Concept Design to improve an e-service

Improving one of the e-services offered by the municipality of Uppsala

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Abstract

The municipalities of Sweden are offering an increased amount of e-services to their population. The ambition of the municipalities is to offer a wide range of e-services and at the same time have good quality. One of the municipalities is Uppsala Kommun and one of the services they are offering is a school choice e-service called eBarnUngdom. The e-service is currently used for a few types of schools but the municipality has the ambition to increase the amount of e-services of this kind.

The purpose of this thesis is to investigate the e-service and come up with improvement suggestions by rethinking the underlying concept as well as coming up with a more fitting concept using the method concept design.

The chosen concept for the e-service was a Web Portal which was illustrated with a low fidelity prototype.

The conclusion of this thesis concludes that concept design can be used to come up with suggestions to improve a currently existing e-service. Some of the improvements might not be directly applicable but they can be used as an idea bank for future improvements.
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1. Introduction

This introduction chapter will describe the background, scope and purpose of the thesis.

1.1. Background

The ability of how well companies create desirable and meaningful concepts is vital for their success. Competitiveness of a single company largely depends on its ability to develop products which are in some manner superior to those of its competitors. (Vesa Tiensuu, 2005)

The creation of concepts happens in an early stage of the product development process and is called concept design. This stage is important to define the properties of a product and the creation of its visual appearances.

Concept design is a relatively new approach, which hasn’t been explicitly used in development methods or as a development method in many fields. Its significance has not been well understood in the corporate world. But some industries, such as the automobile industry, have proven that the creation of concepts can be critical for industries to evolve, by using concept design for the creation of innovative concept and in that way push the limits of technology. (Vesa Tiensuu, 2005)

In the field of Human-Computer Interaction, concept-driven design is used as a complementary approach to more traditional and well-known approaches such as user-centered design. The approach taken in this thesis is similar to user-centered design with the differences that in this thesis, the end-user will not be involved as early as they would in user-centered design approaches.

Concept design is mainly used for the creation of tangible products. A tangible product is usually a physical object the can be perceived by touch (Wikipedia.org, 2012). This means that designers try to come up with new ideas early in the development process but with a final product in mind. At this stage, created concepts are a rough outline of a product. The level of detail is low except for in the fundamental characteristics.

Generally, the same methodology can be applied when creating concepts for computer software products as when creating other tangible physical products. But can concept design be used for something intangible such as a service?

The difference between a product and a service is that the product is seen as an object compared to a service which is seen as an activity performed by someone else. For example, when you buy a painting, you are buying a product. But if you hire someone to paint a painting, you are buying a service (linkedin.com, 2010).

In the field of IT, the difference between a product and a service is harder to see, this is because: (Goldkuhl and Röslinger, 2010)
Some services are automated in such a way, that it appears like you’re buying a product when you in fact, are buying a service which results into a product.

The interaction happens through a computer which makes it harder for the customer to determine whether the activity is done by someone else or by the computer itself.

It’s common for software products to include services such as support, maintenance, installation or updates when sold.

About Services

There has been a rapid growth in the developing and launching of new public e-services for citizens. E-government developers focus more on the amount of e-services launched rather than the quality of use. This means that some of the services have a low degree of usage and in many of those cases, their usability has been criticized. (Goldkuhl & Röstlinger, 2010)

When creating e-services it is important to focus on the process perspective. That means, having both a user-centric view and also acknowledging the workflow of the e-service. The workflow consists of both the interaction between customer/client and an emphasis on the flow of the process. (Davenport via Goldkuhl & Röstlinger, 2010)

Whether the focus should lie in the flow of the process that happens between customer/client and the service providers, or if the focus should lie on the internal flow of the service providers depends on the type service (Goldkuhl & Röstlinger, 2010)

1.2. The e-service EBarnUngdom

EBarnUngdom is an electronic service owned by the municipality of Uppsala Kommun in Sweden which focuses on school applications. The e-service’s core function is to offer a service to the members of the municipality which allows them to choose schools.

This service currently covers preschools, elementary schools and after-school child care and will eventually be covering more types of schools.

The focus of this thesis is to find and develop a concept using service concept design that covers the ambitions of Uppsala Kommun and their e-service EBarnUngdom. The results of the thesis can then be used as a source to improve the currently used e-service.

1.3. Statement of problem

Most of the literature that covers concept design methods focuses on products. There are differences between products and services that make it hard to apply these methods. In this thesis, concept design will be used to create a concept that fits the needs of Uppsala kommuns e-service.
The result will be a prototype and the thesis will also aim to describe if and how concept design can be used to improve and change an e-service.

1.4. Disposition

Chapter 2 – Theory:
The underlying theory that is relevant to the thesis will be explained in this chapter.

Chapter 3 – Methodology:
This chapter describes the methodology used in this thesis.

Chapter 4 – Concept Design Method in this thesis:
This chapter will explain the concept design method that is used in this thesis.

Chapter 5 – Empirical Study:
This chapter describes the current e-service EBarnUngdom by Uppsala Kommun.

Chapter 6 – Analysis and concept design:
Analysis of the information gathered using the chosen methodology.

Chapter 7 – Results:
The results of the thesis will be presented in this chapter.

Chapter 8 – Discussion:
This chapter discusses the problems that occurred and the choices that were made during the thesis.

Chapter 9 – Conclusion:
Conclusions will be drawn and explained in this chapter.
2. Theory

The underlying theory relevant for this thesis will be described in this chapter.

2.1. Concept Design

According to several dictionaries (Encyclopedia.com, Wikipedia.com, 2011), a concept is simply described as an abstract or general idea. Concept design means different things in different lines of business and different groups have different definitions of what concept design is. For instance, in marketing, the concept is seen as the general coordination and management of campaign planning while designers see concept design as simple sketches that they create to study the appearance and structural alternatives of a product as concepts.

Generally, concept design refers to the fundamental outlining of a product carried out during early phases of product creation. (Turkka Keinonen & Roope Takala, 2006)

2.1.1 Concepts and innovation

Concept design is a relatively new idea within product development, but it has existed a long time. Even if it hasn’t explicitly been used by designers, it has in some form existed in the innovation processes of products. Nowadays, concepting activities are required by companies in their innovation processes. (Turkka Keinonen & Roope Takala, 2006)

Innovation involves the use of knowledge to find new ways to create additional value and wealth. It does not necessarily mean that it has to involve new technology or technical knowledge.

Innovation should also be distinguished from invention because innovation does not require the creation of new knowledge as long as knowledge is used to create additional value. (Business Council of Australia, 2006)

Innovation is essential to be able to implement design work that breaks away from the current concrete, technical restrictions and compatibility requirements. But it’s not always easy to generate innovative and creative ideas in the development process. This is where concept design comes in. During this phase, the conditions for generating ideas through creative design can be created without the immediate exploitation of ideas being the initial and most important criterion that dictates the final evaluation.

While improving current products might be not the main goal of concept design, it can be a desirable one. When using concept design together with a user-centered approach the needs of the users can be fulfilled simply by using innovative but easily implemented changes to the existing products.

Most concepts that are created are not always linked into the right context when a project is completed. This can be a result of underdevelopment of technology and markets, but even if
these concepts are not very useful in their current state, they may be useful later as they can be used as an idea bank for when the technology and market evolves. This idea bank can be consulted when working on other projects to find solutions to their design challenges.

When making new products, developers often think to fulfill consumer needs but when a good innovative product is launched on the market, it may change the consumers’ ideas about what they want or think they need. Typically consumers only realize that they need something after they know that it exists and they also get accustomed to new products gradually as they make their way into mainstream society and culture.

2.1.2. Definition of concept and concept design

There are different definitions for a concept. According to Schmidt (1997), a concept can be perceived as a verbal, illustrated or physical description of a product in the language used by a customer. Stolterman and Wiberg (2010) find it necessary to explicitly describe concept-driven development with the purpose of making it visible and possible to critically examine for further development.

Weick (1989) argues that in the design field, not all knowledge can be fully expressed verbally or in other typical research outcome formats, so the concepts have to be designed and manifested as artifacts which will function as carriers of knowledge.

Concept design is applied at early stages of the development of a product. Because of this the concept design does not necessarily need to be like the end product. Keinonen (via Vesa Tiensuu, 2005) sees concept design as a future oriented process which means that the purpose is to explore future designs and product concepts. Concept designs are therefore exploratory in nature and do not usually take technical feasibility or the development stage into account. But there are, of course, restrictions. The challenge is to do this with an intention to develop a theoretical understanding and not just create anything that is possible because “we can” (Stolterman and Wiberg, 2010).

Concept designs have one obvious and valued quality which is that almost anyone can instantly get an overall understanding of the character of the concept without any expertise or special training. The character of a concept design is the overall organizing principle that makes up the composition of the design as a whole (Nelson & Stolterman, 2003).

The main objective of concept design is to create an overall view of the product to be developed and to show its properties and attributes prior the actual development (Vesa Tiensuu, 2005).

The designs can also be seen as measuring instruments to get a sense of how people will understand, react and respond to the character and composition of a design (Stolterman and Wiberg, 2010).
T. Keinonen & R. Takala (2006) sees concepts as descriptions of a product or service that are anticipatory, well-founded, focused and understandable.

**Anticipatory**

It must be possible to use an anticipatory description to create product specifications for the products design platform to influence the expectations of a product before it launches into the market and from there steer the development of technology to learn for future assignments.

This attribute of a concept – *anticipatory*, simply means that there has to be enough time to utilize the concept for making and implementing the decisions in some way. Concepts should not aim to anticipate the long-term future in terms of time, because time does not help understanding the future orientation of concept design. Concepting should instead be used to anticipate the rapidly approaching and yet uncertain future.

The future that can be anticipated by concepts varies in terms of time depending of the type of business. It’s for example easier to anticipate the future in sectors with mature technologies and markets than in dynamic and uncertain environments.

**Well-Founded**

A well-founded description of a concept supports and promotes understanding of the solutions presented. In order for a concept to function as a tool for decision-making and anticipating the future, it must be associated with the phenomena that are presumed to be significant in the future.

That a concept is presumed to be well-founded doesn’t mean that it has to be proven right. What’s important is to highlight new possibilities and if they are sufficiently attractive, the studies can be intensified and the feasibility of the concept determined in later stages of development.

**Focus**

When a concept is being created it is sufficient to focus on one or a few characteristics that are fundamental to the product. Focusing on the right things is sufficient for decision making purposes and can save a good amount of time.

The fundamental solutions are those that distinguish the concept from existing products or other concepts. They may have similar functions or other characteristics but they bring other dimensions to the users such as usage experience, the appearance, new style, ergonomics, interaction or other key technologies.
Understandable

To make a concept understandable, a concept can be described in different forms. These include usage scenarios set in story format, simulations, 3D models, metaphors etc. Stolterman and Wiberg (2010) argue that the best way to present concepts to convey their purpose is to make visual artifacts.

2.2. Examples of concepts in different industries

The concepting activities are different depending on the type of business and technology environment. In business that relies on quick market launch of products, concepting has a very short time span while in more mature business such as the automotive industry it can take several years for a relatively realistic vision to be developed.

This topic will try to describe concretely how concept design has been used in different industries and what they aimed to accomplish.

The Shipbuilding industry

The biggest difference between the shipbuilding and many other industries is that the construction of the ship does not start until the ship has been ordered.

The first step in the production of shipbuilding is to define the vessel's functions and operation plan. After that a rough layout of the ship is designed which is later improved with details. The main objective with a design in this stage is to showcase the advantages of the new product.

Ship companies try to anticipate trends and design futuristic ships to market their image to seem ahead of its time and in that way attract external customers. But creating futuristic designs is also a way of pushing new technological developments and even generate new needs. (Andersson)
The figure 2.1 shows a futuristic ship concept from KMY technology, based on fuel cell technology and wind energy.

**The biological laundry**

One of the biggest manufacturers of home appliances, Whirlpool, had a vision to create an environmental friendly slow-wash washing machine. One of the domains that Whirlpool focuses on is user experience, so for this project Whirlpool adopted a user-centered design approach which means that the design focus shifts from how the product looks to how the customers use the product.

For this approach, a research team started projects with the goal to understand the users and the context where the product is used. Then explicitly bringing the information gathered together in formats such as mockups, renderings, animations and scenarios. In this way the results are easy to understand and it helps uncover new possibilities and anticipate future changes.

The result of the concept created (as shown in figure 2.2) was an environmental friendly slow-wash washing machine without a washing drum. Instead, the water circulates three areas of the machine. One of the places where the water circulates to is a tank, where hydroponic plants clean the grey water by absorbing the nutrients they need. The energy for the water to circulate comes from fuel cells and the heat and water produced is recovered.
According to the vice president of the global consumers design division, carrying out this project had the following benefits:

- **Internal motivation** – This was a chance for the design team to stretch their imagination, to explore and challenge their skills.

- **Experiment** – An opportunity to the company to experiment with a new talents and new ways of working

- **External visibility** – This project also provided external visibility for the company reinforcing the company’s reputation as leaders in design and innovation.

**The automotive industry**

Like fashion, car design is always changing. Concepts has been used in this industry for a while, therefore this industry is seen as a mature and stable industry when it comes to concept design and on a general level the technical and qualitative differences between competing products is less than in other markets.

The concepts in this industry are called concept cars and they are vital in deciding the future direction and style of production of the cars we see today (diseno-art.com, 2011). The concept cars are futuristic and can either aim to anticipate the far-ahead future or they can be more similar to the cars that exist today anticipating the near-future. (http://www.howstuffworks.com/concept-cars.htm, 2011)

The majority of the companies don’t always create solutions that radically differ from existing products because there’s a risk involved. The designers are forced to comprise partly because of technical and production requirements and partly because the lack of courage on the part of the management.
The further design process proceeds, the more elements that have ventured too far from the mainstream become tempered. One of the strategies that Volvo uses is to first create a description of a concept which, in this stage, is only imaginary description of the character of a new product and not a concrete design. This concept is later followed by a phase called “incubation period” which can take from 2 to 6 years. The purpose of this period is to allow the initial ideas to mature and to be refined into concrete product definitions. The best of these ideas are then used for further studies and for the creation of a physical concept and if it is considered feasible, an actual project is started.

Figure 2.3 illustrates a concept car created by Nissan year 2008 and is seen as a gathering place where the needs and desires from both children and adults are met. The inside of the car is flexible and the seats can be turned to fit the passengers. It’s can also be seen as a family limousine. (http://www.conceptcaronline.com/concept-cars/concept-cars-info.php?carid=91)

![Figure 2.3 Nissan concept car - FORUM](image)

2.3. Concept-driven design in HCI

Wiberg and Stolterman (2010) describe three examples of cases where concept design has been used with connection to the field of Human Computer Interaction. This chapter will shortly describe one of those examples, the DynaBook. The three concepts had different qualities and even if none of the examples led to any market or commercial breakthrough products, they all had the traits of strong concept design.

The vision of the DynaBook was created in the early 1970s by the computer Scientist Alan Kay at Xerox Palo Alto Research center. The DynaBook was a concept design of a modern laptop or tablet PC, but because such technology didn’t exist at that time, the DynaBook was never implemented as a real product.
The scientist Alan Kay created a concept design that would give children access to digital media. Even though adults could use it, the main target group was children. With that in mind, the designers had to invent new interaction forms, interface solutions, technology and software. The DynaBook looked like today’s portable tablet PC’s but with nearly eternal battery life.

The “Dyna” part of the concept DynaBook stands for dynamic and indicates that the artifact is dynamic and interactive. The “Book” indicates about the size and physical format of the digital artifact. There were attempts to implement the concept as a prototype but at that time it resulted in a prototype that was clumsy, slow, expensive and useless in most ways.

But even though the prototype failed, the DynaBook became extremely influential for future designs and led to a number of designs that were implemented and used. The DynaBook concept still functions for the development of small laptop computers and the strength of the concept can be seen in the naming of products such as Apple’s “MacBook”.

The DynaBook example is a good example of how concept design was used to come up with a solution that was ahead of its time and inspired the technology to evolve in that direction. Other simple and easily implemented concepts have had similar impact on the field, meaning that concepts do not have to be futuristic or unfeasible to inspire other concepts.

2.4. Web portals

A concept that will be analyzed in this thesis is the web-portal concept. This chapter will describe different kinds of web portals and explore if this concept can be applied to the e-service EBarnUngdom.

According to Wikipedia, a web portal is a web site that functions as a point of access information on the World Wide Web. The portal displays information from different sources in a unified way having the same look and feel. Portals in general, aim to have high usability along with functionality to attract and keep new users whether they are frequent visitors or casual. (http://en.wikipedia.org/wiki/Web_portal)

There are many different types of web portals. It can be a personalized web page that gathers information from other web sites and are used as start pages in their browsers. These types of web portals are called personal web portals.

Examples of such portals are iGoogle (Figure 2.4), Superstart.se, MyYahoo etc. Those examples are the kind of web pages that has set the standard for that type of web portals. Their attributes are: (http://download.backbase.com/rich-portal/Whitepaper-Creating-a-Successful-Web-Portal.pdf)

- Customizable design – Background and color theme can be changed.
• Gadgets – Users can choose what they want displayed in the web page. It can be the weather, news or a youtube video. The information is displayed is dynamic and the location of the gadgets can be changed. You can also add or remove gadgets from a large library of gadgets.

• Remembers the settings – Once you have customized the portal, it will remember the personalized settings whether it’s connected to an account or stored in cookies. (Figure 2.4 – iGoogle)

There are two different categorizations of portals: Vertical web portals and Horizontal web portals. Horizontal portals are those who cover many areas like personal portals such as iGoogle, MyYahoo etc. while vertical are more focused on one functional area and are often used in corporal businesses. (businessdictionary.com)

Some examples of some different types of vertical web portals are finance portals, news portals, customer self-service and support portals and product portals.

An example of a vertical portal is the product web portal NXP.com (Figure 2.5). The biggest feature here is that it gives access to tens of thousands semiconductor products and they can be browsed in different ways.

The challenge for product web portals is to find a way to present products in an effective way for the customers or partners. In this case the personalization of the web portal, though it might be useful, is not as important like it is for personal web portals. Instead, the focus should lie on the search and browse functions and the usability to find a desired product.
2.3 Service Concept design

The term Service Design has been narrowly defined by Gummesson (1991) as “the concretization of the service concept in drawings and flowcharts. Norling (1992) defines it as the work of specifying an idea about a service in drawings and specifications.

Service concept design plays a key role in service design. Service concept defines the how and the what of a service and is the link between the customer’s needs and the organization’s strategic intent. There’s not much literature written about service concept which is unfortunate when it plays such an important role. (Goldstein, Johnston et al., 2002)

A product that consists of hundreds and thousands of components are similar to services in the way that services also consist of hundreds and thousands of components. The difference is that, unlike products, services are often not physical entities, but rather a combination of processes, people skills and materials that are integrated in the designed service.

When designing a service, whether it’s a new service or redesigning an existing service, the stakeholders must make decisions about every single component of the service, from major decisions like facility location to seemingly minor decisions like napkin color. But the most important is to find an appropriate mix of components that are perceived as one single working service by the customers.

Customers have a preconceived notion of what a service is, even if they have not experienced it previously (Johnston and Clark, 2001). A delivered service should therefore be designed
seamlessly so that the service can be perceived correctly by the customer regardless of what preconceived notion of what a service is, the customer has. (Goldstein, Johnston et al. 2002)

When developing a service, organizations must set customer expectations. To ensure that the service fits the needs of the customers and the expectations, organizations must focus on the design and delivery of their service concept.

One feature most of the terms discussed above have in common is the service concept. Most authors refer to the service concept as a central component in designing services (Norling et al. 1992). But most of the research has focused on other aspects of design and development instead of concept design which is a crucial part of service design and can during the development process serve as a driver to make decisions.

Service concept is a term defined in many different ways in the literature. Heskett (1986) defines it as the way in which the organization would like to have its services perceived by its customers, employees, shareholders and lenders.

What most of the definitions have in common is that service concept is critical for service development. The concept defined in the beginning, works later as a guide for the development process thanks to its concrete nature and can drive the service development forward.

Figure 2.6 Service design planning model

Figure 2.6 shows an example of a service design planning model by Sasser et al (1978) which integrates concept design as the underlying element.

In the model shown in Figure 2 is an example of a planning of a service design. The concept is the foundation of all the work. This means that each of the steps shown is based on the service concept.
The service concept works as a framework for evaluating services on an ongoing basis as those services change and improve. That framework can be used to drive a strategic advantage in terms of developing and defending a market position.
3. Methodology

This chapter describes different methodologies that were studied during this thesis on order to come up with the concept design method that is used in this thesis explained in Chapter 4.

3.1. Research Approach

It’s important to have a good underlying research strategy when writing a thesis. A good research strategy uses a systematic and structured approach to create new knowledge. One does not draw any conclusions without first carefully finding sufficient and appropriate sources of data that is properly recorded, analyzed and interpreted. The conclusions drawn are then well-founded based on well reported evidence. (Oates, Briony J, 2006)

The research strategy used in this thesis is called Design and Creation. This strategy offers a more practical approach to create new knowledge. The knowledge contribution is in the form of an IT-artifact. An IT-artifact can be of the following types: (Oates, Briony J, 2006)

- Construct – Concepts or vocabulary used in an IT domain. These can be presented as notions of entities, objects or data flows.

- Models – These are a combination of constructs that represent a specific situation and are used for the understanding of a problem. These can be data flow diagrams, use case scenarios or storyboards.

- Methods – Acts as a guide on the models. Explain how the models are used to solve a problem

- Instantiations – A working system that demonstrates how constructs, models, methods, theories, ideas or concepts are implemented in a computer-based system.

When using this research strategy, the researcher can offer any of the artifacts described or a combination of them. (Oates, Briony J, 2006)

The whole purpose of the strategy Design and Creation is to contribute to knowledge using a problem-solving approach. This involves an iterative 5-step process: (Vaishnavi & Kuechler, 2004)

- Awareness – Recognize a problem. This can be done by studying literature from different authors to identify new areas of research. This can also be if practitioners or clients express the need for something in the field of research or for new developments in technology.

- Suggestion – Offer creative ideas of how the problem might be addressed.
- Development – The idea is implemented. How it is implemented depends on the type of IT-artifact chosen for this strategy.

- Evaluation – Examine the artifact and look for assessment of its worth and deviations from expectations.

- Conclusion – The results from the design process are documented and knowledge is identified together with any loose ends or unexpected or anomalous results. Even failed artifacts or projects can contribute to knowledge.

The end result of this thesis will be a prototype that illustrates a proposed solution to a problem. The prototype is created using a combination of constructs, models and methods. The prototype itself will be a contribution to knowledge as well as findings made during different procedures in the developing stages. The prototype will also be evaluated so that additional conclusions can be drawn.

![Methodologies Diagram]

**Figure 3.1 – Research methodology and development methodology. (Oates, Briony J, 2006)**

*The figure illustrates the research approach for this thesis. The research methodology is a product of the strategy Design and Creation. Data will be gathered with different methods and will be used together with a development methodology for the creation of the IT-artifacts.*
3.2. Data Generation Methods

There are many different data generation methods. They are all good for different purpose. For example, interviews of clients are used to gather data for the requirement specification and an evaluation with the help of questionnaires is used to gather data about a designed artifact. (Oates, Briony J, 2006)

It’s important to be diverse with data generation methods when researching. It helps you capture a bigger quantity and more accurate data which adds to the validity of the research.

The data generation methods used in this thesis will be explained in this chapter.

3.2.1 Interviews

An interview is a particular kind of conversation between people. Usually, at least one person is responsible for the interview who wants to gather information from the other or others. This means that discussion does not happen by chance. The person who gathers the information has in some way planned it. The person, who gathers the information, will in this thesis be referred as the interviewer and the person who the information will be gathered from will be referred as the interviewee.

The interviewer usually has particular issues he or she wants to discuss or a specific kind of information he or she wants to gather. This means that it is his job to steer the interviews discussions onto the topics of interest.

Interviews can be suitable data generation methods when a researcher wants to to:

- Obtain detailed information
- Ask complex or open-ended questions
- Explore emotions, experiences or feelings that can’t be described easily
- Investigate sensitive issues or privileged information.

In this thesis the interviews are used partly to gather information about the current e-service and get an understanding of the municipalities aim and goals with the service. Interviews will also help the gathering of requirements and to generate ideas for new solutions and concepts.

As interviews do not happen by accident, it is important for the interviewer to plan an interview before conducting it. There are different kinds of interviews which are good in different situations depending on the type of data you want to gather.

- Structured interviews – These use pre-determined, standardized, identical questions for every interviewee. This kind of interview is suitable when the interviewer can
interview many people and is looking more for quantitative data. The answers expected from the interviewee are usually short.

- **Semi-Structured interviews** – The interviewer has a list of topics and questions for those topics he or she wants to discuss. The interviewer tries to create a dialogue where a topic is discussed. This type of interview reminds more of a normal conversation because the interviewer can change the order of the questions or add a question in order to keep the conversation active and relevant. This method is used to gather more qualitative data and also for gathering information for specific topics.

- **Unstructured interviews** – The interviewer introduce a topic but have much less control. The interviewer lets the interviewee develop their ideas, talking freely about events, behavior and beliefs that he or she might find relevant and important. The interviewer tries not to interrupt nor intrude but he can ask questions to keep the discussion going. This method is used more to explore and discover topics.

Four interviews are going to be conducted with two different employees affiliated specifically with Uppsala Kommuns e-service EBarnUngdom.

The first interview will be an unstructured group interview with both employees. The reason for that is to get a wider range of information about the e-service and the municipality’s goals and at the same time explore new topics and discuss the interviewees’ ideas and beliefs.

One interview will be done then separately with each employee. The interview will be of the type semi-structured and the questions/topics to discuss will be the same for both. The aim of these interviews will be to explore specific topics in detail. The questions will be deeper and more specific. These interviews will be recorded and transcribed. The information gathered will be used for the generation of ideas for a new concept or for improving the current underlying concepts in the e-service.

For the last interview, a prototype that illustrates the suggestion of a concept for the e-service will be done. This interview will be a more structured group interview with both employees. It will not be fully structured though. The prototype will be presented by the interviewer with pauses during the presentation where questions are asked opening for discussion and suggestions. The goal of this interview is to get feedback about the prototype developed and see if any requirements were missed. It also opens for discussions and suggestions for changing and adding features.

### 3.2.2. Analysis of current e-service

That Uppsala Kommun already has an e-service means that a lot of work has been done before. For example, requirement specification, analysis etc. This thesis will not be based directly on that kind of previously made work.
The goal is to improve the service by coming up with a good underlying concept and suggest solutions based on that concept. The idea generation therefore has to happen early in the development stage. This will open for new ideas and the work done will be based on the new concept.

The existing service has identified a lot of requirements and features already and it would be a waste to not use that information. Therefore, the existing service will be used as a tool for data generation.

For this thesis, Uppsala Kommun has provided the account information of a couple of fictive persons with children. This account will be used on the developers’ version of the service, not the live version. Those accounts will be used to use different features of the current working system like registering children to school, requesting a schedule, change personal information etc.

This will facilitate the exploration of the service. There are small differences between the developers’ version of the service and the live version which do not make any difference whatsoever in this case. The more important features work fine and are therefore good to analyze.

### 3.3.3. Evaluating the Prototype

Once a prototype is developed, it needs to be evaluated. In general, creating a prototype is an iterative process. The prototype is progressively refined until a version that satisfies the designers is made. Before a new iteration is made, a prototype needs to be evaluated. The results of the evaluation are the foundation of the next iteration.

The literature of concept testing is usually separated from concept design. But Vesa Tiensuu (2005) believes that concept testing is an essential part of concept design because there’s no rational reason to separate those stages since its only function is to promote the development of the concept. Therefore, the prototype stage can, at least in some industries, be understood as being a part of concept design.

The purpose of the prototype evaluation in this thesis is to test whether the underlying concept is understood as well as finding both the good and bad parts about it. This thesis will only focus on the developing and evaluation of a concept. This means that the evaluation takes place early in the system development phase and the prototype is therefore also not fully developed. For these reasons, the type of prototype made will be a low-fidelity paper prototype with a narrower goal which is to illustrate the concept chosen for this thesis.

The data generated from the evaluation will be used to come to conclusions answering research questions in this thesis as well as giving proposals for future work and other iterations to refine the prototype.
The created prototype will be properly tested on six participants who are classed as potential users of this service.

The low-fidelity paper prototype, though the name suggests otherwise, will be in digital form. The prototype will be an interactive PowerPoint presentation which will consist of a set of screenshots. The tool Balsamiq Mockups will be used to create the low-fidelity paper prototype screenshots. As figure 3.2 illustrates, the results is a picture that gives you the impression that it has been drawn by hand. The purpose of a low-fidelity prototype is so that the stakeholders and prototype testers do not emphasize design flaws such as background color, button size etc. Those flaws are not important early in the development process; instead the focus should be on things like interaction flow and rough interface layout.

(http://hci.epfl.ch/teaching/hci/course_material/lofi-prototype/lecture5-lofi_proto-x6.pdf)

![Min Sida • Mina Uppgifter](image)

**Figure 3.2 – Sample of the paper prototype created in the software Balsamiq Mockups.**

The prototype will be tested by each of the testers using a “talk-aloud” approach. This means that the test leader will give the tester a set of tasks that he or she has to do with the help of the interactive prototype. The tester has to talk about what he or she thinks and believes and how he or she interprets the prototype. The test leader’s job is to encourage the tester to talk and ask questions to keep the tester talking without leading him or her to specific answers.

With the consent of the testers, the test will be recorded to facilitate the analyzing of the results.
3.3. Development method

This chapter will explain the method that is used to develop the concept that aims to improve Uppsala Kommun’s e-service EBarnUngdom.

3.3.1. Method background

The practical goal of this thesis is to develop a concept that will improve the e-service of Uppsala Kommun known as EBarnUngdom. The e-service is used by parents to apply their children to a school or preschool of their choice. Uppsala Kommun is also planning on expanding the range of services they will offer related to schools. There are already other separate services similar to this one already up. One for example is used by teenagers to apply to senior high school, also known as Gymnasiet.

The current e-service EBarnUngdom has been an object of complaints by the users. A usability study performed by students at Uppsala University (2011) showed that the system contained usability flaws and that the user satisfaction was low. Adding new features and services to the current e-service without tackling the old problems first could mean that the complexity of the service gets higher and the usability and user satisfaction gets lower.

The solution proposed by this thesis is to come up with a concept to represent the range of services offered by Uppsala Kommun related to schools and making school choices and also leaving it open for new features without putting the usability at risk. Because of that the focus of this thesis will be on the development and illustration of that concept.

<table>
<thead>
<tr>
<th>Type of value</th>
<th>Service</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perspective</td>
<td>A process where resources interact with the customers in order to support the generation of value</td>
<td>A resource where the value is generated by the customers</td>
</tr>
<tr>
<td>Business logic</td>
<td>Facilitates process that promotes the customers value generation</td>
<td>Products are made to resources available to the customer use</td>
</tr>
<tr>
<td>Role of the customer</td>
<td>Co-producer and helps generate value</td>
<td>Sole generator of value</td>
</tr>
<tr>
<td>Role of the company</td>
<td>To provide a service process where the customer generates value with the company in the consumption process</td>
<td>Provise the customer with a product as a resource</td>
</tr>
</tbody>
</table>

Table 3.1 - Differences between products and services. (Staffan Hård af Segerstad, 2010)
There’s not much literature out there that suggests a model for concept design specifically for services. That’s why the development method used in this thesis will be a different version of product concept design which is adapted to service design.

Products and services are different and require therefore focus on different areas. To understand the differences in focus areas, one must first understand the differences between products and services in terms of their value. The Table 3.1 illustrates that.

Summarizing the differences according to the table, one can say that the focal point of services is the ongoing interaction between processes and customers while products are looked as separate objects or resources. (Staffan Hård af Segerstad, 2010)

These differences are important to acknowledge. In this case, Uppsala Kommun wants to offer a service and not a product. This means that to successfully make a concept that fits the service using concept design, one must identify the processes needed for the service and how the customers interacts with the service by analyzing the flow of activities.

The customer is important in services which make the usability of the service just as important. Researchers in the field of Human-Computer Interaction argue that usability must be acknowledged early in the development stages.

In order to cover all the aspects needed early in the development stages the prototype that is created to illustrate the concept will be a detailed low-fidelity paper prototype. The only details that the prototype will contain are just necessary ones needed for the customer to understand and interact with the prototype in a correct way.
4. Concept design method used

The method used in this thesis focuses on concept design which means that it will only be a part of a whole development cycle. Because of this, some development phases might seem different or incomplete.

First of all, the general methodology of concept design will be explained.

Stolterman and Wiberg (2010) explain six different activities that are involved in concept-driven design research. Without any particular order, these are:

- **Concept Generation** - This activity is usually based on earlier theoretical work in the field. Generating a brand new concept is not a process possible to prescribe. The new concept generated must provide something new, either in the way that it combines earlier qualities or in the way that it manifests a whole.

- **Concept Exploration** – The researcher goes beyond the initial idea and explores the unknown. This usually means creating models, prototypes and experimenting with unusual materials and design. This stage should lead to new ideas and discover new territories.

- **Internal Concept Critique** – Once the concept has been identified and somehow been made explicit through models, descriptions or sketches. There’s a need to examine the concept before moving to a more formalized design. This stage does that.

- **Design Artifacts** – This is the design phase. The concept is expressed with words or visual design in a concrete way. Theories about the concept and concrete design are connected in this stage.

- **External Design Critique** – The artifact is tested. This means that the design is exposed to the public and critiqued as a composition. What this stage aims to test is the user acceptance of the idea and concept as well as how the theoretical principles that the design manifests.

- **Concept Revisited** – This stage refers to some form of iteration that happens after the external critique. With the feedback gotten, improvements and changes ought to be made.

- **Concept Contextualization** – Once the final concept has been defined, expressed in a prototype/artifact and validated through a process of both internal and external critique one step remains, Concept Contextualization. This means that the final concept is compared to similar concepts showing its strengths and weaknesses to show theoretical contributions to its field.
The development method in this thesis contains all of the concept design activities described above and also some other activities that will contribute to a better e-service concept. This method is shown in Figure 3.3.

Concept Design does not signify a good idea only: instead, a concept is created in several stages and a successful concept requires successful realization of each stage. (Vesa Tiensuu, 2005)

Figure 3.3 – A concept development method adapted for services. This is an adapted version of the one Turkka Keinonen & Roope Takala (2006) use.

The whole development method starts with a background research. Information about the organization Uppsala Kommun is gathered and the requirements for the service that is going to be improved are generated.
The next stage is Concept Generation. This step tries to connect the information gathered in the previous stage to a possible concept or concepts. Those concepts are then explored and critiqued internally.

The following stage is to structure and shape the information gathered with the concept in mind with service-design guidelines. This stage is important to identify and optimize the activity flow of different tasks and also connect and separate requirements with the help of models.

The fourth stage of is to make the ideas and concept concrete designing an artifact. In this stage a prototype will be made. Usability Heuristics will then be used on the prototype to improve its usability and finally test the prototype with the help of external critique or evaluation.

All these stages are iterative which means that the service concept will change and improve as it is being developed. All these stages will be iterated until a final and refined artifact is made which can be contextualized. As a limitation of this thesis only a first draft of each step will made.
5. Empirical Study

This chapter will describe the knowledge gained empirically through group and individual interviews and by analyzing the e-service EBarnUngdom that Uppsala Kommun offers. How the knowledge was gained will also be explained here.

5.1. Organizational Background

Uppsala Kommun is swedish for Uppsala Municipality. The reason that the municipality is referred as Uppsala Kommun instead of the translated name is to emphasize the organizations trademark.

The developing and launching of new e-services over the web for citizens has been growing rapidly. The reason is that the citizens’ computer usage habits grow and so do the demands and expectations for services over the web or also known as e-services. To get good points in national and international benchmarks its better to have a great amount of e-services. This means that the quality and usability of the e-services might be compromised. (Goldkuhl and Röstlinger, 2010)

Uppsala Kommun offers many e-services. One of them is the e-service that will be the focus of this thesis, the e-service EBarnUngdom.

Simply put, EBarnUngdom is an e-service which is accessible through Uppsala Kommun’s home page. EBarnUngdom lets parents apply to schools and preschools for their children. Before this e-service, children were placed in schools automatically depending on the location of where they lived. Sometimes, the school where a child was placed was not always the one their parents had in mind. Some parents prefer to have their children near their workplace, a relative or they just want a specific school because they have heard its better. For these reasons the introduction of this e-service has been greatly appreciated by the citizens. Uppsala Kommun has also plans on expanding this e-service for applications of other types of schools and also adding some specific features. Unfortunately, this e-service has been an objective of criticism and usability complaints. This makes it more difficult to add new features without making the current usability worse.

Before the start of this thesis, a usability study was made to investigate if the service had usability problems and if so, identify them. The usability study was made as part of a usability course by students of Uppsala University where I, the author of this thesis, was involved.

For a greater improvement of the e-service, it was necessary to revamp it with the help of a new concept that will fit and unify the different features already available and features that will be implemented in the future.
5.2. Earlier studies

Before the start of this thesis, a usability study was made on a part of the e-service EBarnUngdom. The need for a usability study came after the users complained about the e-service and some of them failed to successfully finish the tasks.

The study was performed by a group of students of the Masters Program in Human-Computer Interaction as part of a course. This resulted that some knowledge was gained prior this thesis. This thesis aims to change the underlying concept of the e-service which means that there might be big differences between the suggested service and the current one. For this reason the results of the usability study will not be analyzed in this thesis. Instead, the focus will lie on the creation of a new concept using concept design. The knowledge gained about the organization will be used is the information that will be used in this thesis and not the usability results. In this thesis, the focus will lie on the new service concept that will be created and all the criticism and tests will be done specifically to test the new concept.

The first time the group met their contact persons at Uppsala Kommun. They were introduced to the e-service EBarnUngdom. One of the contact persons representing EBarnUngdom gave general information to the students about the service and then also presented the key feature to their e-service, application to preschool. The person presenting, logged into the service with an account of a fictive person with children and then followed the steps to successfully make an application to a preschool. In this presentation, the service was used from the aspect of a developer. This means that the service was used in the way that the developers expect the users to use the service. No problems or errors occurred during this presentation but some small usability and logic flaws were noted by the students.

More details about the e-service EBarnUngdom that is currently running will be described in chapter 5.4. Analysis of the e-service.

5.3. Interviews

This chapter will describe the interviews used for this thesis. There were a total of four interviews with two employees of Uppsala Kommun that are involved with the e-service.

The people interviewed were two people who are employed by Uppsala Kommun and involved in the e-service EBarnUngdom. These were:

- Malin Dal Barosen - employed by Uppsala Kommun and one of her many responsibilities is to administrate the e-service EBarnUngdom. She has not worked with the e-service from the beginning but her knowledge of it is more than sufficient for this thesis.

- Kristian Stjerndorff – He is the head administrator and coordinator of EBarnUngdom. He is also the contact between the developers of the e-service and Uppsala Kommun.
He knows everything there is to know about EBarnUngdom and the ambitions for its future.

5.3.1. First Interview with Malin Dal Barosen

The first interview with her was of the type unstructured. But because of the previously gained knowledge in the usability study prior this thesis the interview had more guidelines than a typical unstructured interview. The plan was actually to have both Malin and Kristian present in the interview but Kristian was unable to attend.

The main purpose of this interview was to understand and clarify the goals of this thesis according to their expectations and wishes. Once the goal is established, the approach to reach the goal will be discussed.

Summary

Once the interview started, the first topic we discussed was what they expected and wanted out of this thesis and I also gave them my thoughts on the project. It was clear at the beginning that they wanted to improve the e-service. Since the usability study made prior this thesis only pointed out usability flaws and didn’t give any concrete suggestions on how to fix the problems resulted in them wanting concrete suggestions of improvement.

The next topic that was discussed was the width of what this thesis would cover. The usability study only analyzed one part of the e-service which was to apply to preschools. But the fact is that the e-service covers other features like reporting income, changing schedules, application to school (after preschool) and also application to childcare. The application features are very similar to each other but the processes can differ. The conclusion of this topic was that, the best for the e-service was if everything was covered but with more emphasis on the application part of the service and also that a new and more usable design solution was suggested.

Different approaches were discussed after this topic and we finally decided that the best would be to revamp the service using the old system as a source for requirements for a new service instead of seeing it as a service that needed to be changed. It came up during the discussions that ambitions for future additions to the e-service were planned and the best for it was if the new design allowed those future additions to easily be integrated in the system.

5.3.2. Second Interview with Malin Dal Barosen

The first interview gave knowledge which made the second interview with Malin able to go deeper into different topics. The type of this interview was Semi-structured which means that questions prior the interview were prepared (See Appendix 19) and discussions outside the topic were allowed but the interviewer tried guiding the interviewee to stick to the topic.
With the consent of Malin, the interview was voice-recorded with the purpose to be able to playback the interview. In this way, misunderstandings which can occur during the interview can be avoided by listening to the interview a second time.

**Summary**

Malin had only worked with the e-service EBarnUngdom for ½ year when the interview was held, but she was very familiar with the service and was certain to be able to help me with most of my questions. She clarified that the aim of the e-service was to provide citizens with a service that gives them the opportunity to make a school choice decision easily and make the application whenever it fits the user.

EBarnUngdom was at first a service that only contained a system supporting the schools choice of pre-schools but they had a higher ambition to provide this kind of service and expanded to elementary school and so on. This year is the first time they will introduce the feature for applications for 3 and 4 graders as well as a feature that provides the ability to compare schools in terms of national tests and other statistics. The e-service will also continue to grow and will open up for school choices for music school and adult education.

At the moment there is already a separate e-service for school choice for gymnasiet (senior highschool) and Malin wasn’t sure if it was good to collect all the school choice services in one place, but it might be a possibility if done properly.

There are other ways to apply to schools nowadays, and it’s by downloading or fetching an application form from the web-site or their administrators. Their goal is to reduce the paper type applications as much as they can, but she didn’t think that it could be replaced entirely.

At the moment, the information about a school on the e-service’s website is limited. The schools themselves are the ones that write information about themselves and the type of information varies from school to school. Some schools like to have attracting information and some don’t bother too much. But the average school has a short description about the school and maybe one picture and an external link to their official website which provides a more thorough description. Malin believes that the information was probably not enough for parents to make decisions solely on that information and that it would be better if the information was similar and somewhat comparable for the parents to help them make good decisions.

The process of choosing schools for elementary school usually begins with them already being assigned a placement. The placement is usually according to where the child lives and the most common is that the child’s parents accept the placement, but there are times that the placement is not accepted and the e-service facilitates that process.
5.3.3. Third interview – Kristian Stjerndorff

The same premises applied in this interview as in the interview with Malin. The same interview form was used to hold the semi-structured interview (See Appendix 19) and it was also voice-recorded.

Summary

The interviews different topics were the same as the interview with Malin. This summary will contain the differences and additions between Malins interview and this one.

According to Kristian, their goal is to replace the paper form. Internet is the standard for making many different kinds of applications and school choices should be one of them. Even if it’s not possible to replace paper form applications entirely because of legal issues, Kristian wants to reduce it as much as possible. Paper forms are today, manually put into the system by the e-services administrators. Another possibility to help the people who are not familiar with computers or have some difficulty making an application is to provide help for example, having an employee write in the information that is given by the applicant.

When making application for preschools, parents have to submit a schedule with the e-service system. The obligation of this process was questioned by the interviewer and Kristian tells that the current e-service offers some features that are not only for application of schools. An example is the schedule feature; parents of children in preschools submit a schedule online and the school can then choose to use that information for planning or other activities. He doesn’t know exactly how many schools uses this feature, but he encourages them all to use this automated system.

The e-service has developed since it started, and the schedule example is just one of the features they have implemented and their ambition to make the e-service complete is high. But some functionality should be questioned, for example Electronic Identification (E-legitimation in Swedish) which contributes to an increased security, but might not be as good from other aspects considering that is not owned by everyone. The system allows also a person to submit anonymous school choice applications which means that they are without any electronic identification or user account.

Kristian believes that it’s important that the e-service provides enough help for the applicants to make a choice of school not only based on geographical location. He wants them to base the choices on quality and on whatever fits them best.
5.4. Analysis of the e-service

The e-service that will be analyzed in this chapter is the e-service currently running (2011-05-30). The goal of this chapter is to demonstrate the e-service and thereby give a more concrete view of the e-service, how it is designed and how it works.

Figure 5.1 shows how the e-service looks. None of the e-service screenshots will be translated, but the important parts will be explained to a degree that helps the reader to make accurate interpretations of the figures.
Looking at Figure 5.1 we see that there are four tabs. The first that we are on is the Home-page, and the other tabs are in order from left to right, pre-school, school and after-school centre. Clicking on any of those tabs simply starts an application to that kind of school (Figure 5.2).

At the home-page on the main content (the left white space) information is displayed that explains what kind of website this is and what you are and are not allowed to do as a logged in user and as a non-logged in user. General information and links to more information is shown below.

At the bottom of the main content part, you can login with the username and password acquired from the e-services administrators through mail.

There’s a column to the right, at the top you can log-in with electronic identification and below that information is a light blue rectangle which shows important context-dependent information which describes the current page. That rectangle is labeled as “Help”.

![Figure 5.2 – Preschool application.](image-url)
The tab with the text “Förskoleverksamhet” triggers a new school-application process like we see in Figure 5.2. Below the tab is a progress bar and the first step is to choose from the schools listed. There’s a search and filter function for this and an overview that lets you add schools and view information about them.

The application process of the e-service is what is used the most and will therefore be one of the main focuses of this thesis. The application processes for school and after-school centre are similar to the preschool one; they follow similar structure when it comes to the kind of steps that need to be done.

The names of the steps are the following:

1. Choose Unit
2. Information about the child
   - Choose information
   - Choose child
   - Co-applicant guardian
   - Alternative
3. Other Information
4. Confirm

After the application is done, some manual work has to be done by the administrators of the e-service to make a decision about placement and when a decision has been made, the applicants are notified through email and asked to complete the application by filling in additional information such as financial information, schedule etc.
6. Analysis and concept design

The goal of this chapter is to analyze the information gathered in previous chapters and build a foundation of knowledge which will be used in the creation of a prototype. The goal is to first come up with a concept that reflects the goals and ambitions of Uppsala Kommun in terms of school choice and then visualize the concept in form of a prototype.

6.1. Requirements

Requirements were gathered with the help of interviews and analysis of the current e-service. A requirement specification was created and was accepted by the tutors working eBarnUngdom. The requirement specification is shown below and is ordered with the most important requirements on top.

<table>
<thead>
<tr>
<th>Environmental Requirements</th>
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</thead>
<tbody>
<tr>
<td>ER1</td>
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<tr>
<td>ER2</td>
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<td>ER3</td>
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| Table 6.1. Environmental Requirements |

<table>
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<tr>
<th>Usability Requirements</th>
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<td>UR1</td>
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<td>UR2</td>
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<td>UR3</td>
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<tr>
<td>UR4</td>
</tr>
</tbody>
</table>

Table 6.2. Usability Requirements
Table 6.3. Functional Requirements

6.2. The concept

The next step in the concept design process is to generate an underlying concept given the information gathered. The concept that was chosen was “Web Portal”.

The Web Portal will be a way to gather the different but yet similar functions of school choice in a unified way. The most important function of a school-choice service is the application process. Depending on type of school, the application processes will need to be different but collecting them in the same portal will provide the user with similar work flow and look and feel.

Besides the application process, other features can be implemented using this concept. This can be features provided by the schools. For example, if a user is accepted and studying in a school, he could through the portal access his schedule, any school news, the school menu etc.

An idea is that the portal concept will support a configurable overview page that is customized by the users to fit their usage needs. For example, if a user is a student in a school he may want to have his schedule and school menu shown on the first page but if the user is a

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<th>Functional Requirements</th>
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<td><strong>FR8</strong></td>
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<td><strong>FR9</strong></td>
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</table>
parent of small children that are in preschool the user might instead want the children’s’ school newsletters together with their schedules or some other functions that the user might find useful.

6.3. Models

The most important feature in an e-service for school choice is the application process. This was decided together with the tutors at Uppsala Kommun that has been running this kind of service for some time now.

In this thesis, the application process will be the main focus when creating the web portal. The application also cover different topics that are important for the web portal such as how schools will be presented, how an inbox will work, how to submit a schedule.

This process consists of a lot of input required by the user and is usually a relatively long process. The most important for this kind of process, from a usability point of view, is to have a good workflow.

An application process for pre-school requires several actors and is finally completed when all the required actors’ have been involved. The process is illustrated in Figure 6.1. In this case, it’s the child’s guardians who are responsible for making the application. They must, by law, both be part of the process and confirm an application.

![Figure 6.1 - Actors involved in an application process.](image)
The most complex part that requires most input from the user is when the first guardian starts an application. The figure below, (figure 6.1) shows a collection of the different inputs required and activities that were identified to generally make a school application. Depending on the type of school application, whether it’s a preschool or music school, the inputs required by the user will differ. In the figure, the colors of the boxes illustrate that they are similar to each other and might be categorized together.

Figure 6.2 - Identification of activities in an application

Figure 6.3 - Flow of a pre-school application.
With the different inputs required broken down, the flow of the process can be decided as shown in Figure 6.2.

Figure 6.2. shows an example of how the flow of an application process can look. There are for big boxes with different colors placed horizontally, these represent different categories with the name of the category written on top. The arrows point in the direction of the flow and the small boxes inside the big boxes represent the different activities.

- User Information – This category requires input from the user in form of personal information such as name, personal number, phone and other information connected to a person that might be needed for the application to be processed.

- Choose school – This is an action that requires to find interesting schools and prioritize them

- Other Information – This part is for information that is school related and not always mandatory, for example if the child needs special treatment and also agreements and conditions.

- Confirm – Finally, the applicant should thoroughly read the choices made and confirm that the application is complete to submit the application.

6.4 The Prototype Evaluation

Following the approach mentioned in chapter 3.3.3 Evaluating the Prototype, a test plan was made. This test plan was presented to, and accepted by the representatives of the e-service at Uppsala Kommun and will be described in this chapter.

**Generally about the test plan**

The test will be done on a detailed paper prototype that is designed to illustrate the concept. The focus of the test is on structure and navigation and not as much on design elements like background color, font-size and image placement hence the low-fidelity paper prototype.

**Purpose**

- To test the prototype’s general structure is comprehensible by the users.

- Find out how the users reason and react in different situations

- Find out if the underlying concept is understood and if it’s viable.
**Test participants**

Literature suggest to have 4-8 test participants (Jabok Nielsen et al., 2000) when testing low fidelity prototypes at early stages. For this test, 6 participants were chosen that fit the following requirements:

- Ages 19-40
- Can be potential users of the system.

**Method**

All the participants will perform the same test and they will do it separately.

The participants will sit by the computer and perform six tasks (See Appendix 20) given by the test leader while using a “think-aloud” protocol. The test will be voice and screen-recorded.

Two questionnaires will be given to the users to fill in, one prior the test and one after (See Appendix 17 and Appendix 18).
7. Results

This chapter aims to explain and describe the result of the thesis. The result consists two parts; the first is a prototype that illustrates a school-choice e-service which follows the concept of a web portal. At this early stage, the prototype focuses on application processes; the second part is to show the results of a prototype evaluation that was made.

7.1. The prototype

The home page (Figure 7.1) of the prototype has three drop down menus. The first menu is “My page”, the second “Verksamhet” can be translated to “School activities” and contains the different types of schools and the third menu is “Questions and Answers”.

![Figure 7.1 - Start page.](image)

A search feature is provided on top-right of the webpage. This can be used to search for a schools name or other information that exists on the website.

To the right of the page is a login-box. Users can either log-in with their normal account information or they can log in with electronic identification.

The reason that the menu contains those three menu elements is to separate the different functions of the website.

- **My page** – contains information connected to the user (Figure 7.2). They have an inbox, history of activities, settings, placements etc. For future improvements, this part can be used as a customizable tool for the user.

- **School activities** – This contains general information about different school activities, such as preschool, afterschool care etc. It’s from this place applications can be made. The reason that all the school activities are listed together is because it provides flexibility by allowing implementation of new school activities for the future.

- **Q&A.** Questions and answers is a way to make information accessible for the users.
7.1.2. The application process

The application process is started by first clicking on the menu “School Activities” then choosing the type of school if it’s preschool, etc. and finally actively clicking the link Apply to a preschool. This link takes you to the first step of the application process (Figure 7.3).

The Figure 7.3 shows some new elements. Firstly, the left column contains the name of the School Activity, in this case Preschool. Beneath that are different links that are connected to
preschools, for example, find preschools, apply to preschool, rules and rights and a map containing different preschools.

The right column shows a new box that is labeled “Favorites – preschools” and is currently empty. Users can easily access schools from here that has been labeled as favorites and there’s also a feature that allows them to compare the favorite preschools.

On top of the main content, a progress bar is shown with four different categories; each category contains a certain amount of steps. The step in bold represents the current step. These steps are the results of the models created in chapter 6.3.

There’s a link on the bottom that is labeled “Next step” and takes the user to the next step.

Figure 7.4 – Application 2-1.

After completing the steps 1-1, 1-2 and 1-3, the user is taken to the second category. This category (Figure 7.4) consists of choosing school and prioritizing them.
You can see that you are in the second category of steps because the first one turns green which symbolizes that the step is complete. Blue background color means that the step is the current one.

Compared to earlier application, the steps in this category require more interaction. The users have to search and find the schools they are interested in and then choose them so they can, in the next step prioritize them. To their help, the users are provided with different tools such as, map, filter by location, filter free-text search or just choosing a school that has previously been added as favorites.

Once the user finds a school that he or she wants to apply, the user should add it as favorites.

The schools are listed in the same page below and the information shown is just a small description of the school, amount of free places and a photo. If the user wants to read more, he can click anywhere in the box. This takes you to a new page where the main content is information about the school (Figure 7.5).

![Björkens förskola](image)

**Figure 7.5 - Information about the school.**

There are five tabs that contain information about the school:
• **General Information** - The information is presented in the first tab is general information about the school that the school can choose themselves. They can add pictures, links and other information.

• **Contact information** – The second tab contains contact information such as e-mail and phone number to the school.

• **Placement overview** – In the third tab the users can find information about the placements, for example how many students a school can take, how many spots that has been reserved and taken etc.

• **Map** – The fourth tab contains an interactive map that shows the location of the school.

• **Study results** – The last tab contains study results. Such as the average score by students in the national exams.

Once the user has schools added as favorites, he or she can go to the next step, prioritize the schools (Figure 7.6).

![Figure 7.6 – Prioritize schools.](image)

The priority of schools is important in case placement is denied on a school. The user can rearrange the list by dragging or by selecting a school and using the arrows to the right to move it down or up through the list.
The rest of the steps are pretty straight forward. The user fills in requested information in text fields. Once all the steps are completed and the application has been submitted (Figure 7.7) the user will first be notified on the webpage, through email and through the internal inbox that an application has been made. The information shown explains how the user can follow the status of the application and that the user will be given new instructions once the application has been processed.

Once the application has been processed by the system and a decision about school choice has been made by an administrator, the user will be notified through email, the e-services inbox and possibly a text-message on the phone. The notification will instruct the user to log on the e-service and click on “My Page” and then “My placements” to proceed with the school choice process (Figure 7.8).

The page in Figure 7.8 shows the placements connected to the user. In the figure, the user named Per Berglund doesn’t have any schools connected to him, hence the empty box below his name. But below, beneath the label “My Family” there’s a box containing two names, Agnes and Adam Berglund who are his children.

In this place the status of applications and schools are shown. For Agnes Berlund, it can be seen that a placement offer has been made and to complete the school choice the user has to do two things, submit his schedule and register his income.

For the user’s son Adam Berglund, you can see that he is attending to the school Eriksberg Skolan and below are a few links that correspond to the school and the son such as News letter, Food menu and schedule. Below that box there’s a placement offer for afterschool child care at Eriksberg Fritidsklubb.

This kind of structure makes it very flexible to show the status and connections between schools and children.
Figure 7.8 – My Placements

Once all the requirements for the placement has been met, the status of the application will be labeled as accepted and the child will be welcomed to his or her new school in whatever way the school prefers. Appendix 2 through Appendix 16 shows figures containing all the parts of the prototype.

7.2. Results of the test

Different prototype screenshots were connected and made interactive with the help of the presentation software PowerPoint to create an interactive prototype.

A prototype evaluation was then made by six participants where they tested the interactive prototype following the test plan described in chapter 6.4. Prototype Evaluation
7.2.1. Questionnaire prior prototype test

Before the actual prototype test, the participants were given a questionnaire (Appendix 17). The purpose of the questionnaire was to find the characteristics of the testers.

General characteristics

The ages of the participants ranged from the youngest 21 years old, to the oldest 35. The chart in Figure 7.9 shows that most of the testers fit in the class with ages 33-39.

Of all the participants, half had children that were in the ages between 2-4 years old. The other half didn’t have any children.

Computer Experience

Everybody but one said that they surfed on the internet every day. Figure 7.10 shows how many hours the testers spend on the internet each time they use it. The users tend to spend most of that time on the internet doing the following:

- Reading blogs
- Social Networks (Facebook, Twitter)
- Email
- Internet Bank
• Reading News
• Playing Games
• Google/Youtube/Wikipedia

Figure 7.10 – Hours spent on the internet each time.

7.2.2. Testing the prototype

The prototype test was both voice- and screen recorded to make the analysis of the tests more valid. The six tasks that the test participants were given will be analyzed in this chapter. To transform the qualitative data acquired from this part of the test to a more quantitative, the tasks were rated in a scale from 1-5 depending on how well the participant completed a task. This is possible thanks to the think-aloud protocol.

The lowest grade of the scale is 1 and means that the participant couldn’t complete the task or completed it with the help of the administrator. And the highest grade is 5 and means that the participant completed the task perfectly. Some tasks were bigger than others and were therefore broken down into smaller parts when rating. The overall rating of those tasks equals the average of the parts’ rating. If a participant scores 3 in a task or a subtask means that the participant barely completed it or completed it with difficulties. These difficulties were observed and explained on each of the tasks and subtasks.

Task 1 - Log-in

For the first task, the users were asked to log in. This task was broken down into two parts when rating:
How well the users understood the menus – What the menus contained and that they were a menu was correctly understood by all the users. The average rating for this task is 4.8.

Logging in - How they actually log on to the service. Average rating 5.0

This first task was successfully completed by all the participants without any problems. The overall score for the first task is 4.9.

Task 2 – Find a specific school

The participants were asked to find the preschool named “Björkens Förskola”. This task was broken down into 3 parts when rating:

How easily they find schools using different tools (such as filter, search, browsing) – The participants used different approaches to find the school. When finding a specific school and three of the six participants chose to use the search box. The others chose browsing until found. Other tools such as filter and map were correctly identified. The average rating for this part is: 3.5.

How information about school was perceived - How they understand what kind of information is shown when viewing a school and how they can find information about the school. All of the participants had rating 5.

The box “Favorites” is perceived – Some users identified how the functions of the box containing favorites correctly, one participant didn’t. Most of them perceived it as a way to save schools to make them easily accessible, two connected it to the application process. The average rating is 4.

This task had an overall rating of 4.2.

Task 3 – Finding rules and agreements of preschool

Three users located the link on the left menu; one used the search field on the top right corner and the other two used the Q&A menu. This task scored an average rating of 4.2.

Task 4 – Preschool Application

This task is by far the largest of the test. It was therefore broken down to ten parts when rating:

Finding the create application link – Most of the participants wanted to apply to a school by first finding the school through search and then going from there to make an application. The average rating for this part was 2.2.
Perceiving the progress bar – Most of the participants didn’t identify this progress bar until the second category and it changed colors. Average rating: 4.2.

Choosing school – This part is how well the participants understand the process of adding schools to the application. Many participants didn’t read the instructions and therefore had a harder time knowing what to do. Average rating 2.7.

Prioritizing schools – This part of prioritizing chosen schools was easy for everybody and everybody got rating 5.

Understanding how to field in text fields, dates, obligatory fields etc. – All of the participants could understand the different fields throughout the application. Average rating was 4.7.

Knowing what to do after the application – Two of the participants read the instructions given once they sent in the application and the others expected to get a notification in some form when a decision was made. This part is connected in finding the status of the application. The average rating for this part was 3.7.

Find placements and status of application – Some of the participants started looking for the placements in other places while some of the participants didn’t have to search as much. This part had an average rating of 3.3.

Perceiving placements – This part rates how well the participants understand the different elements of the “My placements”-page. Some of the participants found this place a bit confusing and needed time to take in what the page contained but most of the participants perceived most elements correctly. The average rating was 3.7.

Inbox – The inbox was correctly understood by all the participants. The average rating for this is 5.

Changing/adding schedule – Some participants had trouble understanding how to add and change at first. The average rating for this is 3.

Overall, the application task scored a rating of 3.75.

Task 5 - Send an email to the support

Most of the participants didn’t have trouble knowing where to look. One of the participants clicked around looking for a link that specifically said “Support”. The average rating of this task was 4.2.

Task 6 – Find a child’s school menu

This task was to see if the user understands that features such as school menu can be found for a person’s child. One of the participants wasn’t able to find it. One of the participants found it...
on the first try and the others tried looking in some different places first but managed to find it eventually. The average rating for this task was 3,3.

**Task 7 – Finding income**

The task consisted of finding income. This is important because the users of the system have to change this part when their income is changed. In this test, all the participants were able to find the page that lists the income and are able to change it. The average rating for this task was 4,7.

**Summary of the test**

The summary of the tests provided possible results in most tasks. Of all the given tasks, finding a child’s school menu was the least successful one and the most successful was the first task, to log in.

The application task contained both high and low results. Breaking the task down to smaller parts made it possible to identify the flaws in it. Some parts scored low like finding the link and choosing the school and can be the focus for future iterations.

The results of all the tasks can be seen in Figure 7.11.

![Average Rating Results](chart)

**Figure 7.11 – Chart of average rating.**
7.2.3. Questionnaire post prototype test

After the testers finished testing, they were given one last questionnaire. The questionnaire consisted of two parts, the first part is a System Usability Scale test based on likert scales and the second part consists of a few general questions about the prototype (see Appendix 18).

**System Usability Scale**

The System Usability Scale is a way to test the usability of systems. The validity of this scale on a paper prototype like the one tested here hasn’t been explored, but any kind of feedback for the prototype is good.

The System Usability Scale consists of ten statements where the tester has to choose their stance on those statements in a five leveled scale from “Strongly Disagree” to “Strongly Agree”.

![Boxplot of SUS-score.](image)

The answers generate a score through a standard formula. The box-plot in Figure 7.11 shows the scores of the test participants. We can see the lowest score was 45,5 while the highest was 97,5. Most of the scores were between 66,9 and 76,9.

**Other general questions**

**Question:** How would you describe the prototype that you just tested as if it were a real website?
- The answers for this question were similar. All of the participants could identify it as website for school choice. Two of the participants also added that the website was for other things such as follow your schedule.

**Question:** Do you have any feature suggestions that you didn’t find in this prototype?

- Everyone but two chose not to answer this question. The suggestions were:

  - Buy food that the preschool arranges. Connect a grocery or restaurant service which allows the parents to pick up food or groceries from the preschool while fetching their children.

  - A way to share schedules with other people and maybe have it on the phone

**Question:** Other Feedback:

- All the participants left this unanswered.
8. Discussion

This chapter is a discussion of the problems that occurred and the choices that were made during the thesis. It will also discuss results and the theory based on the opinions and experience of the author of this thesis.

8.1. Concept design for services

The concept design methodology used in this thesis contained the important and basic pattern of typical product concept design but was tweaked to emphasize a design that focuses on workflow. The used concept design methodology was quite successful. It was easy to go from an abstract idea of the concept to a concrete visualization of it in form of a prototype. Much of it with the help of the models designed.

One of the known risks when using concept design is that it’s possible that the chosen concept might fail and that the chosen concept is not what the consumers need. This might be especially noticeable when introducing concepts that break out of the norm but that the concept doesn’t fill an existing need of the consumers doesn’t mean that it failed. New concepts can be used to generate new needs as they make their way into mainstream. As for the concept of this thesis, there’s not much of a risk involved because the service is not completely new and is based on an existing service.

8.2. Discussion of results

8.2.1. Concept prototype

Over the years, the way that a concept should be defined has differed, some say that, it’s enough to define it verbally (Schmidt, 1997) but in this case we applied Stolterman’s and Wiberg’s (2010) way of defining a concept. They find it necessary to explicitly describe it with the purpose of making it visible so that it can be critically examined for further development. This was applied through the making of a low fidelity prototype which contain was enough detailed to make it viable for testing.

The low fidelity prototype was a paper prototype. This is a cheap and easy way to create sketches and when presenting to customers, get feedback that doesn’t focus on irrelevant things like, in this case, design elements. For this thesis, the focus of the prototype was the workflow and user interaction which means that this way of prototyping was perfectly suited because it allowed the tester’s to focus on how they wanted to complete a task and because of the talk-aloud protocol, it was possible to understand the user’s expectations for each task.

Another reason that a paper prototype was used is that it’s easy to start over and create a new prototype that illustrates another concept in case there’s a need for it. For example if a prototype is tested and the scores point into a different direction, then it’s easier to redesign it.
into the right direction. Because the design of low fidelity prototype is easier and cheaper means that more time can be put into redefining and iterating.

8.2.2 Test results

The results of the test were very good for being a first draft. Some tasks scored worse than others but the overall score was above expectations. The conclusion of this test is therefore that it’s heading in the right direction, meaning that future iterations can be made based on this prototype.

Despite the good results, there were some flaws that were identified as well as some minor errors. Especially for task 4 (Preschool Application) and task 6 (Finding a child’s school menu) which were the only tasks that scored below an average of rating 4.

Task 4 was divided into ten parts when the tests were rated. This made it easier to identify problems and separate it from other parts of the task. The first task was to find the application link. Some of the tester’s tried to find a school first and then wanted to start an application from there. Some others just had a hard time locating the link directly on the submenu. There could have been a misconception by the users that wanted to start an application just after choosing school; they could be thinking that they can just make an application that will apply only to that chosen school. And if they want to apply for another school, they will have to make another application to that school. One option for future development of this service is to allow this kind of conception, meaning that the user’s also can apply to schools by selecting the school first.

Another option in that matter is to clarify the current idea of making applications, namely to choose schools as a step in the application process. This makes it easier to understand the priority process of the application. The problem of not finding the link can be done by changing the placement of the link and/or enhancing the visibility of it. My personal recommendation is the latter, at least for the next iteration to explore in future user tests if that kind of misconception would appear despite the increased visibility of the link.

Other problems in task 4 involved where the users view their placements and status of applications. This part of the prototype is supposed to be where the users can get an overview of their placements and their children’s placements. This is a very important part of the web portal concept and I would recommend having it as a focus for future development. Other tasks that scored low rating was task 6 that is about finding the child’s school menu which is also something that is supposed to be accessed through the overview-page “My placements”.

Another flaw in the prototype was the use of “Favorites”. Users identified the “Favorites” when looking for a school correctly, a place where they can store and save schools that they thought were interesting so that they could easily access them and also in that way compare them. But the meaning of “Favorites” changes during a school application; it becomes a tool for selecting schools instead storing the schools that are chosen for the application. This is a flaw of logic that should be changed even if it easily can be made understood by having some
text instructing the users to add schools to favorites. A better solution is to have another tool that appears only in the application process were the users can add schools to their application without having to add them as “Favorites”. Of course, the option to add schools from their “Favorites” to their application should exist.

8.3. Improvements for future development

Besides improving the prototype with the help of the test results, I suggest that future iterations and redefinitions of the proposed concept should focus on the creation and modification of a homepage that integrates the information shown of “My placements” (Appendix 6). I believe that “My placements” is the most important page for the users if they are going to use the different services provided by the schools of the user and should therefore be the homepage. This page should also be able to be personalized and customized by the user.

Another suggestion is to have different kinds of integrations with commonly used services such as social networks like facebook, twitter etc. All the new services that Uppsala Kommun wants to implement means that the amount of activity by the users on the website would increase. Schools will also benefit to use and offer services through Uppsala Kommuns school portal because it would mean that they don’t have to develop those services themselves. All this might change the user activity from casual users to more frequent users.

One more suggestion is to create support for a smart-phone application. In this way, the user’s can reach different services from the phone. One example is if a parent has a child on daycare. But for some reason, he or she can’t pick up the child from school and has to send another relative to do it instead. This type of message can almost effortlessly be done by the user with a smart-phone and this kind of application.
9. Conclusion

This thesis was about using concept design to improve the e-service, EBarnUngdom provided by the municipality of Uppsala. By doing so we could investigate if it is possible to use concept design to improve already existing methods.

The new concept was created with information gathered from different sources, for example; the current e-service, interviews etc. The created concept was illustrated in the form of a low-fidelity prototype and which was tested.

The concept that was chosen was a “Web Portal” concept. This concept suited the ambitions of Uppsala Kommun perfectly which was to give their members the ability to apply for different types of schools as well as providing different types of school-related services. The Web Portal concept allows the different services to be displayed in a unified way and therefore improving the learnability and usability of the service.

The prototype was made focusing on the most important part of the service, the applications for schools. The created low-fidelity prototype was tested using a low constraint test with a talk-allowed protocol. This type of protocol means that the testers have to say what they see and explain why they do as they do.

Together with a low-fidelity prototype, this test-protocol worked great. Because of this, it was great for getting a lot of information and it was also much easier to determine if the users’ reactions depended on misunderstandings of the design elements due to bad prototype design, or misconceptions and it was also much easier to understand the users’ expectations and their preconceptions.

The prototype test results showed that the development was going in the right direction and some flaws in the design were found which should be covered in future development and iterations.

Testing a concept at an early stage comes with many advantages. If the test results would have been bad, it would have been possible to completely change the direction of the development. In this case it would be to find another more fitting concept and design other prototypes based on that new concept. However, that was not the case in this thesis which gives the developer approval and an opportunity to cheaply correct the identified flaws before implemented.

As all of the features created and presented in this prototype might not be viable to implement directly to the service’s current state, the results of concept design can be used as an idea bank instead, meaning that improvements of the current e-service can be made gradually using the results of the concept design work as a foundation for their improvements.
So how can concept design be used to improve already existing e-services?

Well, as developing a whole new system takes a lot of time and costs a lot of money, it might not be worth investing in scrapping the current e-service and completely replacing it with a new one. But using concept design to improve a current service means that the system has to be treated as if it was made from scratch. This allows the service to be analyzed and viewed from different angles and it can therefore be improved in a way that it couldn’t otherwise. The results of the concept design can also lead to an idea bank that can be used to improve the service.
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11. Appendix
## Appendix 1

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</tr>
<tr>
<td><strong>Task 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>3.7</strong></td>
</tr>
<tr>
<td>- Start Link</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td><strong>2.2</strong></td>
</tr>
<tr>
<td>- Progress Bar</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
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<tr>
<td>- Choosing School</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td><strong>2.7</strong></td>
</tr>
<tr>
<td>- Priority</td>
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<td>5</td>
<td>5</td>
<td>5</td>
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<td><strong>5</strong></td>
</tr>
<tr>
<td>- Filling form</td>
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<td>4</td>
<td>5</td>
<td>5</td>
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<td>5</td>
<td><strong>4.7</strong></td>
</tr>
<tr>
<td>- After application</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td><strong>3.7</strong></td>
</tr>
<tr>
<td>- Find placement</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td><strong>3.3</strong></td>
</tr>
<tr>
<td>- Perceive placement</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td><strong>3.7</strong></td>
</tr>
<tr>
<td>- Inbox</td>
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<td>5</td>
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<tr>
<td>- Change schedule</td>
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<td>3</td>
<td>5</td>
<td><strong>3</strong></td>
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<td>3</td>
<td><strong>5</strong></td>
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<td><strong>Task 6</strong></td>
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<td>4</td>
<td>3</td>
<td>4</td>
<td><strong>3.3</strong></td>
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<td><strong>Task 7</strong></td>
<td>4</td>
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<td>5</td>
<td>4</td>
<td>5</td>
<td><strong>4.7</strong></td>
</tr>
</tbody>
</table>
Appendix 2

Om Min Sida

Allmänt
Du som användare, har tillgång till en rad funktioner som denna e-tjänst erbjuder. Nedan kommer en beskrivning om de funktioner du kan hitta på Min Sida.

Om det är första gången du använder tjänsten kan du börja med att kontrollera uppgifter i Mina Uppgifter.

Inkorg
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Historik
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Mina Uppgifter
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et
Appendix 3

Min Sida
- Inloggningshistorik
- Mina Uppgifter
- Mina placeringar
- Om Min Sida

Hej Per Berglund!

Inloggningshistorik: Enligt nya meddelanden, lege ut

Mina Uppgifter

Adress

Telefon

Telefon (Arbeten)

Telefon (Mobil)

E-post

Utför ändringar

Registerad Inkomst: XXXXX
Andra Inkomst
Appendix 4
Appendix 5

Min Sida > Mina Uppgifter

Mina Uppgifter

Adress
Telefon
Telefon ( Arbete )
Telefon ( Mobil )
E-Pest

Utför ändringar

Registerad Inkomst: XXXXX  [Andra Inkomst]
Eriksbergs Fritidsklubb - Mitt Schema

Klicka på valfri dag i kalendern nedan för att lägga till eller ändra en tid.

< MARS >

v.9
v.10
v.11
v.12
v.13

Måndag Tisdag Onsdag Torsdag Fredag Lördag Söndag

1 2 3 4 5 6

13 mars 2011

Från: 09.30
Till: 16.30

Tiden gäller bara för detta datum, 13 mars
Tiden gäller för alla undergrader framåt
Tiden gäller för alla dagar

Andra Avbryt Rensa tiden
Björkens förskola

Information om skolan...

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Pedagogiktyp: Montessori

Hemsida: www.bjerkensurl.se
Appendix 10

Björkens förskola

Information om skolan...

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. Läs mer...

Lägg till i favoriter

Lediga platser: 2

Boländernas förskola

Information om skolan...

Sida 1 2 3 4

73
Appendix 11

Ansök om förskoleplats

1-1 Barnet

Välj barn

- Adam Berglund (20050720-5912)
- Agnes Berglund (20071130-4808)

Mina kontaktuppgifter

- Telefon
- Telefon (Arbete)
- Telefon (Mobil)
- E-Post

Nästa steg
Appendix 12

Verksamhet > Förskola > Ansök om förskoleplats

1-3 Övriga Familjeuppgifter

- Önskat placeringdatum (t.ex. 2015-02-20) [YYYY - mm - dd]
- Grund för placering
- Omsorgstid timmar/vecka
- Samtalsspråk i hemmet

Barn hämtas tidigast:
- Omsorgstid timmar/vecka

Föregående steg   Nästa steg
Appendix 13
Appendix 14

Ansöka om förskoleplats

1. Familjeuppgifter
   1-1 Barnet
   1-2 Familjehuvudarna
   1-3 Övriga familjeuppgifter

2. Välj Förskola
   2-1 Sök skola
   2-2 Prioritera alternativen
   2-3-1 Övriga uppgifter
   2-3-2 Regler och avtal
   2-4-1 Kontrollera uppgifterna

3. Övrigt

4. Bekräfta

2-2 Prioritera alternativen

Prioritera dina alternativ nedan. Detta gör du genom att markera en förskola och flytta upp eller ner den i prioriteringslistan med hjälp av pilarna till höger.

Du kan välja upp till 4 förskolor.

Prioriteringslista

<table>
<thead>
<tr>
<th>Prioritering</th>
<th>Förskola</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flagsta</td>
</tr>
<tr>
<td>2</td>
<td>Björkens förskola</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Lägg till flera skolor

Föregående steg  Nästa steg
Ansök om förskoleplats

3-2 Regler och avtal

Regler och avtal
* Dina personuppgifter kommer att lagras
* Regler för etjänsten nedan

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est

☐ Jag har läst och godkänner reglerna och villkoren för...
☐ Jag har tagit del av och accepterar kommunens Regler och avgifter

---

Föregående steg Nätstå steq
Ansök om förskoleplats

Din ansökan har nu mottagits och kommer att behandlas inom kort. Du kommer att bli notifierad via epost när din anmälan har behandlats.

Du kan följa din ansökan status under [Min Sida > Mina ansök]. När du blir tilldelad en förskoleplats kommer du att få nya instruktioner om hur du accepterar eller nekar platsen.
Appendix 17

Questionnaire 1

Age: _________

How many days a week do you surf on the internet __________

Of those days, how many hours do you spend surfing on the internet __________

What do you do when you use the internet

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Have you ever used the e-service eBarnUgndom at Uppsala.se? __________
Appendix 18

Questionnaire 2

<table>
<thead>
<tr>
<th>Påstående</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think that I would like to use this web page frequently</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the web page unnecessarily complex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I thought the web page was easy to use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that I would need the support of a technical person to be able to use this web page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the various functions in this web page were well integrated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I thought there was too much inconsistency in this web page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would imagine that most people would learn to use this web page very quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the web page very cumbersome to use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt very confident using the web page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt very confident using the web page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How would you describe the prototype that you just tested as if it were a real website?
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Do you have any feature suggestions that you didn’t find in this prototype?
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Other feedback : ____________________________________________________________
___________________________________________________________________________
Interview questions

- What’s the purpose of the e-service?
- What other ways besides the e-service can you use to apply for a school?
- How is this e-service going to coexist with the other ways of applying to schools?
- How has the e-service developed over time? Which features has been added and removed?
- How do you apply for a school without a computer? What security measures have been taken? How is information given about a school?
- What is the ambition with the e-service? Any plans of implementing new features?
- How does a person get his/her account and what are the requirements?
- How does information about schools get on the e-service?
- Do you think that the information shown on the webpage about a school is sufficient for the parents to base a decision on? If not, what do think is missing? Or what other factors do you think are decisive?
- Who and what kind of employees are working with the e-service and what do they do? Who handles questions from the parents?
- What happens with the account and the e-service after someone is assigned a school. Is there any further interaction required by the users with the e-service?
- How is the procedure of assigning schools done? How are the placements decided?
Tasks

- Logga in
- Hitta Björkens förskola
- Hitta regler och bestämmelser för förskolor
- Gör en förskoleansökan (även efter att ha fått placering)
- Skicka ett email till support
- Hitta Peters barns skolmatssedel.
- Ändra din inkomst