The Challenges and Opportunities of Designing National Digital Services for Cross-Border Use

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Abstract. By creating a centralized online access points for Finnish library, archives, and museum materials, the National Library of Finland's web portal, called Finna, is playing an active role in the wider movement to open and expand access to cultural content. But as its ever-expanding online audience is no longer constricted by physical or national borders, the National Library must cope with the challenges of designing personalized user experiences for diverse users. This study contains data from a survey and interviews of users accessing Finnish materials from abroad to determine the nature of potential target audiences for Finna outside of Finland and determine the major usability barriers for this group.

Keywords: Digital library · User studies · Open knowledge

1 Introduction

We live in a world connected by a global internet but ruled by local laws [15]. Although digital platforms are providing widespread access to the cultural heritage products that libraries, archives, and museums hold, publicly funded digital access portals are inherently tied to locally situated governing bodies. Therefore, while the potential end-users accessing digital cultural heritage materials are heterogeneous and geographically dispersed, the bodies that administer the platforms and services are generally location-based and more culturally, linguistically, and legally homogenous. As public services sectors try to shift to an increasingly user-centric digital model, it will be necessary to grapple with the fundamental differences between the administrators and users of public services in the digital space. By addressing these differences it may be possible to improve, circumvent, or mitigate poor user experiences in the public service sector.

In this paper we address the challenge of providing public services for heterogeneous audiences by presenting a study, in which we test the service concept for a national digital library service, namely the Finnish Digital Library called Finna. The National Library of Finland is responsible for the development and maintenance of the service. Finna is one of the ambitious digital library enterprises that have been launched all over the globe in order to unite the vast repositories of cultural heritage hosted by libraries, archives, and museums. The investments on these digital libraries are noteworthy, and

most of the funding comes usually from the public sector. The stakeholders have a keen interest in the usability of these services, and they require that their audiences' needs be met. There is a general aim that new technologies attract new users to use and engage with cultural heritage. Digital library user studies, however, still seem to define end-users based on the pre-existing user pool, and categorize the users based on the perspective of how they fit into the management of digital library content [5].

The digitalization has, on the one hand, enabled the construction of newer and better services for accessing and interacting with cultural heritage. On the other hand, it has increased the feeling of inadequacy among organizations maintaining the collections of culture and science, because digital technologies and the preservation of digital repositories require wider competencies and resources than one organization can hold. Open solutions, i.e., open access, open data, and open source, have been considered as an opportunity to preserve public services [8]. The term "open knowledge" refers to data and content that is free to access, use, modify, and share. Digital information formats have made it possible for an increasingly large segment of humanity to access and use content that contributes to knowledge creation, but national borders and linguistic differences still act as barriers to access in the digital cultural heritage space. In 2014, of the approximately 756,000 visits to Finna, 92.9 % came from Finland. The concept of open knowledge seeks take advantage of the opportunities provided by digital platforms for cultural heritage by opening up processes to the public's diverse skills and interpretations and involving audiences in the design and development of cultural heritage processes [12].

The purpose of our work was to elaborate upon these challenges that reflect on the design, development, and use of Finna. Our first research question was: *How can open digital cultural heritage platforms create a positive user experience for audiences that are diverse, geographically dispersed, and sometimes undefined?* We also wanted to know, *how audiences perceive the possibilities of open knowledge*. To study these questions, we tested the service concept of Finna on a target audience outside of Finland: Finnish studies students and professors at universities across the United States. Finna consolidates access to all of the library, archives, and museum materials in Finland through one centralized web service and platform. Thus, it could attract our target group, but there also may be points at which national, cultural, or linguistic barriers exist.

The paper begins with some relevant concepts and research on the subject, then describes the methods of conducting the test and some key results. We end the paper with a brief discussion on the value of opening cultural heritage materials to wider audiences.

2 Background

2.1 Digital Libraries as Open Knowledge Platforms

The Finna portal is one initiative within a wider movement to open up access to cultural heritage content in ways that increase accessibility, expand audiences, and improve the user experience by taking advantage of technological innovations, such as the Web and

sophisticated search engine mechanisms. As a type of digital library, Finna is operating as an open knowledge platform that has the potential to increase accessibility to Finland's cultural heritage content and innovate the information-gathering experience.

Created and funded by the European Commission's Information Society and Media project, the DELOS Network of Excellence on Digital Libraries created a report [1] that contains background research, overarching theory, and long-term initiatives on the policy level for digital libraries. The DELOS report sees the role of the library as shifting its role from an institution that stores and retrieves information to one that facilitates collaboration and interaction. This shift is a move from a content-centric system to person-centric systems with the aim of providing users with personalized experiences. While the new digital library model is intended to evolve toward a more participatory user-centric focus across the European Union, the report also explains that in the digital space there are no physical or temporal barriers defining end-user groups. Therefore, it is increasingly important that studies such as this one explore the ways that libraries and information are engaging end-users across borders and draw findings that can create an optimal user experience for diverse user communities.

A collaborative study conducted by Jaeger et al. [6] investigated the role that information intermediaries, and specifically public libraries, play in the relationship between citizens and public services, with a specific emphasis on the importance of facilitating digital inclusion. The authors acknowledge the challenges of reaching across language barriers, attitudes toward technology, and education about government services to reach a wide user base and deliver inclusive services. Using a combination of quantitative and qualitative data gathered through surveys, case studies, interview, site visits, and usability and accessibility testing, the authors measured the role that libraries play in delivering e-services as end-users operating in local, intermediate, and high-level world of information flow. Based on the ways that the study found that the Internet and online social networks can bridge small information worlds, the authors found that at the macro level public services should make information available in the different formats, languages, and venues that smaller worlds of user groups require.

According to Salgado and Marttila [12], strategies for increasing the general public's engagement with cultural heritage professionals, processes, and practices should be based on principles of social inclusion, accessibility, participation, and openness. As Salgado and Marttila address in their study, one purpose for openness in cultural heritage is to engage with new audiences and widening cultural heritage communities "using alternative means" that the cultural heritage professionals may not have foreseen. The principle of facilitating openness and audience participation is one solution within the cultural heritage field for designing positive user experiences for new or unknown audiences and widening the impact of cultural heritage in society.

2.2 Design for Diverse Audiences

Past research relating to user-centered design for public services and heterogeneous populations has cut across fields of anthropology, human-computer interaction, inter-action design, e-government, information science, and social networks. As such a broad

and encompassing topic, there has been ample research done using both qualitative and quantitative techniques in the public, private, and third sectors related to how digital platforms can respond to diverse user groups in user-centered design practices.

The principles of universal design have guided the development of public services for all types of audiences. Erlandson [3] draws upon the joint principles of accessible and universal design: Instead of addressing products, services, and processes to mainstream audiences alone, our society should recognize the needs of everyone regardless of his/her abilities. The origins of universal design lie in educational settings, where equal access to information was recognized as a necessity. Although universal design focuses on recommendations for how to enable interaction with technology for people with different disabilities, some universal design concepts, e.g. design for adaptation, can be useful in other contexts. Gassman and Reepmeyer [4] also emphasize the economical potential of universal design approach. They argue that new products and innovations should be designed and marketed with all age groups in mind, because that substantially increases the target markets.

There has been more extensive research conducted on how to account for diverse audiences in user-experience design in the private sector. As companies find unexpected audiences around the world in an increasingly globalized economy, there is a strong commercial use case for accommodating for diverse user needs in the design process. Marcus and Gould [9] argue that by incorporating globalization and localization concepts into design processes, it is possible to tailor user interfaces to meet the needs of diverse audiences across the globe. They encourage designers to acquaint themselves with cultural dimension, i.e., culture-dependent patterns of thinking, feeling, and acting, and adjust their design to them.

Shah [13] has outlined the constant tension between designing for localized versus globalized audiences. She has acknowledged that online culture may become increasingly more homogenous. Cyr [2] also argues that users prefer to interact with products services that seem to be designed specifically for them. Shah [13] concludes that globalization and localization of digital services must work in tandem and separates the two concepts into two separate functions: First, internationalization refers to the back-end processes of creating modular and accessible global website templates. Second, localization refers to the front-end customization where websites are adapted to meet expectations of a culturally diverse user group.

Quesenbery and Szuc [11] led a series of 65 interviews with user experience professionals around the world to study how national and cultural differences shape the practice of user experience design. Their findings reveal the way that products and services that are originally developed for a local market find unexpected user bases and target audiences around the world facilitated by new communication technologies and providing businesses and organizations with unforeseen opportunities. Quesenbery and Szuc found that the companies with the strongest global strategies were constantly researching and watching market information across border s and ensuring that they experiences they delivered worked for many places and cultures.

3   Methods and Data

3.1   Approach: From Usability to Testing of Service Concept

Usability is one of the leading principles of Finna's development, which means that user-centered design methodology has been applied in the development process. From the beginning of the project in 2008, resources have been assigned to usability work. In 2009 the Usability Working Group made a Usability Plan, which has been updated annually. Different kinds of user-centered activities have been conducted throughout the development of the service. E.g., target user groups have been involved in iterative testing of the service [7]. Thus, we had a foundation of usability as a core institutional value and data from which to build our study.

Our aim was to reach students and professors of Finnish studies across the United States. Due to the uncertainty of reaching a large enough sample for a single survey, we decided to combine two methods: we planned a questionnaire to all potential respondents and an interview to selected key informants.

In this study we were targeting cultural heritage users who probably were not familiar with Finna beforehand. By asking them about their expectations and gathering feedback on the current service concept, our work actually bordered on the field of marketing research. In marketing, users' response to an idea can be tested before or after the product or service is introduced to the market. Evolving services, and participatory methods of design and development, known as co-design or co-creation, have also gained popularity in service marketing [10]. Our priority, however, was to get input for further development of the service.

3.2   Survey to Finnish Students and Professors in the United States

The original motivation for creating this survey was to identify points at which national, cultural, and linguistic barriers exist in digital cultural heritage portals. It started with the research questions: *Are there potential target audiences for Finna outside of Finland? If so, what is deterring this audience from using Finna?* Therefore, we planned to create a survey that investigates how non-Finnish people use and experience Finna by asking non-Finns about their awareness of Finna, possible use cases or motivations for the use of Finna, and how they currently access Finnish cultural heritage materials. During this study, we sought opportunities for collaboration with the Digital Public Library of America (DPLA), and thought that there might be increased opportunities for further synergy if we chose our target groups from the United States.

We created the questionnaire to target students engaged in the study of Finnish language, culture, history, literature, politics, or any other field that might benefit from the use of materials from Finnish libraries, archives, museums, or other cultural heritage institution at colleges or universities located across the United States.

The survey included a total of 14 questions, 11 of which were multiple-choice questions with a range of answer options and three of which were open-ended.

We divided the questions into three sections. The first section addressed how students access information and different formats. The second section addressed prior knowledge of concepts related to open knowledge. The third and final section addressed current and potential future use of social and collaborative media. One final question asked about prior awareness of the Finna web portal.

We contacted survey participants via their Finnish studies professors. The Fulbright Finland Center provided a list of the universities in the United States that provide Finnish studies courses. The list included 11 universities and the names and contact information of the individual professors who teach the courses. We contacted each of the 28 professors and received responses from 25 professors, nine of whom agreed to participate in the survey. We estimated that a pool of about 70 students would receive the link to the survey. Of the nine original professors who agreed to participate, four confirmed that they distributed it to their students.

After two rounds of pre-testing with 12 participants representative of the survey's target audience, we distributed the survey and kept it open for one month. A total of 11 students completed the survey. 24 students started the survey but did not complete it and 9 students opened the survey without responding to any questions. We administered the survey using an online questionnaire hosted on a subscription-based survey tool and professors distributed the to his/her students through via a link sent over email.

3.3   Interviews of Key Informants

Based on the findings from the survey, we conducted follow-up interviews with the purpose of speaking to real potential users in our target audience and gather the detailed use cases for their use of Finna. We composed two sets of nine interview questions, one for students and one for professors, to be conducted in a semi-structured style.

We recruited participants for the interviews by contacting the four professors who confirmed that they distributed the survey and asking them to send around an email asking students to participate in the interview. Students who were interested in participating in the interview contacted us via email. We also asked the professors if they would be willing to participate in an interview.

We conducted interviews with four students at the same university who had completed varying levels of Finnish language courses and had not participated in the survey. We interviewed three professors at three different universities: one a professor of Finnish language, one of Finnish culture and literature with more of a anthropological focus, and one of Finish theater studies. We conducted the interviews over video chatting software, asking follow-up questions when appropriate. At the end of the interview, we requested that the interviewees navigate to the National View of Finna at the URL finna.fi and we asked them to speak aloud during their initial experience with the service. We asked probing questions based on their observations and provided basic instructions on how to use the interface if they seemed to need help (Fig. 1).
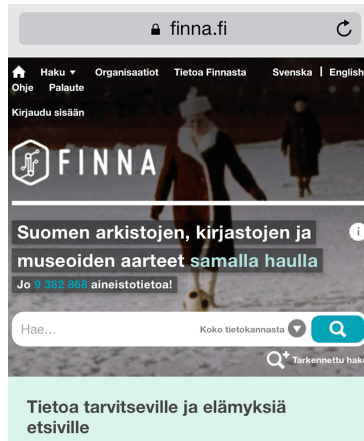
Fig. 1. The National View of Finna on a mobile browser at the time of this study

4   Results and Conclusions

4.1   The Survey: Access Formats and Barriers

While the results from the survey were too few to be conclusive, they did suggest trends in how university students in the United States are accessing information in general and in Finnish. The results also revealed clear patterns in the types of barriers that students encounter when trying to access cultural heritage materials.

The open-ended question about the most common or significant barriers that the participants encounter when trying to access content revealed that the most common barriers are: content that is not accessible online, content that is restricted based on rights management or pay walls, language barriers, and format inaccessibility.

The survey results showed that clear majorities of students access books in physical building while clear majorities access pictures, photographs, journals, articles, newspapers, music, sound recordings, and videos on digital platforms. Of the survey responses to the open-ended question about how students find out where to look for materials that they want or need to access from libraries, archives, or museums, seven responded that they would start with an online search either in a general search engine or on the library's webpage while four responded that they would make inquiries at the library building.

Survey respondents also accessed materials in Finnish language in most of the formats covered on the survey, including books, pictures, journals, articles, newspapers, music, video, and archives, either for studies or hobbies and leisure, in large majorities. Studies was the most popular reason for accessing materials in Finnish in each category, suggesting that students of Finnish studies would be a more likely audience for Finna than other members of the US population with an interest in Finland.

Of the open knowledge concepts, participants were the most familiar with the concepts of digitization, public domain, and crowdsourcing. Responses showed the

participants were the least familiar with the concepts of "Creative Commons" and metadata. They were at least comfortably familiar with the concepts of open access, open data, and open content, but less familiar with the concept of linked data or the semantic web. No participant was familiar with the term "OpenGLAM," suggesting that the term is not clear or descriptive of the movement to audiences outside of it. While these results would contain more validity with more responses, they reveal a general trend toward familiarity with open knowledge terms that are descriptive in language that the layperson understands and less familiarity with technical concepts or names of concepts that are not descriptive.

Although these findings would also need further research to be conclusive, they show a general trend that participants found open content to be most useful to the degree that it makes it easier for them to engage in their work as individuals by making content easier to find and reducing legal complexities. For these respondents, community-building or institutional accountability were less obvious advantages to open content. One of the most conclusive results of the survey was that 9 of the 11 respondents were not familiar with Finna.

4.2   The Interviews with Students: Curiosity Meets Contextual Barriers

Two of the four students we interviewed were motivated to study Finnish because they have Finnish ancestry, one has a close friend who is Finnish, and the fourth was attracted to Finnish by its exoticism and an interest in studies that are strong in Finland, such as digital media and sustainability. The two students with ancestry were more advanced in their Finnish language studies and the other two were in their second semester of beginning Finnish.

All four students had trouble understanding the full range of content types included under the umbrella term "cultural heritage." For example, students would say that they rarely access cultural heritage after hearing an explanation of what the term means, but then go on to talk about frequently accessing Finnish materials or information that would be categorized as cultural heritage on YouTube or Wikipedia. When they do interact with materials on any subject that they think of as cultural heritage it is usually through the university library or for specific courses on a learning management system. Although one student expressed a preference for accessing books and articles in analog format, the students generally access materials online because there are many Finnish materials available and, as one said, "it's just quicker."

Due to an interest in their Finnish ancestry, both students with Finnish heritage had accessed Finnish parish records as part of personal genealogy projects. One of them also likes to find fun articles and resources about Finland in English through groups that she follows on Facebook, such as a Finnish language summer school program and government-sponsored tourism information. These two students also look to local cultural institutions, such as the Finnish-American Chamber of Commerce or the American Swedish Institute, to find information about local Finnish cultural events and resources.

Barriers to accessing Finnish materials that multiple students encountered in the past were videos or articles that were inaccessible or stored behind a pay wall for

visitors coming from an IP address outside of Finland. One student described her inability to find podcasts in simple Finnish language after multiple attempts starting from search engines.

When we asked him to navigate to finna.fi, three students used a web browser on their computers and one student opted to open the website on his smartphone. Most of the initial reactions were in regards to the fact that the website is in Finnish. When one student, who is a Finnish language beginner, came to the website his initial reaction was "Ahh, all Finnish, scary!" After about 10 s he noticed that there is also an English language option on the website. The other beginner was also deterred from navigating the website from the language barrier and was relying on Google Chrome to auto- matically convert the site using Google's embedded translating services, which was not happening on the home page. She never found Finna's English language option. The two more advanced students began navigating the site in Finnish and both saw it as a good opportunity to practice their Finnish. One took about 20 s to notice that there was an English language option, and once she did she switched to the English version of the site. The other advanced Finnish student expressed the opinion that most other students taking Finnish would prefer to access the site in English because Finnish is very dissimilar to English so it is hard to understand unknown words. The language barrier seemed like a significant barrier for students, especially because the link to the English-language option was not in a location that they found intuitive. They were not experienced, as many foreigners are who live in Finland, with the fact that many Finnish websites are also available in both English and Swedish.

Every student enjoyed the visual design of the user interface and enjoyed the photographs on the homepage. When asked, every student expressed the opinion that the site could be useful for their studies and a resource for leisure time pursuits. Based on their normal practice of accessing materials online and their perception that it can be difficult to find the types of Finnish materials that they are looking for, every student had a clear use case for the Finna website.

4.3   The Interviews with Professors: It's About Knowing Where to Look

According to the three professors we interviewed, the largest barrier to access for Finnish materials outside of the traditional course materials is not knowing where to look, not knowing which keywords to use to find materials of interest, and a lack of financial resources for materials that are not freely available. A typical discovery process for both the professor and students involves unstructured searching online, usually beginning with a search engine, that both depends on and falls prey to the haphazard and serendipitous search process that is typical of unstructured knowledge discovery online.

The professors rely on authoritative sources and channels, such as the CIMO community of Finnish teachers abroad that is active both online and at an annual conference, lists that groups such as Finn Lectura and Akateeminen kirjakauppa curate, the Journal of Finnish studies, and knowledgeable colleagues and friends.

Although currently all three professors use creative and resourceful methods for finding Finnish cultural heritage materials to use in their courses, sometimes

lending out items from their personal libraries or finding content on platforms such as YouTube, there was a strong interest in finding authoritative, curated resources, especially ones geared for teaching Finnish studies abroad.

The professors all found that the most consistent motivation for their students to study Finnish language is some kind of personal connection to Finland, usually because they have ancestry or heritage from Finland. Others have a close personal connection through spouses, partners, or friends that motivates them to want to learn the Finnish language.

Upon interacting with the Finna interface, the professors all remarked that they liked the visual layout and quickly commented on the site's rich content. The Finnish language professor's main question was exactly what content the site provides access to. He expressed the opinion that when visiting an institution's digital repository it is evident that all of the content comes from that one institution, but in the case of an aggregation like Finna, he wanted more clarity as to exactly which institutions contribute content and how comprehensive the collections are. Two of the professors explained that they would use the website in Finnish because, in past experience, even websites that offer language translations are not as fully functional in secondary languages, so the assumption is that it would be the same for Finna.

4.4   Lessons Learned

In evaluating our methods for this study, there were several areas that could be improved. Given our limited sample set for the survey, it would have been wiser to take a more active role in recruiting students to participate in the survey or gone with a more qualitative approach by conducting interviews from the outset. We could have used more innovative methods to recruit participants, such as via social media.

5   Discussion

The aim of this study was to fill in a dearth of research in terms of the specific issues that public digital library services may encounter as they serve patrons across national borders and cultures on a large scale. Through concept testing that involved a survey and an interview of a key informant, the study of potential users outside of Finland was supposed to reveal whether there is target audience for Finna outside of Finland.

The results provided information for evaluating how Finna could be improved for external audiences by proactively researching the nature of Finna's potentially heterogeneous user base. On the basis of the results, this paper discussed the questions: *Do public services have an obligation to prioritize the user experiences of users within their national borders? What are the advantages and disadvantages of running digital cultural heritage portals through centralized, public institutions?*

Based on the results of this study, restrictions to patrons trying to use Finna from outside of Finland remain. As confirmed in the survey results, there are certain cultural heritage materials that patrons still access primarily in physical or analog formats, either by choice or necessity. For content that is only available in a physical format or is

subject to certain licenses or restrictions, Finna still plays a role in the information ecosystem by serving as a portal. Users can discover analog materials on Finna and find details about where the physical materials are located, and potentially even reserve the materials at a physical site. There are certain licensed materials that require payments to access online but are fully available at physical locations, but this is only useful to users who can travel to or within Finland.

Public cultural heritage institutions have an especially strong professional mandate to serve the entire public, not just cater to the majority population [6, 14]. Via new digital platforms, users can potentially discover, view, and interact with all of the libraries, archives, and museum materials in public holdings anywhere they have access to the internet. Such widespread and distributed access offers an opportunity for breaking down traditional barriers to knowledge and opening content to a dispersed, heterogeneous population. This is, in itself, a major triumph for the accessibility and usability of public services.

It is in the interest of cultural heritage institutions to provide broader access to their materials. The institutions are already acquiring, organizing, and preserving cultural heritage materials. The impact value comes from the use of the materials, which institutions are increasingly being required to prove through analytics and evaluations. Therefore, it is to the benefit of the public cultural heritage sector to provide a positive user experience for as large and heterogeneous audience as possible.

In the future, it would be important to do further user research and outreach with professors of Finnish studies and active participants in Finnish cultural societies abroad. Based on the results of this study, it is clear that there is an audience outside of Finland that would benefit from using Finna. Everyone who participated in our study seemed to engage with Finland through a gateway composed of educational institutions, cultural institutions, or friends and family. By targeting these gatekeepers, or facilitators, we could reach a large target audience with a more focused and effective initial approach. It would also be valuable to expand the reaches of our study by conducting subsequent studies on how Finnish students of, e.g., history and English language, can utilize the materials on a foreign cultural heritage portal, such as the Digital Library of America. Such a study could provide interesting information for the development of digital libraries in general, and an opportunity to compare the results to the ones of this study.

References

1. Candela, L. (Ed.): The Digital Library Reference Model. DL.org Project Deliverable (2010)
2. Cyr, D.: Modeling Web Site Design Across Cultures: Relationships to Trust, Satisfaction, and E-Loyalty. J. Manage. Inf. Syst. **24**(4), 47–72 (2008)
3. Erlandson, R.F.: Universal and Accessible Design for Products, Services, and Processes. Taylor & Francis, Boca Raton (2008)

4. Gassmann, O., Reepmeyer, G.: Universal design - innovations for all ages. In: Kohlbacher, F., Herstatt, C. (eds.) The Silver Market Phenomenon. Marketing and Innovation in the Aging Society, 2nd edn, pp. 125–140. Springer, Heidelberg (2011)

5. Heraldio, R., Fernández-Amorós, D., Caberizo, F.J., Herrera-Viedma, E.: A review of quality evaluation of digital libraries based on users perceptions. J. Inf. Sci. **38**(3), 269–283 (2012)

6. Jaeger, J., Gorham, U., Bertot, J., Greene Taylor, H., Larson, E., Lincoln, R., Lazar, J., Wentz, B.: Connecting government, libraries and communities: Information behavior theory and information intermediaries in the design of LibEGov.org. First Monday 19 (11). (2014)

7. Kautonen, H.: Evaluating digital library's service concept and pre-launch implementation.In: Proceedings of AFHE, pp. 111–122. AHFE, USA (2014)

8. Kruse, F., Thestrup, J.B.: Research libraries new role in research data management, current trends and visions in denmark. Liber Q. **23**(4), 336–357 (2014). URN:NBN:NL: UI:10-1-116068 (2014)

9. Marcus, A., Gould, E.W.: Globalization, localization, and cross-cultural user interface design. In: Jacko, J.A. (ed.) The Human-Computer Interaction Handbook Fundamentals, Evolving Technologies, and Emerging Applications, 3rd edn, pp. 341–366. Taylor & Francis, Boca Raton (2012)

10. Rust, R.T., Huang, M.-H.: Handbook Of Service Marketing Research. Edward Elgar Publishing, Cheltenham (2014)

11. Quesenbery, W., Szuc, D.: Global UX: Design and Research in a Connected World. Elsevier, Waltham (2012)

12. Salgado, M., Marttila, S.: Discussions on inclusive, participative and open museums. In: NODEM 2013 Conference Proceedings. Interactive Institute Swedish ICT, Sweden (2013)

13. Shah, N.: Cross cultural considerations for user interface design. Hum. Factors Int. Newsl. **5**(3), 299–305 (2013)

14. Wigell-Ryynänen, B.: Supporting societies needs: a model framework for developing a policy for libraries.In: National Public Library Policy in Finland - A Case Study. Network for Information and Digital Access (NIDA), Helsinki, Finland (2011)

15. Zittrain, J.: Be Careful What You Ask For: Reconciling a Global Internet and Local Law. Who Rules The Net?: Internet Governance and Jurisdiction. pp. 13–29. The Cato Institute, Washington (2003)