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# Digitization of cultural heritage

## ViMuseo.fi project. Description of PhD project

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**Abstract:** *In this text I will present my doctoral research on the digitization of cultural heritage, which I am conducting at the Department of Art and Cultural Studies, University of Jyväskylä (Finland). The supervisors are Professor of Museology Janne Vilkuna (main supervisor) and Professor of Digital Culture Raine Koskimaa (second supervisor) from the Department of Art and Culture Studies, University of Jyväskylä. The research is scheduled to be conducted between 2008 and 2012.*

*The goals of the research are (1) to investigate the possibilities for new media in presenting cultural heritage in small museums in Finland; (2) to analyze the cooperation between the researcher, graphic designers and programmers; and (3) to construct the tool to create multimedia presentations. The possible implementation of the research results is also discussed.*

**Key words:** Cultural heritage, digital heritage, digitization, virtual museum, Finnish local museums, small museums, CMS, museology, doctoral research, Finland, University of Jyväskylä.

Digitization, as a process for making a digital representation of an object (the object might be a document, image, real object, idea or ritual, etc.) is still a new and problematic issue in contemporary memory and cultural institutions. Although it is a difficult process, the digitization of cultural heritage is perceived as one of the obligatory activities in these institutions. In spite of the incompatibility between computers and museums, the technology has been present in museums since the 1960s (Parry, 2007). The digitization offers huge capabilities for mu-

seums to achieve their goals, because all kinds of collection can be digitized. Capturing, preserving and communicating the information embodied in the objects provide new capabilities for structuring and communicating knowledge.

Many institutions with sufficient resources actively digitize their collections. Moreover, they are willing to share their experience, prepare tools and create communities of professionals in order to develop new solutions. As a result, there are many online available resources on digitization and preservation,

which could serve smaller or less experienced institutions. However, many of these resources require sufficient understanding of new technologies and new media from the museum professionals. Most of the museums have no resources to start the process of digitization.

Digitization as a process has different outcomes. High-quality digitization follows the high technological standards and recommendations and is perceived as proper digitization. However, in many projects and publications mainly low-quality files (designed to be seen on a screen) are used, because there is no need to use large and heavy files. Low-resolution files or copies of master files are much more useful. In some cases there are only the low-quality files, created mainly for the internal use of the museum. In some community-oriented projects or Web 2.0 projects, this is the only kind of file in use. Moreover, the audience may contribute to the projects by producing and sharing this kind of file. For some institutions, this practice might be satisfactory at some point and can lead to proper digitization in the future. The low-resolution files are not very useful for conservation and documentation purposes, and they are not very valuable for researchers either. However, they can help small institutions to launch online projects and take their first steps in the direction of digitization.

#### ASSESSMENT OF THE NEED IN THE FINNISH CONTEXT

It might be said that Finland has been actively participating in developing the information society since 1995, when the first strategic plan regarding this issue was published (Valtiovarainministeriö, 1995). These efforts have also been seen in the museum and cultural sectors.

Digitizing and providing access to cultural content is strongly supported in these professionally run institutions. State-supported initiatives can be mainly observed in the biggest institutions, with resources responding adequately to the needs of the projects of digitization. The biggest ongoing project is the Public Interface project developed by the National Digital Library. Its aim is to give access to the electronic information resources and services of libraries, archives and museums, and it is planned that it will open to the audience this year (2011). The resources from different Finnish memory institutions will then be available in one service, making them more accessible and findable. However, only institutions with digitized resources can participate in this project, which means that only professionally run museums can follow all the quality requirements. The project has been launched by the Finnish Ministry of Education and Culture in order to improve the availability and usability of the electronic materials of libraries, archives and museums as well as to develop a long-term preservation solution for the materials. The project also follows the Government Objectives of the National Information Society Policy 2007–2011 (<http://kdk2011.fi/en/information-on-the-project>).

According to the National Board of Antiquities, there are 157 professionally run museums in Finland, which are responsible for 329 venues that are open to the public (Kaukonen & Vihanto, 2010). There is no official permission of any kind required in order to establish a museum. As a result, in addition to the 157 professionally run museums, there are around 1,100 small, voluntarily run local museums, which are mainly open during the summer. The Finnish Museum Association has been trying to gather information about all

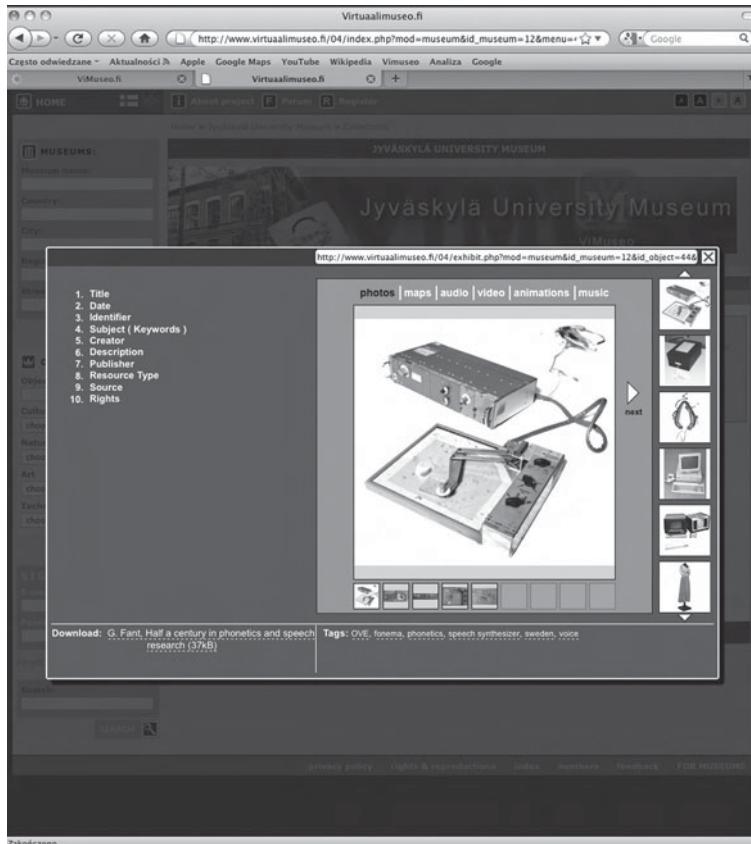


*Fig. 1. Screenshot presenting the Jyväskylä University Museum (Version A).*

the Finnish museums in one service (<http://www.museot.fi>). The list, which is incomplete, includes around 900 museums. This long list includes links to the museums' own websites or to the web pages belonging to municipalities' own websites. In 2008 and 2009, I conducted a preliminary study of these museums' websites. The number of museums has been constantly changing, but the results are comparable. Most of the museums' websites or web pages are not professionally prepared and

offer only limited information about the type of collection, opening hours, address, etc. According to the definition of the museums' sites proposed by Werner Schweibenz (2004), the Finnish local museums' sites mostly represent the contents of the brochures of these museums, with basic information about the museum in question.

The preliminary study of these resources showed that the online accessibility and attractiveness of cultural heritage is very



*Fig. 2. Screenshot presenting OVE IB speech synthesizer from the Jyväskylä University Museum's collection (Version A).*

limited, especially in these smaller, local institutions, although there are many initiatives showing that museum staff are interested in employing Internet solutions to present their collections and to communicate with their audience. The results, however, are quite often unsatisfactory, not only in terms of accessibility and usability. Moreover, there are many museums without even a basic website. Only the biggest institutions can afford to present their resources in complementary and interesting ways. Unequally distributed

resources in the Finnish museums may be seen as a problem, and this results in an unequal presentation of Finnish cultural heritage.

#### AIMS AND RESEARCH QUESTIONS

The research focuses on the small Finnish museums and is carried out in cooperation with the Jyväskylä University Museum (<https://www.jyu.fi/erillis/museo/en>). The Jyväskylä University Museum does not represent small museums, but is open to innovation and, as a

professionally run institution, it can provide all the necessary materials and support. The main objectives of the research are: (1) to investigate the possibilities of new media in presenting cultural heritage in small museums in Finland; (2) to analyze the cooperation between the researcher, graphic designers and programmers; and (3) to construct a tool to create multimedia presentations.

In many situations, museums want to start the process of digitization or be more active on the Internet, but there is little understanding of possibilities of new media and how they could improve their work. The small museums are more community-oriented than research-oriented. Their efforts are all put into supporting activities targeted at local audiences. There are neither sufficient resources to put their museums online, nor sufficient understanding of the problemcomplexes involved in digital heritage. What are the appropriate tools that could be utilized in their work? What solutions can help small Finnish museums become more digitally aware and put their museums online? What are the possible new media solutions that can be used in the local museums in order to present local heritage? I argue that digitization is not the only possible way of bringing museums into the digital world – the low-quality resources and social media can help them to become more active online. This can be a first step in the direction of a proper digitization process.

Another typical problem appearing in museums willing to go digital seems to be the lack of mutual understanding between the museum professionals and programmers or IT specialists. It is expected that the museum professionals know a lot about the possibilities and technical nuances of new media. This situation is relatively much more difficult in the

small institutions no t run by professional staff. However, in most cases there is some basic understanding of the Internet services, browsers, email applications and search engines, which are nowadays in use in every institution. New media are perceived as a continuation of the previous forms of media, and there are thus some basic principles involved. The process of planning and preparing a product of new media can be perceived in the same way as a process of making a product using the previous media forms. The analysis of the process is focused on a clear distinction between the tasks of the actors, their competences, skills and agencies. It will allow for constructing a set of clear, understandable principles for the whole process, which can be further utilized in the form of a practical tool. How should the digital project be planned in order to respond adequately to the skills of their participants? What skills do they have? How do the museum professionals perceive the Internet and how do they use it in their work?

Planning and developing a tool to create multimedia presentations is based on the findings from theoretical research. The main goals of the tool are: (1) to provide opportunities for small museums to share their knowledge; (2) to promote better accessibility to cultural heritage; and (3) to make small Finnish museums more accessible via the Internet.

The aim is to design a simple tool to create multimedia presentations. Multimedia presentation can work as a virtual exhibition, project or collection. The questions were: how to design this tool to adequately meet its users' needs – in this case those of the local museums' representatives and their communities? What elements are required in order to make a virtual presentation about a collection or exhibition

from a small museum? What other elements are required in order to make it attractive to audiences? What elements are necessary to construct the tool that adequately meets the needs of a small museum? What are the minimum technological and visual requirements for the tool? What elements must the tool include in order to be fully functional in a small memory institution?

## METHODS

The study consists of two parts: a theoretical study and a practical implementation (empirical research). The theoretical research is focused on new media; how these are used in presenting cultural heritage on the web and how the possibilities of new media respond to the institutional needs and available resources. The main focus is on small institutions without huge resources or without digitized resources. The Jyväskylä University Museum (The Cultural History Section: <https://www.jyu.fi/erillis/museo/en/cultural>) is being studied in order to provide the necessary basis for the planning and development of the tool to create online presentations and exhibitions. Moreover, cooperation with the programmers and graphic designers is analyzed in this part (also as a comparative study).

The theoretical research is focused on the concept of a virtual museum and what are the features of a virtual museum. The research is not primarily aimed at developing a new digital project, but rather at analyzing the most efficient solutions, which could be potentially implemented in the future. The research is intensively grounded in the Finnish context and the findings are discussed from this perspective. The project has been discussed with museum professionals from the Finnish

museums. In this way the technology can meet the needs of these agents.

Using ethnographic methods, like interviews, is very demanding and time-consuming. However, this approach allows for developing the solution that meets the needs of its users. It may be said that ethnographic methods and participatory design have much in common. However, ethnographic methods can ground the practice in a broader context that may have an impact on the implementation. Developing research versions will help to develop the procedures and methods, which can be used later if the working system is developed.

### EMPIRICAL RESEARCH. ViMUSEO: VERSION A, VERSION B AND PROTOTYPE

The approach chosen in this research is providing promising data and results. The tool has been developed in cooperation with programmers and graphic designers. The process of our cooperation is documented and will be analyzed in a theoretical part of the research.

The research is planned as a comparative study; it was therefore necessary to develop the system with two independent programming teams. I used the same methodology with both teams and used ethnographic methods to document and analyze the process of our cooperation (Silverman, 2006). The same materials and objectives were presented to both teams. We discussed potential solutions, and after that the programmers were asked to answer a few questions pertaining to the matter discussed, what problems they faced, what were the possible solutions and why they decided to choose a particular solution. This method is very time-consuming but brings promising results. The cooperation with both teams

differed a lot, as did the general workflow and final effect. It also resulted in different solutions.

ViMuseo (*virtuaalimuseo* means virtual museum in Finnish) is a web content management system designed for small museums without digitized resources. It works as an online tool to present a museum and to create multimedia presentations that may work as virtual collections, exhibitions and projects. The priority of the system is its simplicity. It is very user-friendly and does not require any professional programming knowledge. Museums can be registered and described by using predefined categories (e.g. "About us", "About the museum", "Visit", "Collection", and so on). Other files may be added, such as images and downloadable files (in the most popular formats). Objects may also be added which are constructed through textual description, adding Google maps, images, flash animations, movies, music files and downloadable files. These objects can be used to create the virtual collections, exhibitions and projects. Users can also post comments and tag the objects.

Both systems have similar functions, features, structure and design. However, from the technological point of view they are completely different solutions. The systems only serve research purposes and cannot be used in any other way. They are accessible online: Version A (<http://www.virtuaalimuseo.fi/> 04) and Version B (<http://vimuseo.fi/>08).

A third version of the system is being developed and will serve only as a demo/prototype. The results from both empirical and theoretical research will be implemented in the forthcoming version. The prototype is planned to include elements researched both theoretically and practically. It will present the concept of the system and will offer additional

comments demonstrating to the museum staff the system's functions. When both versions were discussed with the museum professionals, a lot of time was spent explaining the features. The demo version can make future interviews more focused and less abstract. This version could also be developed as a final version serving the museums, which will be discussed in the next part of this paper.

#### IMPLEMENTATION OF THE VIMUSEO

This project is planned solely as doctoral research. The theoretical part of the research is tightly connected to the empirical research. The empirical research has been partly experimental, and the developed versions of the system only serve the research purposes. Version A and the Version B were developed in order to test the hypothesis and bring a set of useful methods and procedures. The development has been documented and will be analyzed in the doctoral dissertation. The forthcoming prototype version will serve only as a demo, with additional comments explaining the concept and the system's functionalities. There is no intention to use the systems in any other way.

The research is strongly grounded in the Finnish context. It discusses the problems of the small and voluntarily run Finnish local museums and it proposes some solutions. Despite the research being theoretical, the solutions are to some extent also practical. At this stage, the system is not intended to be used by real museums, so the proposed technological solutions do not support this kind of use. However, the programmers did focus on solutions that could possibly be developed in the final product. In order to meet the objectives of the research, the technology

used in the developed versions could be used theoretically in the final version. The conducting of the research and development of the system were also planned in this way, so that the outcomes could be used in the final version. The research, the two system versions and the forthcoming prototype could be utilized in the implementation of the system.

The philosophy of the research is to make the system as open as possible, and we therefore decided to prioritize the open source solutions. This is widely recommended in Finland, for example in public administration organizations (Julkisen hallinnon suosituksia, 2009). Version B is built with Symphony (<http://symphony-cms.com>), which is an XSLT-powered open source content management system. The open source technology can be described as a methodology and it has numerous advantages. The methodology of the whole research and the open source methodology support each other. The source of the final product is publicly available and it can result in further development initiated by its users. Moreover, it promotes the use of open standards, licenses and application programming interfaces (APIs) to share content. Opening cultural content to the public could be supported in any form. Open source is quite often contrasted to commercial solutions, which can be characterized by more centralized, commercially oriented development. It seems that the cultural sector, and especially museums, which are defined as non-profit institutions (<http://archives.icom.museum/definition.html>), could take advantage of the open source methodology.

Moreover, it seems that this approach could be very advantageous in the Finnish context with the enormous number of small museums. It would be very difficult to develop a project

that meets the needs of all these institutions because the levels of expertise and experience in these voluntarily run institutions differ a great deal. I believe that offering them a simple and open solution, which is based on research and which may be developed by them, would be the right choice. Opening the system to its users can be very beneficial in a situation where there is no possibility of knowing each institution. It may result in innovations that are really needed and wanted by its users.

Another benefit of this approach is that there is a possibility to develop a shared digital strategy and policy. The institution initiating this project could try to create the digital strategy and offer it to the museums. Implementing the policy in a practical project seems to be a very innovative but beneficial decision.

This model has been proposed and developed by the Smithsonian Institution. In 2009, the Smithsonian Institution completed a Smithsonian Web and New Media Strategy that updates their digital experience and learning model, and balances the autonomy and control within the institution. The goals that emerged during the process of creating this strategy are related to all the functional aspects of the institution: mission, brand, learning, audience, interpretation, technology, business model and governance (the whole strategy is available online: <http://smithsonian-webstrategy.wikispaces.com>). These themes and goals are unified by the concept of a Smithsonian Commons (<http://www.si.edu/commons/prototype/>), which is an extremely interesting example of how a strategy is implemented through a digital product. The Smithsonian Commons is a digital platform that can be described as a new type of digital presence in the museum world. The Smithsonian

Institution wants to open up access to Smithsonian research, collections and communities. Their resources may be freely used, which can stimulate learning, creation and innovation.

I argue that the same model could be used in the Finnish context. The small museums could be gathered together in one digital space. If there is a common place where these small museums meet, they can share their experiences, good practices and follow the given standards. In this way, it would be possible to implement a digital strategy for all these institutions.

At this moment in time, the system is neither ready to offer this kind of digital experience, nor is there a digital strategy. However, the most important thing is that the research has been planned and developed to find solutions appropriate for small Finnish museums and it has the potential to be developed. It seems that there is too often an attempt to solve problems with cultural and digital heritage by focusing on sophisticated, state-of-the-art technological solutions. The appropriate solution not only meets the technical requirements; it presupposes an identification of the needs and skills of potential users in a wider cultural context. This project aims at identifying these needs and at proposing potential solutions. Further development could make use of these findings.

## CONCLUSIONS

The research is focused on practical and theoretical issues that consider the wide and quite new area of digital heritage studies. In the theoretical part of this research, the relatively small museums and their websites were

studied, as well as the state-of-the-art media technology used for presenting cultural heritage online.

The practical part is designed to implement the findings from the theoretical research and to evaluate the cooperation between the agents involved in the project. The ViMuseo.fi project is a non-commercial project, planned only for the purposes of this research, and is thus proposing a very innovative approach to this field. The goal is to design and construct a simple, user-friendly tool to create multimedia presentations, virtual exhibitions and projects. Innovative solutions and a new approach to this discipline let us reconsider many concepts from the discipline of museology.

The findings are also discussed in the Finnish context. The research aims at providing results that could be implemented in the voluntarily run local museums in Finland. The approach used in this research is not solely focused on technology, but also on real users and their needs. More information about the research, the system and its features are available on the ViMuseo blog at <http://vimuseo.fi>.

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