

Smoothing away the relic of the past: Case archival control UI

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Abstract

This work is a natural continuum for the development of our current archival control UI and for the survey conducted between the end of 2011 and at the beginning of 2012, which results were presented in an Archiving 2012 conference. Time has now come to transform the gained know-how and theoretical knowledge into action. We decided to extend the existing operational models and designs by acquiring a new and fresh touch by utilizing a combination of service designers, innovative methods, agile development and open source.

Introduction

The world has been moving away from an analog way of doing business for decades. This movement has also reached the world of paper archives, even as far as in Nigeria, Africa where archival collections have been digitized and put into OPACs (Online Public Access Catalogues) [3]. In general this transformation is considered as advancement from an average end user point of view. He or She is no longer forced to personally visit the actual archive just to be able to utilize some old and cumbersome method for seeking the required information.

In spite of the advancement to the digital world, the presence of an old relic is still strong in the field of archives. Paper archives were, and still are, based on a strict hierarchical model. In many cases, the archival structure has been moved as it is into digital archives. In the worst case scenario users are forced to use the 'new and shiny' digital archive exactly the same way as with a paper archive, by browsing the tree structure. When the end users of digital archives are asked about usability or ease of use they will likely start to laugh since usability and UI:s are something that have been dragged in from the 20th century. This is far from being user friendly.

The OSA-project itself, that is being used as a reference throughout this paper, is nothing groundbreaking, it is an open source project and it is implemented with agile methods. Novelty value comes from the utilization of UCD (User Centered Design) methods [12], such as service concepts, service blueprints, customer profiling and user experience design. From the very beginning of this project, the intention has been to gain benefits from these methods as much as possible.

Background

Countless amount of software has flopped due to numerous reasons, including, defective operation, missing support, usability issues, fuzzy UI (User Interface), illogical workflow or general bad user experience [1]. Windows Vista is a perfect example about an application that was loaded with new functionalities and candy UI feature such as aero. Still it failed to receive more than status of being hated among end users due to compatibility issues, usability issues and over active user account control. However, according to multiple sources the biggest issue in Windows Vista was its

differences to the de-facto standard, Windows XP. It is a known fact from the field of psychology that people tend to fear and resist changes unless they think that they had a possibility to affect. There are many examples of how technically reasonable application or solution fails. The excuse for failure is often a permutation of three things; bad market situation, undercapitalized development and wrong people in development [9]. From the authors' point of view the biggest reason for failure is to do things as they have always been done, without end user participation.

This is the case in virtually every computer application or software that was built in the 20th century. Back in these early days, people didn't have a worthy possibility to switch into an open source alternative or express demands towards the system vendor, unless the demand came with liquidity.

Fortunately, in the 21st century the direction has been towards participatory design methodologies [12], open source and more precisely defined system requirements as early as in a call for tenders phase [10]. This movement has brought end users closer to the development process, but there are still some old fossil systems and vendors who live in the last century. Roughly speaking, when the dedication towards a certain operational area increases, more IT oriented the solution will be. This is not because vendors are careless; there just hasn't been any completion in the field. Therefore the customers haven't had any alternatives and they have been forced to take what the vendor was willing to offer.

This has been, and still is, the general situation in the field of digital archiving. OSA-project has been trying to bring some relief to this situation by utilizing novelty methods in designing, implementing and testing the new archival control UI. Work has been going on since the results from the archival user survey were gained and analyzed thoroughly [2]. Driving force has been and will be, to conduct something concrete by transforming the collected theoretical knowledge from the actual end users of digital archives into tangible digital archive user experience.

Novelty methods

Digital archives are a model example of relying rules and regulations from the world of paper, therefore it is very important to finally dump the relic of the past and gain benefits from novelty design methods. Different service design methods were utilized in receiving the information from the users of digital archives. Intention was to gain answers to questions such as: What kind of work users do and how? How do users process information? What information is relevant and what is not? Do all users have the same needs or do they vary? The main focus was placed on user's needs and general workflow. Finally, users were empowered by involving them in the R&D (Research and development) process. Users were also given a possibility to design their own tools with co-creation methods.

In the following chapters, the service design methods that were utilized during the OSA-project are introduced. Even though

these subchapters point out specific methods, it is very important to choose the appropriate methods according to required results, available resources and knowhow of the participating persons. One of the important lessons learned while utilizing any design method is to carefully document the whole process, since a need to come back may arise many times during the project.

Shadowing

The first of the utilized methods was shadowing. Shadowing is normally used in observing users of services that need developing. It is an ethnographic method that gives detailed information about the interaction process between the user and the system. This method allowed us to collect information that would be difficult to spot by interviewing or by other verbal or cognitive methods. Utilizing this method can provide information about why user is, or is not using specific part or some element of the service. It can also reveal the operational models of users [7].

Structured interviews

Observing can show what users do and how they behave, but won't necessarily give information on why they behave on a certain pattern, thus interviews were needed. In the interviews, a structured set of questions was used, but it was flexibly extended with additional questions in case the interviewed had something to add. The interviews were selected as another ethnographic method of collecting information from the users, because of its easiness to provide the needed information. The structured questions were designed to give as much information of the interviewed as possible. There were six persons to participate in the interviews. It was important to make the interviewed to open up through the process because then the true needs, desires, points of view and motivations were discovered. The interviews uncovered a lot of information that could be formed into models of how the actual end users want to work.

User profiling and personas

Shadowing and interviews produced a lot of good ideas and viewpoints that were turned into a user profiles. The user profiles were visualized with a method called 'personas'. Personas can be considered as realistic snapshots of true users and they represent the main qualities, demographics, behaviors and goals of the actual users. Personas help to understand whom to develop the services to and why certain solutions have to be made in a certain way. With personas, your end user has a face, personality, concrete properties that you can relate to and use as a base of your UI design solutions. Personas can be used as a developing tool when creating alternative concepts and analyzing their potential [5]. Personas are presented with simple cards that gave the information about what the individual persona needed or wanted from the system. During this development project, total of five different personas were created and utilized. Figure 1, presents two of the created personas, in Finnish language.

Service story and blueprints

After user profiling, a service design method called the service story was taken into use. This method is a written story on how the user is using the software and this story is often used as a base for the service blueprint. The service blueprint is a



visualization model that shows all the steps of the service in a chronological order from the selected stakeholders' point of view.

Figure 1. Two of the created personas in Finnish

There are usually four different stages in the service blueprint:

1. What the user is trying to achieve with the software
2. Users view to interfaces and responses, called the front office.
3. Supporting services that the software provides for the user to ease the process.
4. The invisible back office actions that need to happen for the UI to behave as user friendly as possible.

Furthermore, some concrete benchmarking examples for UI were added to the service blueprints in order to ease the work of programmers.

Integrating user experience design

It has been estimated that every dollar spent on UX brings in between \$2 and \$200 in return. Also "once a piece of software makes it into the field, the cost of fixing an error can be 100 times as high as it would have been during the development stage"[8]. These both equally mean that sooner you consider the user aspects in the development project, the better. However, it requires a lot more know-how than the average Joe possesses to successfully integrate user experience design into the ordinary development

workflow [4]. Even if a correct person for the UX work is found, there are still many obstacles including restrictive management, fear of expenses, limited amount of time, etc. that can be encountered during the development process [1].

Digital archiving

We are all aware, that from the technical point of view digital archives are solely information technology. Development around information technology on the other hand has been utilizing different UCD methods for a long time, but the archival field hasn't, why? Simply because digital archiving has been a very restricted playground for a handful of players and there hasn't been any competition.

Naturally there exist service providers that offer long term data storages to enterprises and different cloud spaces to consumers but these don't fill the requirements of a true digital archive. Universities tend to store their research data and thesis into different backed up storages and companies store their business and accounting information into servers or USB-drives. These are both dedicated purposes and serve mainly as a storage space and backup solution.

Few big software vendors in Finland have gained the Finnish National Archive's SÄHKE2 certificate, which have given them a national permission to store information only in electronic format, but their services aren't meant to be used by normal citizens. Furthermore, from the juridical point of view SÄHKE isn't legally binding at EU level thus it hasn't been notified as a technical regulation by EU authorities.

In Finland, there also is an ongoing work around long-term digital preservation in the National Digital Library of Finland. This particular solution is only meant for the digital cultural heritage materials, and furthermore this solution isn't even operational yet [11].

Finally the absence of knowledge about the meaning of true digital archive causes trouble. It is an unfortunate but very common to e.g. meet a financial administration secretary how considers either document management systems or information management systems as an archive. Furthermore if a teenager is asked how he or she ensures that the precious photos stay in safe, the most probable answer is Facebook or some other widely used social media platform. However, it's not just the average Joes that have misconceptions about digital archives. Some scientist call archives as "data tombs"[13], which are almost never meant to be opened, for example. With knowledge and a core understanding of the field comes the enlightenment that there are differences between the dark and active archives.

Currently in Finland there is only one true audited digital preservation platform that offers services for citizens also and that's us at the Mikkeli University of Applied Sciences.

Development process

This development process originates partially from the survey results [2] and partially from the long term development work around our digital archive. Since we are currently the only noteworthy actor in the field of digital archiving for citizens in Finland, we are not forced to do anything against our will. However our development has always been a customer oriented and the intention has been to give them the best user experience as

possible. Therefore, while considering the next big archival control UI we decided to utilize the above described methods in reaching this target for the sake of our end users.

The actual pre-development process for OSA-project began as early as 2011 in the form of gathering ideas and possible partners. The project started 01/03/2012 and it continues until 31/12/2014. This paper only considers the novel parts of the development project and therefore the general parts are left out.

Information gathering and analysis

Deeper analyses for the survey results were given in the 2012 proceedings [2], but for the sake of new readers a quick briefing is given here in a form of table 1. The survey was about collecting user data from archival users to be able to model the true archival user experience.

Table 1: 2012 survey summary

Question	Result
Open fields about positively affecting features	Ease of use, information retrieval and speed are the most important
Importance of user, system and context aspects	System aspect is clearly the most important
Importance of system aspect attributes	Information reliability, stability, data security, ease of use, usability, functionality, user interface, consistency of functionality are the most important
Attribute dependent on gender, age and experience	*Information reliability and training depend on gender *Functionality, error management, consistency and functionality depend on age *Rules and regulations, training and instructions depend on experience

The rest of the reinforcing information was gathered by Tytti Vuorikari by utilizing shadowing and structured interviews among current digital archive users. Dive into the raw data was the greatest part of the process. It was like a treasure hunt. All the information was there, we just needed to find and analyze it.

Analyzing raw data, when done properly, can take a lot of time, but it can also reveal multiple solutions to the problem at hand. In this case, thorough analysis gave many good ideas that could be implemented in the software right away. Analysis, for example, revealed a clear need for some sort of internal place to store the found data or information. From that finding a service design concept called the "Kori" (basket) was designed. In the "Kori" user can collect and organized the files that he/she is interested in therefore it is similar to a shopping basket in web shops. Also functions for sharing and commenting on the collected items between users were designed into the OSA user interface. Lastly, some of the knowledge that was found during the analysis can be turned into guidelines for further development.

Workflow and testing

It is challenging to identify accurate phases of this project since everything was done with agile method called Scrum, which not even comparable to the linear waterfall model. The Scrum method contains a backlog that contains an ordered list of requirements, features, bug fixes and other non-functional requirements. In other words, backlog contains everything that is required in building a completely viable software solution.

In the case of OSA project, sprints followed requirement specification and two dimensional prioritization table (backlog) that was created in the earlier Capture project. A decision was made that alpha version should include all features with priority 2 or less and additionally one iteration of level prioritization 3 completed. In the beta release, all features with priority 3 or less should be done; level 4 priorities in preliminary execution and level 5 should have estimation about its execution schedule. It was however decided that the feedback and enhancement suggestions coming from the customers and alpha testers will be given a higher prioritization than the designed new features at Beta release. Therefore the beta release doesn't fulfill all the designed requirements, but instead it adds features and functionalities that were identified as important by our customers [6].

When the service designers began working with UI, usability, user experience or interaction oriented tasks from the backlog, they were still newbies in the field of digital archiving. From our point of view this was an optimum situations thus the designers were still unaffected by the relics of the old archival world. Therefore, we received a fresh point of view, from which it was easy to move

on in co-operation with programmers and substance users.

All the design phases conducted by service designers used and experimented with common methods in service design. The analyzing phase started with multiple development meetings and a week-long development session with the end users. During that week shadowing and interviewing techniques were used. At the end of the week a co-creation workshop with the end users was kept. In a workshop, the participants made their own paper prototype UI by using paper and pen. These prototypes, shown in figure X were used in the R&D process further on.

During the development, either real or Skype based meetings have been arranged on a weekly basis between project developers and project participants, which in this case are the clients. Furthermore, participants have been given a possibility to test different releases of the OSA archival control UI and give feedback and suggestions about it.

A beta version will be released for public testing during the first week of March. Also a complete code base will be released. Naturally the final release will also be public according to the spirit of open source development.

Results

Heuristic evaluation checklist was utilized as well as UX expert evaluation for analyzing the OSA archival control UI. Results were compared against the currently used YKSA control UI, Karelian database UI and Digital Archives of the National Archives of Finland. It needs to be clarified that the OSA beta was published just about a week before the submission deadline so

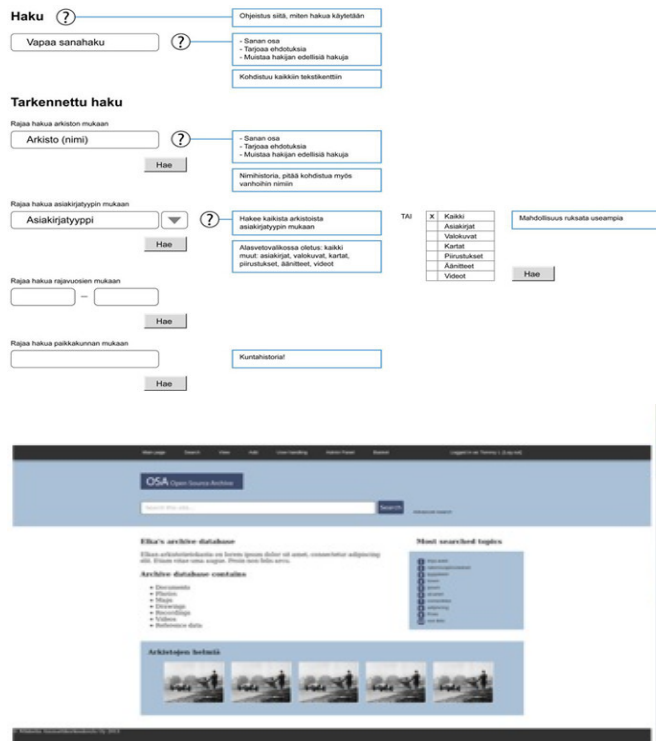
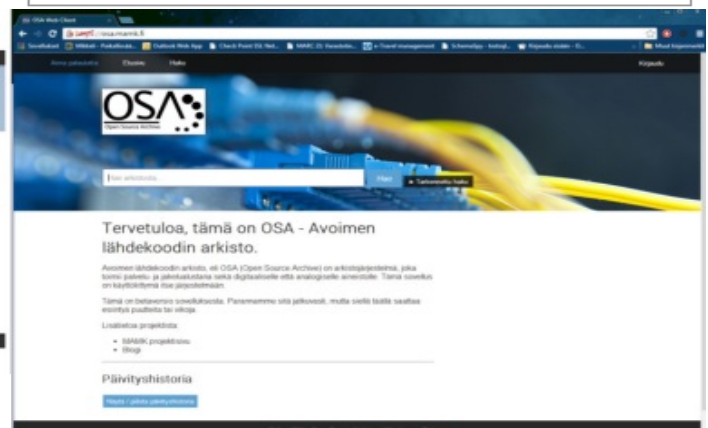
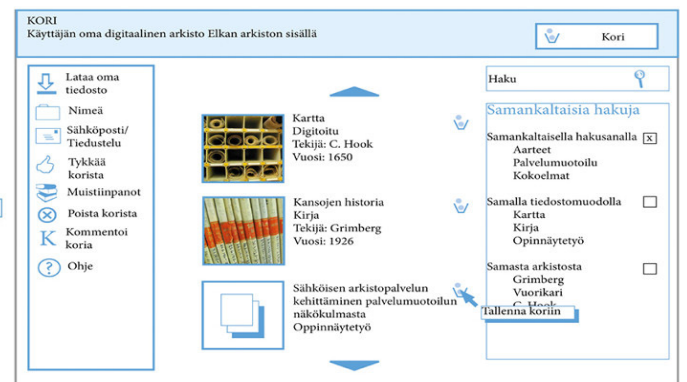


Figure 2: Evolution of the OSA-UI. Upper left, preliminary skech. Upper right, design. Lower left, alpha release. Lower right, current beta release (available at osa.mamk.fi)



results of thorough analysis cannot be included in this paper, but the results will be published at the conference. Figure 2 presents the evolution from the early sketch via design to alpha and beta releases.

This beta release of OSA archival control UI has evolved greatly since the last autumn's alpha release. Development has included unit testing, improved access rights system and most importantly the enhanced user interface that has been designed with novel methods. Even with trained designers and feedback from users, it has been a challenging and time consuming task to build a solid user interface. Lots of assumptions have been made by developers and as usual these assumptions are not quite there. Fine tuning each is going to take more time.

Conclusions

All of the utilized service design methods were very useful in the R&D process. By utilizing these novel methods, we managed to collect vital information from the true users. With the aid of these methods and results we were able to create user profiles and design drivers that will most likely aid your archival control UI to stand out in a good way.

Insights from this documented can be, and should be, shared and immersed by anyone who is developing similar solutions. The process has given masses of individual interface design ideas and from this mass it is possible to harvest further development concepts. In the case of OSA-project few of the concepts were visualized so that implementation and evaluation would be simpler.

The key to successful design and implementation has been in identifying and modelling the use cases and processes accurately enough. Luckily, the OSA-project had a possibility to gain benefits from the students of industrial designing. It however would have been even more beneficial if the designers could have been utilized earlier in the project than it now was possible.

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Author Biography

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Tytti Vuorikari has a Bachelor of culture and arts (2013) from Mikkeli University of applied sciences. She is a part of AieDesign cooperative which is based in Mikkeli, Finland. She has an interest in service design and design education and is eager to gain more knowledge of those fields