



**MUSEUM24:
COLLABORATIVE WRITING AS A METHOD
IN LOCAL CULTURAL HERITAGE PRESERVATION**

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Abstract- Tiivistelmä <p>The Museum24 project assembles a virtual museum for the Jämsä region from regional sources by using collaborative writing as a tool to involve citizens in collecting and publishing local heritage. The aim is to improve accessibility to cultural memory regardless of place, time or other personal reasons. Museum24 covers the local museums and a large variety of the heritage beyond the traditional institutions.</p> <p>The hypothesis was that local cultural heritage preservation can be done with the assistance of citizens using the Museum24 publishing system and collaborative writing in the content creation. With the aid of a usability questionnaire and interviews, the study focused on possibilities and problems in using a digital publishing system in content creation of local cultural heritage from the content creator's point of view. An additional aim was to create a model for the content creation process. The study group consisted of 4 female and 4 male content creators.</p> <p>The method used in this study was design research, a method commonly applied with research subjects and domains in cultural and information technology fields. The research method evolved towards participatory design research, because the researcher worked as a part-time project official. The design research methodologies applied in this study are qualitative, procedural and experiential.</p> <p>Evaluation of the Museum24 publishing system indicated that finding and understanding the information is easy but the system is not tolerant of errors. Museum24 has only one supporting user task, online Help, which is not enough. Technical accuracy was found to be good, and the article creation process was quick, but the finished page did not look the same in every browser.</p> <p>The content creators found that collaborative writing did not play a significant role during the content creation process. However, they felt that Museum24 is a potential environment for collaborative writing. Most of the interviewees had the opinion that the publishing system is not ready to use independently without any previous introduction or good personal computer skills. The interviews indicated that it is possible to create a preliminary model for the content creation process.</p> <p>The basic problems in the Museum24 publishing system are technical. When these errors are solved and when an adequate Help (online Help and training in the necessary computer skills) is available, Museum24 can be used independently, making it possible for any citizen to create content concerning local cultural heritage.</p>	
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Aika - Month and year 08/2008	Sivumäärä - Number of pages 100 + appendixes
Tiivistelmä - Abstract <p>Museo24-projekti luo Jämsän seudulle virtuaalimuseon käyttäen paikallisia tietolähteitä sekä yhteisöllistä sisällön tuottamista menetelmänä, jolla rohkaistaan paikallisväestöä kokoamaan ja julkaisemaan paikallishistoriaa. Projektin tavoitteena on parantaa paikalliskulttuurin saavutettavuutta riippumatta ajasta, paikasta tai vierailijan henkilökohtaisista ominaisuuksista. Museo24 sisältää paikallismuseot ja näiden lisäksi laajan valikoiman kulttuuriperintöä, jota perinteiset museolaitokset eivät esittele.</p> <p>Tutkimuksen oletuksena oli, että paikallista kulttuuriperintöä voidaan koota paikallisväestön kanssa käyttämällä Museo24-julkaisujärjestelmää sekä yhteisöllistä sisällöntuottamista. Käytettävyysskyselyllä ja haastatteluilla etsittiin sekä mahdollisuuksia että ongelmia, joita julkaisujärjestelmän käyttö sisällöntuotannossa tuo sisällöntuottajan toimintaan. Lisätavoitteena oli luoda malli sisällöntuotannon prosessista. Tutkimusryhmä koostui kahdeksasta sisällöntuottajasta (neljä naista, neljä miestä).</p> <p>Tutkimusmenetelmä oli design-tutkimus, jota käytetään yleisimmin kulttuurin ja informaatioteknologian tutkimusaiheiden yhteydessä. Tutkimusmenetelmä suuntautui kohti osallistuvaa design-tutkimusta, koska tutkija työskenteli osa-aikaisena projektityöntekijänä. Tutkimusmenetelmät olivat laadullinen, prosessuaalinen ja empiirinen.</p> <p>Museo24-julkaisujärjestelmän arviointi osoitti, että tiedon löytäminen ja ymmärtäminen julkaisujärjestelmästä on helppoa, mutta järjestelmässä esiintyy virhetilanteita. Julkaisujärjestelmässä on vain yksi käyttäjälle tarkoitettu tuki, sisäänrakennettu Apua-toiminto (Help), mikä ei ole riittävä. Teknistä tarkkuutta pidettiin hyvänä ja artikkelin luominen tapahtui nopeasti, mutta valmis artikkeli ei näyttänyt samanlaiselta eri selaimissa.</p> <p>Sisällöntuottajien mielestä yhteisöllisellä kirjoittamisella ei ollut merkittävää roolia sisällöntuottamisessa, mutta he pitivät Museo24-julkaisujärjestelmää ympäristönä, joka mahdollistaa yhteisöllisen sisällöntuottamisen. Useimmat haastateltavat olivat sitä mieltä, että julkaisujärjestelmä ei ole valmis käytettäväksi ilman käyttöä edeltävää koulutusta tai riittävän hyviä tietoteknisiä tietoja/taitoja. Haastattelujen perusteella oli kuitenkin mahdollista muodostaa alustava malli sisällöntuottamisen prosessista.</p> <p>Museo24-julkaisujärjestelmän perusongelmat ovat teknisiä. Kun nämä virheet on ratkaistu ja riittävä apu (sisäänrakennettu Help ja koulutus julkaisujärjestelmän edellyttämässä tietoteknisissä taidoissa) on käytettävissä, kuka tahansa voi käyttää julkaisujärjestelmää itsenäisesti ja tuottaa järjestelmään paikallista kulttuuriperintöä käsittelevää materiaalia.</p>	
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1 INTRODUCTION

The focus of this thesis is a virtual museum - Museum24¹. There are various studies concerning virtual museums and their visitors, as well as several theses concerning the development of virtual museums and digitalization of cultural heritage. In addition, the idea and functioning of Wikipedia, as well as other Wiki-related subjects are widely researched during the past few years. In this thesis, the focuses are 1) the citizen as content creator alone or in collaboration with other content creators and/or museum officials, and 2) the methods and (desktop) publishing system they use in content creation.

In many theses, the term 'collaborative' is associated with education, and the term **collaborative writing** (subsection 3.2) emerges in the context of mass media and communication and eLearning. Collaboration refers to projects where multiple people create something (mainly written work) together, using for example video conferencing, the Internet and wireless devices. To be a part of a community motivates, and the distance between experts and visitors diminish. Museum24 encourages citizens to create content about locally important cultural themes.

Content management means storing, indexing and finding the data. **Content creation** is the first phase of content management and means the acquisition of content, aggregation of syndicated content and authoring of new content (subsection 3.3). In other words, content creation is production of educational, entertainment, news or other subject-related material to distribute over the Internet or in other electronic media. Today, local communities participate more actively in the Internet, and the most active persons involved are middle-aged and senior citizens who are interested in local issues (Rantanen 2004, 23) - a trend which is also evident in Museum24.

The first Wiki-based virtual environments appeared in 1995, allowing communication and collaboration with other users. **Wikipedia** - the Internet-based encyclopedia - is functioning with the help of unknown as well as known authors. The notion 'Wikiseum' means a

¹ <http://www.museo24.fi>

combination of virtual exhibits, normal Web presence and interaction (Hoffman & Herczeg Michael 2005). This study embodies the possibility of creating a virtual museum by using partly the same formula, and trying to increase cooperation between experts, researchers and visitors. Museum24 is an administered museum website. At the same time, the basic idea of Museum24 is quite near the idea of a Wikiseum. In this study, the content creator interviews discuss citizens' facilities and possibilities to preserve local cultural heritage, and also their expectations and requirements for participatory communication.

Independent content creation requires tools. Systems used in human-computer interaction should be easy to learn, flexible, effective and appropriate for the task, including online help and user guides. The user testing is a way to find out real information about the use of computers and the problems in the interface during use. Therefore, a part of this study discusses the *Museum24 publishing system* and its **usability**.

1.1 Design research

Since the 1920s, many theorists have tried to define what design research is and what the used methodologies are. The methodologies mentioned in relation to design research (Laurel 2003, 8-9) are experimental, qualitative, quantitative, speculative, experiential, performative, discovery-led/poetic, formal, structural, and procedural. Design research is used in the following contexts: commercial, academic and exploratory. Its subjects are designers, designed objects, users, customers, and organizations. The research domains are products, services, theory, practice, games, entertainment, and brand.

Design research appears to be an extremely flexible research method. It allows so many combinations of methodologies and contexts that it covers almost every need a researcher has. As Laurel (2003, 316) concludes, design research has a "specific research approaches map to specific contexts and purposes". The relationships of these approaches enable the researcher to choose research methods appropriate to the task.

In this study, the existing design research methodologies are qualitative, procedural and experiential. The research method evolved towards *participatory design research* because the researcher worked as a part-time project official and content creator in Museum24 during the

research. For the same reason, this study may be considered both experiential and procedural.

After a thorough examination, certain limitations may be identified in design research: research subjects and domains. These properties point towards cultural and information technology studies. In the 1990s, Sir Christopher Frayling identified three key modes of design research: it is *research into design* (the traditional historical and aesthetic studies of art and design), *research through design* (project-based, including material research and development), or *research for design* (creating objects and systems "that display the results of the research and prove its worth"). (Laurel 2003, 11.) According to Laurel (2003, 14), design research is moving towards the ITCP field (information technologies and creative practices). It means moving from human-computer interface technologies to humane computer interface technologies. With design research, people improve relationships with each other, communities, cultures, and democracies. In this context, design means more than "serving the needs of business", it means determining and working for the benefit of society, government, education and the environment. At the time the Museum24 research started, the context was non-commercial - Museum24 is a municipal, local virtual museum.

In this study, design research is used within the ITCP field. Museum24 has a human-computer interface technology. The important aim for Museum24 is to encourage citizens to participate in content creation and to use collaborative writing - just for the benefit of society and education. Museum24 corresponds at least with two of the three key modes of design research: research for and through design.

Design research can be both imaginative and empirical. Ethnography is a central method in design research. Research tools within the qualitative research axis include videotaping and photography, artefacts and material culture collections, local model and representation collections, passive or participant observation, oral histories, group interviews, archival and document collections, and structured and semi-structured interviews. (Johnson 2003, 38; Plowman 2003, 33.) Museum24 is a virtual museum, and ethnography is a very essential method. The museum consists of a variety of collections, and many of them are originally the property of citizens digitized either by museum officials or by citizens themselves.

The interdisciplinary feature of design research is well represented within the field of digital culture. Svensson gives an example: "If you are involved in designing computer games you need to know about social aspects of gaming worlds, reputation systems, identity and immersion..." (Svensson 2003, 195). Interdisciplinary work also means that people and ideas meet in creative ways. Museum24 is one of the Finnish pioneers trying to establish a publishing system for the use of local people.

At research level, the goals are to obtain information about the usability of the Museum24 publishing system and collaborative writing as a method of producing content. Outside the research questions, there is an additional aim: to describe a model that an amateur content creator can use to gather and save local heritage. This research consists of interviews and a questionnaire. The Museum24 research questionnaire is based on Keevil's (1998) five categories of usability as guidelines and questions developed from the WUI questionnaire² of Schweibenz, Harms & Strobel (2002).

1.2 Research questions

The hypothesis for this study is that local cultural heritage preservation can be done with the assistance of citizens using the Museum24 publishing system and collaborative writing in the content creation.

Main question

What are the possibilities and problems in using a digital publishing system in content creation of local cultural heritage from the content creator's point of view?

² Download the German version at http://usability.is.uni-sb.de/werkzeuge/wu_index.php (search the link **Excel-Datei [190 KB]** or the text version link **Readme-File**).

2 MUSEUM24

In the *Culture 2000* programme, the European Union emphasizes the importance of maintaining cultural heritage. Culture 2000 was a Community programme for the years 2000–2006. It was established "to promote a common cultural area characterised by its cultural diversity and shared cultural heritage" (European Commission 2007). Along with the European viewpoint, the European Union also understands regional and local viewpoints and emphasizes the availability and attainability of public information aiming to preserve the identity and the special features of regions. In addition, the Finnish *Museo 2000* report concerns regional cooperation as a means of developing the activities in local museums.

Museums have a central role: small regional museums – as well as communities that may be considered to be similar to museums – have to find new forms of activity. These activities guarantee that their task of acting as a local memory and creator of identity is sustained. By bringing together small museums and different communities, it is possible to gain visibility both regionally and nationally. To be recognizable also internationally requires networking with international projects of cultural heritage.

Digitalization of cultural heritage is included in the programme of the Finnish government as a part of the *Programme of Information Society*. The Museum24 project (later Museum24) started in 2002. The aim was to establish the museum plan for regional cooperation between the municipalities of Jämsä, Jämsänkoski, Kuhmoinen, Korpilahti, and Längelmäki, and resulted in a preliminary study on a regional virtual museum project. Briefly, the project was based on the idea of assembling a virtual museum for the Jämsä region from regional sources by using collaborative writing as a tool to involve citizens in collecting and publishing the local heritage. (Heikka 2006.)

From February 2003, Museum24 has worked in cooperation with the cities of Jämsä and Jämsänköski, Artio Group³ (see section 3), United Paper Mills UPM-Kymmene Ltd and Jämsä Parish. The project is funded by the State Provincial Office of Western Finland (using the European Regional Development Fund, ERDF) with 56%, the cities of Jämsä and Jämsänköski with 30%, and private companies and societies with 14%. The official start was on 1st of May 2004.

1.5. - 31.12.2004 Preliminary work	1.1.2005 - 31.5.2006 Project period	1.6.2006 - 31.5.2007 Extension time
1.5.2004 official start starting with the project: establishing office programming the publishing system	checking aims drawing up guidelines for the content planning and testing technical solutions starting content creation	content creation continues further plans for 2006 - 2009 15.5.2007 the final publication of Museum24

Figure 1. The schedule of Museum24

Figure 1 covers the Museum24 project span. Although the project planning and financial applications were done during 2002–2003, the actual project started in May 2004. The first steps were establishing the office and making purchases like computers, scanners, printers, cameras, software and other office equipment. Museum24 was maintained by the project manager Juhani Heikka. During 2004, the first project official was also employed, staying from 1.8.2004 to 31.10.2005. I was a part-time museum official 1.1.2006–31.5.2007. The City of Jämsä allowed the use of their museum worker from the beginning of the project until 30.6.2006.

Year 2004 was time to find authors and drawing up guidelines for the content which continued during 2005. Museum24 employed local content creators and photographers. It also had an operative group with members from municipalities, different museums and communities involved, and many interest groups. The publishing system developed further in the beginning of 2005, and technical testing and development continued until 2007. Content creation was the main task during the last two quarters of 2006 until the final publication in May 2007.

³ <http://www.artio.net/en> or <http://www.artio.net/fi>

The Museum24 aims to improve accessibility to the cultural memory of the Jämsä region regardless of place, time or any personal reason as disability. The virtual museum does not only cover the local museums, but a large variety of the heritage beyond the traditional institutions. Segments of Museum24 (attachment 1, see also subsection 4.1) include a nature scientific museum, home district museum, industry museum, sports museum, art collections, a local newspaper, gallery of regional artists etc. It promotes the Jämsä region in Finland and abroad, spreading knowledge of the local history. The target group consists of every citizen - local or from elsewhere - interested in Museum24 and local history. This makes the target group very heterogeneous; participants range from quite young children (for example elementary school pupils) to senior citizens.

Artio Group, a company specializing in web design and web solutions, has identified the most suitable DBMS (Database Management System) to integrate within the project. Integration includes interfaces for entering into the database the data, which is produced by tools used for digitizing existing resources, as well as interfaces for retrieving data to the Museum24 publishing system.

2.1 Museum24 - a genuine museum?

According to a definition

"A museum is a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment" (ICOM 2007).

Schweibenz (1998) claims that "a definition for 'museum' can only refer to the general aspects that all museums have in common". He opens his claim by writing that "*museums are institutions with a lot of facets depending on the topics they deal with, e.g. art, culture, history or science to name just a few*". Tomislav Sola (according to Heinonen & Lahti 2001, 20) emphasizes the communicative nature of a museum: its aim is to help us to keep our culture alive.

The three basic tasks of a memory organization are: 1) to make a person/community find the traces of time from the surrounding reality, 2) to activate us to take responsibility for our lives, neighbours and environment and 3) to realize that a memory is a counterpart to

forgetting and death. The third opinion is based on a concept that collections - assembled by an individual or a community memory organization - create order and security, and give people an opportunity to feel immortal, to make their mark in history. It is impossible to remember everything, and the past is therefore a product of choices. (Vilkuna 2003, 9–10.) At the opening of Museum24 on May 2007, Vilkuna stated that the newest conception of a museum is a virtual museum.

Autio (2005, 3–4) considers Museum24 very interesting because it is an independent project with no previously existing museum. She notes Karin Blomberg, who has written about a *democratic museum* in her study *Länsmuseerna och Internet* (2002). Autio writes that the idea of Museum24 is that the citizens can contribute their collections to function as virtual windows of the museum.

The City of Jämsä does not have a city museum, and Museum24 is not affiliated to the Museum of Central Finland. Thus, Museum24 is independent of traditional museums. The Museum does have links to the University of Jyväskylä, and these relations have been essential for Museum24. Autio notes that traditional museums do not accept the name Museum24 because it does not have a documented plan. Moreover, Museum24 is a project, not a permanent institution. (Autio 2005, 11–13.)

Although Museum24 does not have a documented plan, it does have a project plan. As a museum, Museum24 tries to function as professionally as it is possible, for example describing the content using ontological parameters. The parameters used are author/photographer, copyrights and the content: who or what, where, when, additional information, all of which have their own parameters.⁴ It is true that Museum24 is a project, but it leaves a permanent track, if the participating cities of Jämsä and Jämsänkoski (which will be united to become the City of Jämsä on 1.1.2009) continue to employ a person to update the website and to establish contacts with local citizens and other possible content creators.

⁴ Read more information about the publishing system in subsection 4.3.

Professor Erik Allardt (1995, 80–81) divides culture into high and low culture as well as national and international culture. According to Allardt, national high culture means traditional institutional art and science, and low culture is based on every person's everyday wisdom and pastime/entertainment activities. Internationally, art, science and modern techniques represent high culture, and modern mass entertainment is its counterpart. The main thesis of Allardt is that to maintain a culture that serves human beings, all these four segments must be considered.

The professional museum institution represents national high culture with a relationship to an international equivalent. At the same time, it collects national low culture, but on the terms on developed culture. (Table 1.) (Allardt 1995, 80–81) According to Allardt's categories a local museum – such as Museum24 – can be located within the area of low culture.

Table 1. Allardt's culture categories (Allardt 1995, 80–81)

High culture	National culture 1 - art and science - cultural festivals - proper museums	International culture 2 - best art, science and technology - science centers
Low culture	3 - popular techniques and relaxation - parish fetes - local museum (<i>Museum24</i>) - home district houses	4 - mass entertainment - adventure parks - rock concerts - "disneylands"

In 2001, ICOM (The International Council of Museums) changed a part of its definition of a museum. The b-section **"In addition to institutions designated as 'museums' the following qualify as museums for the purposes of this definition"** now includes the sentence: *"cultural centers and other entities that facilitate the preservation, continuation and management of tangible or intangible resources (living heritage and digital creative activity)"*. (ICOM 2001.) According ICOM's definition Museum24 is a museum.

2.2 Museology and heritology

General museology includes the philosophy, history, theory and practice of museums, museum-like institutions, and processes that have established them. Its starting point is material culture all over the world within different communities and in different periods. It deals with the principles of preservation, research and communication of the material and its environment, including the social preconditions, with their impact on the tasks of general museology. (Heinonen et al. 2001, 23; van Mensch 1992.)

As early as in 1565, a Dutch doctor, Samuel von Quiccheberg, published in München a museological handbook concerning the systematic examination of collections. The title of the book was *Theatrum sapientiae - Inscriptiones vel tituli theatri amplissimi, complectentis rerum universitatis singulas materias et imagines eximias*. His studies were followed by D. Major, who in his 1674 book *Unvorgreifliches Bedenken von Kunst- und Naturalien-Kammern insgemein* termed Quiccheberg's museum ideology "tactica conclavium", organizing closed rooms systematically. In the early 1700s, two significant books about museology were published: Michael Valentini's *Museum Museorum* (1704) and Caspar Friedrich Neickelius's *Museographia oder Anleitung zum rechten Begriff und nützlicher Anlegung der Museorum oder Raritäten-Kammern* (1727). (Heinonen et al. 2001, 15; Kunstbus 2007 - Kunst & Kunstenaars.)

The 'old museology' (museography) has its origin in the late 1800s. The first chair of museology was established in Germany, Bruenn (Brno in the Czech Republic) in 1919. Museology searches for an answer to the question of how or with what to do museum work, for example how to preserve, clean, catalogue and display museum collections, and answers by giving practical instructions. (Heinonen et al. 2001, 14, 24; van Mensch 1992; Vilkuna 2003, 6.)

The three museum categories are cultural historical, scientific and art. Some do name a fourth category, specialized museums. Museums began to function more professionally in the 1950s, and in the 1960s universities already offered short museum courses. (Vilkuna 2003, 6-7.) In subsection 2.1, it was maintained that according to the ICOM definition, Museum24 is a museum. As a researcher, I have the opinion that Museum24 can be included within two of the previously mentioned museum categories: cultural historical and specialized

museums. Museum24 aims to preserve local cultural heritage and it uses digital techniques in implementing the preservation.

In the early 1990s, it was possible to undertake basic studies of museology within 100 universities, in Finland at the University of Jyväskylä and at the University of Turku. At the same time, the Finnish Museums Association tried to import the idea of museology, the starting points of which were 1) the museum and other similar phenomena, 2) the (museum) object and 3) the museal act. **Common museology** can be divided into four museology categories: *meta-*, *historical*, *theoretical* and *applied* museology. (Heinonen et al. 2001, 16-17; Vilkuna 2003, 6-7.)

Meta-museology studies museology itself from the axiom that a human being has a very special valuing relationship to reality. This relation is called 'museality' and its targets are museum objects, 'musealia'. Museology as a discipline is near philosophy. (Heinonen et al. 2001, 17.)

Historical museology describes and explains circumstances and presuppositions (bounded with time and place) that represent museality, providing the overall historical perspective. It uses two ways for observation: historical and present views. Historical museology applies periodic divisions. The periods are: premuseal time until 1300, early museal time 1300-1600, old museal time 1600-1700 (the first public museums appeared in the late 1700s), and middle museal time, covering the development of public museums within the 1800s and the new museum types. The new museal time began after the Second World War. The latest period covers so called 'eco-museums' and 'the new museology', which have widened museality outside the proper museums. (Heinonen et al. 2001, 17-19; van Mensch 1992.)

The new, **theoretical museology** originates from the community- and environment-centred ideology, and asks *why* (for example why do we have collections and museums, why do we legislate). Its task is to create basic conditions to a common museal practice. Theoretical museology is descriptive, additive and developmental. (Heinonen et al. 2001, 23-24; Vilkuna 2003, 8).

The fourth category of common museology is **applied museology** (practical museology or museography). Applied museology covers the whole field of museum work concerning also its methodological dimensions, adapting the theoretical concepts in practice. (Heinonen et al. 2001, 24; van Mensch 1992.)

The collection-driven museum became phenomenon-driven after the 2nd world war, a museum object was considered to be evidence of some larger phenomenon. A demand of more active participation with museums and the community appeared gradually. The museum is also a medium, a means of participation in social debate. One of the tasks of museology is to educate museum officials. Museology also has an all-round educational task to make us understand the authority relations in the context of time and culture. (Heinonen et al. 2001, 14; Vilkuna 2003, 7.)

Kenneth Hudson (1993) has written:

"Europe is one large museum, where every building, every field and every river and railway contains clues to the past and present of the country concerned, provided the onlooker has the information to understand what he is looking at. Scattered across the Great Museum are the institutions, which we call museums. Their main function is to help people to understand the Great Museum. They justify themselves by looking outwards, not inwards."

The above excerpt was at the same time a critique and an alternative to the French idea of an ecological museum - a kind of comprehensive community environmental process - in the 1970s. Hudson saw the museum more as a point of view or a way to act than an exhibition room. Hudson's idea about the Great Museum extended globally after 1972 when the Convention Concerning the Protection of the World Cultural and Natural Heritage was agreed. The convention focuses on the preservation of cultural sites, and deals with the conservation of nature. (Kallio 2005, 1; Unesco 2007; Vilkuna 2003, 8-9).

Museum24 in Jämsä and surrounding municipalities is a response to the 'Great Museum' in the local web. Museum24 aims to obtain and maintain participation with the community, and it has an educational task. For example, local comprehensive schools and history clubs use the Museum24 publishing system in different ways: they search for information and also produce information for publication.

Where is Museum24 positioned if we place it in the common museology categories? The correct category is historical museology and its new museal time. The basic idea of Museum24 – preservation of local cultural heritage – fits well within the definition of new museology. In Museum24, citizens attach great value to local reality, and in many cases even to their own reality. Thus, the idea of museality is widened outside the physical museums.

The following paragraphs clarify why the terms 'heritology' and 'heritage' are used in the context of Museum24.

While the shift from object to value took place, there was a shift from *museum object* to *heritage*. Tomislav Sola has coined the term *heritology* meaning the 'science of tradition', and including all phenomena conserving and transmitting heritage. According to Tomislav Sola (1982), heritology is a wider concept of museology. There is a move from museum-centred museology towards total heritage, covering a wide range of phenomena. In his unpublished comment, Zbynek Stránský (1984) emphasises "the aspect of active (museum) documentation as manifestation of *the specific relationship of man to reality*". Furthermore, he comments that heritology as a term refers to the concept of cultural heritage. (Heinonen et al. 2001, 20; van Mensch 1992.)

The importance of cultural heritage preservation is emphasized, when the identity of an individual or a community, memory and roots have become problematic. The term 'heritology' is a part of museology, when museology means not only the museum institution, but also the preservation and usage of culture and nature heritage. (Nikula, Ala-Pöllänen, Heinämies, Huovinen, Lehtonen, Lokki, Nieminen, Setälä & Siiriäinen 1999.)

Vilkuna (2003, 10) writes that museology investigates cultural heritage, and the focus is the culture that created memory organizations and its memory processes, so the better name for the subject would be heritology.

According to Dicks (2003, 119, 129-132), heritage is a symptom of the 'turn to the past' phenomenon in contemporary society. Heritage production is a way to salvage the past and to stage it as a visitable experience. Our 'childhood-self' and 'ancestor-self' find satisfaction in living history museums and heritage centres, which make time stand still by creating past

environments. Dicks suggests that instead of being a retreat from the present, heritage is stimulated by the present. It is late modernity itself that allows the past to be represented in forms that seem so real, particularly in wrap-around, interactive, living history simulations.

Dicks (2003, 133–136) writes about the juxtaposition of heritage and history, where the latter is considered objective and truthful. She refers to Schouten (1995) as follows: "*Heritage is not the same as history. Heritage is history processed through mythology, ideology, nationalism, local pride, romantic ideas or just plain marketing, into a commodity.*" Dicks refers also to Ashworth (1992) writing that contemporary heritage is an antonym to preservation: "Heritage conservation is creation and not preservation of what already exists". Furthermore, she supposes that heritage often has a particular tie to the present. History belongs to the public knowledge, but all heritages are always someone's heritage. She suspects that an attempt was made to keep history and heritage separate because of the latter's association with visitors and tourists. When the past is produced, and the history is made visitable, it becomes heritage, profitable business for different audiences. Dicks (2003, 137) writes that heritage projects must add value and bring benefits to the area in question. Only such assets encourage local interest groups to participate.

In her book, Dicks (2003, 139–142) notes that heritage encourages different groups to think of their cultural roots as a part of their selves and their identity, a part that deserves to be made public. She writes that only few museums achieve local collaboration, museums do not anticipate the advent of an "autonomous, truly popular and professional free museum".

The change from museum-centered museology to heritology emphasized a person's specific relationship to reality. This study examines collaborative writing as a method in local cultural heritage preservation. The earlier studies give different definitions for the term 'heritage'. The common supposition is that heritage is something we produce from the past with the help of our present. To collect local cultural heritage thus provides opportunities to live through our own or our local history, 'local pride' as Schouten called it. Ashworth's concept of heritage conservation supports the idea of content creation in the context of local cultural heritage and Museum24.

Dicks's opinion about producing the past to become heritage and therefore profitable business corresponds with the situation of Museum24. When the official financing expires, Jämsä and Jämsänkoski (from 2009 the united City of Jämsä) will share the yearly costs (server, updates) at a nominal amount. In the future, the development of business-like activities may be the only way to maintain, create new content, and expand Museum24.

3 VIRTUAL MUSEUM

3.1 Virtual reality and born digital

Dietz, Besser, Borda and Geber with Lévy (2004, 90) define virtual reality (VR) as follows:

"An artificial environment that is created by the means of 3-D computer graphics, spatial audio and visual applications. Often termed 'worlds', VR represents real-world or conceptual environments that can be navigated through, interacted with and updated in real-time, often with the use of peripheral and/or sensory devices".

Dietz et al. (2004, 22) cite Pierre Lévy's (1998, 16) *Becoming virtual: Reality in the digital Age*:

"The virtual, strictly defined, has little relationship to that which is false, illusory or imaginary. The virtual is by no means the opposite of the real. On the contrary, it is a fecund and powerful mode of being that expands the process of creation, opens up the future, injects a core of meaning beneath the platitude of immediate physical presence."

According to Dicks (2003, 182), virtual reality refers to the technology used creating virtual worlds, and the experience of being immersed in them. She comments: "...the term *virtual environment (VE)* is often preferred, since this refers to the 3-D computer-generated realms that *virtual technology* permits." Already Carlson (1992, 53-54) had the same opinion: the term 'virtual' has a variety of meanings and for example in the educational communities, technology has driven the definition of the term.

Digitization enhances interpretation because it provides objects with more contextualization. Dicks (2003, 184-185) considers the digital image as a metaphor for the real, although these two are understood in different ways.

Documents and other material in digital libraries (museums, exhibitions) can be *born digital* or digitized versions of materials that originated in other forms. The term 'born digital' differentiates any digital information from digital objects that begin their life in digital form. These born digital objects are originals, not only surrogates or metadata about originals. The preservation/conservation of originals is a mission function for an institution. (Borgman 2001, 80; Dietz et al. 2004, 22-23.)

The Digital Preservation Coalition (2001) defines the term *born digital* as follows:

"Digital materials which are not intended to have an analogue equivalent, either as the originating source or as a result of conversion to analogue form. This term has been used in the handbook to differentiate them from 1) digital materials which have been created as a result of converting analogue originals; and 2) digital materials which may have originated from a digital source but have been printed to paper, e.g. some electronic records."

According to Wikipedia, 'born digital' as a term has its origin in digital preservation. It describes assets which start as computer data (email, web graphics and 3D models from virtual worlds) (Wikipedia 2007). Born digital material is thus created, displayed and experienced using digital equipment, interfaces, programmes and formats. Such material can also be temporary by nature. The content can be manipulated and it may be interactive.

'Born digital' is also a notion which describes the younger generation as 'digital natives'. The basic point of view in this context is the way people interact, for example, when using information technology. (Digital Natives 2007.)

'Born digital' as a term is changing towards the idea of 'born hybrid'. Dietz et al. (2004, 23) wrote about objects that are digitally created but have specific physical requirements, objects that are re-released as well as objects of which digital surrogates become primary from the user perspective. If the production process is evidently either analogue or digital, there is no need to have too narrow a focus on the term 'born digital'.

Museum24 does not have much in common with the idea of virtual reality, if VR is defined as Dietz et al. and Dicks define it. As a virtual museum, Museum24 does not represent real-world or conceptual environments to navigate. The site has no elements that need any peripheral or sensory devices during the navigation. Interaction is quite insignificant - the site mainly provides a facility to use/watch Flash animations. Instead of VR, the terms 'born digital' and (even more so) 'born hybrid' describe the Museum24 collections best.

Museum24 uses the photo collections of local well-known photographers like Anna Salonen and Pauli Nevalainen, Foto Roos, Lauri Nivarpää etc., and every photo, regardless of the

type of the origin, is digitized into the publishing system. The Museum officials also digitized short video clips from old cine films⁵ and audio clips from old tape recordings⁶.

Most of the material of Museum24 is not born digital material, because photos, texts, video clips and tape recordings have an analogue origin. Although Museum24 mainly uses the converted forms, there is some born digital material not used in other forms before: photos, texts, audio and videos. Examples of born digital material are photos taken with a digital camera during the project⁷ and local sounds recorded for museum use⁸. The most evident born digital material in the context of Museum24 is the Museum24 publishing system⁹.

3.2 Virtual exhibition and virtual museum

VR technologies enhance the function and usability of a museum. Museums have been the pioneers of virtual access to culture. A virtual exhibition functions as an online entry for global audiences. It directs to a presentation, bringing the objects and their stories alive. Individuals can find their own meanings for an object. The disadvantage is that access to the 'real thing' (physical object) is limited unlike in collection-based museums. (Brown 2001, 310; Dicks 2003, 184; Soren 2004, 6.)

Kallio (2005, 8) comments that a virtual exhibition is a relatively new and unstable term, since a virtual exhibition can be anything from an exhibition that complements an actual museum exhibition to a stand-alone museum layout. Dietz et al. (2004, 25) has the same idea, in that virtual exhibitions have a great variety in terms of their content, structure, navigation, design and complexity, from a simple selection of images to multimedia architectures and narratives.

Dietz et al. (2004, 25) and Kallio (2005, 8) consider virtual exhibitions as born digital resources. In their view, the terms 'virtual exhibits', 'online exhibition' and 'web exhibition'

⁵ Farmer Paavo Salo bought a cine camera as early as 1936. Museum24 presents video clips of his cine films from the 1930s and 1940s. This material includes also the first coloured cine films. Become acquainted with life on the Savo farm at [http://www.museo24.fi/?action=INavigation::changeFolder\(10758\)](http://www.museo24.fi/?action=INavigation::changeFolder(10758))

⁶ Listen to the dialect of Jämsä at [http://www.museo24.fi/?action=INavigation::viewArticle\(4533\)](http://www.museo24.fi/?action=INavigation::viewArticle(4533))

⁷ See examples of the born digital material at [http://www.museo24.fi/?action=IMuseum::setLanguage\('fi'\)](http://www.museo24.fi/?action=IMuseum::setLanguage('fi'))

⁸ Listen to local voices at [http://www.museo24.fi/?action=INavigation::changeFolder\(6723\)](http://www.museo24.fi/?action=INavigation::changeFolder(6723))

⁹ <http://www.museo24.fi>

also refer to the same type of production. Kallio notes that a virtual exhibition has many museum exhibition-like characteristics, for example the role of the museum object.

Kallio (2005, 15) further divides virtual exhibitions into three categories: *network-like exhibitions*, having common features with most websites on the Internet, *thematic exhibitions* based on a(n) (interactive) story, and *associative exhibitions*, which give an accurate view of the content at the outset, with an opportunity of browsing as the visitor wants. Museum24 has the features from both network-like and associative exhibitions. The site structure (navigation, and more closely the site map) may be deemed to give the visitor the headings. The visitor makes the choices as to how and where to start and browse associatively.

Järvinen (2003, 26–27) studied the digital services of museums and writes that a virtual exhibition is created solely for the net. It may originate within a museum exhibition but it is designed by using digital media. She uses categories like *digital publications*, *digital databases* and *virtual museums*.

Museum24 is created for the net and it has some born digital resources, but the content is mainly digitized material (see subsection 3.1), which would tend more towards a virtual museum than an exhibition. The following paragraphs also strengthen the concept of Museum24 as a virtual museum.

Huhtamo (2002) states that in the early part of the 20th century, H. G. Wells spoke about the idea of a global database ('world brain'). The medium was microfilm. The origin of virtual museums is in the exhibition design within the avant-garde art movements in the early 20th century. Exhibitions turned to encouraging visitors into a dynamic relationship with the space, its dimensions and elements.

André Malraux pointed out the idea about the imaginary "museum without walls" in 1947. The reason for the idea of questioning the traditional museum was the spread of photography. At the same time in the United States, Vannevar Bush was evolving a theory about a non-linear system of storing and retrieving data. The following steps towards virtual museums were in 1960s when hypertext was invented, and in 1993 when the Mosaic browser was introduced. The first official "museum" on the Internet was *The Museum Inside the*

Network exhibition in 1995. Before that in the early 90s, hypertext was used in CD ROM-based virtual museums. (Huhtamo 2002.)

The exhibitions from the beginning of the 20th century until the 60s included the ideas of a virtual museum: the navigable non-linear database, convergence of different media and the interaction with users/visitors. In 1990, Jeffrey Shaw created an interactive work *The Virtual Museum - within a gallery*. This exhibition connected the past and the future of virtual museums. (Huhtamo 2002.)

Järvinen (2003, 26–27) defines a virtual museum as almost always having a connection to a 'real world' (physical) museum. Furthermore, she writes that most virtual exhibitions should be called digital publications, since a proper virtual exhibition consists of assorted material and provides experiences. Huhtamo (2003, 3) holds the contrasting opinion that a virtual museum is a cultural and ideological subject, it does not substitute a 'real world' physical museum, and it is not an on-line archive or a database. The virtual museum can help preserve material and immaterial cultural heritage.

A search with Google for 'virtual museum' brought up 1,020,000 hits in March 2007 and 958,000 hits in April 2008. Until the year 2007, the volume of search hits was growing. The reason for the fall in figures may be that the words 'virtual museum' are substituted with other terms and that some virtual museums have disappeared or merged with other museums. According to Huhtamo (2002), virtual museums have a very general common denominator referring to almost any kind of collection of material put on general display on the Web. Schweibenz (1998; 2004) shares Huhtamo's opinion. He comments that in the museum and information science literature, a variety of terms are used synonymously for museum-related digitized information resources, e.g. electronic museum, digital museum, on-line museum, hypermedia museum (hyper museum), meta-museum, Web museum, and Cyberspace museum. All these terms share the concept of digitized museum information that is brought together in an online-accessible collection.

The Museum24 site is produced by using a digital publishing system that utilizes digital databases, and most of its content has a counterpart in the 'real world'. The difference is that these counterparts, for example photo collections, do not belong to any existing museum - as

Järvinen (2003) defines the character of a virtual museum – they belong to individuals, communities or municipalities. The material is assorted and it provides experiences, as Järvinen emphasized. Only the term 'experience' is here undefined: there can be various methods to obtain experiences. Museum24 presents, for example, texts, photos, videos and audio, but the site itself is not very interactive.

According to Huhtamos's opinion, Museum24 is a virtual museum, because a virtual museum does not need to rely on a 'real world' physical museum (cf. Lewis and Schweibenz later in this section). What Huhtamo wrote about the common denominator of virtual museums is valid in the context of Museum24. Museum24 has various collections of digitized material and this material is put on a general display on the Internet. At the same time, the task of Museum24 is to preserve material and immaterial cultural heritage.

Many studies of virtual museums lean on the term Hoptman (1992, 141–142, 146) used: *connectedness*. He regards connectedness as the basis of the virtual museum. Connectedness refers to the nature of information, which can be interrelated, interdisciplinary or integrated media. The information searches and publications as educational learning resources are enriched with connectedness. Hoptman states that if the concept of connectedness is used throughout the editorial and production process, digital integrated mixed media publications represent better the broad contexts from which information is reduced. According to Hoptman, the virtual museum provides both multimedia and information that is not filtered out through traditional methods.

Geoffrey Lewis (1996) presented a well-known definition for the virtual museum in the Articles Section of Britannica Online, the Internet version of the Encyclopaedia Britannica. Lewis described the virtual museum as

"a collection of digitally recorded images, sound files, text documents, and other data of historical, scientific, or cultural interest that are accessed through electronic media. A virtual museum does not house actual objects and therefore lacks the permanence and unique qualities of a museum in the institutional definition of the term."

Schweibenz (1998) concluded the definition of a virtual museum as follows:

"The "virtual museum" is a logically related collection of digital objects composed in a variety of media, and, because of its capacity to provide connectedness and various points of access, it lends itself to transcending traditional methods of communicating and interacting with the visitors being flexible toward their needs and interests; it has no real place or space, its objects and the related information can be disseminated all over the world."

Museum24 corresponds to most of the requirements Hoptman presents. The information used is interrelated and integrated media. The intention is to give accurate and valid information, but the approach to all themes is not interdisciplinary because of the background of the content creators. Only few of them are professionals, have studied at the university or have university degrees. The information is not produced using only traditional methods or methods approved by educated museum officials. If the term 'interdisciplinary' covers the whole variety of subjects presented in Museum24 and not only the method of content creation, we can conclude that the three elements of Hoptman's connectedness are in use.

Both Lewis (1996) and Schweibenz (1998) lean on their definitions of a virtual museum regarding access to information and the digitalization of information. They share Huhtamo's (2003, 3) opinion that a virtual museum has no physical counterpart. Thus, Museum24 is a virtual museum. Furthermore, it does not house the actual objects and it offers the possibility of accessing information all over the world where Internet connections are in use.

3.3 From collection-driven museum to audience-driven museum

Historically, museums are curator-driven. Traditionally, curators authorize objects, oversee collection, acquire items, plan, and prepare exhibits. There has been limited access to holdings through an interpretative exhibition context, which is provided by curatorial and educational staff. "*The museum provides a framework of context and interpretation, and the user can navigate within that smaller context*" (Dietz 2004, 21). Collaboration demands more openness, consciousness of processes and acceptance that results may be less predictable. Now there is a change in the curator's role: in small museums, a curator may be responsible for a variety of tasks from collections to funding. (Diamond 2005.)

In the 1980s, the importance of information about the object took priority over the importance of the object itself. The importance of museum education and visitor studies emerged. Visitors considered the information about museum objects to be important for its appreciation. Without the information, there is no way to the understanding of museum objects. (Schweibenz 1998.)

Treinen (1996, in Schweibenz 1998) reasoned that communication is the key to understanding the museum object. Instead of only presenting objects, museums have to create meaning and establish context. The museum has to connect visitors, objects and information. Hoptman (1992, 141) used the term 'connectedness' (see section 2.2). According to Schweibenz (1998), connectedness means that visitors have an opportunity to focus on their special interests within an interactive dialogue with the museum. Hooper-Greenhill (1994, 134) in Schweibenz (1998) emphasized that the above-mentioned constitutes a change from a collection-driven museum to an audience-driven museum. An audience-driven museum relates to a particular visitor group, and its focus is on the visitors instead of the collections. The Internet is an ideal communication system to achieve this goal.

Gosling (2001, 469) suggests that many museums - for example natural museums - are becoming 'idea museums'. An idea museum is "*an institution where exhibitions and programmes revolve around a key organizing concept*" (King 2005, 2). Gosling emphasizes that the term 'idea museum' should be used carefully: what else were the old displays if they did not express ideas about the world? He concludes that as a term, idea museum is useful when a museum attempts to change from a collection-based agenda to multidisciplinary communication.

The virtual-physical distinction appears with the audience. If a visitor does not come through the doors of the museum physically, he is not a 'real' visitor. Along with globalization, a museum should value virtual visitors as real visitors. In fact, virtual exhibitions can reach wider audiences than actual exhibitions. In addition, museums can collaborate with libraries, other museums or educational institutions. Collaboration widens the museum's approaches to become appropriate to global audiences, allowing them to reach much larger arrays of materials. (Brown 2001, 310; Dietz et. al 2004, 22; Hein 1998, 170-171.)

Research of virtual museum visitors occurs often in the context of learning. Communication and collaboration are ways of fostering constructivist learning (Arbach 2006). For example, in their project report, Devine, Gibson and Kane (2004) present a view of Scottish museums. They describe how they use the opportunity to increase access for new audiences, and promote new learning styles. Hein (1998, 6-7, 41, 45) writes that learning as we know it now is an active participation of the learner with the environment. He maintains that "...visitor studies arise out of the educational role of museums".

Museum24 is originally a virtual museum with a limited idea: to preserve and maintain local cultural heritage. Museum 24 is a way to create and maintain local cultural heritage without a curator. Persons (project manager, project official) working in the project are employed only for the duration of the project. After the project period the use of volunteers will increase. If Museum24 had a curator, his role would have been different from that in curator-driven museums: everything that concerns Museum24 and happens in it, from funding to content creation.

Because of the nature of a virtual museum, visitors - even when they make virtual visits - are real for Museum24. The website has a follow-up system, which gives information on for example such visitor properties as country, date, visited pages, time spent within these pages and the visitor's IP address¹⁰. Furthermore, all feedback sent either by email or using the feedback formula¹¹ within Museum24 is studied carefully. Although Museum24 visitors represent different ages and interest groups, it is evident that there are the following common reasons to visit the website: local history and the need to find detailed information.

Lamminen's¹² (2006, 16) study group (see section 5) also noted these. Museum24 creates connections between visitors, between visitors and content creators, and between objects and information.

¹⁰ Electronic devices use an IP address (Internet Protocol address) to identify each other and to communicate with each other on a network. Devices like computers, routers, servers and printers can have their own IP address – either unique within the specific network or within the global Internet.

¹¹ [`http://www.museo24.fi/adminFrame.php?action=INavigation::showCommentsPage\(\)`](http://www.museo24.fi/adminFrame.php?action=INavigation::showCommentsPage()), see also subsection 4.2

¹² researcher Juha Lamminen, University of Jyväskylä, Faculty of Information Technology

Museum24 has also an educational role in relation to elementary schools within the area. Schools have their own Museum24 pages (picture 1), and pupils have taken the photos and created texts. For teachers, Museum24 contains questionnaires and exercises on the local special museums introduced by Museum24 – and Museum24 gives the right answers to the teachers as well.



Picture 1. Working space for local schools¹³

At the turn of the 21st century, the role of museums and their ability to compete for visitors with other communication media arose within the museum field. For example, Brown (2001, 299) and Hein (1998, 11) noted that museums are changing from passive collectors of cultural artefacts to active preservers of cultures. As institutions, they make the movement towards holistic integration of core museum programmes (collections and research) aimed at strengthening the visitor's experience, its quality and impact. Institutions use effects like maximizing visual access to authentic objects and intellectual access to original research. The most significant asset over other types in a museum is the 'real thing'. (Brown 2001, 299; Hein 1998, 11.)

¹³ [http://www.museo24.fi/adminFrame.php?action=INavigation::changeFolder\(3521\)](http://www.museo24.fi/adminFrame.php?action=INavigation::changeFolder(3521))

Kallio (2005, 1-2) comments that the most important museum issues have been introduced by using alternative techniques like virtual exhibitions and multimedia. It saves space, makes it possible to browse the material via the Internet at home or somewhere else, and digitizing diminishes the use of original objects and materials. Huhtamo (2003, 4-5) and Dicks (2003, 184-185) write about a private and location-free experience, which allows an interactive, non-linear exploration of the exhibition from home, as long and as many times as the visitor wants. A visitor does not have codes of behaviour (dress code, eating), he can concentrate intensively on the subject without disturbance from other visitors, and the additional information is just a mouse click away.

Dietz et. al (2004, 31) hypothesize that tailoring the content based on what users do and want is the best way to meet the audience's needs. The information about who is using the virtual museum and for what purposes helps the organization to meet audience expectations and to improve usability and user retention. It is possible to specify discrete sub-audiences (age-dependent, sorted by particular interests, the disabled, linguistic minorities, grammar school pupils, university students etc.). The new technologies allow museums to tailor exhibitions and interactivity by using a level of discourse appropriate for just a specific group. The exhibition may be the same but the language and graphics used are different. Furthermore, Dietz et al. discuss that empowering users to become more participative may mean more work for users. They question whether users want to customize their own exhibitions or let assistive tools do the work for them. (Dietz et al. 2004, 27, 30-31.)

Virtual museum visitors can find artefacts and other material that may not have display space in actual museum exhibitions. Visitors have easy access to information using different ways from traditional print indexes; the combinations can be unique and only put together for a specific visitor. The lack of an exhibition is not an obstacle to finding information from available media resources, in individually tailored formats. (Hoptman 1992, 146-147.)

The Internet offers to visitors feedback-loops presenting a limitless universe of individually managed and enduring sites. If we compare the web and television or film, the web is more 'visitable' and 'travellable' because of the interface the computer provides. (Dicks 2003, 171-174.)

A virtual museum gives the visitor the opportunity of accessing the exhibition and information as a private and location-free experience. Although both Dietz et al. and Hoptman (the latter mentioned as early as 1992) use the term 'tailoring', Museum24 does not offer the visitor tools for it. The only tailoring the visitor can do is changing the language (Finnish/English), but not all the articles are translated.

Museum24 includes an ontology database for the use of content creators. In addition, the Museum24 publishing system has a readiness for searches based on the ontology, which maybe in the future will allow a visitor to use the semantic web¹⁴. This is a way to 'tailor' one's own exhibitions from the Museum24 sources and from those of other virtual museum databases using the same OWL-language¹⁵ (see subsection 4.3).

3.4 Virtual museums in the future

The idea of mass media emerges in the context of (virtual) museums in many studies and papers. The origin of the term 'media' is in Latin: medium, meaning the way of expression and the social context where the expression is produced, presented and received. The term 'mass media' was coined during the 1920s, when nationwide radio networks and mass-circulation newspapers as well as magazines became common. Mass media denotes such media that are directed and designed to reach a large audience. (Kotilainen 1999, 31-32; Wikipedia 2007.)

Grewcock (2001, 47) argues that a museum exhibition is mainly a mass media experience, and Heinonen et al. (2001, 23) write that a museum is a medium in which exhibitions are a method of mass communication. Schweibenz (1998) concludes that a dynamic interplay exists between the concepts of a museum and mass media. He refers to other researchers, for example Heiner Treinen (1993), and concludes that visitors do not get enough out of their visit. A solution is to provide more information and entertainment - or a combination of these approaches, 'edutainment'. Dietz et al. (2004, 27-28) do not share the above opinions (that are directed mainly towards physical museums), saying that "*even though the virtual museum aims to have mass appeal, it has become clear that it cannot function as a mass medium*".

¹⁴ <http://www.w3.org/2001/sw/>

¹⁵ <http://www.w3.org/TR/owl-features/>

The reason is that there are only few sites that will have 'mass audiences', and the most important point of view behind the argument is that as a medium, the Internet is a personal medium.

The statistics within Museum24 indicate that locally, these museum web pages are not mass media, but do attract a considerable number of visitors. The local newspaper *Koillis-Häme* that covers the municipalities of Jämsä, Jämsänkoski, Längelmäki, Korpilahti and Kuhmoinen has four weekly issues and an average circulation of 7,663 per each issue. Between 1.1.-31.1.2008, Museum24 had from 1,000 to 4,500 visitors daily (average around 2,100 per day, about 15,000 visitors per week). About 75% of the Museum24 visitors were from Finland and 25% outside Finland. (Koillis-Häme 2008; Museum24.)

The Virtual Museum of Canada¹⁶ (VMC) is one of the world's most successful virtual museums since its launch in 2001. According to its researchers Dietz et al. (2004, 27-28), the museum collaboration has been carried out using different models. Digitization and establishing collective repositories was typical to the central model. The meta-centre model consists of multiple information resources that are connected with a series of relationships. The priority issues for virtual museums today are access and usage.

Grewcock (2001, 47) wrote that a visitor brings along the diversity of his own life experiences, knowledge, networks of associations and connection with the world. Therefore, it is important to identify a notional visitor and use that information to increase communication. He suggests a few areas to investigate, like visit motivation, visitor expectations, visitor perceptions, as well as the physical environment and its use. Dietz et al. (2004, 6) studied five key areas - audience, interface, content, infrastructure, and sustainability - to define the 'next generation museum'.

Harcup (2006) discovers that it is easy to reach the existing audiences but museum funders want to reach new audiences. How do virtual museums (and physical 'real' museums) reach these new audiences? The most common solution is the creative use of technology. As Piacente (2001, 22) notes, it allows putting artefacts and art in context, increases

¹⁶ http://www.virtualmuseum.ca/English/index_flash.html

opportunities for interactivity and may provide simulated experiences. Through multimedia, a visitor can create connections with other exhibitions. In addition, Harcup (2006) mentions the possibility of drawing a virtual collection from a variety of institutions. She writes that this kind of use of media increases collaboration among those who otherwise do not participate. "*The more people interact, the greater the potential value that is added to the whole.*"

The form of interaction varies, but the common feature is to transform the visitor's experience from the passive to the active. Interaction can be for example writing, playing, voting or creating. There are different levels of participation depending on needs and users. In any case, even low-effort interaction adds a lot of value for others. In museum work, interaction can mean that visitors have access to parts of collections that are normally unseen. (Harcup 2006.)

Dicks (2003, 184–185) concluded that museum collections grow and there is a problem in finding new space for artefacts and displays. The solution is digitization and virtual exhibitions. She gives an alternative: museums keep the material/artefacts and exhibitions are held only in virtual form. Dicks also describes the possibility that there is no physical museum space - everything exists in digital form.

Digital communication technology differs from other media by allowing duplex communication. A duplex communication system consists of two connected devices/parties that communicate with one another in both directions. Researchers like David T. Schaller and Steven Allison-Bunnell (Kallio 2005, 40) voice the criticism that interactivity is understood as the user's possibility to choose what to look at or read. Interactivity consists of possibilities to communicate with 'real' people, to produce their own interpretations and meanings - and most important, it gives users something to do.

The virtual and actual museum exhibitions can be integrated - either within the gallery or in the gallery and in the net. Museums use new communications technology to build virtual exhibitions so that different groups (for example schools and students) can explore the exhibition before the actual visit. With new technologies, it is possible to use interactive capabilities that allow visitors to bookmark multimedia experiences and access them later on the web. (Gosling 2001, 473–474.)

(Dietz et al. 2004, 5-7) emphasize that there are significant aspects of a next generation virtual museum, such as the hybridization of the concept of the museum, interpenetration of physical and virtual space, modular/pan-institutional structure and audience participation in the content creation. They represent two primary ideas. The next generation virtual museum is more audience-centred. It may mean less focus on the goals and functions of institutions. Virtual museums need to understand that it is a platform which supports both individuals' and institutions' efforts in that area, as well as creating model applications.

How does the next generation virtual museum function? Dietz et al. (2004, 7) give some recommendations. First, there should be research about online audiences. Another theme to study is how the audience uses online resources. Virtual museums should focus on assistive systems that allow users to create and manage content. The Internet is a medium delivering customized learning opportunities (and interfaces). A virtual museum should focus on developing a platform providing access, communication and social spaces to meet audience needs to collect, relate, create and donate activities. Such a platform encourages individual thinking and at the same time provides access to usable authoritative information. (Dietz et al. 2004, 7.)

Personalization is one of the main directions in future virtual museums because it is a component of creative practices. The virtual museum represents the collective memory, but within the personal museum a visitor uses and re-uses, assembles and manipulates information resources for himself. Visitors should have the facility of collecting content into their personal museum spaces not only from one virtual museum but a number of virtual museums and from other information sources. The term 'collaborative filtering' means that audiences can be directly involved in some content featuring on the site. Such a personal museum is a platform supporting interpersonal communication and knowledge management. In addition, virtual museums should create an open system for the audience to add restricted information to the core museum content. (Dietz et al. 2004, 7-9, 38-40.)

Engagement, participation, content use and re-use in creative environments are some elements (see section 4) that need to be considered as key elements for future virtual museums. The virtual museum now represents the collective memory. The future personal

museum is a place/space that is open to any visitor or group of visitors. The basic elements of a personal museum are personal choices, made with adaptive and adapting tools. (Dietz 2004, 38.)

According to Dietz et al. (2004, 33–34, 38), collaboration can be formed with outreach programs and visitor services as well as using entertaining applications and game-like interfaces, which allow audience participation. Kallio (2005, 16–17) writes that the essential theme for virtual exhibitions is creating experiences. Furthermore, he has the opinion that the Internet is suitable for interactive games and quizzes as well as for video and voice. For example, games intensify the educational use of exhibitions.

Museums need to have technology partnerships to create newer forms of communication; examples are online discussions, online seminars, forums, surveys, webcasts, message boards and training. In the future, many groups access information using mobile phones and handheld devices, not to forget other wireless network devices allowing the use of web functionality. (Dietz et al. 2004, 33–34, 38.)

New technologies make it possible to give visitors more of the information they are looking for. The source of additional information is always the item level of an individual object. In a personal museum, the audience constructs their own narratives as well as seeking authoritative experiences. This kind of usage needs such databases that can provide context about specific chosen objects. Dietz et al. (2004, 40) quote Hayles: "*Data are thus humanized, and subjectivity computerized, allowing them to join in a symbiotic union whose result is narrative.*"

Does Museum24 have the properties important for the future virtual museum? In the late 1990s, Schweibenz suggested that giving more to the audience requires 'edutainment' – a combination of more information and entertainment. Dietz et al., Harcup, Dicks and Gosling presented solutions on how to offer these: the creative use of communication technology (for example multimedia), digitization, virtual exhibitions and easy access. From the beginning, Museum24 fulfils all these criteria. Another requirement for a future virtual museum is interactivity – as Piacente, Kallio and Gosling note. Many researchers also widen the idea of interactivity to cover the personalization of a virtual museum. As concluded earlier in subsection 3.3, Museum24 does not yet fulfil these criteria. The basic elements within the

core of the publishing system exist, but the final easy-to-use interface for visitor use is under development.

A virtual museum needs technology partnership. Museum24 had many partners from the outset - one of the most important was Artio Group (see also section 2), the company behind the Museum24 publishing system. During the preliminary studies 2002–2003, the project manager Juhani Heikka investigated different interfaces for museum use. Artio Group had the Impressio eJournal¹⁷ CMS (Content Management System) solution, which was already then used in various countries outside Finland¹⁸. The company was developing a new electronic publishing system, which was based on open source coded environments. Artio Group wanted to develop it further within Museum24, in the role of project partner. Without the assistance from the company during the project, my tasks as IT helpdesk for the content creators would have been more difficult and partly impossible. The online help provision for me - Mantis - ensured that somebody either from the Artio Group Jämsä unit or from the Czech Republic (Artio s.r.o.) answered and made corrections to the publishing system.

¹⁷ <http://www.julkaisut.fi/>

¹⁸ for example in Namibia, South Africa and in some East European countries

4 COLLABORATIVE WRITING AND CONTENT CREATION

"To transfer messages from one medium to another always involves reshaping them to conform to new standards and material" (Kittler 1990, 264). Communication requires a relationship between sender and receiver, who make decisions on the relevance of the transmission: should the data be altered or retransmitted. Carlson (1992, 55–56) writes about the conceptualization of the communication elements. She considers the transaction as primary. Participants create and sustain relationships, which need mutual respect and mixed talents and expertise. They have to work cooperatively to elaborate and upgrade information. There has to be an electronic medium to enable and to empower users to participate in the intellectual exchange.

Adelson & Jordan (1995, 469–474) write about negotiation and the coordination necessary for cooperative work. Cooperative work means a number of tasks in which multiple actors come together with multiple goals and complex sets of constraints, including collaborative engineering and design, writing, research and strategic planning and decision-making. They rely on the *Coordination theory* of Malone and Crowston (1991) and introduce situations that require coordination. These situations are goal selection, decomposition and reformulation, allocation of limited resources (managing monetary and time constraints), role interdependencies and role conflicts.

Furthermore, Adelson & Jordan (1995, 475) formulate the negotiation theory, which consists of three main aspects: the negotiating parties are rather collaborative than adversarial, they construct mutually acceptable solutions and, at the same time, they try to improve their working relationships. The means to act are making needs and resources explicit, matching interests to resources, developing joint solutions and alternatives and respecting the other side. Dietz et al. (2004, 32) consider computer-mediated communication as a socially produced space. They consider that it links together and brings closer a variety of people who understand others and tolerate differences, and thus are communicating.

4.1 Collaboration and collaborative writing

According to Quinion (2006) **collaboratory** as a concept emerged in the 90s. It was a method that enabled researchers to work together while their physical environments were apart from each other. The term was coined by professor William Wulf, and it was used in an unpublished paper in 1989 at the University of Virginia. As a term, it is a blend of collaboration and laboratory.

A collaboratory can be understood as an environment where participants use communication technologies to access, share, maintain and create data. It also includes communication with others. The means used are, for example, video conferencing, the Internet and wireless devices. Diamond (2005) states that collaboration and collective action are inherently performative. People construct their identities through roles and transactions crossing cultural space and barriers with the help of new technologies.

“A collaboratory is more than an elaborate collection of information and communications technologies; it is a new networked organizational form that also includes social processes; collaboration techniques; formal and informal communication; and agreement on norms, principles, values, and rules” (Cogburn, 2003, 86).

Bruce and Lunsford (2001) write in their article about collaboration in the contexts of business, research, development and education. They suggest the use of following attributes to determine whether something is more or less collaboratory-like: shared inquiry, intentionality ("a shared consciousness of the site's status as a mutual project"), active participation and contribution, access to shared resources, technologies ("a collaboratory is usually Web-based") and boundary-crossings (geography, time, institutions and disciplines).

In many papers and doctoral theses published in Finland, the term **collaborative** is mainly associated with education: Arvaja & Häkkinen (1999) *Kollaboratiivinen oppiminen teknologia-ympäristössä*, Hakkarainen, Lipponen & Järvelä (2001), *Epistemology of inquiry and computer-supported collaborative learning. A cross-cultural comparison*, Järvelä & Häkkinen (2005) *How to make collaborative learning more successful with innovative technology*, and Mäkitalo (2006) *Interaction in Online Learning Environments: How to Support Collaborative Activities in Higher Education Settings*. **Collaborative writing** is a term that emerges in the context of mass media

and communication and eLearning, virtual universities etc.: Tissari, Vaahtovaara & Vahtivuori (2004), *Hella-projektin loppuraportti*.

Wikipedia (2007) defines terms *collaboration* and *collaborative writing* as follows:

"Collaboration is a process defined by the recursive interaction of knowledge and mutual learning between two or more people working together toward a common goal typically creative in nature. --- The terms collaborative writing and peer collaboration refer to projects where written works are created by multiple people together (collaboratively) rather than individually. Some projects are overseen by an editor or editorial team, but many grow without any of this top-down oversight. In a true collaborative environment, each contributor has an almost equal ability to add, edit, and remove text. The writing process becomes a recursive task, where each change prompts others to make more changes. It is easier to do if the group has a specific end goal in mind, and harder if a goal is absent or vague."

The Museum24 publishing system can be called a 'collaboratory' because it is an environment where participants (citizens as content creators and museum officials) use communication technologies when they access, share, maintain or create data. As a virtual project Museum24 corresponds to all the attributes Bruce and Lunsford defined for a collaboratory-like activity. Everyone from the project manager and partners to the content creators understand Museum24 as an entity and they know their own role as a part of it. The interface is web-based and almost all resources are shared.

Museum24 is a large entity¹⁹, although it concentrates on the Jämsä-Jämsänkoski-Kuhmoinen-Korpilahti-Längelmäki area. It covers for example the small local museums²⁰, personal archives and diaries²¹, industry²² and education²³. Thus, Museum24 is a boundary-crossing virtual museum.

Some of the Museum24 resources have a limited access. A remarkable limitation is restricting the right to publish articles because of the need to proofread and translate the articles before publication. Another reason is that Museum24 has a publishing schedule, and an article might be ready for publication earlier. This correlates with the definition given in Wikipedia, "*some projects are overseen by an editor or editorial team*". On the other hand, each content

¹⁹ the published content of Museum24: attachment 1, see also section 2

²⁰ see museum round at [http://www.museo24.fi/?action=INavigation::changeFolder\(3482\)](http://www.museo24.fi/?action=INavigation::changeFolder(3482))

²¹ see an example at [http://www.museo24.fi/?action=INavigation::changeFolder\(4304\)](http://www.museo24.fi/?action=INavigation::changeFolder(4304))

²² see 'At work' section at [http://www.museo24.fi/?action=INavigation::changeFolder\(3483\)](http://www.museo24.fi/?action=INavigation::changeFolder(3483))

²³ see 'At school' section at [http://www.museo24.fi/?action=INavigation::changeFolder\(3484\)](http://www.museo24.fi/?action=INavigation::changeFolder(3484))

creator does not have equal rights to add, edit or remove text, which does not exactly correlate with the Wikipedia definition. Their articles cover very specific fields and they may not have proper knowledge over each other's subjects. Only those content creators who have common or overlapping subject matter in their articles or who proofread articles have all rights (read/write/delete).

4.2 Collaborative virtual communities

People interact with each other using tools like language and culture - or any other way to construct a meaning for something. On the Internet, interaction is in the form of the data and records left behind in the bulletin boards, weblogs, newsgroups, Wiki-based environments etc. while browsing. The illusion of interactivity thus emerges by browsing through and passing over. The visitor may never again visit the page and other visitors may not read or comment his opinion. A virtual community emerges when a user comments on another user and returns to see what that specific user or others have added. To be able to enter into something others have created, and at the same time create own meaning and assign it to existing information creates a communal construction of meaning. The user is an active participant who is social, part of the culture, and fulfils his or her needs for individuation. (Goldman-Segall 1995, 259, 264.)

Hoffman & Herczeg (2005) consider the Internet as a passive medium, but they introduce a few often-used types of interaction. Typical are for example a chance to change parameters or play trivia quizzes. Hoffman & Herczeg do not appreciate such possibilities because they are not creative. Instead, they represent the possibility to be a part of a community. According to these researchers, such interaction motivates visitors, and at the same, the distance between museum experts and visitors diminishes.

A collaborative network means web-based relationships with individuals, communities or sectors. Various phases during the development of virtual museums have clarified that there should be new types of communities composed of producers and users to cover the need for ubiquity and communication. Creativity, good organisation and various support services like traffic and communication networks, together with a soft infrastructure consisting of social networks, unofficial and civic organisations (clubs, societies) represent an innovative

community. A community consists of interindividual relationships, which include the participants' understanding of the community's function and objectives. (Dietz et al. 2004, 32–33; Hietala & Kaarninen 2005, 185; Kotilainen 2005, 455.)

The marginalized groups and communities with long traditions of cultural heritage rely on collaboration. The civic webs in Finland are mainly products of local, national or European short-time development projects. Some typical objectives are, for example, advancing the rights of the citizens, increasing or improving the services for citizens and enhancing civic participation and communication on the net. There are two different approaches for the community communication: individual level and community level as a specific social context. Civic webs are mainly based on voluntary work. (Diamond 2005; Kotilainen 2005, 451, 453.)

In their international study Livingstone, Bober & Helsper (2005, 301–304) distinguished three types of participatory users: the interactors, the civic-minded and the disengaged, depending on the way they use the net. The interactors - mainly middle class boys - use the Internet for cultural and creative purposes. The civic-minded are concerned with political participation, and they are often girls from the middle classes. The last group, the disengaged, are younger, from a lower socioeconomic status, and may not have net access at home.

Kotilainen (2006) also studied youth civic sites like Livingstone et al. According to Kotilainen, there were no earlier studies on the uses of civic webs among young people. The results were approximately the same as those Livingstone et al. published: the gender differences in the uses of the Internet are similar with British youngsters. Girls are more civic-minded than boys and those who have not visited the site are mostly boys. However, Kotilainen wrote that this Finnish project reduced inequality of young people regarding gender and uses of the Internet, because the girls were active in many ways.

Rantanen (2004, 17–20, 23) describes local communities on the Internet and the role of local communities as content creators. In the past, the third sector, municipalities, cities, and companies, were the main users of electronic publishing systems. Now local communities are participating more actively on the Internet, and they create connections outside the association, towards other citizens, authorities and companies. A remarkable feature is that

the most active persons involved are middle-aged and senior citizens, because younger people are not so interested in local or association issues.

A study concerning 15 local community nets and their users by Taloustutkimus Oy (2003) showed that a typical community net user is over 40 years old. Of middle-aged persons, women are more likely users and in the aged group, men form the majority of users. Young men or politically active persons do not use community nets much.

As it is now, Museum24 is not a proper collaborative virtual community. The publishing system includes the Memories section²⁴, but a visitor cannot comment on what others have written. The feedback formula²⁵ or email are the ways to communicate interactively and only with museum officials. Although Museum24 serves rather a small local area, we cannot call Museum24 a 'civic web' in the sense Kotilainen uses this term: it does not directly improve or advance such rights and services as civic webs normally do. Thus, the objectives of the virtual museum are to enhance civic participation and communication on the Internet.

Livingstone et al. and Kotilainen examined persons who form the most avid group of Internet users, young people. Museum24 contains a 'For schools' section²⁶ and the above-mentioned 'Memories' section. These sections are directed for different age groups. The users of 'Memories' are mainly from the age group 50 years and over, and the users of 'For schools' are pupils from comprehensive school classes 1-9.

The target group of this study, the content creators, acts like the interactors in the study by Livingstone et al. The exception is that content creators' age and sex varies (see subsection 6.1), and they use the net for cultural purposes. They also create content with a political meaning. These articles rely on local history and although all history is political by nature, the aim is only to present historical facts, not to take of an attitude.

²⁴ <http://www.imnetti.fi/muistelu/>

²⁵ [http://www.museo24.fi/?action=INavigation::showCommentsPage\(\)](http://www.museo24.fi/?action=INavigation::showCommentsPage()), see also subsection 3.3

²⁶ [http://www.museo24.fi/?action=INavigation::changeFolder\(3521\)](http://www.museo24.fi/?action=INavigation::changeFolder(3521))

4.3 Content creation

An important objective in the Museum24 is to encourage citizens to create content about locally important cultural themes. According to Borgman (2001, 79), users are sources of information as well as the information providers.

Content creation means *acquisition* of content (for example text files, images, audio or video files, animations), *aggregation* of syndicated content and *authoring* of new content. The term 'aggregation' includes the collection of content and both receiving and consuming of different data feeds. The syndicator is the producer of the feeds. Authoring includes operations to enter information to the workflow system (here: the Museum24 publishing system) for others to copy, edit, approve and publish. (Brandon Hall Research 2007; CMS Review 2007.)

The CMS Review Glossary defines content as

"the intellectual capital of an organization. It is information, separated from its presentation. --- Content, stated as simply as possible, is information put to use. Information is put to use when it is packaged and presented (published) for a specific purpose. More often than not, content is not a single piece of information, but a conglomeration of pieces of information put together to form a cohesive whole."

Content Management Systems (CMS) facilitate the storing, indexing and finding of the data. Some systems have version control capabilities. CMS are widely used in different portals (organizations, foundations, companies). Content management has three phases: the first is **content creation**; others are **content management** and **content delivery**. Content management consists of the processes required to get the right content to the right person at the right time and at the right cost. During the content delivery phase, the content is served to website visitors or sent to print production or other devices. Only the content creation phase is relevant to this study, because the aim is to examine collaborative writing as a method of content creation in local cultural heritage preservation. The main issues are possibilities and problems that authors have during their content creation process, and therefore the other two phases (content management and content delivery) are not examined.

Digital content creation (content production) means production of various contents for culture, documents, teaching, research, entertainment or marketing including the related services and businesses. It has features from information technology, communication and

culture, and it consists of ideas, plans, composing and distribution. Different independent digital cultures, net art and organized civil actions, together with local or decentralized Internet communities, describe the diversity of the field. Content creation is activity that emerges from copyrights and the core of its business is copyrights. A content creator should always know the rights concerning both individuals and the target. (Dromberg & Merilampi 2002, 4; Pehkonen 2003, 26, 38–39.) Briefly, content creation means the production of educational, entertainment, news or other subject-related material to distribute over the Internet or in other electronic media.

Pehkonen (2004, 33; quoting Uusitalo 1999a, 630–631) distinguished two categories of studying digital content production from the marketing communication viewpoint: use of the Internet as an alternative medium or distribution channel, and development of meaningful content for intellectual or entertainment-based interactive services. It is possible to observe content creation from the viewpoints of digital culture and civic societies as well. The focus is then on individual media culture areas, meaning digital game cultures, subcultures of the net, and mobile phone cultures. The study of Museum24 is focused on the latter category: observing content creation especially from the viewpoint of civic societies.

Creation of web pages using traditional coding requires many skills. Users have to learn how to use applications, manage site construction, decide the contents, share responsibility, understand questions concerning the server and domain, and know update routines. This can be too difficult a task for many volunteers, and the solution is to use (desktop) publishing systems. These systems have become more common and cheaper, but the most popular method is to use so-called open source-based free publishing systems that use databases and include many dynamic and interactive properties. Using a database-based publishing system means that for example colours, fonts and layout are easy to change either on specific pages or on the whole site. Publishing systems are suitable for content creation - they are very popular for example in portals, for interaction, and user management. There is no need to install any separate application; the user needs only an Internet connection and browser. (Rantanen 2004, 25–27.)

The Museum24 publishing system operates with existing as well as future systems. It is based on the CIDOC CRM²⁷ (CIDOC Conceptual Reference Model, see also section 5). This model is becoming one of the most important standards in saving and classifying information on cultural heritage. The MPEG-7 standard²⁸ is widening the functionality of the publishing system. Museum24 is based on OWL Web Ontology Language (see subsections 2.1 and 3.3), which makes it possible to use semantic tools. The publishing system saves data in PostgreSQL²⁹ and MySQL³⁰ databases, but it is easy to connect with any other database. Because the Museum24 system is database-based, the whole site structure including colours, fonts and layout is ready. Such a structure makes it easy to use and the content creator can concentrate on his or her main task.

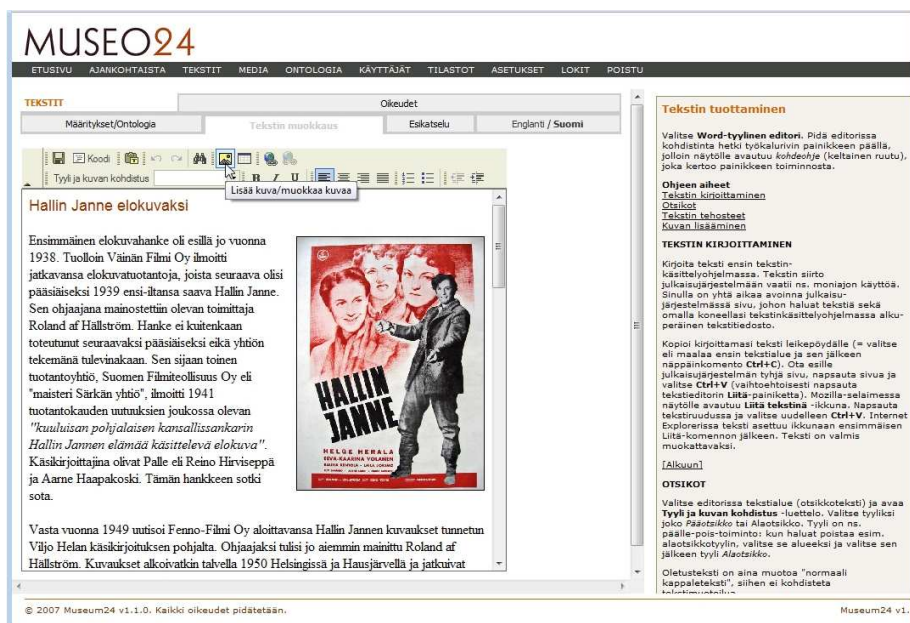
As Rantanen (2004, 27–29) notes, an important feature for the users is how they create the content. Writing, uploading images and linking is simple by using the publishing system in the browser. Text editors (picture 2) normally have different fields for titles, subtitles and text. Some publishing systems offer extra functionality like discussion forums, voting possibilities and forms. Updating is also done by using the browser. A publishing system is easy to use - instead of many separate applications there is one system to control, the website looks more professional with coherent pages, and the content creation is easy and quick to learn. Important aspects are the ability to manage the whole site and the system and at the same time decentralize the content creation.

²⁷ More information about CIDOC CRM model at <http://cidoc.ics.forth.gr/>

²⁸ More information about MPEG-7 standard at <http://www.chiariglione.org/MPEG/standards/mpeg-7/mpeg-7.htm>

²⁹ An open-source database engine with advanced features

³⁰ Popular open-source database engine



Picture 2. FCK Text Editor³¹ in Museum24 publishing system

The use of new technology demands specialization and collaboration between people with different technical and creative expertise. If a participant knows about the possibility to create and distribute content, it changes the idea of a restricted creative source and authorship. (Diamond 2005.) Museum24 is one of the pioneers within the field of digital preservation of cultural heritage: the aim is to use collaboration between people with different expertise as well as between people who are interested in preserving local cultural heritage for their personal reasons. When the threshold is low enough - for example an easy-to-use publishing system - and there is no need to be an expert, many citizens are ready for content creation.

4.4 Wikipedia

Collaborative work has developed from the need to make the cooperative tasks easier when the participants do not share the same location and cannot be present at the same time. Participants have earlier used a 'track changes' option to indicate changes within different

³¹ FCKeditor is a text editor to be used in web pages. FCKeditor has common functions as the possibility to write text, format it and create tables. The editor does not need installation on the computer. The only needed thing to work with FCKeditor is a compatible Internet browser, like Internet Explorer, Firefox or Opera. More information at <http://www.fckeditor.net/>

documents (like Word documents), but there was no version management. New so-called computer-supported tools allow participants to create projects, for example in the intranet area or in some e-learning space. Access can be restricted and participants have different user rights to interact. In addition, email, chat and discussion forums are means to coordinate processes, thus these methods have a very limited role in collaborative writing. (Banerjee, Bolloju & Ma 2004.)

Known examples of interaction with the audience on the Internet are blogs (Web logs) and bulletin boards, which allow feedback and contribution. An administrator of a Web log is called a 'blogger' and he or she is responsible for everything from the content creation to its changes. According to Lih (2004, 2-3) a Web log represents mainly the blogger's subjective view about the topic. Godwin-Jones (2003) has an opposite view: Web logs can be amazingly interactive, allowing readers to respond to the original text, to link and cross-link blogs and thus to create online communities. He also discovers the possibility of maintaining group blogs.

Museum24 uses the methods Banerjee et al. listed for coordinating processes. Lih and Godwin-Jones discussed blogs as a way to interact on the Internet. Museum24 does not correspond to the idea of blogs because the intention is not to allow occasional visitors to respond to the texts with subjective views. Many articles, for example the articles describing the civil war of 1918³² or the pages about the Finnish Paper Worker's Union³³ refer to the kinds of situations that need to be written about objectively. Therefore, this study is directed more towards the idea of Wikipedia.

Ward Cunningham invented the Wiki Web idea and developed the first usable Wiki Web software in 1995. Wikis are social software: they foster communication and collaboration with other users. Any user on the net can change any page within the site. Wiki-based virtual environments save changes and discussions. Every version of an article can be found in the archives. The English version of Wikipedia started in 2001 and it has been a success. Wikipedia - an Internet-based encyclopedia - already has over 75,000 volunteer contributors, and about 5,300,000 articles in more than 100 languages. The number of articles written in

³² [http://www.museo24.fi/?action=IMuseum::setLanguage\('fi'\)](http://www.museo24.fi/?action=IMuseum::setLanguage('fi'))

³³ [http://www.museo24.fi/?action=IMuseum::setLanguage\('fi'\)](http://www.museo24.fi/?action=IMuseum::setLanguage('fi'))

English is approximately 1,800,000. (Désilets, Paquet & Vinson 2005; Hoffman & Herczeg 2005; Lih 2004, 2-3; Wikipedia 2007.)

Visitors should have appropriate modes of action to interact in serious Web pages. One such mode is to get involved by becoming part of an 'expert' community: it allows discussion and creativity. The use of Wiki Web technology provides a combination of virtual exhibits, normal Web presence and interaction that is called a Wikiseum. The idea of a Wikiseum tightens the cooperation between experts, researchers and visitors. Other corresponding Wiki projects are Wikibooks, Wiktionary and Wikinews. Wikinews is used in participatory journalism, which fills the period between the published news and the written history. (Hoffman & Herczeg 2005; Lih 2004, 5.)

A collaborative writing tool such as a Wiki should include at least a versioning system, a page-locking system and the facility to temporarily remove editing functionality from some pages. A Wikiseum resolves the conflict of strictly administered museum Web presence and content and the idea of the Wiki Web. In a Wikiseum, there can be different user levels with different rights and interaction possibilities, depending on the task. The user roles might be such as administrator, moderator and visitor. The administrator has rights to do everything from the decision-making to content creation and editing, as well as managing the user accounts. A moderator is an expert in the field and has almost as much rights as the administrator, but his or her role is to act as supervisor, to exercise quality control. Visitors can be divided in two categories: surfers who just stop at the Wikiseum, and registered visitors who visit the museum frequently and have rights to make some changes and participate in the discussion as a part of the community. (Hoffman & Herczeg 2005; Tonkin 2005.)

Anthony, Smith & Williamson (2005, 4-6, 15) describe two types of contributors who are participating in open-source communities: *the strongly committed experts* and *the passer-by contributors*. Research shows that the strongly committed experts contribute high quality content and they care about the community itself. Of course, the community is a way of building up their own reputations, and Wikipedia, for example, uses this, allowing such contributors to become registered users. The strongly committed expert contributes regularly, but the passer-by contributor contributes anonymously and usually only once.

Anthony et al. note that the version management of Wikipedia limits the participation of nonsense contributors and so-called graffiti attacks.

Lih (2004, 6–7) criticized the quality of Wikipedia articles and their content. The main criticism is that the articles are editable and because of the various writers, both the quality and content may be variable. Lih notes that there has to be strict evaluation before the articles might be used as reliable secondary sources. Contrary to Lih, Anthony et al. (2005, 15) note that in spite of their anonymity, passer-by contributors create high-quality content.

The Museum24 publishing system does not use Wiki Web technology. Instead, it is based on open source code and it has developed towards a more restricted system than the Wikiseum or other Wiki-based solutions. However, the idea is to tighten the cooperation between experts and visitors as Wiki Webs do.

On one hand, Museum24 is an administered museum website, and on the other hand approaching the idea of a Wikiseum. The publishing system allows the use of different user rights. The categories are *administrator* with the rights to manage the whole system and *registered user* with the rights to read and write user's own articles. The administrator can give the user the right to edit other contributors' articles, too. A user can be the owner of a folder, or there can be a group of owners. *Passer-by users* can participate by sending feedback or creating a text in the *Memories* section. It is possible to save earlier versions of articles, but these versions are readable only for the registered users and administrators. Normally only the latest version is saved and in use. Only some articles consist of such information that may be needed later.



MUSEO24

JÄMSÄN SEUDUN VIRTUAALIMUSEO

Kirjoita muistelu

Voit olla mukana kartuttamassa Jämsän seudun virtuaalimuseon. Museo24:n muistoarkistoa lähettämällä alla olevalla lomakkeella omat muistosi. Muistelujen aiheet voivat olla mitä tahansa, erityisesti hauskat tapaukset ja kaskut ovat kiinnostavia. Muistelu voi julkaista nimimerkillä tai omalla nimelläsi. Museo24:n tekijöillä on oikeus julkaista muistoja virtuaalimuseon sivuilla ja oikeus tarvittaessa poistaa niitä näkyvistä.

Täytä lomakkeen tiedot, kirjoita muistosi ja paina julkaise painiketta. Muiden kirjoittamia muisteluja löydät kohdasta: [lue julkaistuja muisteluja](#).

Otsikko

Muisto

Nimi

Nimimerkki

Picture 3. Write a memory

The administrator for example edits the stories written into the Museum24 *Memory* section. The usual reason is that there are several typing errors. The administrator does not evaluate or correct the content of an article, and therefore the Memory pages contain a short comment: "*Museum24 is not responsible for the contents of the stories.*" Memories are memories and they may be subjective. Within the official Museum24 pages, articles must be reliable and every mistake is corrected immediately, as well as new information added, when it appears.

5 USABILITY

Evaluation of the usability of the Museum24 publishing system is important for the Museum24 and for the publishing system provider, Artio Group. Unzeitig³⁴ (2005, 18–19) states that a museum environment sets the highest multimedia requirements. A museum does not only introduce textual or visual information, there is also the physical object to be presented virtually. Unzeitig has been developing the Museum24 publishing system since the beginning. In his diploma thesis, he proposes how to describe multimedia using semantic web technologies (see subsection 3.3) and the data model used for describing cultural heritage, CIDOC CRM (see subsection 4.3), as well as the overall concept of storing and annotating multimedia documents within the Museum24 system. According to Unzeitig "*the idea of the Museum24 project is to provide the maximum possible experience and value to its visitors (users)*".

Borgman (2001, 140–141) defines *access to information* as "*connectivity to a computer network and to available content*". It means usable technology, necessary user skills and knowledge, and usable content in useful form. The systems for human-computer interaction have to be easy to learn, flexible, adaptable and tolerant of errors, as well as effective and appropriate for the task. In addition, Natarajan (2002) notes briefly: "*Usability can be defined simply as 'ease of use' of a system.*" He indicates the ISO9241 standard, Part 11, which defines usability as "*the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use*". According to Natarajan (2002)

"a usable application must include readable and accurate online help, installation manuals, user guides, and training material. Effective and usable documentation results in increased user satisfaction, overall application usability, and reduced customer support costs".

The Finnish researcher Turkka Keinonen (1998) writes that the ISO9241 standard defines usability as an attribute of the product. He introduces principles of the most frequently mentioned factors describing usability. Different situations should follow the same, already known formula (consistency) and there should be a possibility of user control. The

³⁴ Michal Unzeitig was a student at VŠB – Technical University of Ostrava, Faculty of Electrical Engineering and Information Science, Department of Computer Science and he was in student exchange at Jyväskylä University of Applied Sciences on 2005. During this time, he was employed at Artio Group. The main task was to develop the Museum24 publishing system. To request his diploma thesis, please contact michal.unzeitig@artio.net.

appropriate visual presentation allows the user to obtain information about what is happening or will happen. Error handling includes, for example, warnings and announcement about faults. There should be a limited memory-load - the system/product should rather give alternatives for the user, and the user should see only such alternatives as he really needs at the moment (task match). It is essential to have guidance and support.

A successful interface can also be defined as Mayrand (2001, 407–408) does. It has clear conventions, and it is user-friendly (intuitive and simple). A good interface is transparent, meaning that the interface disappears in favour of the content. Furthermore, it is engaging allowing duplex access: visitor to the content and the content to the visitor. Although Dicks (2003, xi, 17) writes about public places, her observations are suitable for human-computer interfaces, too. An interface has to be user-friendly, accessible, interactive, performative and safe. Visitors expect readable views and qualities promised.

Soren (2004, 10, 15) states that the quality of user experience depends on the development process, constructivist user-oriented approach and cooperation with multimedia developers. Furthermore, she notes the importance of coherent content, language versions, easy navigation and clear site structure. The use of databases is an essential part of good user experience. Soren introduces solutions to engage online users, such as identifying target user groups, giving users the possibility of gathering objects from a variety of online museums and heritage organizations, providing experiences for both experienced users and novices. There should also be fun as a part of the educational content.

All the above researchers have mentioned usability categories important for evaluating Museum24. As a researcher, I consider Natarajan's simple claim about the ease of use of a system, as well as Mayrand's presupposition about the transparency of an interface, to be the most essential criteria. Both include a number of attributes describing usability: interactive, guided, sameness of the formula, user controls, flexibility etc.

Aarseth's (1997, 58–75) cyber text theory is suitable for evaluation of textual media and web pages. He uses the terms 'texton', 'scripton' and 'traversal function'. *Scripton* describes strings as they appear (surface structure) and *texton* these strings as they exist (deep structure). *Traversal function* is a mechanism of generating scriptons from textons to be presented to the

reader. Aarseth introduces a typological model of seven variables and their possible values (table 2). These possible values counted with each other produce a multidimensional space consisting of 576 unique media positions. A web page can thus be static, IDT or TDT by its dynamic, determinable or indeterminable by its determinability, transient or intransient by its transiency etc.

Table 2. A typology of textual communication (Aarseth 1997, 65)

Variable	Possible value
Dynamics	Static, IDT (intratextonic dynamics), TDT (textonic dynamics)
Determinability	Determinable, indeterminable
Transiency	Transient, intransient
Perspective	Personal, impersonal
Access	Random, controlled
Linking	Explicit, conditional, none
User function	Explorative, configurative, interpretative, textonic

Aarseth's cyber text theory is not applied in this study, because the purpose is to acquire information about the usability of the publishing system itself, but Aarseth's typology of textual communication may have been used as a starting point for the usability analysis Juha Lamminen (see subsection 3.3) executed in 2006. The study group – 12 volunteer students, 9 female, 3 male, youngest 22 years old, oldest 43 years old – solved a test story by attempting to find the answers in the Museum24 pages. The study group was satisfied with the layout and usability of Museum24, but they made some proposals to improve the usability. These proposals concerned the navigation and photos.

According to the testers, the menu texts should be more explicit and there should be only one proper menu: the site had two menus, one on the right side of the page and the other ('murupolku', in IT terminology 'path') above the article area. The URL addresses should be shorter. (Picture 4.) This is a problem that is not easy to solve. Every page has its own ID (identification number) within the database. Because of the programming language used, PHP³⁵, the URL addresses are impossible to read and to type into the address field of the browser³⁶. Additional coding is required in order to get shorter and more exact addresses.

³⁵ Read more about PHP at <http://www.php.net/>

³⁶ See examples in footnotes 26–27, 33–34 and 38



Picture 4. Objects that need improvements in Museum24 pages

Within the galleries, the text should be below the photo – not only as Alt text with the cursor, because Alt text disappears so quickly³⁷. Although there is a link to the instructions, the test group wanted improvements to the way of informing that photos enlarge when visitors click them.

The most problematic task for the study group was finding information within Museum24 because of the inadequate Search³⁸ facility. The Search function within the public pages is slow and does not necessarily give the right results. According to Artio Group, this is due to the huge number of pages and the slowness of creating and updating the index. The searching tool is based on PHP code and does not support all the advanced search methods like Google and other search engines do.

Hom (1998) introduces different categories for evaluating usability: inquiry, inspection and testing. Inquiries presented include contextual inquiry, surveys, questionnaires and self-reporting logs. Inspection methods he introduces are, to name some methods suitable for this

³⁷ See an example at [http://www.museo24.fi/?action=INavigation::viewGallery\(6740,'ImageGallery'\)](http://www.museo24.fi/?action=INavigation::viewGallery(6740,'ImageGallery')) - move the cursor over a photo to read the Alt text. In June 2008, there are no more problems with this Alt text.

³⁸ Test the Search engine at [http://www.museo24.fi/?action=ISearch::showSearchPage\(\)](http://www.museo24.fi/?action=ISearch::showSearchPage())

study, for example heuristic evaluation³⁹ and cognitive walkthroughs⁴⁰. Thinking aloud and question-asking protocols are examples of testing methods. In studying usability from the visitor's point of view, experts mainly use cognitive walkthroughs and heuristic evaluation. The Museum24 content creators fall somewhere between the visitor and the programmer. However, cognitive walkthrough produces slightly different results from those of heuristic evaluation because it aims to identify the meanings of the tasks the user does.

The usability index (heuristics) is used to measure as a percentage figure how far a website has succeeded in following the generally accepted usability guidelines/principles. It consists of five categories: finding the information, understanding the information, supporting user tasks, evaluating the technical accuracy and presenting the information. The method should be used in the early stages, when the website is under construction. (Keevil 1998; Soren 2004, 48-49.)

According to Keevil, the usability index is based on a checklist consisting of questions that require a *yes* or *no* answer. These questions measure certain quantifiable features of Web documents, and are based on Mehlenbacher's paper (1993) summarizing the following as characteristics of a usable system: accessible, maintainable, visually consistent, accurate, comprehensive, and oriented around the tasks that users intend to perform. (Keevil 1998.)

Harms & Schweibenz (2001) describe usability as "*the visitor's ability to use these sites and to access their content in the most effective way*". The usability of websites can be tested and improved in a process that is called usability engineering: a set of methods to design user-friendly products and enhance the user-focused methods. Expert-focused methods like heuristic evaluation and user-focused evaluation methods like laboratory testing with actual users can be used in combination. The user testing provides real information about the use of computers and the problems in the interface during the use. The Department of Information Science at the University of Saarland, Germany, developed a usability engineering process

³⁹ Heuristic evaluation means usability inspection where each element of a user interface is compared with usability principles. These principles are called heuristics. Heuristic evaluation is best suited to earlier stages in a process and using this method may discover a good number of usability problems before actual production (here = content creation done by local citizens) begins.

⁴⁰ Cognitive walkthrough is a review technique. Evaluators construct task scenarios from a specification or early prototype and then role play the part of a user working with that interface, 'walking through'. It helps to identify the user's goals and purpose for each task.

and tested it in a usability study evaluating a museum website. *The Heuristics for Web Communication* consists also of five heuristics that deal with displaying information and navigation. The test has a severity rating (0–4). Number 0 means that there are no usability problems and 4 means that there are severe problems to fix before actual use. (Harms & Schweibenz 2001.)

During the heuristic evaluation, the product is compared with certain guidelines to recognize usability problems. Keevil (1998) maintains that the heuristics used are very detailed and complicated, but Harms & Schweibenz (2001) consider heuristic evaluation a relatively simple and fast process. Harms & Schweibenz conclude that the main problem is that the evaluation is done by experts - and it is impossible to ignore one's own knowledge of the subject. The questionnaire used in this thesis was based both on Keevil's and Harms & Schweibenz's heuristic evaluation processes.

Crucial for all usability heuristics is audience research. Thus, the audience/user may have different roles, so both the evaluation of the user context and the technical context are equally important. The Minerva Project has created a guide that describes technical guidelines for digital cultural content creation programmes (Johnston & Dawson 2004). They emphasize (2004, 12) that "*the appropriate use of standards in digitisation can deliver the consistency that makes interoperability possible*". These guidelines have been the basis for the Museum24 publishing system, and therefore Museum24 decided to carry out the preliminary audience research in 2006 mentioned earlier in this chapter.

6 COLLABORATIVE WRITING AS A METHOD IN LOCAL CULTURAL HERITAGE PRESERVATION

6.1 Pilot questionnaire and interviews

This study has two parts: a questionnaire and interviews. The questionnaire serves Artio Group, giving them information about the usability of the Museum24 publishing system. While I was processing the questionnaire, I sent the first draft to Artio Group for evaluation. They were satisfied with the content because the questionnaire concentrated on themes that were useful for the development of the publishing system.

Two volunteers from the age groups 31–40 and 41–50 tested the questionnaire. They had different experiences of using the Internet as a method of publishing. One knew how to create web pages, could use various cooperational and interactive web environments, and thus did not need any help apart from the guidance that was in the Museum24 publishing system. The other volunteer was familiar with normal office programs, basic Internet use and email, and participated on a short course to learn how to use the Museum 24 publishing system. I gave them texts and photos for an article and a printout of finished sample pages. Both had the same pilot task⁴¹: to create articles from the source material, reproducing the positioning of the photos, as well as titles and subtitles, within the Museum24 system.

After the content creation, the volunteers answered the pilot questionnaire concerning usability of the Museum24 publishing system. They had only a few comments: the covering letter should contain instructions on how to fill in the questionnaire and use the Museum24 publishing system at the same time, and questions 6, 15, 27 and 34 should be formulated more clearly. The other volunteer was interested in why there were only yes and no answers. There were two reasons why the questionnaire had only **yes** and **no** alternatives. 'Yes' and 'no' answers make it easy to find exactly the subjects that need improvements or are not understandable. If the answer is 'yes', the person can use/has used the object/function. If the answer is 'no', the person either a) understands the question but cannot use the

⁴¹ Pilot task pages at [http://www.museo24.fi/?action=INavigation::changeFolder\(4868\)](http://www.museo24.fi/?action=INavigation::changeFolder(4868)) and [http://www.museo24.fi/?action=INavigation::viewArticle\(4912\)](http://www.museo24.fi/?action=INavigation::viewArticle(4912))

object/function or b) does not understand the question or has not used the object/function. In both cases (a and b), there is a need to improve the publishing system to make the feature more usable and understandable. The second reason for only the two alternatives was that each part of the questionnaire had a space for opinions.

After the questionnaire phase, the volunteers participated in a pilot interview. This took from 20 to 30 minutes per person, and the interviewees wanted no changes to the questions, which were clear enough and easy to answer.

The final cover letter (appendix 2) sent 26.12.2006 consisted of two parts, a short introduction email and a cover letter as an attachment. I decided to send explicit instructions for answering (appendix 3) only after I received the confirmations of participation. The exact date for sending the instructions was 6.1.2007.

After formulating the questionnaire (appendix 4) taking into account the testers' comments, it was ready to use, and the data was gathered from the study group 11.-31.1.2007. The interviews (appendix 5) with the study group were arranged 1.2.-24.4.2007.

6.2 Study group

The research method was participatory design research. As a researcher, I worked in the Museum24 project, where my main tasks were to teach content creators how to use the Museum24 publishing system, to be an online helpdesk and to create/edit content into the publishing system. The persons under study (four female, four male) were amateur content creators, such as sport club members or citizens who were interested in local heritage. Some of the interviewees had previously written for local newspapers or gathered information for different purposes as a part of their profession. These content creators were chosen because they wanted to use the Museum24 publishing system independently. In this study, the sex is not a significant factor because of the number of interviewees, and therefore it is not referred to later.

All the interviewees wrote content for Museum24 during autumn 2006. In the first phase, they were given a short introduction on how to use the Museum24 publishing system. They also had the option of asking for help while they were producing the content. The content they gathered was not consistent. Each interviewee created approximately from 10 to 20 pages of material: at least text and photos, but some also produced voice and movie clips. When the articles were finished, the interviewees filled in the questionnaire. One interviewee decided not to participate in the interview.

The ages varied, with three interviewees in the age group 20–30 years old, only one in the age group 31–40 years old, and four in the age group 41–50 years old. The scale does not correspond with the proposition that mainly middle-aged and older citizens are interested in local history (see subsection 4.3). The age scale in this study may be explained by the fact that younger citizens are usually more educated and they have basic skills in using computers and programs. They have been taught to browse and utilize source material, and because of these personal skills, they may not have so many prejudices regarding the use of the publishing system.

In the questionnaire, all the interviewees said that they had used an operating system, word processing and photo processing applications and browsers. Email, search engines and using the clipboard were familiar to everybody. One interviewee did not know how to use resources (working with files and folders), and one had never used media players. The less familiar features for the interviewees were file-compressing tools like WinZip and the use of different e-environments (blogs, e-learning spaces, discussion groups, publishing systems etc.): two had never used these functions, both from the age group 41–50 years old. This may be an indication of their way of using the Internet: younger persons may download/upload different material from that of older users.

The programs listed in the questionnaire were chosen because it is easier to learn to use the Museum24 publishing system if a person has these skills. The Museum24 publishing system is resource-based. A content creator should know how to work with files and folders, and in addition he should know, for example, the difference between 'copy' and 'move'. Previous experience in use of text and image processing programs makes content creation quicker because the use of various programs is similar (text and photo alignment, using text effects

like bold and italic or font type and size). Although every web page has in principle the same XHTML/XML language coding, browsers may present some page properties differently. The more the content creator has used various browsers, the less confusing these differences are. Being acquainted with application and other computer-related errors makes content creation more flexible, because the knowledge diminishes the need to ask for help in every fault situation.

According to the research question, this study aims to describe the possibilities and problems a content creator has in using the digital publishing system to preserve local cultural heritage. The answers for the usability questionnaire and the interviews included both possibilities and problems, depending on how the gathered information described in subsections 6.3 and 6.4 is interpreted. Thus, the following descriptions can be understood as problems as well as possibilities – a problem within Museum24 turns into a possibility for local cultural heritage preservation, when it is solved.

6.3 Evaluation of the Museum24 publishing system

The data was collected by using Webropol⁴², an Internet service for creating online surveys. The questionnaire was an open survey on the web page: the URL was sent by email and the answering time was 6.1.–31.1.2007 as mentioned before.

The questionnaire was prepared using the heuristic evaluation methods (Keevil 1998, Harms & Schweibenz 2001) to recognize usability problems of the interface. Evaluation consisted of five categories: finding the information, understanding the information, supporting user tasks, evaluating the technical accuracy and presenting the information. The questionnaire was relevant for the theme of this study because it produced surplus value for the interviews and at the same time for Artio Group for the further development of the publishing system.

The study method was participatory design research. The data was cross-tabulated for the use of Artio Group but only some of the results are quantified in percentage terms in this

⁴² <http://webropol.fi>

study. The most important for the study results and Museum24 is to describe the publishing system on the whole as the content creators experienced it.

The Museum24 publishing system uses standards like CIDOC CRM, MPEG-7 and OWL (see subsections 3.3. and 4.3). Because of the phase of the publishing system development, the study group used OWL only occasionally with photos and video clips. Therefore, there were no questions concerning the use of the ontology database in the usability questionnaire.

6.3.1 Finding and understanding the information

Questions 4–15 concentrated on finding the information. Content creators thought mostly (87%) that the titling (in the publishing system heads of the structure) was clear, folders had descriptive names and links from folders and titling functioned well. They felt that the Museum24 publishing system corresponds to Soren's (see section 5) criteria of easy navigation and clear site structure.

Some content creators commented that there should be an explanation for unfamiliar title terms or if the title is not in use, it should be removed. For example, the term *Ontologia* (Ontology) was difficult and the basic content creator did not fill in the ontology fields. A content creator wrote:

N4 " 'Kansiolla ei ole määriteltyjä ontologiasuodatuksia.' Ontologia tarkoittaa oppia asioiden alkuperästä. Siis suodatusta mistä? Suojellaanko kansiota kenties tiedolta omasta alkuperästään? Tietotekniikkajargonia voisi kenties aavistuksen verran avata käytettävyyden nimissä ainakin paikoin..."

F4 ["The folder has no defined ontology filters,' Ontology is the study of the origin of things. So filtering from what? Is the folder perhaps protected from information of its own origin? IT jargon could perhaps be explained a little for the sake of usability, at least occasionally..."]

Only one had used the Search function, others did not notice that such a function was available. I suppose the content creator had not used the search engine much because there was no mention about it not working properly.

Interesting answers were given for the questions concerning alphabetizing (see section 7). Only two persons noticed that alphabetizing does not function properly in various lists and windows. Maybe the alphabetical order was not important because the content creator knew his own material, which made finding the right file easier? The very significant part of the

publishing system, the FCK resource browser (connected to the databases), where photos and other audiovisual material inserted into the text, had no alphabetizing and it used the caption, not the name of the file (picture 5).



Picture 5. FCK resource browser without an alphabetical order

Sometimes there were almost 50 photos in a folder in such order as the content creator had uploaded them into the publishing system. Therefore, finding the photo by name (here: by the caption) was not an easy task, and for me as an editor, the lack of alphabetizing caused delays in the work. Soren (section 5) considered the use of databases to be an essential part of good user experience, and my opinion is that this criterion is not realized in the publishing system.

The publishing system was under construction during the autumn 2006, and the system included an *Info* page where Artio Group informed users. If some changes had been made, the page was the first to load after logging into the system. Afterwards, the user had to find the right file from the system folders to read the information, and this caused problems. The issue that most of the content creators noticed was the written language in these short information notes. There were many grammatical errors and the expressions were unsatisfactory. In addition, the terms used were professional jargon that made it difficult to understand the message in some cases. One content creator made a suggestion that the

changes should be announced in a more illustrative way, for example using print screen pictures.

The interviewees were unanimous that the most important requirement is technical skill. They felt that a person should have previous knowledge of computers and various programs. Without basic skills on the use of text and photo-processing applications, a content creator needs much help in the beginning. Another important skill is to know the rules about how to use resources. If a content creator does not understand what folders and files are, or cannot create, delete, rename, move and copy folders and files, it is very difficult to work with the publishing system. During the interviews, some interviewees said that the most important skill for finding the information within the publishing system is knowing the basic rules about how to organize and name data. If the content creator can create folders and give descriptive names for files, finding the information is simple. Both moving and copying files from a folder to another were cited as important skills: a content creator should know where to save the material.

N1 "Siis täytyy olla sellaiset perusvalmiudet siihen, että ymmärtää millaista on tiedostojen siirteleminen, että asioita pitää tallentaa ja ymmärtää painaa päivitysnappulaa. Tavallaan sellaiset valmiudet pitää olla etukäteen, ihan perustietotekninen osaaminen."

N3 "Se oli kompastuskivi, kansilogiikan ymmärtäminen. Loppujen lopuksi ei vaadi muuta kuin että on käyttänyt Microsoft-perusohjelmia."

M1 "Ylipäätään että on aiemmin käyttänyt tällöisiä suhteellisen paljon erilaisia ohjelmia."

M3 "Jonkun verran teknisiä valmiuksia, koneen käyttöä, ei ne mitään ylivoimaisia ole."

F1 ["So, one must have the basic skills and understanding of moving files, that things must be saved, and that the update button must be clicked. In a way, such skills must be in hand in advance, basic IT know-how."

F3 "It was a stumbling block, understanding the folder logic. In the end, all that's required is that one has used basic Microsoft software."

M1 "In general, that one has previously used various programs quite a lot."

M3 "Some technical skills, using a computer, nothing exceptional.]"

The content creators had the same idea as Borgman (see section 5) who points out that with the technology there should be necessary user skills and knowledge.

The structure of the publishing system resources is the same as that of operating systems, but content creators had difficulties in understanding it for some reason. Perhaps the most embarrassing was that the Museum24 publishing system has two identical folder structures:

one for media files, the other for text files. If the content creator was not accurate, the file uploaded, copied or moved into the wrong path. (Picture 6.)



Picture 6. Museum24 publishing system resources

Questions 15–21 charted how the content creator understood the information within the publishing system. Questions that concentrated on symbols (picture 7) divided opinions. Most of the content creators (62–75% depending on question) answered that the symbols – named *extra tools* in the publishing system – are distinguished clearly, they are large enough and correspond to the function. The users were pleased that the symbols had Finnish texts in the tip box that appears when the cursor is placed over the symbol. In the publishing system, some of the symbols are hidden. Almost half of the content creators (43%) said that it was hard to find the button to show the hidden symbols. The users also said that it took time to understand the logic behind the symbols.



Picture 7. Symbols from left: Information, Copy, Move, Publish, Edit, Delete, Choose

The most essential question examined the error messages and other messages that appear during the work. Keinonen (see section 5) defines error-handling as including warnings and announcement about faults. Some of these messages are in Finnish and thus easy to understand, some are in English. The majority of the content creators (62%) answered that the error messages and other messages were understandable. Free opinions introduced many comments concerning system messages. Unaccountable errors happen occasionally, and in such situations the error messages were felt to be frustrating gibberish (picture 8).



Text alias "hlp_Delete_children_recursively" was not found.
Text alias "cnf_Delete_children_recursively" was not found.
Text alias "cnf_Delete_items_recursively" was not found.

Picture 8. Error message in English

Borgman (see section 5) claims that the system for human-computer interaction should be tolerant of errors. I find Borgman's claim justified from the content creator's point of view – the interface should disappear in favour of the content as Mayrand (see section 5) notes, and thus make usage easier. However, I find Borgman's claim difficult to put into practice if the system is under construction, as the Museum24 publishing system was. The only way to avoid error messages is to use well-tested systems, which means higher expenses that the budget of a two-year project does not cover. Programming and editing the publishing system has to be done while the system is in use.

One opinion described well understanding the information in the context of the overall publishing system:

N4 "Virheilmoituksen kieliasulla ei ole käytännön merkitystä; olennaista on se että systeemi ei toimi. Englanninkielinen selitysoasa voi olla mitä vaan."

F4 ["The language of the error message is of no practical importance; the point is that the system does not work. The English explanation could be anything."]

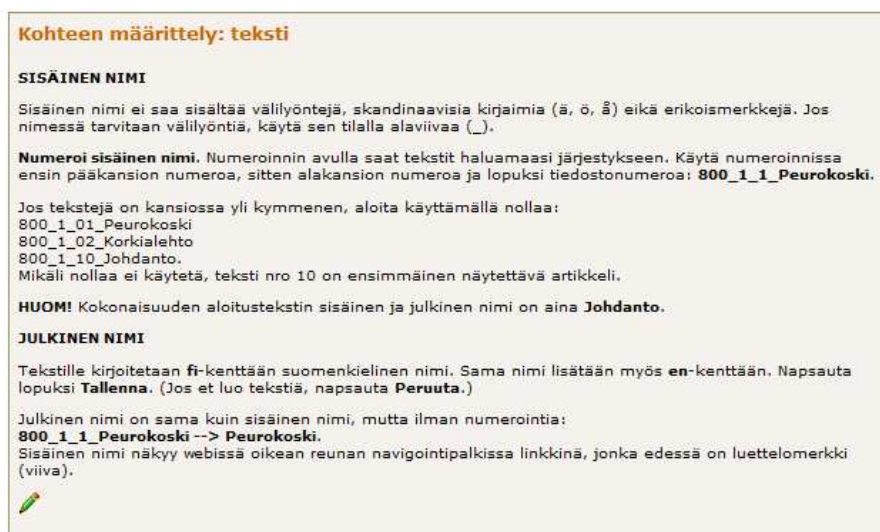
During the interviews, no comments emerged about understanding the information. As a museum official, I had the same problems as the content creators: some error messages were unclear and unexpected. The difference between the test group and myself was that I am an IT professional and therefore it was easier for me to solve problems. At least I knew what to

ask from Artio Group, and I had ID (user access/identity code) into their web-based helpdesk system, Mantis.

6.3.2 Supporting user tasks

Questions 22–32 sought experiences about supporting user tasks. Such tasks are for example the *Help* function, the facility to change browser language, and the Frequently Asked Questions (FAQ) section.

Every content creator in the study group knew that from autumn 2006, there was an online Finnish *Help* (picture 9) within the publishing system. According to the answers in the questionnaire, only half of the interviewees had used it. Their opinion was that the online Help has a clear formula and the instructions are understandable.



Picture 9. Online help in the Museum24 publishing system

One of my tasks in Museum24 was to write the online Help. Two content creators felt that the Help texts do not correspond to the content creating practices. It is my view that the online Help does exactly correspond to the content creating practices, because there is only one method of creating an article. My supposition for the reasons behind this user claim is that these content creators had visited the publishing system immediately after an update. Artio Group updated the publishing system frequently, and every time the basic system core changed. The publishing system core was edited to correspond to Museum24 utilization, and every update eliminated some of these personalized objects. For example, the online Help

did not follow the user tasks before I informed Artio Group and they corrected the links between online Help texts and the publishing system tasks. According to Keinonen (see section 5) there should be a consistency: situations are repeated following the same formula. The publishing system updates fell short of the requirement of consistency and reduced the usability.

Some content creators noticed that the Museum24 publishing system is bilingual: English and Finnish. Others answered that they could not find out how to change the language. The publishing system makes the language selection automatically depending on the browser language. When the browser is the Finnish version, the publishing system uses Finnish. If the content creator wants to use English in the publishing system, the language is selected when logging into the system.

An important function for a content creator is to preview the articles, and every content creator had used it. I was surprised that most of the content creators (57%) thought that the article in the text field of the FCK Editor and in the Museum24 pages correspond to each other. When an article contains text without photos, the text in the FCK Editor and the finished article seem to be the same – however, there are some minor differences. Great differences appeared when an article contains both text and photos (picture 10) and only one content creator commented that:

M4 "Selaimissa on eroja (Mozilla/IE). Kuvan ja tekstin sijoittelu on kommervenkistä ja lopputulos ei näytä siltä, mitä se editorin puolella on. Lopullinen näkymä on tarkistettava julkiselta puolelta (julkaistava teksti väliaikaisesti, vai onko muuta keinoa?), koska esikatselukaan ei aina kerro, mitä sivu näyttää julkaistuna."

M4 ["There are differences between browsers (Mozilla/IE). Positioning the picture and text is complicated, and the end result doesn't look like it is in the editor. The final view must be checked in the public side (the text must be published temporarily, or is there another way?) because even the preview does not always show what the page will look like published."]



Picture 10. Differences between FCK Editor and browser

My task was to preview articles and edit errors. I checked the articles with various browsers because if a page seemed to be finished in Mozilla, there were sometimes problems in Internet Explorer and vice versa. Borgman (see section 5) comments that a presupposition for human-computer interaction is to be appropriate for the task. The differences between the FCK Editor and the final article demonstrate that the FCK Editor does not correspond to this claim.

The Museum24 publishing system has no FAQ, but one content creator answered that there is one. Maybe this content creator misunderstood the *Ajankohtaista* section, which includes a field for initiatives, but this section is not in use. We asked Artio Group to disable it, but due to some technical reason it did not succeed. Others noticed that it is impossible to send any messages or questions to museum officials or Artio Group from the publishing system. A content creator wrote that there should be a facility to send feedback to Artio Group within the publishing system.

During the interviews, only two content creators referred to supporting user tasks. However, researchers like Keinonen and Soren (see section 5) emphasize the need for guidance, support and cooperation with multimedia developers. The Museum24 publishing system contains some supporting properties like online help, but the most important - the possibility to ask for help - is lacking.

6.3.3 Evaluating the technical accuracy and presenting the information

The technical accuracy of the publishing system was the subject of questions 33–42 which concentrated on what happens during the article creation process.

Most interviewees noticed that the publishing system does not function in the same way with different browsers. For example, there are differences in how the copy-paste happens in the browser. Internet Explorer pastes the clipboard content into the text field, but Mozilla opens first a separate window for the clipboard content.

The content creators found that if they have the text and photos ready, an article is created in ten minutes. Every content creator knew about the possibility of inserting video and voice clips into the article as a link. What they did not know was that they could restore a deleted file. The majority of the interviewees followed what they had done by using the log. A log records nearly every movement a content creator has done after logging in until logging out from the publishing system.

All content creators shared the opinion that unexpected and unsolved error situations happen. The majority of the content creators (57%) answered that error messages do not always appear. They may not have noticed that sometimes error messages and other announcements appeared 'outside' the screen and this requires scrolling with the mouse. Such a property may be compared with Dicks's and Borgman's (see section 5) opinions on the human-computer interface: it has to be consumer-friendly and usable technology. If the content creator does not find an essential function during the work, the development process is not ready.

The content creators knew that they could follow and read what others had written. They commented this possibility during the interviews:

M3 "Oon tutustunut ja kattonut noita, mutta en mä oo kommentoinut mitenkään, mielenkiinnosta vaan katsoin."

M2 "No en mä ole puuttunut, mulla oli oikeudet mennä sinne, mähän pääsin kattomaan niitten juttuja siellä."

N3 "Kävin selailemassa ... ihan omasta mielenkiinnosta, en niinkään teknisesti tai muuten katsonut."

N2 "Toisten sisällöntuottajien? Tuota, no sillä tavalla, että katsoin, mitä niistä pitäisi täydentää... etten kirjoita päällekkäin..."

M3 ["I did have a look at them, but didn't make any comments, just took a look out of interest."]

M2 "Well, I haven't interfered, I did have the rights to get in, I got to see their stuff."

F3 "I went in to browse... just for my own interest, didn't look from the technical or any other point of view."

F2 "Other content creators? Uh, yes, only to see what should be supplemented... so I don't duplicate..."]

An important aspect within publishing systems is the facility to cooperate and edit the articles written by others. The Museum24 usability questionnaire did not include a question concerning the Edit property. The reason was, that a content creator had the rights to read own and other people's articles and the rights to edit only own articles. Because it was not possible to edit articles that others had created, the question had been unnecessary.

Questions 43–50 tried to evaluate the content creators' experiences of the presentation of the information.

All the content creators, with the exception of one person, did not find the system slow – uploading and saving as well as other functions in the publishing system happened rapidly and the information (article, photo, movie clip etc.) is seen in the publishing system. For myself, the slowness of the publishing system was evident. The reason for these differences of opinion is that the content creators and I had different computer skills. The basic routines were automatic for me, I work very fast with the publishing system, and thus the slowness of the database and database server were emphasized. In my opinion, the usability definition of the ISO9241 standard "*...to achieve specified goals with effectiveness, efficiency...*" (see section 5) is not in order in the publishing system – although the most important factor is that the content creators are satisfied with the system. The aim in the future is that a citizen who is interested in local heritage and content creation is able to use the publishing system.

Every content creator knew that it is possible to create an article in the publishing system either in Finnish or in English. Soren (see section 5) notes the importance of language versions, but in my opinion Soren's comment concerns mainly the finished product, the web pages, and thus does not apply to the language versions of the publishing system. The most important Finnish articles were translated by a professional translator, and I uploaded these articles into the Museum24 publishing system.

Subsection 6.3.3 described error messages and other announcements as supporting tools within the publishing system. These error messages and other announcements were also evaluated for language, which was correct according to the answers. In addition, the interviewees answered that other texts (titles, subtitles, online help etc.) within the publishing system were correct.

Half of the interviewees had printed their articles from FCK Editor or from preview. Furthermore, half of the content creators answered that both the printing and layout of the printed page were in order. However, printing from the preview window produces a different output than from FCK Editor.

Presentation of the information did not attract any comments during the interviews.

6.4 Collaborative writing as a method in content creation

One of the main goals of this study was to examine collaborative writing as a method of producing content for Museum24 and as a part of participatory communication. Carlson (see section 4) wrote that participants need an electronic medium – here the Museum24 publishing system – to enable and to empower users into the intellectual exchange. Quinion (see subsection 4.1) expresses the same idea through the term *collaboratory*: the Museum24 publishing system functions as a collaboratory, an environment where participants use communication technologies to access, share, maintain and create data. Important questions during the interviews concerned the kind of cooperative tasks a content creator performed with the museum officials and/or other content creators, what was the environment where the communication happened, and what the content creator expected from participatory communication.

In the excerpts, I mention the names Jussi and Artio Group / Saraniva. Juhani Heikka (Jussi) was the project manager, Artio Group developed the publishing system and I have their permission to use their names. I have used initials to denote the other names.

Museum24 was a short-term project, and consequently, Project Manager Juhani Heikka contacted potential authors and sent announcements into notice boards, for example at the

University of Jyväskylä, to get more contacts. Among the interviewees was one who had read about Museum24 and immediately contacted Juhani Heikka. She remembered her first thoughts as follows:

N2 "Kun tiesin muuttavani Jämsään, näin netissä että tuommainen hanke on käynnistynyt ja ilman muuta ajattelin, että siinä --- osio ja jos ei ole, niin kohta on ja se on minun."

F2 ["When I knew I was moving to Jämsä, I found information on the Internet about the start of the project, and promptly thought that it should have a --- section, and if there isn't, there soon will be and it's mine."]

The interviewees recalled that in the beginning they had intensive communication with the project manager because of the article plans and schedules. They mentioned that they first searched the Internet to see what others had written on the subject. After that, they prepared a plan of the article structure, discussed it with museum officials and started to write. Only one interviewee started the process by phone to agree on an interview. His subject was sports, and minor sport clubs do not have web pages or a published history. The methods of communication were the phone (either calling or sending a message), email, or face-to-face situations, but some of the interviewees started immediately with the publishing system and asked for feedback on the article outlines by email or by phone. During the writing process, almost every content creator conducted interviews or asked for further information from persons who knew something about the topic – including museum officials.

N2 "Sinun ja Jussin kanssa sillä tavalla, että jos on tietotekniikkaan liittyvä juttu olen kysynyt sitä sulta ja sisällön, ehkä eniten tämmöiseen otetaanko joku kokonaisuus tai eikö oteta, Jussin kanssa."

M2 "Sää kuulut museon väkeen. Puhelimella ja sähköpostilla ja mä kävin siellä. Ja ja, no Jussin kanssa jonkun verran varmaan puhuttiin puhelimesta."

F2 ["With you and Jussi, so that if it's to do with IT, I've asked you, and anything to do with content, perhaps mostly shall we include some item or not, with Jussi."]

M2 "You're one of the museum people. By phone and email and I went there. And... well, I think Jussi and I spoke on the phone a bit."]

In autumn 2006, two of the interviewees wrote articles as a part of their practical training: one collected history for a sport club and the other did a final project for tourism, catering and hospitality management. These content creators spent a few weeks at the Museum24 office with museum officials. Three interviewees wrote their articles sometimes in the Museum24 office because of the material (video and voice clips, photos, literature) we could offer for them to use.

Almost all content creators scanned photos from printed sources and took photos themselves (buildings, monuments, persons, landscapes, works of art) to show the present state and changes. Scanned photos and photos from professional photographers and persons who are interested on photography did not cause any problems. Instead, the quality of the photos taken by the content creators varied, and some photos were taken again because of the exposure, shade or some other reason. Some content creators optimized their photos following the Museum24 instructions for photo processing, some supplied photos for me. I optimized and renamed the material and uploaded it into their media folders.

In spite of what is written above, all interviewees used Museum24 photo collections. If they needed a photo from an exact period or event, they called, sent an email or came into the Museum24 office to browse Museum24 collections (CDs and separate hard disk). We sought out appropriate photos in advance before the visit, or sent photos to the content creator either as an email attachment or by uploading photos to the Museum24 publishing system into their media folders. Sometimes content creators had no idea what kind of photos they could use in the article and asked us for tips. First, we read the article to establish what kind of material could be usable and then searched our collections.

At the time of gathering the photos (or voice and video material), the content creators secured the copyright agreements. Museum24 sent a form and the content creator completed it and obtained the signature of the photographer or some other person responsible for the original photo. Sometimes a photo or other material was chargeable, and the project manager obtained the agreement. When Museum24 used the content creator's photos, the agreement was signed between the content creator and Museum24.

N3 "Tekijänoikeusasiat olen tiedostanut ja sisäistänyt, vältetty sillä, että kuvat on omia otoksia, osa on tietysti otettuja työn alla eli tekijänoikeudet on työnantajan, mutta täältä on lupa niiden käyttöön."

N2 "Nyt kun mainitset tekijänoikeudet, se tuli äänien ja filminpätkien yhteydessä, kun yritin selvittää sitä, millainen taustamusiikki voisi olla Kaipola-pätkässä."

N4 "Tavallaan oli vaikea itse hahmottaa, että jos on jonkun ihmisen kokoelmasta kysymys, ja kuvan ottajasta ei tiedetty mitään, niin riitti että mainitsin kuvaaja tuntematon, kuitenkin täytyi mainita kenen kokoelmassa oli."

N1 "Siinä pohdittiin paljon sitä, että museon tapahtumissa on paljon ihmisiä, että voiko tunnistettavia henkilöitä olla ilman, että kysyy lupaa."

F3 [I'm aware of copyright issues and have internalized them, but I've avoided them because the photos are my own, some of course taken for work, i.e. the copyrights belong to the employer, but it has granted permission to use them.]

F2 "Now you mention copyrights, it came up in connection with sound and film clips, when I tried to investigate the kind of background music we could use in the Kaipola clip."

F4 "In a way, it was hard for me to understand that if it was a case of someone's collection and there was no knowledge of the photographer, it was sufficient to cite an unknown photographer, but the owner of the collection had to be named."

F1 "We gave a lot of thought to the number of people involved in the Museum events, and whether it was possible to have identifiable persons without asking permission.]"

The content creators recalled that they visited the Museum24 office when they needed help with scanning photos and editing videos or voices. In the office, I advised them on how to do the scanning or did it myself. I also assisted with the voice and video editing and solving other technical problems in the publishing system, either by phone or during their visits. The technical assistance included situations when the content creator and I edited the article at the same time but in different locations.

During the interviews it turned out that the content creators not only contacted me but called, sent email or visited Artio Group to get help for unexpected technical problems:

N3 "Kun testasin alkuun, tietenkin mulla jatkuvasti Saranivan puhelin toimi. Sen oli pakko sietää sitä."

M3 "Kävin Kankarisveden koululla, oli Saranivan Arto kertomassa siitä, oli siitä siihen hetkeen apua."

F4 "Oltiin siellä, joka käyttöjärjestelmää (researcher's note: meaning Museo24-publishing system) suunnitteli, se aluksi takkusi niin kauheasti."

N3 ["At first, when I was testing, I was on the phone constantly to Saraniva. He was forced to put up with it."

M3 "I went to Kankarisvesi school, where Arto Saraniva was explaining it, it was a help at the time."

F4 "We went to see the people designing the operating system (researcher's note: meaning the Museo24 publishing system), it kept crashing so much at the beginning.]"

Collaborative writing as a concept was familiar only to a few interviewees. They described that collaboration with Museum24 personnel and other content creators did not have the same characteristics as collaboration has for example in Wikipedia. Only one interviewee had the opinion that working with the Museum24 publishing system corresponded to the idea of collaborative writing.

- N3** "Ei oikeastaan toteutunut, sä varmaan olit ainut joka yhteisöllisesti teit työtäni, voi olla että Jussi on jonkin verran tekstejä editoinut."
- N4** "Se yhteisöllisyys, mitä puhuit, se ei käyttöjärjestelmässä (researcher's comment = Museum24 publishing system) toteutunut, se oli enemmän puhelinkeskustelun yhteydessä."
- N2** "Että olisi tehty tämmöistä työnjakoa, ei semmoista ollut, vaikka se oli ajatuksena mulla kyllä. Ehkä siihen vaikutti se, että S teki kokopäiväisesti muuta työtä. Juuri kun olisin ollut aktiivisesti tekemässä, hän teki toista työtä."
- M1** "Kyllä tätä voi kutsua yhteisölliseksi sisällöntuottamiseksi, koska kaikki tekevät samaa. En ole tehnyt yksin, osan valokuvista on koonneet muut. Ja onhan siihen vaikuttaneet monet muutkin asiat, jotka ovat tulleet esille. Kyllä siinä on selvästi yhteisöllisiä piirteitä."
- F3** ["It didn't really work like that, I think you were the only one who collaborated in my work, Jussi might have edited the texts a little."]
- F4** "The collaboration you talked about, it didn't happen in the operating system (researcher's comment = Museum24 publishing system), it was more in connection with telephone conversations."
- F2** "A division of labour like that, it didn't happen, although I did think about it. Perhaps it was because S was doing another full-time job. Just as I would have been actively working on it, he was doing another job."
- M1** "Yes, this can be called collaborative content creation, because everybody was doing the same. I haven't done the work on my own, some of the photos were collected by others. And it has been affected by many other things that have been mentioned. Yes, there were clear collaborative aspects."]

In spite of the above, during the interviews the content creators described features that are typical for collaborative writing. Some content creators answered that they cooperated with other content creators when they needed information that touched on their own article or when they wanted to avoid overlapping with the articles of others. They had also actually helped others to write or correct articles.

- M1** "Joo, jonkin verran jossain vaiheessa K:n veljesten ja MS-H:n kanssa."
- N2** "Otin vähän sähköpostia kääntäjän kanssa."
- N4** "Sit mä kävin vissiin liikenteestä katsomassa laivojen osuuden etten kirjoita päällekkäin liittyen juuri sitä osastoa raaka-aineiden kuljetus ja valmiiden aineiden kuljetus, sehän sivuaa sitä."
- N1** "Kyllä mä varmaan kommentoin ja olen oikolukenut ja kirjoittanut uusiksi, prosessikirjoittamista. Joitakin muitakin juttuja oikoluin ja Kuorevettä luin, olin Kuorevesi-poliisi. Teinhän mä ne murrejututkin, sen olen unohtanut ihan kokonaan."
- N3** "...nyt kun tuli uusi kirjoittaja käsityöhommiin kuukausi sitten. Hänelle laitoin sisällysluettelorunkoa, mitä minulla oli, olin jotain kirjoittanutkin, vinkkasin hyviä persoonia, jotain käsityölajeja."
- M3** "Tuota no S:n kanssa sillä tavalla, että katsoin, mitä niistä pitäisi täydentää."
- M2** "Mulla löytyi sitten henkilö, joka sitten pilkut ja pisteet katteli, käytiin ne läpi."
- M1** ["Yeah, a bit at some stage, with the K brothers and MS-H."]
- F2** "I exchanged some emails with the translator."
- F4** "Then I think I looked over the ships section under 'Transport', so I don't duplicate my writing about transporting raw materials and transporting finished goods, it touches on it."
- F1** "Yes, I think I commented and have proofread and rewritten, process writing. I proofread some other pieces and read the Kuorevesi piece, I was the Kuorevesi police. Oh I did do the dialect stories, I forgot about that."

F3 "...now that a new writer came in for handicrafts a month ago. I did an outline of the contents for her, what I had, I'd even written something, tipped her off on good people, some forms of handicrafts."

M3 "Well, with S by looking over them to see which of them wanted supplementing."

M2 "I found a person then who looked over the commas and full stops, we went through them."]

On the whole, the content creators felt that the Museum24 publishing system is a potential environment for collaborative writing:

N1 "Onhan tässä nyt paljon suuremmat mahdollisuudet, että voi johonkin keskeneräiseen juttuun päästä tutustuun ja tosiaan joku asia julkaistaan vasta kun se on valmis, mutta siinä on joku pitkä yhteinen juttu tapahtunut ennen."

N4 "Jos tekisi jonkun toisen kanssa rinnan, toinen voisi tietää mitä minä en tiedä. Tosi hedelmällisenä tilanteena olisi, että kumppanina henkilö, jolla olisi semmoinen tieto tähän aihealueeseen, että minä en koskaan voi löytää mistään arkistomateriaalista sitä. Tietoa, joka voi olla vain sellaisen henkilön päässä, joka on sen kokenut."

F1 ["The potential is now that much greater, that one can get to see a half-finished story, and actually some pieces are only published when they're finished, but a long collaborative process has taken place before that."

F4 "If one was working alongside somebody else, the other might know what I don't. A really fruitful situation would be having a person as a partner with knowledge about this topic that I could never find in any archive material. Knowledge that can exist only in the head of somebody who's experienced it."]

However, one interviewee felt quite alone with the content creation (excluding the museum officials). The reason was that this content creator had a special topic that needed such professional skills and knowledge about the subject that others did not have it. We as museum officials could only help with some extra material and by discussing the structure of an article.

Only one content creator did not want any help from other content creators:

N2 "Mä en kyllä varmaan suostuisikaan siihen, että joku toinen räpelöi mun artikkelin asiasisältöä. Musta olisi tosi turhauttavaa ruveta selittämään---."

F2 ["I don't think I would even agree to someone else tinkering with the factual content of my article. I'd find it really frustrating to have to start explaining...."]

Obviously, this content creator is not a person who would want to create an article for Wikipedia because there is a possibility that another person could comment or edit the original article. According to the interview, the same content creator might cooperate with others if they give the information for editing.

All the articles created during this study concerned a special field. The content creators commented that because of their own professional background – or because of interest in the subject – it was easy to start. A common opinion was that creating an article means mostly finding the relevant information from various sources. They concluded that a basic requirement for a content creator is to have good sources (or at least knowledge about sources) to find the information. The interviewees mentioned such sources as library resources (article databases, books, electronic material, databases of the National Library of Finland), archives (museum archives, National Land Survey of Finland, National Archive Service, Military Archives, archives of the organizations and associations) and museums (home district museums, special museums). All national databases are nowadays available on the Internet, which make the finding of the information easier. An important source for some of the interviewees was personal archives (texts, photos, diaries, scrapbooks etc.) that some older citizens had. Commonly used sources to find suitable illustrations within the Museum24 district were the Museum of Central Finland, the Aerial Photograph Collection of Veljekset Karhumäki Oy and UPM-Kymmene Corporation. The interviewees also used the photos of Museum24 (for example the Salonen, Nevalainen, Brask, Lehmusto, and Lapinkivi private photo collections).

M2 "Metsossa, kirjastossa Tampereella, lähteet löytyivät sieltä, nämä asutuksen yleisluettelo, sitten Jyväskylässä maanmittauslaitoksen kartta-arkisto, sieltä muun muassa se isojakokartta."

N2 "Muutama arkistoon olen ollut yhteydessä sähköpostitse. Sota-arkistoon, Tekniseen korkeakouluun, perinteiset kotiseutuarkisto, kirjasto, sanomalehtikokoelmat"

N3 "Kirjallisuuslähteet, Keski-Suomen museon inventointikortit, Kuoreveden museon osalta Pirkanmaan tiedot, internetistä jonkin verran, jonkin verran Maakunta-arkiston lähteitä käytin, kirjallisuudesta oli paikallishistoriikit ja kunnan historiateokset."

M2 ["In Metso, in the Tampere library, I found the sources there, this general list of habitation, then the land survey map archive in Jyväskylä, and in there the general land reparcelling map among other things."

F2 "I've contacted some archives by email. The war archive, the University of Technology, the traditional local history archives, library, newspaper collections..."

F3 "Literature sources, inventory cards of the Museum of Central Finland, Pirkanmaa information at Kuorevesi Museum, some from the Internet, I used some of the sources at the Provincial Archives, from literature came the local history reviews and municipal historical works."]

The content creators also mentioned a quality that may help – patience. Patience because of unexpected errors when help (person or online) is not available and patience during content creation (gathering material from archives, interviewing older citizens etc. takes time). Patience connected also with communication between content creators, museum officials and

Artio Group: when participants meet, there should be time to discuss things properly and to recap on issues related to using the publishing system.

In the interviews, the content creators further emphasized such properties as an ability to draft large entities and good skills in Finnish language and grammar. A content creator should know the subject and keep the article at such level (text amount and content) that the reader does not lose interest. An important point of view is also to understand the differences in creating material for printed media or for the Internet. One interviewee answered that using the interface and article creation do not require any special properties from the content creator on personal level.

N4 "---enempi siihen sisältöön liittyen, että pystyy nyt jonkinlaisia kokonaisuuksia hahmottamaan"

M3 "Kai se kirjoitusominaisuus, kirjoittaminen tärkein on, että osaa muotoilla asiansa jotenkin sinne."

N2 "Pitää tuntea aihe, josta kirjoittaa, pitää yrittää ajatella."

M2 "Sehän kirjoitetaan kuin kirjoittaisi johonkin, pitää osata suomen kieltä, pitää osata suurin piirtein oikeinkirjoitus."

F4 ["---more in connection with content, that one is able to conceptualize some kinds of entities"]

M3 "Perhaps the written side, the writing, most important is being able to set out the facts in some form."

F2 "One needs to know the subject one writes about, one must try to think."

M2 "It's written like writing for something, you need to know the Finnish language, you need to know the correct spelling and grammar roughly."]

The content creators also assessed how probable it is that a citizen could use the Museum24 publishing system independently. Almost all answers included some kind of 'if':

M1 "Jos on ennenkin käyttänyt ohjelmia, joo. Epäilen, että voisi tulla ongelmia vastaan, jos ei ole käyttänyt. Kyllä se varmaan aikaa veisi paljon, olisi iso haaste."

N2 "Jos siihen on olemassa ohjekirjanen tai siellä on sellainen ohje."

M3 "Ei kyllä ainakaan tuommoisenaan pysty sisällöntuottaja käyttämään ilman opastusta."

N3 "Jos tietotekninen tausta on kunnossa, juuri nuorempi väestö, perusosaaminen on olemassa, mutta en voi sanoa, että kuka tahansa kuntalainen, jolla on internet."

N1 "Ei, piste. No just sen takia, että valmiudet käyttää on hirveen erilaiset."

M1 ["If you've used software before, yes. I suspect you might encounter problems if you've never used them. I'm sure it would take a lot of time, it would be a big challenge."

F2 "If there was an instruction book or there were directions."

M3 "Not at least as it is, a content creator could not use it without guidance."

F3 "If they have an IT background, the younger generation, the basic know-how exists, but I couldn't say any local resident who has Internet."

F1 "No, period. Well, precisely because people's resources for using it are awfully different."]

The interviewees' opinion corresponds to my opinion. Working on Museum24 indicated precisely that if content creators cannot perform basic tasks on a computer, they become frustrated. During the content creation, the focus is on text and gathering other material. Every deviation from routines is a minor disaster – trying to find help and correct the situation takes time and tests patience. If the interface does not serve the content creator, the pleasure of writing an article disappears. An important question will be whether it is possible for a content creator to use the Museum24 publishing system independently at all. A content creator crystallizes the situation as follows:

N1 "Onhan se kaunis demokraattinen ajatus, että kuka tahansa voi tehdä ja tässä on hirveen hyvät mahdollisuudet. Tässä voi päästä siihenkin, kun alkaa olla enemmän ihmisiä, joiden valmiudet käyttää tällaisia paranevat. Ihmiset, jotka ovat historia-asioista ja ympäristöstä kiinnostuneita eivät ole sen tyyppisiä."

F1 ["It's a nice democratic thought that anybody could do it, and here we have a really good opportunity. This might achieve it when there are more people with improved skills in using such things. People who are interested in historical issues and the environment are not the type."]

Half of the interviewees had created content for other media before, and two had used other kinds of publishing systems. They claimed that their opinion about content creation and publishing systems had changed during their project in autumn 2006. To create content for the Internet as web pages differs from using a publishing system. In their answers, the interviewees mentioned that they got a view of how to create pages that have the same structure and other basic elements (for example fonts and colours). They also said that content creation into the publishing system is astonishingly simple, which gave a positive attitude towards the whole process.

N3 "---oli kokemusta vain Internet-sivujen tekemisestä DW:llä, siinä mielessä antoi positiivisen kuvan siitä, että voi olla yksinkertaista, tekstinkäsittelyn omaista, ei tarvitse olla koodia, ei ole teknisesti ylivoimaista sisällöntuottajalle."

M2 "FrontPagella mä oon tehnyt, se ei oo tämmönen. --- Ihan fiksu nähdä, että tähän suuntaan ollaan menossa tässä. --- Jossain webdesign-kurssilla, semmosen kävin joskus, niin siellä pyrittiin just tähän, että kaikilla sivuilla asiat on samanlaisia. Tämähän on hyvä työkalu, että niistä tulee tommosia."

F3 ["--- only had experience of website construction with DW, in that sense it gave me a positive picture of how simple it can be, like word processing, with no need for code, it's not technically too much for a content creator."]

M2 "I've used FrontPage, it's not like this. --- Good to see that this is moving in that direction. --- Some web design course, I've done one at some point, we aimed to precisely this, that on every page things are the same. This is a good tool, that they come out like that."]

Most of the interviewees said that because the articles were created for a public forum, they wrote in a different way than they would have done for some other e-based forum like an e-learning space, closed association e-environment or printed media. The Museum24 publishing system was described as so visual that it set more demands than writing an article for a newspaper. Photos, voice and videos provided opportunities to tell the story another way.

M1 "---mä en monestikaan ole käyttänyt silleen kuitenkaan esim. kuvien kanssa en ole noin paljon pelannut. Miten olen käyttänyt Optimaa ja verkkokursseja, ne eivät ole niin graafisia. Niillä on eri funktio."

N2 "Jos vertaan alkutilanteeseen, ajattelin varmaan, että tän voi tehdä samalla tavalla kuin kirjoittaa johonkin julkaisuun artikkeleita. Nyt olen sitä mieltä, että sen pitää olla myös lyhyempi ja simppeimpi ja täytyy kutistaa. Mutta kun tähän saa mukaan kuvia, niin sitten voi kertoa toisin kuin sanoilla."

M3 "Mennyt lehdelle paperiin, joku muu on tehnyt loppuun asti. Tässä se meni vähän pidemmälle, jopa ite sitä ulkoasua pääsi sinne muokkaileen, valitsemaan kuvia ja laittelemaan eri puolille sivua..."

M1 ["--- I haven't very often used one like this, for example dealing so much with pictures. How I've used Optima and online courses, they're not so graphic. They serve a different function."]

F2 "If I compare to the starting point, I probably thought that you could do this in the same way as writing articles for some publication. Now I think that it should also be shorter and simpler, and it has to be condensed. But as you can include pictures here, you can tell the story in ways other than words."

M3 "Gone to the paper, somebody else has finished it. Here it went a bit further, one could even change the layout, select pictures and put them in different parts of the page..."]

An interviewee examined the complete content creation process from the point of view of participatory communication. In her opinion, content creation is social and something that happens between people.

7 CONCLUSIONS

The method in this study is participatory design research: as a researcher, I worked from 1.1.2006 to 31.5.2007 as a part-time museum official, IT help and content creator in the Museum24 project. In the beginning, Artio Group wished that I could work the whole project time within their company operating with the CIDOC CRM. This would have been a more information technology-related than digital culture-related approach, so I refused.

Typical for this period was continuous development of the Museum24 publishing system side by side with the massive content creation. In April 2008, Museum24 consists of 985 published articles (total number in the publishing system 1259) and 3029 published photos (total number in the publishing system 4612). The number of visitors to the Museum24 pages since the first articles were published has been 633,349.

There are two central concepts to all research: reliability and validity. In qualitative methodologies, the reliability of material and analysis reflects the researcher's actions: has the researcher paid attention to all material and do the results mirror the informants' thoughts (Hirsjärvi & Hurme 2001, 189). The Museum24 study consisted of three phases: content creation, questionnaire and interviews. The study group was so small (8 persons) that differences between individuals either on the questionnaire level or on the interview level are not statistically significant. More important than statistical significance is how the answers in the questionnaire correlate with the information produced by the interviews about content creation, participatory communication and collaborative writing.

"However, in the last instance the validity and reliability of the research results depend on the coherence of the local explanation, the number of clues in the material supporting it, and how relevant the explanation appears to be when applied outside the material in question." (Alasuutari 1995, 131–132.)

Usability

It was difficult to find a suitable evaluation method for the publishing system. Most tests and heuristic evaluation formulas were directed to the web page users/visitors, and the aim was how to design user-friendly products. For example, Soren (2004) studied the Virtual Museum of Canada and the quality of the online experiences. She introduced some methods to evaluate user experiences, among them was Keevil's 'Usability Index'.

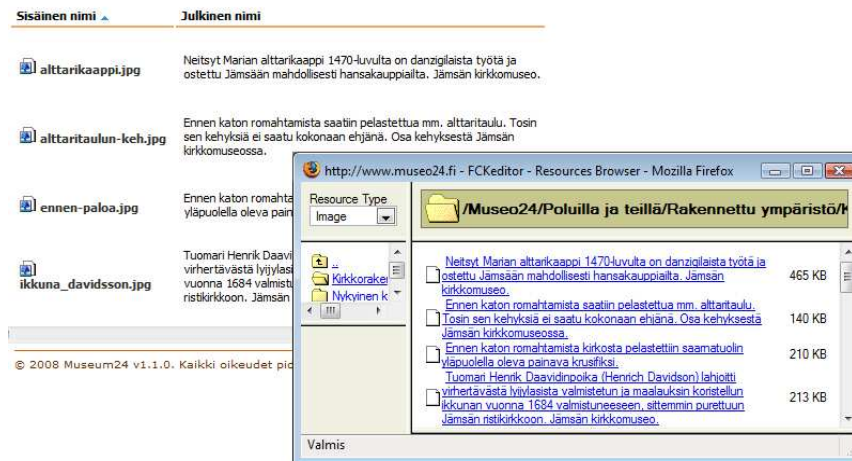
After studying various possibilities, a combination of Keevil's (1998) and Harms & Schweibenz's (2001) heuristic evaluation systems ('usability engineering') seemed to be relevant for this study. Because it is possible to measure web pages as a visitor with simple *yes* and *no* answers, it is possible to evaluate a publishing system using the same formula. A user of a publishing system is a visitor of the publishing system, although the point of view is more that of an author than of a visitor. Harms & Schweibenz (2001) found that the main problem for such evaluation is that normally experts do it and the results do not correspond to the user reality. In my study group, every interviewee was a user, and the method was expert-focused. The Museum24 research needed user-focused opinions because in the future the publishing system will be in use by visitors - not in professional use. In the final questionnaire, I used Keevil's (1998) five categories of usability as guidelines and developed the questions from the WUI questionnaire of Schweibenz, Harms & Strobel (2002). The questionnaire provided information on whether there are usability problems in the publishing system, what they are, and how they can be removed.

The questionnaire was tested before the research and the testers mentioned a few minor changes. When writing up the results concerning usability, I realized that it would have been better to ask questions about error messages and other announcements only in one usability category. The questionnaire contained questions concerning error messages and other announcements in three categories. Although every category approached the subject from a different point of view, free opinions in all these categories were almost the same. For me as researcher, it meant that either the content creators did not understand the purpose of these questions or I should have formulated the questions slightly differently.

The first category in the questionnaire was to evaluate finding the information. The content creators felt that the Museum24 publishing system is easy to navigate and has a clear site structure. Basic tasks like links and paths functioned properly. The greatest contradiction between the opinions of the content creators and my own concerned alphabetizing (see subsection 6.3.1): FCK Editor did not organize files in alphabetical order, and only two content creators noticed it. Obviously, the content creators knew their own material and alphabetizing lost its importance. My point of view is slightly different: if the aim is collaborative writing or use of some other cooperative system, there has to be an alphabetical order. Content creators must be able to find information without extra effort. Knowing one's own material is not enough, there are unknown materials of other content creators to find and to use.

When I examine alphabetizing on the publishing system level (technically), it depends on the database. Many database-based e-environments (for example the e-learning space Optima) do not alphabetize uploaded material automatically. They present the information in the order it is uploaded or created into the database. However, most e-environments have a provision for alphabetizing the data in the system, or automatic alphabetizing is programmed into the system. The above-mentioned Optima environment includes tools for alphabetizing and a facility to arrange files and folders by dragging.

In the Museum24 publishing system, every file and folder has both an internal and external name. Alphabetizing uses the internal file name, which is given during the upload. Users see the external name that describes the content of the photo. This practice causes problems in finding a file. The left side of picture 11 shows a view over the user interface after the upload. The user can alphabetize files either in descending or ascending order according to the internal name by clicking. The right side of the picture shows the FCK Editor Resources view from the same folder: now the user can only see the external name (caption) with no alphabetical order. For content creators, the best solution would be for FCK Editor Resources to use the internal name.



Picture 11. Alphabetizing problem

The most essential skill for finding information within the publishing system is to know how to use computer resources. If a content creator has good basic skills, it is easier to learn to use a new environment. The study group showed this demand to be true. However, if using Museum24 requires good skills, is it possible to use the publishing system independently at all? At least, the demand of good computer skills may prevent the idea of collaborative writing from being realized, because it may be difficult to find authors who are capable of using – or of learning to use – too complicated a system. For example Borgman (see section 5) requires that the systems for human-computer interaction should be easy to learn and flexible.

In the answers concerning understanding the information – as well as when the content creators evaluated the technical accuracy and presenting the information – the main problems were error messages: the content creators did not understand these messages. The reason was either the error situation, the content of the message, the language (English) or grammatical faults. I could thus conclude that after a content creator had found the information he was searching/using, it was in most cases understandable in spite of error messages. Development of the Museum24 publishing system and content creation started almost at the same time. The publishing system interface was tailored from various open source elements which were not suitable for virtual museum use as they were. The developers made changes that caused error messages, and these error messages were not translated into Finnish because they appeared for the first time.

Only few persons in my study group noticed the same problems in the publishing system as I did. I suppose the reason was that they had better IT skills than the others. However, according to the interviews everybody experienced problems – error situations, unexpected loss of data, slowness, difficulties in copying and moving files/folders etc. – but they did not try to find out why these problems occurred. The study group accepted that errors 'happened', and in such situations, they either called me for help or set aside the content creation for the moment. The content creators did not link a variety of errors and attempt to solve what or where the basic reason for this error might be. They accepted the situation; only a few were annoyed or angry, which was astonishing. The unexpected fault situations in the publishing system mean that one important factor of usability was not in order – consistency. Both Keinonen and Johnston & Dawson (see section 5) mention consistency, as the experience of usability requires a constant formula and easiness of the user control.

The lack of supporting user tasks was emphasized in error situations. I started to write the online Help in autumn 2006, when the content creators started their work. The online Help did not function properly because of the system core updates. However, this was not a major weakness in the publishing system, as only two content creators mentioned it during interviews. In my view, the most urgent need was to have a facility of contacting Artio Group from the publishing system and to get answers into the publishing system. The publishing system contains a facility to send suggestions and we discussed with Artio Oy if this could be changed to a 'helpdesk' or discussion area. Another important issue was that there should also be a FAQ (Frequently Asked Questions) section in the publishing system.

The Museum24 publishing system does not correspond to all requirements that for example Natarajan (2002, see section 5) presents. The publishing system has an accurate online Help, but it covers only the most common features – the project is finished and volunteers to continue with the online Help are not easy to find. The training material covers the Museum24 publishing system version 1 and is only partly usable with the present publishing system. In the case of Museum24, I cannot conclude that user satisfaction is increased because of effective and usable documentation.

Evaluation of technical accuracy indicated that a good interface should function in the same way with every browser. The Museum24 publishing system does not. For example, there

were differences between Internet Explorer and Mozilla (the study group used only these browsers) in such functions as using the clipboard. Uploading files into the publishing system via FTP (File Transfer Protocol) connection was possible only when the content creator used Internet Explorer. Almost all other properties were optimized for Mozilla. In my opinion, the only way to prevent these differences is to do expert-focused interface testing at least with widely used browsers. The demand for a transparent interface (Mayrand 2001, see section 5) is emphasized in these situations: if the interface follows the same formula in every browser, it disappears and the content (creation) is the most important factor.

Slowness of the publishing system depends on the user. The content creators evaluated presenting the information and answered that every feature in the publishing system functions quickly, which makes it possible to see the final information soon enough. My own estimation is that the database server behind the publishing system is quite slow. If a content creator can use the interface fluently, the database responds with a delay. An opinion from the interviewees crystallizes the differences between users: a user with basic skills is satisfied with the situation, while other users with better IT skills experience the situation as frustrating:

N1 "Kun se ei toimi yhtä nopeesti kuin mun pää ja sormi, siinä nousee verenpaine. Huomasin, että Jussi ei välttämättä aina tajunnut sitä."

F1 ["When it doesn't function as fast as my head and finger, it raises the blood pressure. I noticed that Jussi didn't always necessarily appreciate this."]

The usability evaluation of the Museum24 publishing system indicated that on the whole, it is usable with some exceptions. In my opinion, these exceptions, such as the lack of alphabetizing and functioning support, are crucial for independent content creation. The reason why the study group did not emphasize these exceptions as much as I do may be that everybody had good basic computer skills, experience of various situations in computer use, and the possibility to ask for help from museum officials. The content creators who had lower computer skills or who did not have computer skills at all refused to participate, which affected the results.

The size of the study group is too small for any statistically significant conclusions. From the questionnaire and the interviews, it is evident that within this study group, good IT skills lower the threshold of content creation and that these persons adopted the publishing

system as it is – if at the same time it is possible for them to get help. The demand of help challenges the museum officials: they should possess very good and varied experience to be able to help. As Borgman (2001, 140–141) has noted, persons with good technical skills can use different methods to overcome unsatisfactory interfaces, which beginners cannot do.

Soren's (2004, 12–13) best practices of developing quality in online experiences are also valid in examining the usability of Museum24. A common vision at the outset, clear goals, and most of all consistency – meaning a solid structure – and a website for collaborators can be seen as the means for productive content creation. The usability of Museum24 depends on the content creator's skills, as the interviews and free opinions in the questionnaire indicated. Within the publishing system, there are functions that could be developed further to correspond to the demand of a user-friendly interface.

Content creation and collaborative writing

As Diamond (2005, see subsection 4.3) notes, using new technology demands collaboration between people. The possibility of creating and distributing content changes the idea of restricted creative source and authorship. To be a part of an 'expert' community allows discussion and creativity.

Concepts such as blogs, bulletin boards, chat, Skype, Messenger, and Wikipedia are known among those who use the Internet. All these web environments make it possible to communicate with others regardless of where they are located and what time it is. The Museum24 publishing system is an administered museum website – it does not allow the same possibilities to create and edit articles, as Wikipedia and other Wiki-related environments do. However, virtual environments like Museum24 lower the threshold of participating in collaborative writing and content creation.

When a person is part of a collaborative network, he is in a relationship with other individuals, communities or sectors. As Kotilainen (2005, see subsection 4.2) wrote, Finnish civic webs like Museum24 are mainly products of local, national or European short-term development projects. Although Museum24 is not a pure 'civic web', it enhances civic participation and communication in the net at the local level.

Because of the necessarily short-term project and the need to have a strictly administered environment, interaction with citizens was quite insignificant, if the criteria are articles that are produced by them. Every interviewee – except one with a professional interest in certain subjects who contacted Museum24 – embarked on their writing when the project manager contacted them, directly or indirectly. Those who wrote for the Memories section were volunteers, and most of them participated in a local history course at the Adult Education Centre. Because these volunteers wrote memories without any sources, trusting to their own memory or hearsay, I did not include them in my study group. Another reason was that they used only a narrow part of Museum24, and most of them were so aged that a considerable amount of time might have been necessary to train them to use the publishing system. I was working only as a part-time official, so it was impossible to put into practice.

Remarkable for the communication between the content creators and museum officials was the use of phone, e-mail and visits to the museum office. These are everyday communication methods and as such, they are not means of collaborative writing, but can be seen as a means of participatory communication. On the other hand, according to Cogburn (see subsection 4.1) a collaboratory also includes social processes. In addition, such communication methods as video conferencing and wireless devices are mentioned in the context of a collaboratory.

There were understandable reasons for using the phone. An obvious reason was that if you call, somebody answers and the 'helpdesk' is ready to use. The content creators called even with minor problems they could have solved alone after thinking a while. During a call, it was possible for the content creator to edit the article at the same time, or to test instructions as well as to solve error situations. It is more convenient to discuss the problem on the phone than to send an email and try to describe the situation, especially when some screenshots of the error situation are required. The Museum24 publishing system has no discussion area or any other possibility for contact with the developer and/or museum officials. A discussion area or FAQ might have diminished the volume of phone contacts, although on the other hand, people ask for different online helps and instructions but do not use them.

As mentioned in subsection 6.4, collaborative writing was quite an unknown concept for the content creators. In my opinion, both the content creators and museum officials performed

many tasks that are methods of collaborative writing. The most obvious was that when a content creator informed me that an article was ready, I proofread it and made the necessary corrections. Collaborative writing was present when the content creator and I edited the same article, either at the same time but in different locations, or so that the content creator uploaded the necessary material into the publishing system, created an article, and asked me for help, for example with photo alignment.

The Museum24 publishing system lacks a property that is typical for collaborative writing: version management. When a person with writing rights corrects an article, the corrected article replaces the original after saving. Of course, the content creator or museum officials have the original text, but the Museum24 publishing system always only contains the latest version.

Some content creators were active and proofread and commented other contributors' articles. They gave advice and asked for material, but there was a restriction: the subject. During the interviews, I noticed that only persons whose articles touched on some level contacted each other. This is not contrary to the idea of collaborative writing, as for example in Wikipedia, volunteer authors comment on or rewrite specific topics, not every subject. Counter to the idea of collaborative writing was that only the content creators had access to the publishing system. If citizens reacted to some article, they contacted museum officials, not the author. Unlike in Wikipedia, they had no rights to log into the publishing system to make corrections or additional notes.

However, the content creators thought the publishing system to be a potential environment for collaborative writing. The greatest obstacles for collaborative writing are the lack of skills and time. Because most of the interviewees were professionals or semi-professionals in their own subject, they also mentioned the reward.

N4 "Vapaaehtoishommat on aina vapaaehtoishommia, ei painetta tehdä valmiiksi."

N1 "Olen tavallaan jonkinlainen alan ihminen, ei ilmaseks ole varaa tehdä juttuja. Joku joka on innokkaampi harrastaja. Jos mä lähden jotain ilmaseksi kirjoittaan, se ei ole tämmönen juttu. Johonkin joululehteen ehkä."

F4 ["Voluntary work is always voluntary work, with no pressure to finish the job."]

F1 "In a way, I'm a kind of professional in the field, can't afford to work for free. Somebody who is more an enthusiast. If I set out to write something for nothing, it wouldn't be a job like this. Some Christmas magazine perhaps."

The idea of collaborative writing does not cover rewards, but there are collaboratories and projects like Museum 24, with budgeted fees and pay at least for some persons like administrators and specialists. The original Wikiweb idea is based on volunteers who collaboratively and without any fees produce the content.

The interviewees mentioned that the most important requirement for a content creator is technical skill, meaning skills to use a computer and various programs. Basic IT skills guarantee that the content creator can learn to use the environment while producing the content. If a person already has good skills, it is easy to 'step in' a new environment. During my part-time work in Museum24, I noticed that some content creators did have such skills that they could independently use the publishing system, some others did not want to do it – maybe they did not have time or they did not want to learn to use the publishing system.

An ability to work independently in gathering the material was only in second place measured from the answers in the interviews. Data collecting demands for example creativity, knowledge about different sources, networks, mobility, and ability to use a digital camera and other equipment. Furthermore, independent working requires writing skills, proficiency in language(s), and patience, because surprising things happen. Obviously, the interviewed content creators did not value these skills very highly, as they were all people who had done such data collecting before. They did not need much assistance in finding the right sources, and they could supply us with good addresses and contact information.

A very important quality for a content creator is to be reliable, to stick to the schedule. Only one interviewee noted this. It was common for sub-projects – from the manuscript phase to the finished article – to be delayed. From the museum point of view, we set relatively loose schedules, but only few content creators managed to keep them. From the authors' point of view, reasons for the delays may be that they did not get photos or other material from their sources, their daytime job, problems with the interface – and some people simply have difficulties following schedules without surveillance.

Writing for the web differs from writing for printed media. During the project, it became obvious that a short introduction concerning writing for the net is needed in this kind of

projects. It might include a brief overview of standards and style conventions that concern writing and the most important grammar-related topics.

While we discussed the requirements, the content creators mentioned mainly properties that are important in using the publishing system. The other side of collaborative writing – the community and interpersonal relationships within it – did not appear to be important. Museum24 is not exactly a collaborative community but rather a collaboratory (Bruce & Lunsford 2001, see subsection 4.1), it fulfils at least five qualifiers of the six mentioned as follows: consciousness of the site's status as a mutual project, participation and distribution, access to shared resources, technology and boundary-crossing nature. One of the reasons the content creators focused mainly on properties within the publishing system may be that they did not communicate with each other or edit each other's articles in the publishing system, which is typical for collaborative writing. Thus, it is easy to forget the others and concentrate only on one's own subject. Maybe common meetings concerning for example the above-suggested 'writing for the web' instructions would have improved the cooperation.

Model of the content creation process

An additional aim of this study was to describe a model of the content creation process for citizens to use in gathering and preserving local heritage. During the interviews, I asked how the content creators gathered the information and what kind of writing processes they used.

In conversation with the interviewees, I noticed that they did not exactly describe the whole writing process, but concentrated on subjects that caused problems and on subjects concerning gathering the information. According to the interviews, it is possible to create a preliminary plan for the content creation process (figure 2). However, each content creator has his own method of processing the assignment. The most significant factor in content creation is the subject, because it defines the best way to execute the whole process.

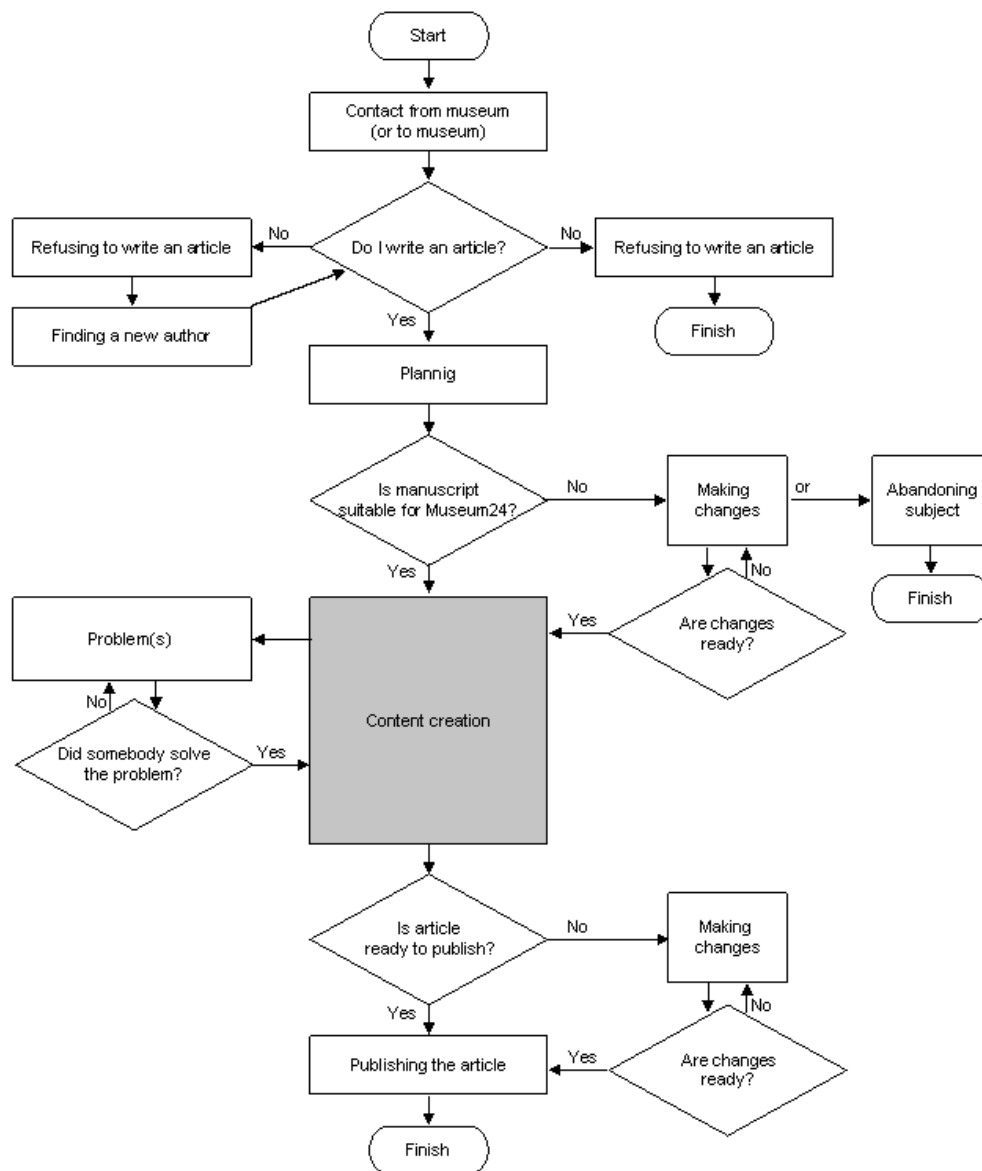


Figure 2. Model of the content creation process as a flow chart (Ojala 2008)

The process begins either when a person interested in a subject contacts Museum24 or when Museum24 officials contact persons who are potential authors. There is no difference between these two 'groups' of content creators. Because of the restricted user rights of Museum24, a citizen cannot independently create a new article. Should it be developed towards a more open and Wikipedia-based system, a third group of content creators may be formed from individual citizens in the future.

The first decision is whether or not the person will write an article. In both cases, the author may not be satisfied with the terms or the schedule. If he declines, the process ends or

Museum24 searches for another author. The third possibility is that the subject area is set aside to wait for a more favourable time.

When the agreement (consisting for example of the schedule, number of pages, and photos) with the content creator is concluded, the planning period starts. This period is quite short and the aim is to produce a preliminary manuscript – mainly a table of contents with short notes – for Museum24. The content and/or text manuscript may need rearranging when the content creator does the rewriting. The corrections are reread. If it seems that the structure or content of the article is not valid, the subject is abandoned and the process ends. This may happen for different reasons: too 'hot' a subject, author too prejudiced, too difficult to find material. Abandoning an interesting subject is the last resort. Before giving up on a subject, the museum officials try to find other solutions for the situation. During my working period in Museum24, omitting a subject did not happen, because we wrote at least the introduction for every subject.

After the approval of a manuscript/table of contents, it is time for content creation. Content creation consists of every task an author does during the process, from gathering the material right up to the upload into the publishing system. Content creation consists of every task an author does during the process, from gathering the material right up to the upload into the publishing system. Error situations and other problems – technical or concerning the writing and the material – that may occur are a deviation from the independent writing process. As described earlier, there is help available for such situations.

The museum officials read, preview and proofread the finished pages. They check the captions and copyright notes. The museum official and/or the author do the final editing, and when everything is in order, it is time to publish the content. The museum officials do the publishing, because a content creator does not have the rights to do it. If it is decided to translate an article into English, it is sent to a translator when it is ready for publication in Finnish.

The model for content creation is preliminary and represents a way of working with content following the normal process. It does not cover every possible incident that may happen during the content creation process. The first approach to Museum24 may come from a

company or an association, and there may be several authors processing a subject – each writing their own article. Such situations happen when the agreement is with an organization/association. Some authors may translate their own articles into English if their skills are good enough, and some use their own proofreaders.

The level of independence during the content creation varies. It is also possible that when something special happens in a content creator's life (for example illness) the whole writing process either ends, is delayed, or another person writes the article.

The model does not mention the visitor's role. If a content creator or Museum24 receives no feedback concerning the content, it does not automatically mean that everything is in order. Visitors assign their own meaning to the articles and their opinion – as well as their possible personal experience – of the subject may differ from the perspective an author has described. This means dialogue between the content creators, museum officials and audience, and confirms the process of collaborative writing.

Finally

The purpose of participation is to provide relevant information that a community requires, and this can be achieved through the activity of citizens who take an active role in the process of heritage collecting. Active participation requires tools to organize the information and knowledge to determine the relevant information on various topics. Dietz et al (2004, 32) wrote that "*the Internet is blurring boundaries for virtual museums and creates a communication synchronicity continuum*". We can have both face-to-face and time-delayed interpersonal communication at the same time.

Virtual Museum (of Canada): The Next Generation by Dietz et al. was the most important source for my study. This research described the future of the virtual museum using five key areas: audience, interface, content, infrastructure and sustainability. A very important point of view for my study was that development of an online collaborative network requires relationships with individuals, communities and sectors. Through these relationships, it is possible to maintain dialogue with users, audiences and specific groups across boundaries. A virtual

museum platform that is not mediated directly by museum officials provides opportunities to introduce and create collective memories.

According to earlier research (Rantanen 2004, see subsection 4.3), a remarkable feature is that the most active persons involved are middle-aged and senior citizens. The reason is that younger people are not so interested in local or association issues. This study both agrees and disagrees with that statement, but the background is different: Rantanen examined local communities and Museum24 is not exactly a local community. The middle age range varies depending on the source as between 35 and 65 years, with most sources defining middle age as from 40 to 60 years. My study group consists of 8 persons, half of them middle-aged. Surprisingly, the other half were younger, from 20 to 30 years. Statistically this is not significant because of the small study group.

Why were these people interested on content creation for Museum24? Although the project paid a reward for some content creators, it was almost nominal. Another – very human – reason could have been the prospect of seeing one's own work and name on the Internet. However, this is a more likely reason among amateur content creators than among the interviewed content creators. They had very special fields, much expertise in that field, and they were known in their own professional circles. Maybe the reason was simply a desire to introduce a specific piece of local heritage to a larger audience.

Pehkonen (2003, 53) wrote that the greatest obstacles in content creation are the narrowness of expertise/specialization, and that content creation is time-consuming and requires changes in approach and methods. She concludes that using trainees and students in multimedia projects is not a permanent solution from the point of view of institutions or from the point of view of development of the content creation field. In my opinion, the idea of collaborative writing does not exclude any volunteer content creator because of his status. Dietz et al. also see the important role of the audience in either producing the information or personalizing the existing information. Wikipedia and Wiki-based webs may have different user levels with different user rights. Many other web-based communities have registered and unregistered visitors with different user rights – but what these visitors are is not important. What matters most is that they produce relevant content.

The hypothesis was that local cultural heritage can be preserved with the help of citizens by using the Museum24 publishing system and collaborative writing as a method in the content creation. This study has indicated that it is possible to use methods of collaborative writing in content creation that concerns local cultural heritage. There is always an 'if' and in this case, this 'if' concerns the publishing system. Rantanen (2004, see subsection 4.3) mentioned that writing, uploading images and linking are simplified by using the publishing system in the browser. My study group tested the Museum24 publishing system, and with only few exceptions came to the same conclusion.

The size of the study group is too small for any statistically significant conclusions. From the questionnaire and the interviews, it is evident that within this study group, good IT skills lower the threshold of content creation and that these persons adopted the publishing system as it is – if at the same time it is possible for them to get help. The demand of help challenges the museum officials: they should possess very good and varied experience to be able to help. As Borgman (2001, 140–141) has noted, persons with good technical skills can use different methods to overcome unsatisfactory interfaces, which beginners cannot do.

Rantanen (2004, 29) wrote that the use of a publishing system diminishes the number of programs used, because a browser-based publishing system usually covers such elements as file transferring, image and text editing, and html editor. In my opinion, a good publishing system does not replace the fact that most of the work is done before the uploading: photos, texts, videos, voices. If an organization or association uses open source based and free publishing systems, these do not offer as many automated functions (for example optimizing photos, chat, and bulletin board) as tailored chargeable systems. Therefore, a content creator needs to have at least basic computer skills.

Now the Museum24 publishing system is at the same stage of development as it was on 31.5.2007, which means the same problems for future content creators. The difference between new content creators and my study group is that the new ones do not have access to technical support. Wikipedia and Wiki-based webs have an administrator (or many persons with administrator rights) and/or other assisting persons. FAQ sections and a facility to ask for help, as well as good computer skills among users, are an essential part of these webs. Museum24 has an online Help, but it only covers the most frequently used functions. Many

quite commonly used functions will have to be learned alone in the future, because a museum official working only three hours per week must use this time for updates.

Based on the interviews, I can conclude that the conditions in the Museum24 publishing system are with some exceptions (unexpected errors, slowness of the system, support and alphabetizing) suitable for amateur content creators if we consider the usability of the publishing system. Museum24 was not considered as easy that every citizen could use it independently if he does not have good computer skills. The easiness of use could empower citizens to collect and to publish the local cultural heritage. However, if citizens do not know about the possibility of participation in content creation, how can they be empowered?

In projects such as the present one, what was achieved previously is often destroyed by the future, if there is no visibility. Projects have financing for a finite period, and what happens after that period? Museum24 consists of mainly unchangeable material that only needs occasional updates. The city of Jämsä provides a nominal allowance for updates, but it does not cover the creation of new content. Museum24 is at a point where volunteers and collaborative writing may be the only means to continue. Who convinces citizens that collecting and publishing local cultural heritage has a far-reaching influence on the district.

"Ikivanhaa lienee asutus tässä erittäin hedelmällisessä tienoossa, joka kulkee nimellä Jämsän jokivarsi. Ja nimi Jämsä, eli niin kuin kaikki jämsäläiset vielä tänäkin hetkenä sanovat, moni vielä säännöllisesti kirjoittaakin, Jämpsä, lienee hämärän muinaisuuden nimiä, minun luullakseni muinaisgermaaniaista perua... Vanhoissa kirkonkirjoissa kirjoitetaan Jämsän nimi Jembsiö, Jämbsiö. Siis p ääni on nimeen alkuperäisittäin kuulunut" (Ernst Lampén: *Suomea ristiin rastiin*, 2. painos 1918, Otava).

["Immemorial is likely to be the habitation in this extremely fertile area that goes by the name of Jämsä riverside. And the name Jämsä, as all its people still today pronounce it, and many still regularly write it, Jämpsä, is probably a name from the distant past, I would think of ancient Germanic origin... In old church records, the name of Jämsä is written Jembsiö, Jämbsiö. So the p-sound has originally been part of the name." (Ernst Lampén: *Suomea ristiin rastiin*, 2nd ed. 1918, Otava).

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INTERVIEWS AND LECTURES

Heikka Juhani. Project Manager / Museo24, 15.5.2006.

Vilkuna Janne. Museologist professor. Jyväskylän yliopisto. 15.5.2007.

Alice

Appendix 2

1 (2)

Lähettäjä: "Alice" <alice.ojala@pp.inet.fi>
Vastaanottaja: <alice.ojala@pp.inet.fi>
Lähetetty: 26. joulukuuta 2006 11:39
Liite: Museo24_gradu_saate.pdf
Aihe: Museo24: Osallistuminen tutkimukseen

Hyvä vastaanottaja

Viestin Vastaanottaja-kentässä näet vain lähettäjän tiedot, muiden vastaanottajien nimet on lisätty piilokenttään. Vastaanottajia ovat henkilöt, jotka ovat tuottaneet tai ovat parhaillaan tuottamassa aineistoa Museo24-julkaisu-järjestelmään.

Liitteenä on pdf-muotoinen saatekirje, joka sisältää tutkimukseen liittyvät perustiedot. Toivon, että olet osa tutkimusryhmääni ja vahvistat osallistumisesi sähköpostitse mahdollisimman pian. Vahvistuksen saamisen jälkeen toimitan Sinulle tarkemmat tiedot kyselylomakkeen sijainnista sekä kyselyssä tarvitsemasi tunnukset. Haastatteluajasta sovin kanssasi tammikuussa 2007.

Hyvää uutta vuotta 2007 toivottaen

Alice Ojala
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1 (1)

Appendix 2
2 (2)

26.12.2006

Hyvä vastaanottaja

MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

Opiskelen Jyväskylän yliopiston Taiteiden ja kulttuurin tutkimuksen laitoksella Digital Culture -maisteriohjelmassa. Teen pro gradu -työtä aiheesta

Museum 24: Collaborative writing and interaction with local citizens in the context of regional cultural heritage preservation

(Museo24: Yhteisöllinen sisällöntuottaminen ja yhteistyö paikallisväestön kanssa osana alueellisen kulttuuriperinnön tallentamista).

Olet aloittamassa tai olet jo aloittanut sisällön tuottamisen omasta aiheestasi. Museo24-hanke ja Museo24-julkaisujärjestelmän toimittaja Artio Oy haluavat lisätietoa järjestelmän käytettävyydestä sisällöntuottajan kannalta katsottuna. Käyttäjäkokemuksesi on arvokas lisä kehitettäessä julkaisujärjestelmästä toimivaa kokonaisuutta sisällöntuottamiseen. Lisäksi kootaan tietoa yhteisöllisestä sisällöntuottamisesta, joka tarkoittaa aineiston tuottamista yhdessä muiden käyttäjien kanssa, mutta ei välttämättä samanaikaisesti eikä samassa tilassa tapahtuvana toimintana.

Tutkimuksen aikataulu 1. - 31.1.2007

Tutkimuksen sisältö

- 1) Ohjattu tutustuminen Museo24-julkaisujärjestelmään.
- 2) Oman aineistosi tuottaminen Museo24-julkaisujärjestelmää käyttäen.
- 3) Museo24-julkaisujärjestelmän käytettävyysselvitys. Kutsu käytettävyysselvityyn toimitetaan Sinulle sähköpostitse 1.1.2007.
- 4) Haastattelu, kesto noin 30 min - 1 h

Tutkimusmenetelmä Tutkimusmenetelmä on *participatory design research* -menetelmä, joka tarkoittaa, että tutkijana osallistun Museo24:n sisällöntuottamiseen. Design-tutkimusta käytetään sekä kaupallisessa, tieteellisessä että tutkivassa toiminnassa. Tutkimuskohteita ovat mm. suunnittelijat, suunnitellut asiat tai esineet, asiakkaat, käyttäjät ja organisaatiot. Tämä tutkimus kohdistuu informaatioteknologian ja luovien käytänteiden alueelle.

Tutkimuksen teemat Käytettävyysselvitys kartoittaa julkaisujärjestelmää viidellä eri osa-alueella: tiedon löytäminen, tiedon ymmärtäminen, tuki käyttäjän toimille, tekninen käytettävyys sekä tiedon esittäminen. Haastattelu keskittyy sisällöntuottamisen käytäntöön, julkaisujärjestelmän käyttökokemuksiin, sisällöntuottajalta vaadittaviin ominaisuuksiin ja valmiuksiin sekä yhteisölliseen sisällöntuottamiseen.

Toivon, että saan Sinut mukaan tutkimusryhmääni. Vahvistathan osallistumisesi 10.1.2007 mennessä alice.ojala@museo24.fi tai 020 776 2356. Kyselyvastaukset kerätään anonyymeina, mutta tiedon osallistumisesta tarvitsen haastattelun sopimista varten.

Alice Ojala
Alice Ojala

Alice

Lähetäjä: "Alice" <alice.ojala@pp.inet.fi>
Vastaanottaja: "Alice" <alice.ojala@pp.inet.fi>
Lähetetty: 6. tammikuuta 2007 9:30
Aihe: Museo24: Käytettävyyskysely

Hyvä vastaanottaja

Viestin lopussa olevan linkin kautta pääset vastaamaan kyselyyn Museo24-julkaisujärjestelmä ja yhteisöllinen sisällöntuottaminen. Kyse on ns. julkisesta kyselystä, johon siirrytään suoraan [www-sivuosoitteella](http://www.sivuosoitteella), siksi viesti ei sisällä tunnusta eikä salasanaa. Vastaukset ovat anonyymeja.

Varaa vastausaikaa noin 20 - 30 minuuttia. Vastausajan kesto riippuu siitä, kuinka tuttu järjestelmä sinulle on ja joudutko välillä tarkistamaan jotain julkaisujärjestelmästä. Lue ennen vastaamisen aloittamista toimintaohje. Mikäli haluat, voit myös tulostaa tämän viestin.

1) Napsauta alla olevaa linkkiä, ja kyselyn aloitussivu avautuu.

2) Avaa tämän jälkeen selaimen uusi ikkuna näppäinkomennolla Internet Explorer 6-sarjan selain: Ctrl+N
Internet Explorer 7: valmiina yksi tyhjä välilehti, aktivoi se napsauttamalla
Mozilla: Ctrl+T

3) Uudessa ikkunassa näet avoinna olevan kyselyn aloitussivun. Napsauta selaimen osoiteriviä ja kun osoite on valittu, kirjoita tavallisesti www.museo24.fi ja paina Enter. Uuteen ikkunaan avautuu Museo24-sivu ja voit kirjautua järjestelmään, mikäli tarvitset sitä vastaamisen aikana.

4) Vaihda avoinna olevien ikkunoiden (kyselysivu, Museo24) välillä seuraavasti:
IE 6-sarja: näytön alareunan tehtäväpalkissa näet kaksi IE-ohjelmapainiketta, napsauttamalla näitä vuorotellen siirryt ikkunasta toiseen
IE 7: Napsauta näytön yläreunan välilehtiä
Mozilla: Napsauta näytön yläreunan välilehtiä

5) Jos sinulla on aikaa, voit kyselysivujen alareunan Seuraava/Edellinen-painikkeiden kautta tutustua etukäteen kyselyn sisältöön ja vastata sen jälkeen. Tämä on mahdollista niin kauan kuin et ole lähettänyt vastauksia eteenpäin Lähetä-painikkeella.

6) Kyselyä ei voi keskeyttää eikä jo vastattuja tietoja saa toisella istunnolla esille.

Voit ongelmatilanteissa ottaa yhteyttä puhelimitse 040 910 4484. Tilastoissa ei tule näkyville esim. vastausaikaa, jolloin en voi yhdistää tiettyjä vastauksia keneenkään henkilökohtaisesti ja anonyymius

kyselyn osalta säilyy.

Kiitos vastauksestasi jo etukäteen. Haastattelunajan sovin
kanssasi lähiaikoina.

Alice

Siirry kyselyyn

SSL-suojaus (suositeltu linkki)

<https://www.webropol.com/P.aspx?id=127120&cid=5970507>

vaihtoehtoisesti tarvittaessa ilman SSL-suojausta

<http://www.webropol.com/P.aspx?id=127120&cid=5970507>

**MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN
SISÄLLÖNTUOTTAMINEN****Tutkimusaika** 1. - 31.1.2007

Olet tuottanut sisältöä Museo24-julkaisujärjestelmään. Museo24-hanke ja Museo24-julkaisujärjestelmän toimittaja Artio Oy haluavat lisätietoa järjestelmän käytettävyydestä sisällöntuottajan kannalta katsottuna. Tutkimuksessa selvitetään myös kuntalaisen mielipiteitä ja kokemuksia yhteisöllisestä sisällöntuottamisesta.

Tutkimus koostuu kahdesta osasta,

1) **julkaisujärjestelmän ominaisuuksia ja toimivuutta kartoittavasta käytettävyysselvityksestä**, joka käsittelee seuraavia osa-alueita: tiedon löytäminen, tiedon ymmärtäminen, tuki käyttäjän toimille, tekninen käytettävyys sekä tiedon esittäminen

2) **sisällöntuotantoon liittyvästä haastattelusta**, johon sovitaan haastattelu-aika allekirjoittaneen kanssa.

Ennen vastausten lähettämistä muista varmistaa kyselyvastauksen lähettämisen napsauttamalla Lähetä-painikkeen vieressä olevaa **Haluan lähettää vastaukset** -valintaruutua. Kyselyvastaukset lähetetään tutkimuksen tekijälle anonyymeina.

Kiitos osallistumisestasi tutkimukseen.

Alice Ojala

1) Ikä

- alle 20 v.
 20 - 30 v.
 31 - 40 v.
 41 - 50 v.
 yli 50 v.

2) Sukupuoli

- nainen
 mies

3) Valitse, mitä ohjelmia olet käyttänyt aiemmin. Suluissa olevat ohjelmat ovat esimerkkejä alan ohjelmista. Olet saattanut käyttää/käytät muuta vastaavaa ohjelmaa, jolloin valitset kohteen, vaikka käyttämäsi ohjelmanimi ei ole listassa.

- käyttöjärjestelmä (Windows XP, Linux)
 tekstinkäsittelyohjelma (Word, Works)
 kuvankäsittelyohjelma (PaintShopPro, Photoshop, Gimp)
 mediasoitin (Real Player, Windows Media Player)
 leikepöytätyöskentely (tiedon kopiointi ja siirtäminen avoimessa asiakirjassa, samassa ohjelmassa kahden tai useamman eri asiakirjan tai eri ohjelmissa avoinna olevien asiakirjojen välillä)
 resurssienhallinta (kansioiden ja tiedostojen hallinta)
 sähköposti (Outlook, Outlook Express, netti.fi, luukku.com)
 pakkausohjelma (WinZip, PowerArchiver)
 selainohjelmat (Internet Explorer, Netscape, Mozilla)
 hakukoneet (Google, AltaVista, Yahoo)
 erilaiset verkkokommunikointiin tarkoitetut ympäristöt (verkko-oppimisympäristöt, keskusteluryhmät, julkaisujärjestelmät, *blogit*)

MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

Appendix 4
2 (6)

MUSEO24: TIEDON LÖYTÄMINEN

4) Otsikointi on selkeä.

- Kyllä
 Ei

5) Kansioiden nimet ovat kuvaavia.

- Kyllä
 Ei

6) Otsikointien (kansiot ja "murupolku") linkitykset ovat toimivia.

- Kyllä
 Ei

7) Hakutoiminto on käytettävissä.

- Kyllä
 Ei

8) Aakkostus toimii kansiorakenteessa.

- Kyllä
 Ei

9) Aakkostus toimii tiedostojen (artikkelit, media) nimissä.

- Kyllä
 Ei

10) Aakkostus toimii FCK Editorissa, kun mediatiedostoja (esim. kuva) lisätään tekstiin.

- Kyllä
 Ei

11) Aakkostus toimii artikkelien nimissä, kun tekstiin lisätään linkki, joka osoittaa julkaisujärjestelmään tallennettuun artikkeliin.

- Kyllä
 Ei

12) Tieto julkaisujärjestelmään tehdyistä muutoksista on saatavilla.

- Kyllä
 Ei

13) Tieto julkaisujärjestelmään tehdyistä muutoksista löytyy helposti.

- Kyllä
 Ei

14) Kirjoita tarvittaessa lyhyt kommentti tiedon löytymisestä.

MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

Appendix 4
3 (6)

MUSEO24: TIEDON YMMÄRTÄMINEN

15) Symbolit (esim. Muokkaa, Poista, Tallenna) erottuvat selkeästi.

- Kyllä
 Ei

16) Symbolit ovat riittävän suurikokoisia.

- Kyllä
 Ei

17) Symbolien kuvakkeet vastaavat hyvin toimintoa.

- Kyllä
 Ei

18) Symbolit ovat helposti esille saatavissa.

- Kyllä
 Ei

19) Symboleihin on yhdistetty tekstitys suomeksi.

- Kyllä
 Ei

20) Ohjelman virheilmoitukset ja muut mahdolliset työnaikaiset ilmoitukset ovat ymmärrettäviä kieliasultaan.

- Kyllä
 Ei

21) Kirjoita tarvittaessa lyhyt kommentti tiedon ymmärtämisestä.

<- Edellinen

Seuraava ->



MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

Appendix 4
4 (6)

MUSEO24: TUKI KÄYTTÄJÄN TOIMILLE - Sisällöntuotantoprojektisi aikana Ohje-toiminto on ollut vasta osittain käytettävissä. Vastaa aiheeseen liittyviin kysymyksiin käytettävissä olevien ohjeiden perusteella.

22) Ohje-toiminto on käytettävissä.

- Kyllä
 Ei

23) Ohje-toiminto on selkeästi muotoiltu (esim. kappalejaot).

- Kyllä
 Ei

24) Ohje-toiminnon teksti on selkokielineen.

- Kyllä
 Ei

25) Ohje-toiminnon tekstit vastaavat työskentelykäytäntöjä.

- Kyllä
 Ei

26) Selaimen kielivalinta on mahdollinen.

- Kyllä
 Ei

27) FCK Editorin tekstikenttä (ts. työtila, jossa kirjoitat ja muokkaat tekstiä) vastaa lopullisen sivun ulkoasua (tehosteet, kuvien sijoittelu, tekstit).

- Kyllä
 Ei

28) FCK Editorissa työstettävänä olevaa tekstisivua voi esikatsella.

- Kyllä
 Ei

29) FAQ (Frequently Asked Questions, Usein kysytyt kysymykset) on käytettävissä.

- Kyllä
 Ei

30) Käyttäjä voi esittää suoraan julkaisujärjestelmästä kysymyksiä järjestelmän ylläpitäjälle (Artio Oy).

- Kyllä
 Ei

31) Käyttäjä voi toimittaa tiedon ongelmatilanteista suoraan julkaisujärjestelmästä järjestelmän ylläpitäjälle (Artio Oy).

- Kyllä
 Ei

32) Kirjoita tarvittaessa lyhyt kommentti tuesta käyttäjän toimille.

MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

MUSEO24: TEKNINEN KÄYTETTÄVYYS

33) Julkaisujärjestelmä toimii samalla tavoin kaikilla käyttämilläsi selaimilla.

Kyllä

Ei

34) Sinulla on teksti, johon lisätään kolme kuvaa. Kuvat olet tuonut mediakansioon. Kaksi kuvista lisätään sivun oikeaan reunaan alakkain, kolmas tekstin alapuolelle. Ennätät kopioida/liittää tekstin ja asetella paikalleen kuvat 10 minuutissa.

Kyllä

Ei

35) Tekstiin voidaan lisätä videoita ja äänitiedostoja.

Kyllä

Ei

36) Saat kaikissa virhetilanteissa virheilmoituksen.

Kyllä

Ei

37) Odottamattomia, ratkaisemattomiksi jääviä virhetilanteita esiintyy.

Kyllä

Ei

38) Voit seurata, mitä olet tehnyt sisältöä tuottaessasi.

Kyllä

Ei

39) Julkaisujärjestelmän eri ominaisuudet toimivat nopeasti.

Kyllä

Ei

40) Julkaisujärjestelmässä voi palauttaa poistetun tiedoston.

Kyllä

Ei

41) Julkaisujärjestelmässä voi seurata muiden tuottamien aineistojen edistymistä.

Kyllä

Ei

42) Kirjoita tarvittaessa lyhyt kommentti teknisestä käytettävyydestä.

MUSEO24-JULKAISUJÄRJESTELMÄ JA YHTEISÖLLINEN SISÄLLÖNTUOTTAMINEN

Appendix 4
6 (6)

MUSEO24: TIEDON ESITTÄMINEN

43) Kun tuot mediakirjastoon 5 kuvaa Siirrä-toiminnolla, ne näkyvät ruudulla kohtuullisen nopeasti.

- Kyllä
 Ei

44) Artikkelin tallennus kestää alle 10 sekuntia.

- Kyllä
 Ei

45) Kansainvälisyys otettu huomioon (kieliversiot).

- Kyllä
 Ei

46) Virheilmoitusten ja muiden ilmoitusten kieli on virheetöntä.

- Kyllä
 Ei

47) Alustan tekstitys on virheetöntä.

- Kyllä
 Ei

48) Artikkelin voi tulostaa vaivattomasti editorista (tulostus sekä asettelu arkille kunnossa).

- Kyllä
 Ei

49) Artikkelin voi tulostaa vaivattomasti esikatselusta (tulostus sekä asettelu arkille kunnossa).

- Kyllä
 Ei

50) Kirjoita tarvittaessa lyhyt kommentti tiedon esittämisestä.

Haluan lähettää vastaukset

<-- Edellinen

Lähetä



HAASTATTELUKYSYMYKSET

- 1 Miksi ja miten lähdit mukaan projektiin?
- 2 Miten mahdollinen taustaorganisaatiosi (yhdistys, työnantaja, "historiikin kohde") suhtautuu projektiin ja sisällön tuottamiseen?

- 3 Kuvaa, miten suoritit tiedon haun ja tiedon työstämisen artikkeliksi.

(Oma apulista: työvälineet, menettelytavat, verkostot, mitä joutunut ottamaan huomioon, esim. tekijänoikeudet jne.)
- 4 Millaista yhteistyötä teit museon henkilökunnan ja/tai muiden sisällöntuottajien kanssa?

(Oma apulista: millaisena koki yhteistyön, joutuiko ottamaan itse yhteyttä vai tarjottiinko apua, ehtikö ylipäättään tutustua toisten tekemiin teksteihin, olisiko halunnut kommentoida tai muokata muiden tekemiä tekstejä)
- 5 Miten yhteisöllisen sisällöntuottamisen ajatus toteutui tutkimusaikana Sinun aineistosi osalta?

(Varakysymys, jos asiat eivät tule esille jo kysymyksen 4 yhteydessä.)
- 6 Mitä ominaisuuksia ja valmiuksia Museo24-julkaisujärjestelmän käyttäminen mielestäsi sisällöntuottajalta edellyttää?
- 7 Teit erillisen arvion julkaisujärjestelmän käytettävyydestä. Uskotko, että julkaisujärjestelmää voisi käyttää ilman museon tms. opastusta? Perustele vastaustasi.

(Tässä ehkä täytyy kuvata haastateltavalle, mitä vapaaehtoisella sisällöntuottamisella tarkoitetaan, esimerkkinä voinee käyttää Wikipediaa.)
- 8 Miten näkemyksesi sisällöntuottamisesta ja julkaisujärjestelmistä on kehittynyt tämän projektin aikana?