriptions in different ways if it is an archival document at the archives, a bibliographic material in libraries, or an object in a museum.

World Map, 1482, National Library of Sweden, license: CC-BY 2.0

We have so far only seen the beginning of the merge of professional work with the possibilities of what interaction with the audience and the accelerated development of technical options for exploring digital cultural heritage can bring to the institutions. The digital exhibition of the future is yet to be seen!

Carta Marina, Olaus Magnus 1572, National Library of Sweden, license: CC-BY 2.0



Portolan Map, Jean François Roussins 1660, National Library of Sweden, license: CC-BY 2.0

In order to create a digital exhibition out of the various collections of cultural heritage objects it is, of course, necessary to show the context of the objects and to create an interesting story. In that aspect, there is actually no difference between exhibitions shown at the museum or online. The important thing is to carefully select and link together digital objects. Here, searchability and visibility of collections as well as interoperability are of major importance.

Nowadays, there is continuous development of new possibilities to explore the material opening up with the new technologies and quantities of digital cultural heritage objects. With the entry of digital exhibitions, traditional ways to access the information have changed. Digital stories can easily go beyond physical limits, and involve a much wider audience.

New digital technologies as such are the first step. For example, Medelhavsmuseet in Sweden has recently exposed digitised collections in 3D. At the museum, visitors could see and explore a travelling multimedia exhibition, "Etruscans in Europe"[1] showing images of original objects and virtual reconstructions in 3D combined with real artefacts from the museum. There is a similar exhibition at the museum now, also in 3D, where visitors are able to see details on a mummy sarcophagus by zooming in on the artefacts at very high resolution or even to explore digital layers and artefacts hidden between layers. That means also that there are now digital objects in 3D in the museum's databases showing objects that are at the museum but not visible for the audience.

Exhibition: Etruscans in Europe. Medelhavsmuseet, Stockholm

Terracotta. Upphovsrätt: Statens museer för världskultur Licens: CC-BY 2.0

Statens museer för världskultur – Medelhavsmuseet. Licens: CC-BY 2.0

Cinerary urn from Volterra area. Upphovsrätt: Statens museer för världskultur. Licens: CC-BY 2.0

Digital reproductions of objects can offer possibilities to explore details on the paintings that are not easy to see for the audience. Objects from the museum scanned in high resolution were, for example, showed at the exhibition "Jewellery at Nordiska museet" in Sweden[2], side by side with the real objects, thereby adding complementary information.

Some museums are even digitally exposing the exhibition areas, like Skokloster castle[3], while other museums have created possibilities to explore a part of the museum showing items that have not been exposed before. Etnografiska museet in Sweden has created an exhibition combining a physical exhibition with digital information, creating possibilities to digitally explore a part of the museum, "The Storage – An Ethnographic Treasury"[4] showing storage boxes and shelves containing items from the museum storage. In some ca-

ses, this exhibition gives digital access to objects that have never been shown before, making it possible for anyone to explore those items virtually.

Skokloster Castle. Weapons Arsenal.

Skokloster Castle. King's Hall

Skokloster Castle. Parade Room.

In the next step, digital exhibitions can, with help of these new technologies, show those objects that are not visible or exposed at the museum. A collection of digital cultural heritage objects does not automatically lead to a digital exhibition. This happens only when objects are carefully selected and linked together around a theme or a story. In other words, just as in analogue exhibitions, it is all about creating stories. Moreover, stories in digital exhibitions can also be available online after the physical exhibition has been closed. In the Athena Plus project, a pilot digital exhibition about Queen Kristina of Sweden is being made by collaboration between Nationalmuseum and the Authority of the three museums: the Royal Armoury, Skokloster Castle, and The Hallwyl Museum. The exhibition is being made with an online tool for creating digital exhibitions. When different types of such cultural information that have a common theme, but which have been fragmented over different domains or institutions, are brought together via new linked open data technologies, it creates new and exciting opportunities for interactivity and learning.

Portrait of Queen Kristina, by David Beck ca 1650.
License: CC-PD (Public Domain), Royal Armoury.

Digital virtualisations also offer possibilities to show how objects have looked originally by virtually recovering fragments or ruins of the buildings and reconstructing historical views from documentation of urban environments. This is done by organising collections of thousands of images in an interactive time-varying model. The European project 4D CH World[6] is working with those issues showing virtual reconstructions with a fourth dimension - a historical timeline. Another example of using digital possibilities in reconstruction is an event in Rome showing Ara Pacis virtually painted by coloured lights and thereby giving the audience a chance to experience it as it looked originally[7].

Viewers of digital exhibitions are nowadays often also active users who search for an interactive experience with the help of new methods and tools. Today the audience is often also acting as a co-creator and can be involved in the exhibitions in different ways. At the Museum of Fine Arts in Boston there was an interesting example where the audience helped to create the exhibition by voting online for their favourite paintings from a selection of works from the museum's collection.[8] Today, digital paintings are also used in pedagogical work at the museums, for example for making paintings "alive" and introducing themes of the exhibitions for children.

The focus has now changed from digitising of collections to the need for data infrastructure that can manage, store, and preserve all this digital information in various ways, at different levels, and from several actors.

However, there are a lot of challenges ahead for the institutions working with digital objects and exhibitions. In order to link all the different sets of information, managed and stored in separate systems, in a meaningful way so new stories can be created and presented, there is a need for a complex underlying infrastructure consisting of several layers. A basic technical infrastructure such as Internet capacity is a basis for being able to publish large image, audiovisual, or 3D-files. Moreover, there is a whole range of other requirements that need to be technically solved at each institution in order to provide cultural heritage information, for example metadata standards and persistent identifiers.

Therefore, a coordinated management of digital information and coordination of digitisation procedures are crucial for creating high quality data and making digital information visible, searchable, usable, and useworthy. Digisam, where I work, is dealing with those issues. Digisam is a secretariat for Swedish National coordination of digitisation, digital preservation, and digital access to cultural heritage. One of our main tasks is to promote the achievement of the objectives of the national strategy for digitisation and to develop a proposal on national guidelines for an integrated digital information management and a coordinated and cost-effective digital long-term preservation of collections and archives for the cultural heritage state institutions. The proposal shall also include roles and division of responsibility for aggregation, digital access, and preservation within the state's cultural heritage sector.

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