Usability assurance

Project Casper

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<table>
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<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catharina Ahlström</td>
<td>Mda</td>
</tr>
<tr>
<td>Kristina Fridenskold</td>
<td>Mda</td>
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1 Introduction

1.1 Purpose

The purpose of identifying different target groups is that we want to design the interface of the demo on the basis of the perspective of the user. It is important to know who the users are and the target groups will serve as guidance when to find suitable test users. As we want the product, which the demo shows, to be available to as a wide group of people as possible, we have chosen to focus on four different, possible target groups of users. We have deliberately chosen to exclude some other possible groups, such as for example groups of people that could be considered Techno Negative. One of the methods we have used is to create four different personas that are representative for each target group. A persona is a user archetype that is possible to use to help guide decisions about product features, navigation, interactions, and even visual design. A persona description is a narrative that describes the flow of someone’s day, as well as his or her skills, attitudes, environment and goals.

On the basis of the references in the requirement specification we have designed a prototype of the user interface of the demo. By the means of this prototype we will perform usability tests among possible future users in order to see how the prototype fit in the reality. The tests will show how the users interact with the prototype and what problems they might have. The usability tests are part of qualitative studies where informal interviews are another part. These interviews tell what the users consider as important when they shall use services similar to the one the prototype shows.

Our expectation is that this work will constitute a foundation with intentions to design the product as “user friendly” as possible. With user friendly we mean that the
product has to be easy to handle, to give the user a feeling of trust and being in control.

1.2 Scope

Included scope

Our aim is to do a full paper mock-up of the GUI for a demo version of a “Christmas card service”. In the design of the GUI we will consider the users needs and expectations. We will also consider the policy requirements stated in the requirement specification of the Casper project. We will use the personas of the four target groups as guidance to find suitable test users on whom we will do qualitative studies. The methods we will use are ethnographical field studies and informal interviews. We plan to do usability tests of the demo, or on a prototype of it, on a number of test users that correlate to one or more of our four personas. These studies will be held in a laboratory environment, i.e. a fixed room with a computer on which we can show the demo, a videocamera on a stand to record what is happening during the test and a recorder to record the sound. After tests we will analyse and summarise the result.

Limited scope

If we find a need for it, we will perform a usability test on our paper mock-up before usability test on a computerised prototype. We might also extend our studies with more formal interviews.

Excluded scope

We will not do quantitative market surveys. We will not send out questionnaires. We will not perform usability tests with persons not corresponding to the features of our personas.
1.3 Terms and Abbreviations

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
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</table>

1.4 References

In this document we refer to the following requirements in the requirement specification for the Casper project:

1.4.1 Human factors

RFU.USER.HUMAN.1-TARGET_GROUP

1.4.2 User policy requirements

RFU.OP.POLICIES.1-ACCESS_CHARGING
RFU.OP.POLICIES.2-ACCESS_POSITIONING
RFU.OP.POLICIES.3-ACCESS_INFORMATION_NAME_ADDRESS
RFU.OP.POLICIES.4-ACCESS_INFORMATION_PHONENUMBER
RFU.OP.POLICIES.5-ACCESS_INFORMATION_PERSONAL_ID_NUMBER
RFU.OP.POLICIES.6-ACCESS_ADDITIONAL_INFORMATION
RFU.OP.POLICIES.7-EXTENSIONS
RFU.OP. POLICIES.8-PROMPT1
RFU.OP. POLICIES.9-PROMPT2
RFU.OP. POLICIES.10-PROMPT3
RFU.OP. POLICIES.11-EDIT
RFU.OP. POLICIES.12-ENFORCEMENT
1.4.3 Usability assurance enclosure

In this document we refer to the document 'enclosures to usability assurance'.
2 GUI mock-up and prototype

In the Casper project we have decided to make a demo version of a X-mas card service application. To make sure that the demo version will handle aspects such as policy, trust, control etc. we decided to make a mock-up of the gui. The mock-up will serve as a guideline in discussions held between project members. By making a simple paper-mock up we save time and effort in the same time as we gain a means for communicating our vision of the demo. By taking our paper mock-up to meetings we have been able to make ongoing changes and adjustments according to the input received from persons involved. The paper mock-up has also made it possible for us to visualise what will happen when making different possible user choices. In this way the design of the gui has grown out of a mutual understanding of the demands on the demo version of the X-mas card Service. The paper mock-up will also serve as a model for a computerized prototype which in turn will serve as a tool for planned usability tests of our gui. The usability tests will be performed with people matching the personas that we have created in the scenarios document. After performed usability tests we will analyse the result and make any necessary changes to our computerized prototype. It is our aim that the final prototype shall serve as a guidance for the programmers when implementing the demo version of the X-mas card service.

Since the prototype has been developed in an evolutionary way, with many discussions throughout the design work, there should not occur any problems during the implementation phase that have not already been considered in the design phase.
2.1 The demo GUI

In the work of designing the gui for the demo our aim has been to illustrate how we wish to handle the user policy towards service providers and how we think a gui should be designed to make the user feel secure and in control when using this service. This we think will provide that the user gets a feeling of trust towards the system used.

2.1.2 Patterns

“GUIs that use widgets and conventions that are already familiar to new users are easier to grasp because the users will posses knowledge and expectations that are consistent with their use. For example, users will usually know what to do if they see a pop-up menu. Users are also less likely to make mistakes if their existing habits and expectations work with a new gui. A gui that reduces unexpected reactions from the user is easier to learn to use.”

Mark Grand, chapter 5, “Patterns in Java Volume 2”.

In the design of the gui for the demo version of our X-mas postcard service we have followed some guidelines formed by Mark Grand\(^1\). Firstly we have tried to use elements that are familiar to the user in the gui. By designing for a group of users that we expect have some experience of computers and the world wide web we have the advantage to be able to presume that the user already knows how to act when confronted with, for example, a pop-up list, a scrollbar, a text field or a button. Our

\(^1\) Guidelines for designing a GUI according to Mark Grand: Use elements that are familiar to the user in the GUI, Design GUI components that are consistent with users expectations and knowledge base, Forgive user mistakes, Provide warnings to users for those operations that cannot be undone, Walk users through unfamiliar tasks step by step, Provide short cuts to routine tasks for experienced users
aim is to design our gui components in a way that is consistent with the users expectations and knowledge base. We think that it is essential to “forgive” user mistakes by providing an option for the user to change any mistakable input given. By providing warnings when the user is to perform an operation that cannot be undone will improve the users sense of control and trust. In our gui the user can cancel almost every input except after having confirmed the specification list. However, the user has to confirm this action and also have the possibility to cancel before confirming. We see this as a way to provide the user with the understanding that he/she will make a choice that is not possible to withdraw. By making our users follow a specific path when using the X-mas postcard Service we consider ourselves having followed also the guideline to walk the users through unfamiliar tasks step by step. What we have not done though is to provide short cuts to routine tasks for experienced users. This is because we consider our gui design being minimalistic of its nature. By this we mean that we consider our design clean from unnecessary steps and graphics.

2.1.2.1 Selection (Grand 99)

We have used the pattern Selection for design of the “register or change policy” service. We have also used Selection when dealing with the idea of a possibility to pick addresses from an addressbook, even if we most likely will not implement this in the final demo version.

2.1.2.2 Form (Tidwell 98)

When designing the log-in page in our gui we have had the pattern Form in mind. This pattern has also served as a pattern for the part where the user can fill in an address to where a postcard is to be sent.

2.1.2.3 Our believe in a minimalistic design

In the interest of usability we believe in a minimalistic design of the gui for the X-mas postcard Service. We believe in simplicity, a plain gui where there are very few possibilities of doing wrong. We also believe in the thought that everything has its right place, i.e. for example do we believe that when making the choice of changing a
user policy the user will be linked to this service at the operator site where this service belong.
3 Usability tests

By performing usability tests it will be possible for us to evaluate and assess the design proposal we have made for the gui of "the X-mas Postcard Service" demo. Before the tests we have transferred a paper mock-up of the gui to a computerized prototype created by html. The aim of the prototype is to visualise our proposal of the gui for an application like "the X-mas Postcard Service". However, the functions shown in the prototype has not been implemented. By this way of working we have the opportunity in an early stage of the work of the design to test our gui on people who represent prospective users of a service like "the X-mas Postcard Service". On the basis of the results from the tests we have the opportunity to make necessary changes and/or supplement to our gui proposal without it affecting any other work to speak of. Our thought is that the implementation of the functions in the gui will not take place until the usability tests are carried out and the result of the tests have been analysed and evaluated. In this way we have the opportunity to present a detailed sketch of the gui and which functions that are necessary according to the requirement specification for the programmers in the project. This way of working should contribute to save time for the implementation of the code and decrease the risk of misunderstanding or omission of important details.

3.1 Purpose of usability tests

The purpose of performing usability tests of our prototype is to investigate three matters:

- Is our gui self-explanatory? Is there anything that needs to be clarified?

Does the user feel the steps from the beginning to the end to be logical? Are they too extensive? Does it feel too easy? Too “pure”? Does it take too long time to go from the beginning to the end? Is there anything that needs to be
clarified? Is there anything that can be removed? Is there anything that seems to be indistinct?

We hope these questions will be answered partly by our observations of the user and partly by the comments from the user during the test.

• *Does the user feel confidence for the demonstrated service?*

This is a central matter in our work of design and at the same time it is difficult to measure. Assessments have to be done on the basis of the observations and eventually by asking the user. Yet it is important not to formulate the questions in such a way that they influence the answers.

• *Does the user feel that he/she is in control of the given information?*

Like the question above this too is a central matter for us. In the same way as in the case above we have to rely on the assessment that is possible to do on the basis of the observations, from comments during the test and eventually by the following conversations.

### 3.2 Test persons

Our aim is to find a number of persons for our usability test. Preferably we will try to find persons that agree to one of the personas we have created. We will use the three personas Bosse, Eva and Jens as guidance when we choose users for the tests. The reason for this is that our target with the demo application is to make the gui as general as possible and suitable to as a broad audience as possible.
3.3 The approach

The test will be carried out in our project room on a stationary pc. The test person will be seated in front of the pc and have to follow written instructions about what to do. Before the test the test person will be given a short presentation of how the test will work and what is expected. The test person will be encouraged to verbally comment what he/she is doing and to express the thoughts that will come up during the test. A video camera will be placed with focus on the screen and on the user’s hands. This camera will record the whole test procedure. The film will be used in the analysis of the test. One of us mda-students will be seated behind the test person and take notes about what is going on. The other student will assist the test person if there are any questions. This student will also observe what is going on during the test but mainly focus on the user’s comments and questions. The thought is that the test person will be the active part in the test and the two of us mda-students will keep as a low profile as is reasonable. The reason for this is to influence the test person as little as possible. The estimated time for the test is approximately 45 minutes.

3.4 Target groups

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2 Please see the document ’enclosures to the document usability assurance’.
3.4.1 Target group 1

Target group 1: Travelling businessmen/women


Trend: Save time/quality time, save money.

Technology: Always connected 3G.

Hardware: Smartphone, handheld computerized telephone, laptop.

Persona*: Bosse, 40 year old man, lives in a house with wife and three children, Techno positive (early majority).

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<td>Likes new technology</td>
<td>Needs to keep in contact with his office when travelling</td>
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<tr>
<td>Techno positive (early majority)</td>
<td>Frequent need of company documentation at all locations</td>
</tr>
<tr>
<td>Likes travelling</td>
<td></td>
</tr>
<tr>
<td>Likes good food</td>
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Statistics

<table>
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<tr>
<th>Lives in House</th>
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<th>83.000</th>
<th>41.000</th>
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</thead>
<tbody>
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<td>Married men 35-45, if income &gt; 420.000 SEK/year</td>
<td>45.000</td>
<td>22.500</td>
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</tbody>
</table>

Comparison women

|                  | Women 35-44, if income > 320.000 SEK/year | 17.000 | 8.000 |

*The creation of this character is based on informal conversations with a person matching this target group. However, more extensive studies are needed if this persona shall be developed further.*
"I have recently changed employer. It is very stimulating and I travel a lot, mostly within Europe. I try to be effective and use my sparetime in airports and taxis to communicate with my company and my family. My job is rather stressful and demanding but I can’t let it affect the responsibility I have toward my family and my employer. But am I really in control of my agenda, travel itineraries, stocks and my private economy? A problem right now is how to find time to buy a nice gift for my wife on her birthday. And I don’t even want to think of how me and my wife will find time to look at different kitchen solutions together for our planned renovation of the house this summer. If I could choose what to improve right now it would be to get a better grip of how my kids are doing in school.”
3.4.2 Target group 2

Target group 2: Early middle aged working men/women

User profile: Early middle aged working women in Sweden.

Trend: Save time/quality time, save money.

Technology: Always connected 3G.

Hardware: Smartphone, handheld computerized telephone, laptop.

Persona*: Eva, 35 year old woman, lives in a smaller house with partner and two younger children, work full time as a clerk. Somewhere between techno positive (early majority) and techno negative.

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<td>Need to be at work between 9-5</td>
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<tr>
<td>House owner</td>
<td>Need to organise her children's schedules</td>
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<tr>
<td>Likes cooking</td>
<td>Need to shop food and clothes</td>
</tr>
<tr>
<td>Have many girl friends</td>
<td></td>
</tr>
<tr>
<td>Likes clothes and nice furniture</td>
<td></td>
</tr>
<tr>
<td>Likes travelling</td>
<td></td>
</tr>
</tbody>
</table>

(C) Ericsson software technology
Statistics

Women 35-44, if income

Women 35-44, if income > 200.000SEK/year

Women 35-44, if income > 320.000 SEK/year  17.000  8.000

*lives in house*

*The creation of this character is based on informal conversations with a person matching this target group. However, more extensive studies are needed if this persona shall be developed further.*
“I work as a clerk and my working hours are between 9 and 5. This means that I do not have much time left after work to go to the supermarket. Of course it matters how much different products costs and I try to look out for discounts. It happens quite often that I suddenly remember that I have to buy something. I seldom plan my purchases ahead and my problem is how to know which supermarket has the best offers at the moment. How is it possible in an easy and simple way to get information about different offers without checking ads in the newspaper or advertising sheets? Other important things to me are keeping informed about my children’s schedules and different activities. Sometimes I need to get in touch with the day nursery to inform that instead of myself, my children’s grandparents are picking them up, and often it’s difficult to reach the right person. Some of the weekdays the children have different physical activities right after day nursery and how is it possible for me to find out if any of them has been cancelled so I don’t have to go there unnecessarily?”

EVA⁴

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⁴ For description of every day life (written in Swedish), please see the document ‘enclosures to usability assurance’.
3.4.3 Target group 3

Target group 3: Teenagers

User profile: Teenagers in Sweden (alternatively northwest Europe).

Trend: Save time/quality time, save money.

Technology: Always connected 3G.

Hardware: Smartphone, handheld computerized telephone, laptop.

Persona*: Jens, 16 year old boy, lives with parents and one brother in an apartment, technFreak (early adopters).

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<tr>
<td>Has many friends</td>
<td>Need to organise schedule</td>
</tr>
<tr>
<td>Want to be considered cool</td>
<td>Has homework</td>
</tr>
<tr>
<td>Likes new technology /</td>
<td>Has exams</td>
</tr>
<tr>
<td>Techno Freak (early adopter)</td>
<td></td>
</tr>
<tr>
<td>Goes to school</td>
<td></td>
</tr>
<tr>
<td>Want to be fit</td>
<td></td>
</tr>
<tr>
<td>Almost no money</td>
<td></td>
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### Statistics

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<td>Men 16-19</td>
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<td>income &gt; 40,000 SEK/year</td>
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<td>Total</td>
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<table>
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<tr>
<th>Age Group</th>
<th>Income Range</th>
<th>Number of People</th>
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<tr>
<td>Women 16-19</td>
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<td>45,500</td>
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<td>Women 16-19</td>
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<td>Women 16-19</td>
<td>income &gt; 40,000 SEK/year</td>
<td>35,000</td>
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<tr>
<td>Total</td>
<td></td>
<td>195,000</td>
</tr>
</tbody>
</table>

*This character is a total fictive person, further studies of teenagers is needed to confirm the relevancy of this persona. However, more extensive studies are needed if this persona shall be developed further.*
JENS\(^5\)

“I study at upper secondary school and would like to work extra to earn some money, if only I could find such a job. I love to practise sports and I hope to go to USA next year. I’m in love with Nina but I don’t know how to check her schedule so I can show up outside her classroom without Nina suspects something. By the way, what shall I do in case of a real date, how do you act? How can I do my homework if I forget my books in school and how can I keep my mum on a convenient distance? At the moment my largest problem is how I will survive a two week holiday on Mallorca this summer with my parents and an awful younger sister. How can I keep in touch with my friends and get to know what they are talking about at the café? I really hope I will find some cool games to download so time will run as quick as possible!”

\(^5\) For description of every day life (written in Swedish), please see the document ‘enclosures to usability assurance’.
3.4.4 Target group 4

Target group 4: Disabled People*


Trend: Save time/quality time, save money.

Technology: Always connected 3G.

Hardware: Smartphone, handheld computerized telephone, laptop.

Persona**: Anders, 30 year old man, lives in an apartment by himself, work as a teacher on distance. Disabled through a muscle disease. Techno Freak (early adopters).

<table>
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<tbody>
<tr>
<td><strong>Personal</strong></td>
<td><strong>School/jobs</strong></td>
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<tr>
<td>Has many friends</td>
<td>Need to organise his agenda</td>
</tr>
<tr>
<td>Has personal assistant</td>
<td>Need flexible working location</td>
</tr>
<tr>
<td>Likes new technology</td>
<td>Need adjusted working environment</td>
</tr>
<tr>
<td>Techno Freak (early adopter)</td>
<td>Need means for communication with employer and other employees</td>
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<tr>
<td>Likes good food</td>
<td>Need to access documentation from different locations</td>
</tr>
<tr>
<td>Likes music</td>
<td></td>
</tr>
</tbody>
</table>
Statistics

We have not been able to find statistic information about disabled persons in Sweden. When trying to find out how many people between 25-35 years old that has a computer in their home and a connection to the Internet, we discovered that the statistic information was from the years 1998 and 1999. As we do not believe that this information is relevant for us, we have chosen not to present it here.

*By disabled people we refer to disabled people in wheel chairs who are able to use their arms in a normal way.

**This persona has been created according to a portrait in a newspaper article, of a person that is disabled since several years through a muscle disease. However, more extensive studies are needed if this persona shall be developed further.
"When you become disabled the use of IT becomes much more explicit. Thanks to the possibility of working on distance I can choose to work from a location best suited for my needs and wellbeing. In the wintertime I often work from my apartment in the Canary Islands, during the summer I mostly work from my home in Sweden. Most people think that working this way isolates me. However this is not how I feel. Instead it gives me a feeling of freedom and possibility to take part of more environments than before. As a matter of fact, in each situation where I usually need personal assistance to perform a certain task I would gladly swap this person for a technical artefact if I could do the same task by myself, even if it would take a bit longer and the performance would not be quite the same. Each task where I do not have to ask or help gives me a feeling of victory and freedom."
4 Summary

Control
For the user it is important to be in control. This means that the user must feel that he/she is in possession of giving approval to different kind of services and to be secure of not being prompted for services not asked for or charged for services not used. It should be easy to get access to the administration of ones policy with a certain operator and easy to get a comprehensive over all view of it.

Safety
It is important that the user feel trust for the system. To provide a feeling of trust it is of utmost importance that the system actually is safe. By safe we mean that no other parties than those who has permission from the user should be able to retrieve information about the user or the user account. The service provider shall not be able to retrieve information about the user other than what is stated by the user policy towards this service provider.
5 Revision History

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<tr>
<td>2002-03-08</td>
<td>1.1</td>
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<tr>
<td>2002-03-11</td>
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