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Designing Extranet

Neste Oil

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Abstract

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This thesis is part of Industrial Management and Engineering degree programme of Metropolia, University of Applied Sciences. Neste Oil Ltd and, more precisely, Nordic Sales have decided to upgrade their existing extranet to a newer version. Their aim is to offer better quality customer service. The project to define pre-requirement specifications was accomplished between December 2011 and April 2012.

This study is part of the designing and definition phase of the pre-requirement specifications. It is based on theories concerning usability and user centered service design as well as heuristics from Nielsen and Scheiderman's eight golden rules.

Besides these, the study draws on data gathered through benchmarking and interviews. Benchmarking was carried out among Neste Markkinointi extranet and the corporate intranet portal. Three interviews were held: first the domestic operations coordinators, second the coordinators responsible for Baltic and Swedish customer and third, with the 1st prototype ready, with domestic Sales Managers and their coordinators. In the interviews the employees were encouraged to comment on the current system and prototype.

With the help of the designing guidelines, benchmarking, current state analysis and interviews the objective of this thesis was reached. The thesis had three objectives: to create a prototype of the new extranet, use case documentation and pre-requirement specifications in TestLink environment. These create the basis for the demo of the application and the final requirement specifications which will be sent to the software vendor.

Based on the first interviews with the operations coordinators the current state analysis was made. At this phase the current system was tested to see how the application worked at the time of testing, and if the comments of the coordinators were correctly understood. Based on the interviews with the Sales Managers and coordinators the first prototype will be modified until the point it will be the second and final prototype.

The use case documentation was created from the accepted version of the prototype to separate customers and consequent update frequency. The prototype and use case documentation served as sources for pre-requirement specifications in TestLink environment.

Key words	Extranet, User Interface, Usability, Benchmarking

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1 Introduction

This thesis is conducted as a part of studies in Industrial Management and Engineering degree programme of Metropolia University of Applied Sciences. This study has a specific focus on renewing the existing Extranet for Neste Oil wholesale customers. The idea is to find the problem areas in the current system and design the structure and functions for the new application. The desired specifications for the design are determined by interviews, benchmarking and testing the current system and prototypes created.

1.1 Case Company Background

Neste Oil operates in the oil industry which is currently facing some major changes. The oil reserves are declining at the same time when transportation is growing. Currently countries are changing their legislation to more a environmental friendly direction which is creating challenges for the business. New raw materials should be identified and new technology created and adapted. This makes the company focus even more on their customer services.

Neste Oil is one of the largest companies in Finland concentrating on high-quality and low-emission traffic fuels. Neste Oil strategy is based on its ability to use its unique refining expertise to produce premium-quality, lower-emission traffic fuels from a broad range of low-cost feed stocks. It is the world's leading supplier of renewable oil using a system developed by Neste Oil itself. [Neste Oil, 2011]

Neste Oil refineries in Naantali and Porvoo have a combined crude oil refining capacity of about 260,000 barrels/day. Neste has started up new refineries in cooperation with other companies or on their own in Rotterdam, Singapore and Bahrain. In Adu Dhabi the new refinery is in the opening process. [Neste Oil, 2011]

Neste Oil and to be more specific Nordic Sales has decided to change their existing Extranet to a newer version. This is due to the outdated technology behind the system and technical support which will end in December 2012.

Nordic Sales is a department responsible for the wholesale in the Nordic countries and currently the extranet service is offered for domestic customers only. The project fo-

cusing on renewing the extranet started in the middle of November with creating a project proposal and getting the approval for the project before December. The timetable for the project is to get the requirement specifications ready at the end of April. After that the implementation project with the system vendor will be started. Some functions too complex to be solved in the designing project can be shifted into the next developing projects.

The core project group consists of six Neste Oil employees; Project Manager Sirja Salminen, ITC specialist Tomi Nikula, NS Operations Manager Minna Johansson, ICT specialist Pertti Myllymäki, NS Assistant Aija Palmroos and Operations Coordinator, Annamari Linna. There are many other groups involved in this project whose responsibility is to look after the corporation brand and give technical information concerning other applications possibly integrated into this service.

Besides the core project group there is a steering group monitoring the project and making final decisions concerning budget, scope and linguistics based on the information collected. In this steering group there are among others the head of the business department Johan Perander, ICT department representative Helka Pirilä and technical department representative Tero Salovaara.

1.1 Business Problem and Objective

The business and research problem is the outdated technology in the current extranet service. Not only does this system possess functions that cannot be used but technical support for the system will also end in December 2012. For which it is intended to find a solution by designing a newer version.

Accordingly the objective of this thesis is to design a prototype, use case and pre-specification documentation to help Neste Oil write finalized requirement specifications for the renewed Extranet. These documentations serve as a basis when constructing the new Neste Oil extranet application. The main focus is on the structure, navigation and rough content of the service while technical aspects remain the concern of other studies.

This study is part of the Extranet projects' first phase, also known as definition, where the designing of the new system is done with the help of interface designing, current system, benchmarking and interviewing. By designing the documentation the requirement specifications can be written and offers requested from software vendors.

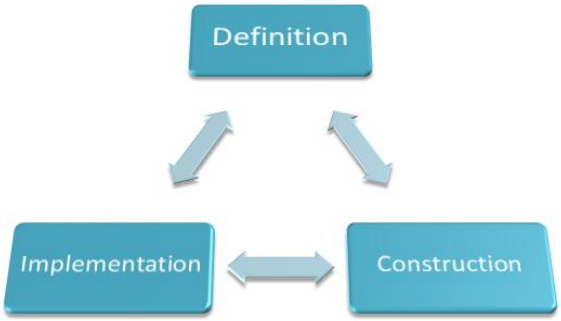


Figure 1.1. Different phases in system Development

The outcome of this study is divided into three main parts; prototype, use case and pre-specification documentation later on referred to as TestLink. The goal is to define a rough layout, functions, structure and integrations inside the new application. The structure of the system consists of different pages and navigation, i.e. how different sections are linked together. TestLink documentation helps the project group to indicate which parts are public, the file amounts per year, updating style etc.

These will help Neste Oil write the requirement specifications for the extranet portal service with fewer errors. The work carried out inside the company at this phase will save resources when the implementation is eventually done. The new version will support a better customer relationship and strengthen the connection between the two parties.

1.2 Process Flow

This section describes how the research is executed. The process intends to lead to the desired outcome. The different phases of the study are explained here in more detail. The basic process is to collect data, analyze it and create new solutions.

The process of this study consists of several phases. Besides these phases, there are meetings approximately two times per week with the core project group present. There the knowledge is shared between the group members; the ICT department provides information about the technology and the business department explains the needs of the system and notes from the interviews. Decisions about the final navigation and functions are made in these meetings after specialist visits.

The project starts by defining the business problem. One aim is to then identify best practices through theories related to the topic of extranet. In this case the focus is on extranets, intranets, usability and interface designing. Another objective is to observe how the process of designing a user centered interface is handled with prototypes and testing.

Best practices show how designing should be done thus giving a solid base to start making the current analysis. By making a current state analysis, the situation can be analyzed critically without getting used to the solutions used in it. The current state analysis is processed through user case testing and by interviewing four Neste Oil employees. The interviews are organized personally with coordinators responsible for domestic wholesale customers. They are the daily system users whose thoughts should be gathered first. The outcomes of these interviews will allow for the documentation of the best and worst sides of the systems. Moreover, a query concerning the same aspects as the interviews is sent to the biggest wholesale customers.

The analysis of the current situation is put into PowerPoint format which will be presented to the project group with comments to spread the knowledge about the service. The entire project group is not able to get access rights into the system which makes this phase highly important. Figure 1.2 on the next page describes the entire process.

Figure 1.2. Process

Before the designing of the newer system can start there is benchmarking to be done. Neste Markkinointi has launched a new extranet service to their retail customers in Finland and Baltics in 2010. This system is implemented with SharePoint 2007 technology and it is thought to give a good impression about the current brand and style Neste Oil wants to reflect to its customers. One other benchmarking target is the intranet portal which can be browsed to get ideas for designing the structure and navigation of the new wholesale extranet.

Based on the information collected the draft of the prototype is created. The draft is a rough overview of what the application should have; the first prototype is created when the project team has submitted their comments concerning the draft. The prototype is created as a PowerPoint presentation with real linkages between the different sections. The project team accepts the prototype which leads to the use case documentation where the content of pages is divided into different sheets by customers and updates. At this point, interviews are carried out among the coordinators responsi-

ble for the Baltic and Swedish customers to know how their customer relationships are organized. These results help the corporation decide when the extranet services could be launched.

The use case documentation serves as a basis for creating customer focused presentations of the pages. These presentations are for the sales managers and their operation coordinators. At these meetings the managers and coordinators are able to express their thoughts about the prototype, and their comments will be written down. Any changes to the first prototype are based on these comments and are done after the project team's approval. These changes make up the second and final prototype. The same changes are done to the prototype and to the use case documentation.

The last phase in this study concerns gathering details from the second prototype and putting them into use case documentation. This documentation is written open into a system called TestLink where it can be used as pre-requirement specifications. These pre-specifications demonstrate clearly the service with content, updating, methods, public or customer oriented etc. The TestLink version is done among the project group in a workshop. The three main outcomes, i.e. the prototype, use case and TestLink documentation will mitigate the writing process of the requirement specifications.

1.3 Research Process

During this study, collecting information was carried out through project team meetings, interviews with Neste Oil employees, queries sent to the customers' employees, testing the current application and seeking information concerning interfaces. This work concentrated on the specifications of the possible actions and basic layout of the extranet pages. Technical information and integration were the concern of the other project group members. After the data collection was complete the data was analyzed using content analysis and qualitative analysis methods.

The study section dealing with data collection is divided into four main stages including best practices, current extranet, benchmarking and interviews. The first stage was to identify best practices of designing a user centered interface by reading books, journals and articles. The second and third stage was to collect data through testing the Nordic Sales' Extranet, intranet and Neste Markkinointi Extranet. The testing helped to know the structure of these and how the functionalities have been implemented. These parts together with the interviews provided an overview of the extranet services. Ob-

taining basic knowledge helped in making an accurate current state analysis and developing the final suggestion for the new extranet.

Three sets of interviews were arranged and one customer query sent to the biggest wholesale customers. The first interviews were organized with the domestic operations coordinators to find out their opinions about the current system and develop ideas for the new one. The second round was arranged for coordinators responsible for the Swedish and Baltic customers. There the idea was to figure out if the extranet service could be launched to them and how their customer relationship works. The third set of interviews was held with the help of the first prototype. This prototype was introduced and comments gathered from sales managers and their operations coordinators.

The working methods included meetings and a workshop where the project group was present. These gatherings were organized to generate ideas and to exchange thoughts. At some meetings, there were specialists who came to talk about their area of expertise and how it could be possibly integrated to the future Extranet. These specialists came from ITC, sales and NRC departments. A workshop was also organized with the project group at the end of January after the interviews. The idea was to create the design into TestLink as pre-specification requirements and finalize other documentation. All interviews were done as qualitative research interviews where all the ideas brought forward were documented.

1.3.1 The Qualitative Research Interview

The main key characteristic for qualitative research is that the researchers take a more detailed interest in human experiences in more detail and that less people are interviewed. In quantitative research the focus is more on measurements and specified questions which are asked from hundreds or even thousands of people. It is more about giving precise information on how many of the interviewed people have done what, instead of getting to know why for example certain phenomena has occurred. With qualitative research the researchers are focusing on a particular subject of interest. They are willing to know everything concerning that subject to draw more accurate assumptions. [Merriam, 2009 p. 5-7; King & Horrocks, 2010. p. 7-10]

With the qualitative research interview the main idea is that the questions, themes or emphases are open-ended in such a way that they can be modified into the situation and according to the answers of the person being interviewed. These emphases should

be non-leading and giving as objective information as possible to encourage the interviewee to share more personal experiences. To get realistic answers there needs to be a relationship based on trust and confidentiality between the interviewer and interviewee which will help the interviewer to draw the right conclusions. [King & Horrocks, 2010. p. 2-4]

One important aspect is that the interviewee should feel in charge of the situation as much as the interviewer. The challenge in interviews is the power balance between the parties which can have an effect on the results. It should be brought to interviewees' attention that he or she can withdraw at any time without further consequences. [King & Horrocks, 2010. p. 2-4]

There is no clear model or format on how to create an effective interview and different aspects need to be considered when the interview questions or themes are designed. Every interview is unique, shaped by the personality of the interviewer and the interviewee. Still, there are a couple of guidelines that should be considered when planning one. Many of these seem to be too easy to notice because they arise from basic human interaction called conversation. [Qu & Dumay, 2011]

When planning a qualitative research there are a few tasks that need to be done beforehand. The researcher should frame the research questions correctly, define an example and contact the participants. The frame of the question has to be clear and right; it should not be a question that answers right to the point under research but focus more on the reasons behind it. Besides the right framing, the scope of the question needs to be defined. The scope of the questions should not be too broad. [King & Horrocks, 2010. p. 25-28]

There are four main points that help the interviewer to be successful in their own part. First of all the interviewer should keep the discussion going without too long pauses or misunderstood questions. This will maintain the flow of the interview; make the interviewee to become more relaxed. Secondly, the interviewer needs to keep the relationship between the interviewer and the interviewee positive with a suitable flow and appropriate themes. These should not be questions where it is possible to answer yes or no because this will hamper the thinking of the interviewee. Thirdly, the interviewer needs to know when to interrupt and learn to pace and concentrate to the situation.

Finally, there is the aspect that the interviewer should not possess any bias which can have an effect on the outcome of the research interview. [Qu & Dumay, 2011]

The success of a qualitative research interview is not only based on the fact how well the interviewer is able to ask questions and later on analyze the data. All decisions made from the beginning of the research have an impact on the outcome. When designing an interview the importance of the questions is clear and how they will be presented to the participant have an effect how the answer will come out. When designing a qualitative research interview there should be many aspects taken into consideration. [King & Horrocks, 2010. p.41]

1.3.2 Other data collection

Besides the interviews data was gathered through meetings, benchmarking and testing. Meetings in a business world normally have an agenda that is the frame for the meeting. There are said to be too many meetings taking up too much of the employees time. Meetings should therefore be well prepared to be efficient. If a meeting is efficient it will most certainly lead to more productive behavior. [Lucas, 2001: 89-92]

There are five stages that should be included to make the attendees feel the meeting was worth the time invested in. Meeting should be planned beforehand; there should be a clear opening, conducting, closing and reviewing. These stages prove planning is one of the key aspects to a good meeting. The person arranging the meeting should find the most suitable participants and have a clear agenda. Defining the agenda will help the participant to see the outcome and what has to be done to achieve it. Reviewing is helpful for underlining the made decisions and it shows the agreed steps on how to proceed. [Lucas, 2001: 89-92]

Benchmarking is the process to compare companies or applications with each other. The idea is to familiarize with the rival's products and compare them to your own and find out what are the best and worst aspects. The best ones can be copied and the worst should be avoided if possible. To be better than the existing other ones there has to be something more to offer to be successful. Benchmarking is about being humble and admitting that others do business as well as you. Certain aspects are simply done better in other versions and the secret in them should be discovered. [Coers & Gardner, 2002: 1-10]

Testing and more precisely user testing is a highly used method to evaluate implemented interface applications or the ones under implementation. A user test is a situation where a potential user uses the system for certain tasks. The situation normally involves specifically designed use cases which the tester is supposed to accomplish. During the testing different phases are documented into notes. [Nielsen, 1996: 89-90]

Testing documentation will help develop the system and understand what matters to the user when designing a new interface. While testing, attention should be paid to the usability of the system, what aspects satisfy the user and what seems not to be working as expected. [Nielsen, 1996: 89-90] In this project the testing phase was conducted when making the current state analysis and modifying prototypes. Different tasks were achieved and documented into the current state analysis.

1.3.3 Data Analysis Methods

When data is more qualitative than quantitative the method used for processing it can be content analysis. With this it is possible to gather from separate pieces of information one informal body that is analyzed. Conclusions and results can be drawn with the help of content analysis. [Verne, 2011]

Content analysis is a method to analyze messages exchanged virtually, verbally or in writing. Often, this analysis is used for systematic documentation where the amount of words and phrases are taken into closer inquest which is not the purpose here. In this study the data is first gathered, then modified and finally the results are reported on. Content analysis helps researchers to see the phenomenon behind actions or see the reasons that lead to some phenomenon. Content analysis will indicate why the current system is the way it is. The analyzing method looks for aspects appearing more than once in the gathered data. This will indicate one perspective to the phenomenon or culture present with the users. [Elo & Kyngäs, 2007:107-110]

Content analysis has many ways to be implemented and can be complicated to accomplish. As part of the content analysis a qualitative analysis method is used. This will look into the data and point out important aspects when the researcher keeps in mind what the aspects are they are trying to find answers to. When analyzing, the most important aspect is to keep focusing on the right details which will help draw the right conclusions. After analyzing the data and writing notes concerning it, the report can be

created. All the findings are listed systematically in the report. [Smith & Firth, 2011: 52-54]

2 Designing an Extranet

Extranet is a solution for a company to offer better service to its customers, no matter, if they are business or consumer customers. It is the option between the public internet and the private corporate intranet. The operating idea is the same as in the internet but in extranet the company can define who can access and what. [Lloyd & Boyle 1998] When trying to determine an extranet solution it is easiest for a normal internet user to think about online banking services. There the user is identified and the security one of the most important aspects.

All these three different page solutions resemble each other which can be seen in designing. They can all be designed similarly and the theory behind is shared among them. Designing an extranet is closer to designing a web page than an intranet except for the security part. For intranet, security has to be planned more carefully than with web pages. This often makes the system to be more complicated with all its services and is called portal rather than web page solution. The outlook of an extranet should resemble the same brand image than the internet page of the company. This helps the customer to know who they are dealing with. However, it needs to be clearly expressed that the user has reached a point where everything is confidential in order for them to feel safe. [Nielsen, 2000; Brown & DeHayes, 2009: p.228]

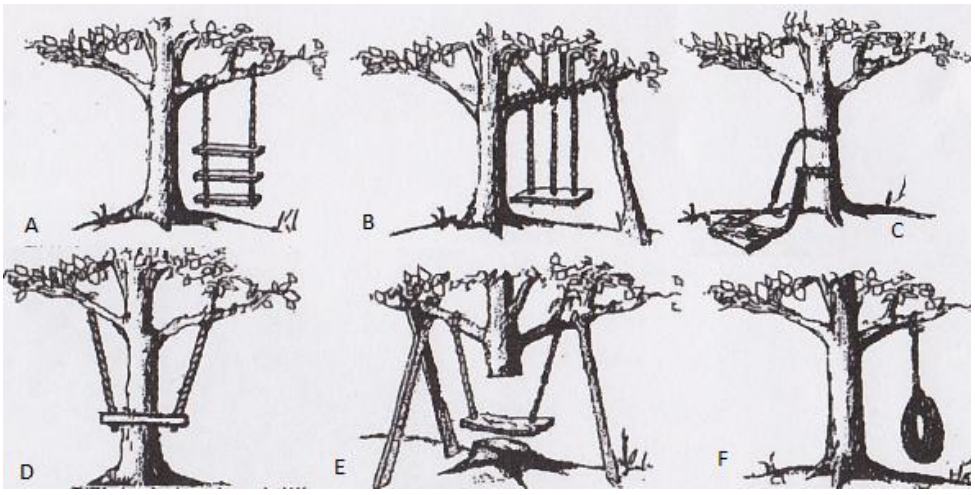


Figure 2.1. Software projects.
This is how: A) it was sold B) security wanted it C) How it was planned D) it was coded E) it was implemented F) the customer wanted it [Sinkkonen, Nuutila & Törmä, 2009 p.15]

Designing new services, applications or solutions is a challenge where the final "product" is usually something else than was first intended. During the designing and implementing process there are designers, security representatives and the executors who all have their own opinion of the matter.

2.1 Internet, Intranet & Extranet

Public internet is the World Wide Web where everyone can create and access all kinds of pages. It is not as safe as extranet but serves public needs well. Internet is the set of computers connected to each other via the web. IT has become part of the everyday life, especially, now when smartphones have are becoming more popular and are constantly connected to the internet. Internet in the sense of extranet is the unsecure system enabling the customers to access extranet. [Schneider, Evans & Pinard; 2009: Gerow, 2006 p. xx]

Intranet, on the other hand, is a solution inside the company's own network where the same knowledge can be spread to all employees with one click. Intranet is a small scale internet solution used inside certain organization or a company and their network. It is the most secure option for the firm to spread confidential information to its employees. Intranets make the communication easier by offering company services such as company contacts, applications and information on one source. It saves working time by reducing emails, phone calls and letters etc. In short, intranet is a highly secure environment that can be accessed only by the company employees. [Lloyd, Boyle, 1998 p.55: Gerow, 2006]

An extranet itself is a secure solution that follows the same line and design with intranet and the public web page of the company. It is sort of an extension to the public part on the internet and designed to be used by the incorporate external users such as customers or suppliers. These users have specified access rights to only certain information that is published for them. Extranet enables the company to identify customers and offer modified services via web. [Nielsen, 2000 p.266-268: Gerow, 2006]

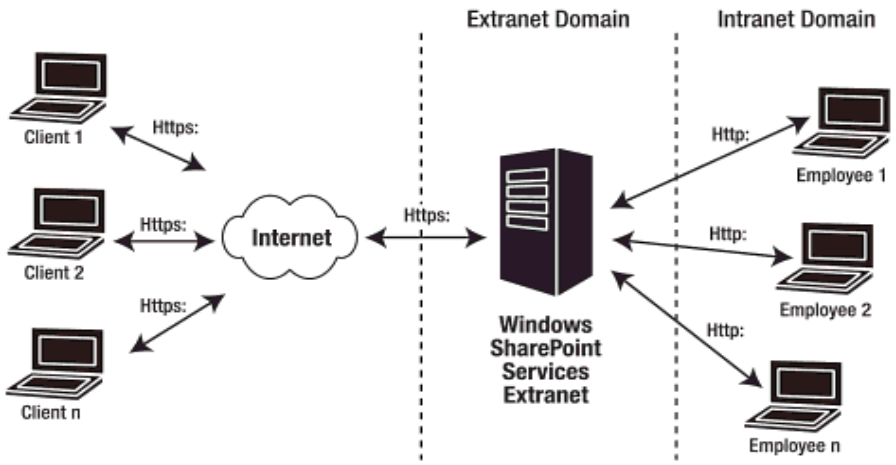


Figure 2.2. Typical way to organize relationships between internet, extranet and intranet[Gerow, 2006]

The use of extranet can reduce customer based costs of the companies significantly by saving time and effort involved in managing sales and customer relationships. Due to the service offered via internet there are less phone calls and meetings between the parties. Other advantages of an extranet are the easiness to set up, use and maintain, versatility, security, ROI (return on investment), scalability and results. [Lloyd & Boyle, 1998 p.59-65]

There are a couple of key figures which should be mentioned when talking about extranets; goal-oriented, future oriented and legacy sensitive, powerful software applications, coordination and commitment. Most system integrators state these aspects should be present in an extranet. Extranet systems are most efficient if they are well-focused on a common-goal or objective of the company. These help Mother Company to give faster service to the customer and reduce costs. This alone does not make the system successful because there is need for powerful software applications behind the outlook of it. Applications are coordinated to work together as neatly as possible. By being future oriented the basic idea is to offer services through up-to-date solutions. Here extranet is a key point when thinking about offering better customer service and these days the business is more customer oriented than ever before. [Lloyd & Boyle, 1998: 57-58]

2.2 Usability of the System

Usability as a term posseses many descriptions but most often it is referred to as ease-of-use when it is, in fact, much more. If it is defined in this way it does not include how well the system works in the sense of usability. It has not been taken into

consideration while designing and impelementing the "product". Many project descriptions mention the term user-friendly without any explanation which makes it hard to define what the abstract term defines in this specific case. [Seffah & Metzker, 2008: 6-8]

Usability is a term used to evaluate a user interface; the part visible to custom user. Users are able to see, hear and feel the interface of the system without forcing to consider what the application does behind it. There are lots of parts of the system hidden from the normal user such as databases and integrations with other applications. [Lauesen, 2005]

In this work the the term usability is referred to as a design term; how the functionalities and pages should be organized to offer the best possible user experience. This contains the easiness to learn how to operate, prepare inputs and get outprints from the portal. Usability is a part of a bigger concept that answers the question if the software or portal is acceptable and, fundamentally, if it is good enough to satisfy all the needs of the user and stakeholders etc. [Nielsen, 1994]

Usability is one part of many rather abstract design standards that have been made throughout the years. Due to the abstraction of the theories they can be adabted to many different contexts. This raises a problem that the design principles and guidances need to be modified and clarified to be used in real projects which often fail to success. [Kunert, 2009: 64]

These theories differ from each other at certain points which is the reason why they should be used in combination. This quarantees the best solution for the designing. In this case the theory is centered on the Schneiderman's eight golden rules and Nielsen's ten usability standards. The main focus is to create a user centered solution for the Extranet portal without focusing on the technical part dealed with separately. [Kunert, 2009: 64]

Usability is hard to measure because it is generally defined by its relationships with a set of factors. These factors and usability have a relationship that depends on the unmeasurable cause and effect.

The set of factors are as follows:

- ✓ Efficiency describes how well the portal uses e.g. different sources to enable the user to do what is needed
- ✓ Effectiveness means the capapibility of the portal to enable the user to achieve their goals with certain accuracy
- ✓ Satisfaction level gained through the user experience of the portal with certain tasks. This can be measured by the user comments and feedback.
- ✓ Learnability defines how easily the portal can be used. This can be measured by counting how many times the portal has to be used before the user feels to be able to use it without errors. [Seffah & Metzker, 2008: 6-8]

Figure 2.3 below shows the most used standards and theories concerning usability. All of these theories are compared to each other in the sense of usability factors, some of them do not use the same wording but are understood to mean the same. As it is possible to notice from the table these standards resemble each other and show how the four mentioned parts are important enough to be topics in each set of standards.

Constantine and Lockwood (1999)	ISO 9241-11 (1998)	Schneiderman (1992)	Nielsen (1994)	Preece et al. (1994)	Shackel (1991)
Efficiency in use	Efficiency	Speed of performance	Efficiency of use	Throughput	Effectiveness (Speed)
Learnability		Time to learn	Learnability (Ease of learning)	Learnability (Ease of learning)	Learnability (Time to learn)
Rememberability		Retention over time	Memorability		Learnability (Retention)
Reliability in use		Rate of errors by users	Errors/safety	Throughput	Effectiveness (Errors)
User satisfaction	Satisfaction Comfort and acceptability of use)	Subjective satisfaction	Satisfaction	Attitude	Attitude

Figure 2.3. Different standards or methods concerning usability. [Seffah & Metzker, 2008 p. 11]

2.3 Guidelines for Designing

The set of standards published by Jakob Nielsen in 1994 are commonly called the heuristics and are one of the most used theories in usability. Heuristic evaluation is done when for example the designer is looking at the interface critically to recognize the good and the bad parts. This is normally done individually or in groups where the inter-

face is first introduced and then evaluated with the heuristics. Nielsen's heuristics give ten separate aspects to look at. [Markopoulos, Read & MacFarlane, 2008]

- ✓ *System Status* should always be visible to the user to inform what is going on and if there is a delay it should be clearly noted.
- ✓ *System and real world should go together* in a way that the user can understand the terminology and possible actions done through the system without training.
- ✓ *User control and freedom.* The system needs to be organized with control; user cannot access anything not supposed to. There should be a support for redo and undo actions.
- ✓ *Consistency.* User does not have to wonder if the actions and different words mean the same thing. System should follow platform conventions.
- ✓ *Prevention of errors* is better than clear error-message which also should be present in the system. This can be managed to create a system where error prone tasks are always confirmed with a question.
- ✓ *Memory load minimization* by making objects, actions and options visible. User should not be forced to remember information from another part to other. User instructions should be easily accessed always.
- ✓ *Flexibility and efficiency of use*. Accelerators may speed up the use of an expert user and they do not interrupt the novice users' experience.
- ✓ *Aesthetic and minimalized design* is more than enough. If there is too much information it can make the user to forget the necessary and most important information or even forestall the user to see the right information.
- ✓ *Help users recognize, diagnose and recover of errors* with the error messages written with plain language clearly marking what has been the occurred problem.

- ✓ *Help and documentation*. Even though the main idea is that the system is easy enough to be used without documentation should it still exist. [Nielsen, 1994: 115-148]

Shneiderman added his own thoughts in 1998 to the existing guidance for designers whose aim is to create an interactive application. This means that the application is the source for human-computer interaction. In many ways Shneiderman's eight golden rules go together with Nielsen's aspects. These golden principles are highly popular among interface designers and need to be introduced also in this context. [Shneiderman & Plaisant, 2010: 88-90]

- ✓ Offer information feedback
- ✓ Strive for consistency
- ✓ Cater to universal usability
- ✓ Prevent errors
- ✓ Permit easy reversal of actions
- ✓ Reduce short-term memory load

These 6 first golden rules go together with Nielsen's aspects and do not need more explanation to be clear. There are two more rules that are similar but still different in their main idea when comparing to Nielsen's theory.

- ✓ Design dialogues to yield closure means if user wants to make something the whole sequence of actions should be clear. It should include beginning, middle and the end which can be easily understood by users. There should be feedback if the set of actions were successfully finished. This gives the users a feeling of accomplishing something that in return will offer relief to the mind of the operator. It also lets the brain think about the next set of actions that need to be done. Do not force the user to make more than three clicks to find what they are looking for.
- ✓ Support internal locus of control seems to be important for the experienced user who has a desire to feel in charge of the interface. They want to make their

normal actions fast without any disturbances such as tedious data-entry sequences. [Shneiderman & Plaisant, 2010: 88-90]

The similarity with the Nielsen's theory shows exactly how important aspects these are. They are the base for developing a working interface. It does not matter how good the technology behind the interface is if the design and use is not up to the level the user would like it to be. These principles are only guidelines which need to be modified, refined and extended for each use case. Of course, they are not perfect but offer a solid base to start the designing of an interface, no matter if you are a mobile, desktop or web designer.

2.4 User Centered Service Design

User centered service design has received lot of attention during the last years and it is becoming more important when companies are developing their services. They are trying to gain competitive advantage by offering more finalized services through internet, making customers more loyal.

There are many reasons why it is worthwhile to design a service from the customer's point of view. First of all there is the money aspect which is one of the most important parts. By designing in a user centered way the company makes sure the service will be used and the investment will pay off. Testing will help designers to modify the service to be user friendly. The user can easily understand the logic behind it and does not need special guidance to use it. This will decrease the phone calls and emails received which are known as time and money resources combined with the services. If the service is this easy to use and user friendly it will guarantee that the reputation of the company who possesses it will increase in same way as that of the vendor. [Sinkkonen, Nuutila & Törmä, 2009]

When a web service is properly designed it is an indicator to the customer that the company cares about their customer relationships and wants to offer good quality services. Services that are up-to-date with their solutions make the customers and service users, in this case Neste Oil Ltd employees, work more efficiently which increases well-being at the workplace.

Having end users present in the designing process will help the project stay on budget and timetable when there are fewer surprises during the process. The project is more

predictable and is more likely to make profit. This is due to the fact that the application will be cheaper to implement, maintain and users are more satisfied with it. [Sinkkonen, Nuutila & Törmä, 2009]

In addition, a couple of guidelines should be followed. During the project all the decisions should be made based on facts and the project leader should take care that everyone involved understands all aspects involved with the project. The outcome where the project is aiming for should be more or less clear to all. These set of rules can be divided under two main headings; responsibility in a way that everyone understands and that the project is coherent enough to be copied by an outsider. [Sinkkonen, Nuutila & Törmä, 2009]

The golden rules of interface design were mentioned briefly earlier, but the golden question was not mentioned. This is a question kept in mind when doing service designing. The question in its all simplicity is what is the purpose of this service or page? It may seem to be something that is too obvious to be even mentioned but is more often forgotten during the process. Always when the project is expanding without real control the team should stop and think about the question to see what the most important parts are and what can be left aside. This question will help the project team to save resources. [Jääskeläinen, 2010]

There are a few methods which help the project team stay user centered. The team can use different kinds of personas to understand who they are offering a service to; use different scenarios which can be understood as use cases. Or it is possible to create a story built up from pictures showing how the system would work and this can be tested with the users in mind. [Sinkkonen, Nuutila & Törmä, 2009]

2.5 Designing Process

Every designing process is different based on the needs of the company. The most common situation is the company's need to reform some existing service, application or solution. The technology used in them might be outdated or does not match the current needs of the company and its customers. These are reasons indicated for the extranet renovation at Neste Oil. Often when designing an interface to a web service it is accomplished by using an iteration modeling. In this type of process all the steps are repeated as many times as it is necessary before progressing to the next phase. [Jääskeläinen, 2010: 179]

The first step is to arrange a meeting where the reforming of the service is discussed. There are certain topics that need to be covered to help everyone involved understand where the process is heading and what the final purpose is. These topics are; what is the meaning of the service, what is the target customer group, how the success of the new service solution will be measured, how long is the life cycle of the application and how the visual appearance could be described. [Jääskeläinen, 2010: 180-182]

The next step is to create a clear concept with models and make the final requirement specifications. In this phase the current system is first documented as a page map which will indicate the relationships between pages and functions. If pages are imbalanced it can be easily seen from the page map. If this is the case the structure should be modified, there can be sub-headings that should be brought up to the next level etc. Clear page map leads to the phase where the system is defined with use cases. These describe how the user is able to carry out needed tasks, how hard they are and what is involved in them. With this information the designers will be able to compose a better way to accomplish certain tasks. At this point, it will be examined if there are some unnecessary pages or actions or if there are sections that need to be added into the service. [Jääskeläinen, 2010: 182-186; Sinkkonen, Nuutila & Törmä, 2009: 175]

Many projects carried out in big corporations will face internal contradictions where different people have different needs, opinions and visions of the web service. The most important aspect is to remember the basic idea; who are we designing this service for. [Jääskeläinen, 2010: 182-186]

The actual designing can be started after the basics are clear. The structure and navigation are defined first. One of the responsibilities of the designing team is to work out the structure of the information, how it is organized and classified. A balance between the needs of the users, technology and the information available has to be found. There should not be terminology confusing to the user or same words used in different headings. A good and efficient page structure can give the user the sense of reachability; everything can be done easily. The most common solution is to create the structure of the pages as a hierarchy. It is understandable to the users because hierarchy is widely used in everyday life to classify products, humans and services. [Sinkkonen, Nuutila & Törmä, 2009: 183-185]

In a hierarchical structure operations are divided into headings and sub-headings. It is not recommendable to use more than 4-5 different layers or the user can be lost. If the system has many layers it is more likely that the user will go look for certain information from the wrong section. This will eventually annoy the user and make the user experience worse. When sketching the navigation structure it is necessary to look at it from the user's point of view which leads to an iteration round with the users. There are also other structures available but they are not as recommendable as the hierarchical one. [Sinkkonen, Nuutila & Törmä, 2009: 183-190]

A rough prototype can be created after the navigation and the structure of the service is obvious to the whole team. In a prototype operations and content are placed on the pages. Menu, navigation, headings, sub-headings, controls, body text, pictures and pop-up windows will be present. With this so called prototype made with, for example, PowerPoint the functionality of the pages can be tested with the designing team and users. At this point it is easier to modify the rough model and see all the linkages between the pages when nothing has been coded etc. The prototype will describe the reason why something is on the page and what the purpose of it is. With iteration rounds the model will be better and better leading to a proper model that can be implemented. From that model the actual requirement specification for the service can be written. These different models will be documented and will help justify the design choices. [Sinkkonen, Nuutila & Törmä, 2009: 203-214]

2.6 Conceptual Framework

As a summary there are a few aspects that need to be clear enough before starting the actual designing process of an extranet. When designing the interface of an external secured service also known as extranet, there is no need to think about the technology. This interface designing will give suggestions of the appearance of the system. The most important parts of the first stage designing is to build up the structure, basic functions and navigation of the service. These form the basis for implementation and leave no space for questions

There are different sections in the designing process that need to be accomplished. There is the definition of an extranet so the designer knows what the aim and purpose of the service is. The following theories should be studied: eight golden rules for interface designing, heurestical guidelines, user centered service design and usability.

These together form the guideline used in this study. With this guideline it is possible to create a reliable current state analysis where all the important sections are documented.

After and during the current state analysis interviews are carried out to give perspective to the system and the state of contentment. Data from these interviews offer ideas for a new version which can be tested with the first prototypes. These so called prototypes or rough models will be modified in iteration rounds. After some iteration rounds the model is acceptable and the requirement specifications for the system can be written after use cases and TestLink.

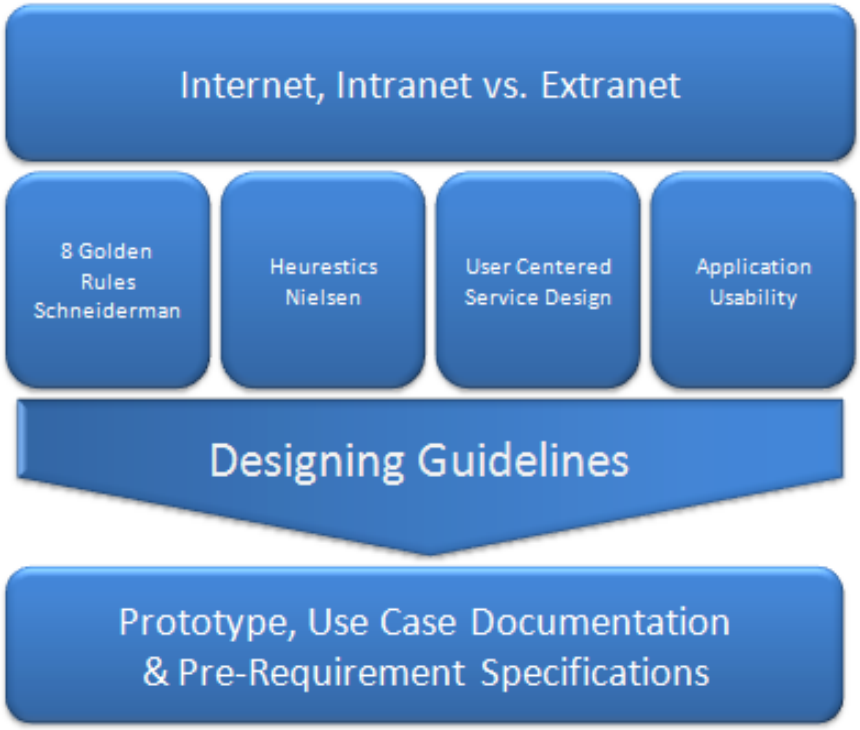


Figure 2.4. Theoretical Framework

Designing an interface starts understanding the term usability and what it holds inside. In this case it is the design term defined as easiness-to-use, user experience and how these can be measured. There are many usability guidelines such as Schneideman's eight golden rules and Nielsen's heurestics. They focus on the main aspects considered when designing web pages and user interfaces such as extranet. The guidelines mention important aspects such as error messages, informing the user, keeping it simple, consistency and easy reversal of actions (redo/undo).

User centered service design make sure that the designing and implementation work of the system will be worth it. It will take the users into the designing process through interviews and iterations ensuring their comments to be remembered. This style if correctly implemented, needs facts to back up the decisions made and accentuates that everyone in the project needs to know what is going on.

When this style is part of the designing guideline there will be one golden rule present throughout the process: What is the purpose of the service? This will help the team to keep their focus and save resources when it is clear what is unnecessary and what is not. The use of personas and use cases help in this.

When the actual designing starts after data gathering it is recommendable to have a meeting where the information about the project is shared. Afterwards the interviews and current state analysis can be done. When doing a qualitative research the interview should pay attention to the following aspects: framing and scoping the questions correctly, flow and atmosphere of the interview. The interviewer should have control over the situation without showing it by creating a good, trusting relationship between the parties. Every interview is unique and it is important that the interviewer is able to modify questions or topics throughout the conversation.

With this knowledge the page map can be created and iteration meetings will outline the navigation and structure of the system and its pages. Based on the chosen structure, a prototype is sketched and modified according to the comments of the users. After several iteration rounds the prototype will be acceptable by all the parties and the requirement specification can be written based on this work with the help of use case and TestLink documentation.

Figure 2.5. Phases in interface designing after data gathering.

The precise designing process will guarantee that the interface of the system will more likely be easy to use, user friendly, easy to modify. The pages should be customer

specified so different parts can be separated (many groups who can see only some points). The application accessible via web will add value to the service by being reachable 23h per day. Good planning will decrease the problems. It is said to be 40-100 % more expensive to fix problems after the implementing phase than in the designing phase. Systems that are designed with usability standards in mind tend to reduce employee's training time by 25 %. [Seffah & Metzker, 2008: 11]

3 Current State Analysis

The starting point in this project was to make a current state analysis of the extranet which has been in use for a decade and is technically and visually outdated. It is important to understand the current situation in the company as it is stated earlier on. The first stage in doing the analysis was to familiarize with the system as a common user. The system was tested with different use cases; the tester was accomplishing daily tasks that are normally done by the coordinators. After the rough current state analysis interviews were conducted among Neste Oil users to back up or change the conclusions made.

The system in question has been created to serve domestic customers and the number of users in it is strictly limited. There are approximately five customer users per customer and one operations coordinator. Altogether, in Neste Oil's end there are four customer operations coordinators and one assistant that updates information in to the system.

There are people in the core project group (ICT department) that are not familiar with the current system and they do not have access rights which make the analysis even more important. The current state analysis is the tool created to help a project group understand what services the extranet is offering and what is missing. In the first project group meeting the system was presented with business department's log-ins but it is easier to keep the system in mind if there will be published some material on the project site. This site has been created into Neste Oil's intranet portal as a workspace that contains the needed material, tasks and schedule of the project and can be accessed at all times by the members.

The general process of making a current state analyze is as follows; firstly there is the page map made about the current system which is modified into a PowerPoint presen-

tation where the link, functions and explanations are present. A presentation of the analysis is held in a project team meeting where all the members can express their thoughts. In the current state analysis, there are only the pros, cons and most used use cases gathered together. This helps the project group to identify problem areas of the system.

3.1 Visual Appearance

There is a picture below from the current system and its visual appearance which distinctly show how outdated the system is. The site is just a normal web application and the design is clear but the thought of not being up to date is constantly on mind. It does not match with the current visual standards present on other web interfaces. The system does not go together with the new Neste Oil Ltd brand image that should be used in all published content.

As a system, it still works without too many errors but there are problem areas that should be taken care of. Many of its problems can be sorted by using newer technology which is faster and follows current standards. If the change of technology is able to correct many aspects concerning usability the navigational interface design does not have to pay attention to these.

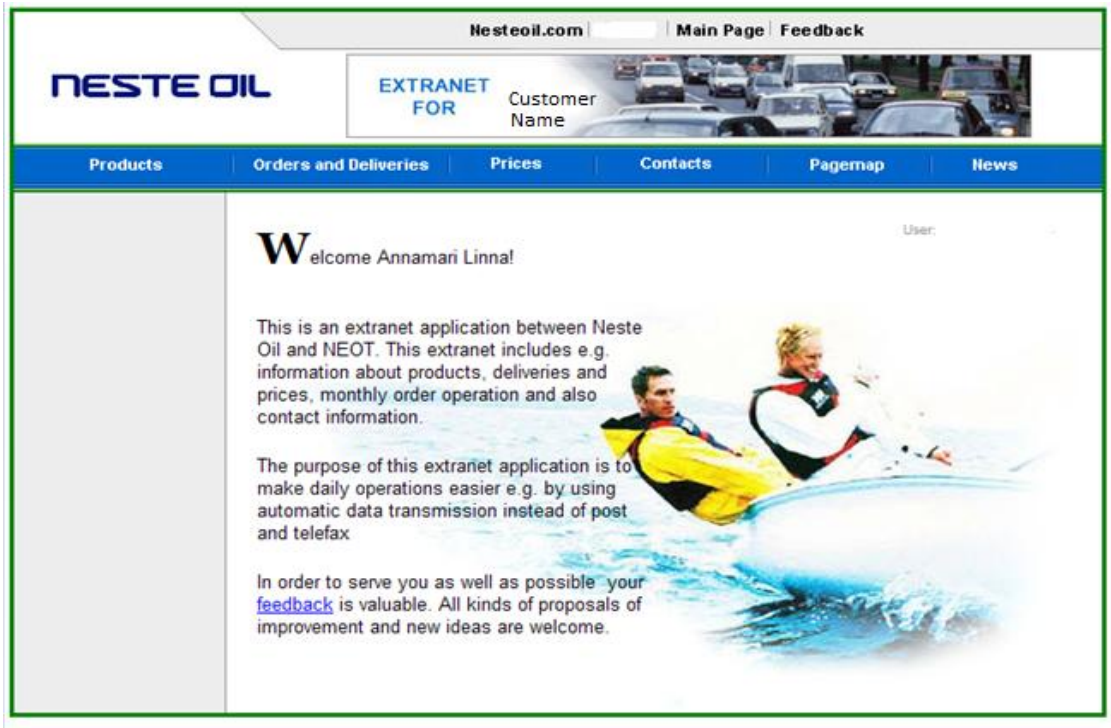


Figure 3.1. Front page of the current extranet is in English

When looking at the general visual appearance of the application one major issue stands out immediately. English and Finnish languages are used inconsistently. Some pages, such as the front page, are all written in English which is totally acceptable. Then there are other pages that are either written in Finnish or in both languages which is confusing. The user is not able to decide which language to choose but can only try to cope with the mixed ones. This is an aspect that should be corrected in the next version. The service has to be designed in a way which makes it coherent with the language.

3.2 First Set of Interviews

Interviews were organized personally with domestic operations coordinators. They are daily users of the system and know it best. After making the draft of the system it was introduced to other Nordic Countries and Baltics coordinators to see if it could meet with their customer's needs. Based on these interviews the decision of launching the service outside Finland can be done.

Customer enquiries were sent via email to the biggest wholesale customers in Finland. The goal of this enquiry was to inform the customers about the extranet that is under development and find out if they had some issues with the current one. One aspect was to recognize the contentment with the service. The enquiry gave the customer a signal of being appreciated and also informed about any changes to come.

3.2.1 Customer Enquiry

Customer enquiries were sent via email at the end of December to make sure customers had enough time to answer it before the project had progressed into the next phase. Emails were sent to the four biggest wholesale customers of Nordic Sales and their extranet users. At least one of the receivers of Customer Company was able to give answers concerning the current service and possible improvements.

The enquiry was an informal email where the project in Neste Oil was shortly presented; what the aim of it is, who is involved and when the new service probably would be launched. Secondly, the following two question headings were introduced to help customers form their answers: what is the satisfaction level with the current extranet and what improvements would add value to their service catalogue.

As a summary from the gathered answers the overall satisfaction with the extranet was surprisingly good but a couple of aspects were in need of improvements. Customers were happy to receive the prices via extranet and did not want to change that. Existing reports were considered necessary and a few new reports would be appreciated on the extranet. Moreover, it was felt that it would be very good if publishing in Excel format was allowed and not only in PDF.

One suggestion appearing in two answer sheets was a wish for a summary report or chart provided by Neste Oil Ltd. This should list the deliveries and sales done during earlier years not only the current one. Feedback concerning the technology concentrated on file downloading and stated that multi downloading would significantly add the usability of the system. At the moment, users are forced to download every file separately. This improvement would save time and effort. Customers also reminded that in the next version there should be limited access rights to prices and contracts as in the current one.

3.2.2 Domestic Operations Coordinators

Four operators responsible for wholesale customers were interviewed. They had either one or two customers whose operations they are coordinating in Finland. These employees have been using the current extranet for years and were familiar with its downsides and upsides.

The interviews were organized separately at the end of December with Susanna Kämäräinen, Tuula Valtari, Jaana Turtiainen and Armi Tähti. The question themes for the interviews are shown below. The main idea was to have a casual conversation concerning the current extranet. The main topics were basic information telling the position and use purpose of the extranet with the focus on how the current extranet was working in their opinion (usability) and what could be improved. The last item or theme was to find out if the customers have given them some feedback during the years.

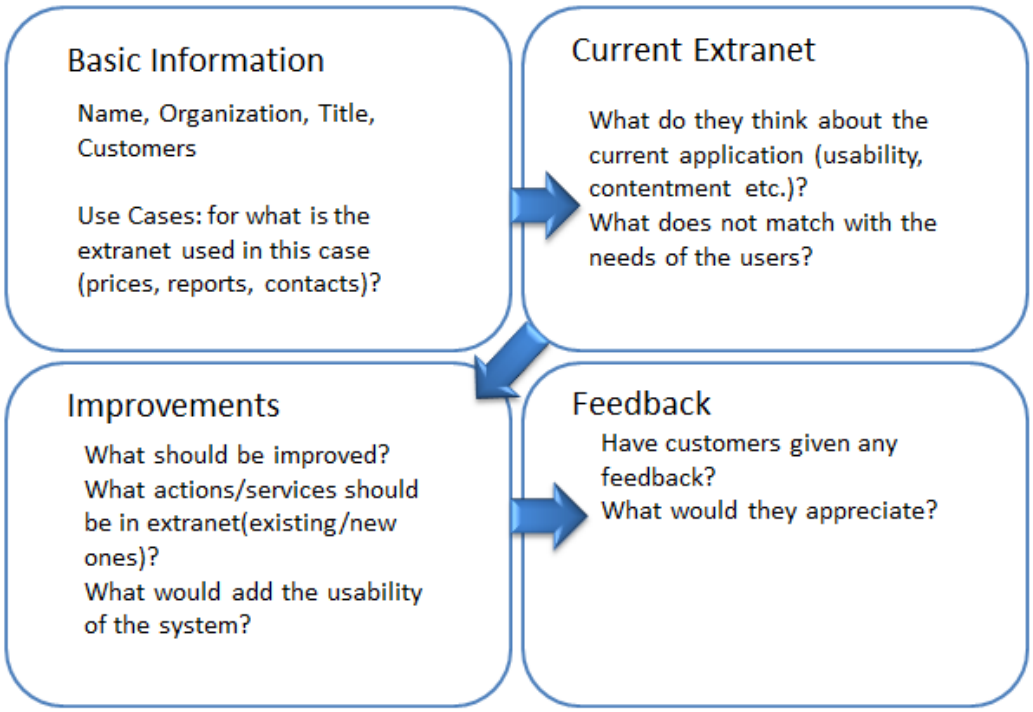


Figure 3.2. Question themes for domestic wholesale operations coordinator

Data collected from the third topic concerning improvements is used in the next phase when the prototype is being designed. In the current state analysis the focus is more on the current situation, use cases and feedback sections. On the other hand, the interviews give an overall picture of what is done with different customers and what kinds of services are offered and how the customer relationship is managed.

As a summary from interviews with the coordinators a couple of conclusions can be drawn. The extranet application has problem areas and most of the customers are served in the same way. There are a couple of exceptions; one has a special business model and some common services do not fit their needs. Altogether, there are six domestic wholesale customers with approximately 5 users each. This indicates clearly that the user amounts are small and licencing etc. should not become an issue.

In the current system there are manually updated prices, price changes, and product and contact information. There are a few integration parts with applications such as Salsa and Business Objects, later on referred to as BO. Integration is for example the link between BO and extranet applications which enables report publishing only to certain customer or customers. Contentment with the integrations is high, but with the prices section there is a problem with time. the reason is that the integration adds

prices nicely into the system but they then need to be published manually to the customer by the coordinator. This file publishing has to be done separately for every file and due to the slowness of the application it might take even half an hour per day.

Other issues are error messages and empty headings that should be hidden if there is no content. There are a few reports such as Bio Criteria and Tax Attachment which could be added to the extranet. This would decrease emails on both sides. One new feature could be Certificates of Analysis section where the analysis reports of a certain lot are published automatically from Neste Oil's system. a new feature would be helpful to clients with vessel deliveries who cannot unload her cargo before this analysis.

The main aim was to gain an overview of which clients have certain services and how these are managed. On this basis the structure of the system is easier to understand. One focus was to understand how the orders are dealt with, this information helps when a well-functioning ordering system is designed. Later on when the data was analyzed, it was clear that the designing of the ordering service would take much time and effort. With this information the steering group made a decision to leave the order section out of the project's scope. It will be designed in the next development project after the implementation. At this time, a slot has been designed for this service but it will be hidden from users.

3.3 Structure in Current System

Before starting to shape the model it is necessary to get a clear picture about the whole system. The best way is to look at the page map which in this case was found from the site. This is part of the designing guidelines introduced in the theoretical part. The page map separates all pages and functions of the system. Links between different pages are not documented and need to be defined by using the system.

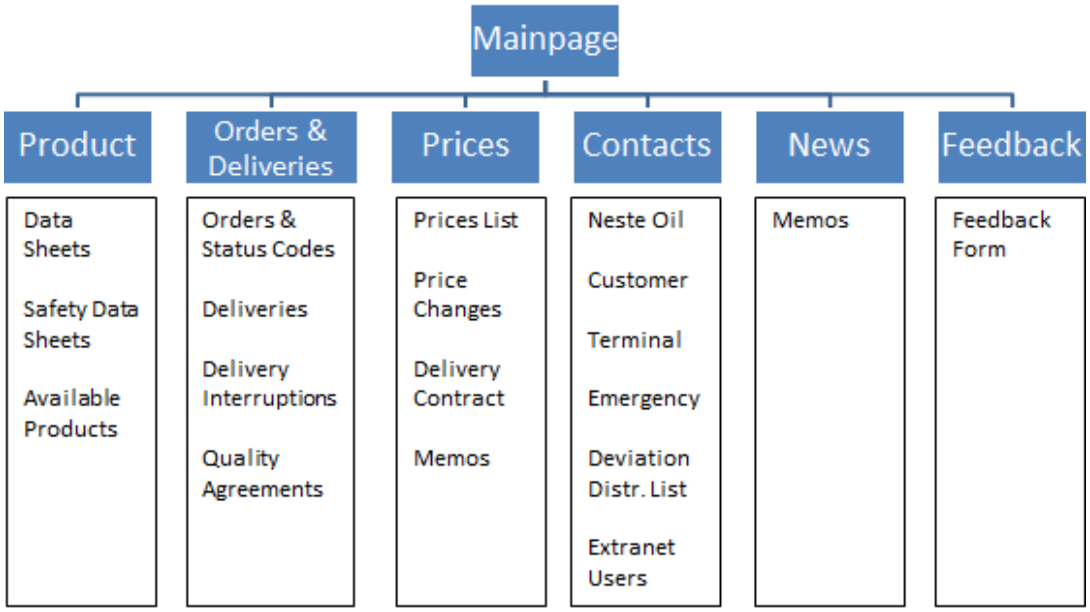


Figure 3.3. Page map.

The application consists of six main sections and currently users are using three of them, i.e. Product Information, Prices and Contacts. There are headings and pages without any content on them. The user is able to click on links which do not go anywhere; the browser opens a page that simply says: access denied. This is not a recommendable solution; empty or inaccessible pages should be hidden from the user.

There is a log-in page which matches with the current brand and recommendable technology. It gives an image of modern extranet which, however, lets the user down when they reach the main site. Log-in and user identification is a service bought from outside Neste Oil and is not a subject in this project. With the log-in service the admin and normal users can be controlled. When logging in to the system, there is a choice to be made for the Neste Oil users. Currently, there are no admin rights on the customer side users which means that they don't have this choice. The Mother Company users, on the other hand, have to choose between going either on the maintenance side or the customer specific page set.

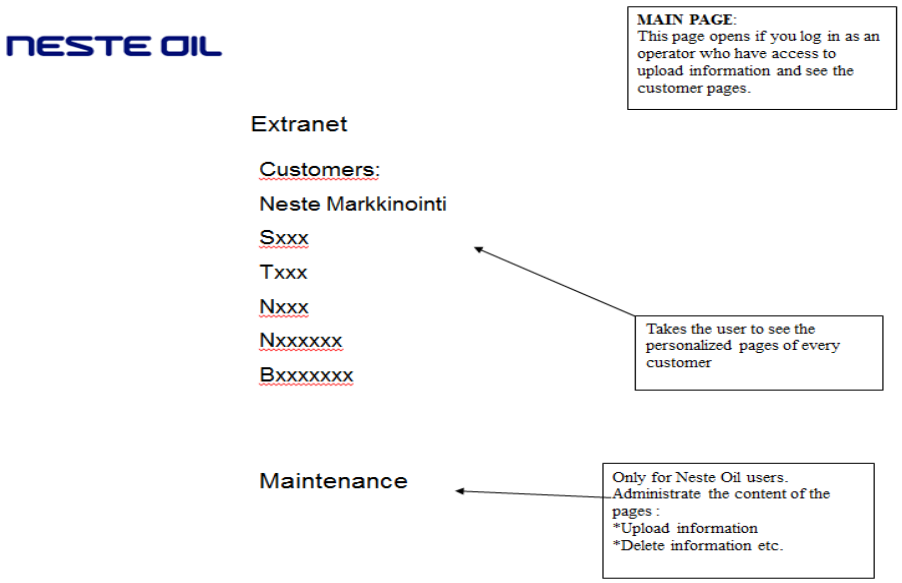


Figure 3.4. First page after log-in

On the maintenance side everything starts from the page where possible functions are listed. There the user chooses a function which leads to the screen where a certain customer has to be picked. The first aspect in need of improvement is a user with admin rights forced to go back and forth to accomplish certain tasks in the system. For example with the price function the same customer has to be chosen every time when adding files. Another noticeable aspect is file uploading or publishing in the system. The user is forced to add every file separately. Due to the old technology this might, for example with prices, take over half an hour when it should only take under 60 seconds.

All the details from different pages are documented to the slideshow. The presentation demonstrates where the functions, integrations and used sections are placed. Customer specific documentation is a possibility when there are as few customers as in this system. The rough documentation shows only the basic features, updating procedures and linkages between pages without any visualization etc. as can be seen below in Figure 3.5. There the basic funtions and comments are either marked in colour red or in arrow boxes to make it easy to see what is commented.

As seen in the figure below the current state analysis gives a rough overview of the application. On the prices page there is next to the top navigation a side navigation where certain headings under this sections are separated. On the middle section of the page is a long list of price files without any separation. The user is able to choose the

price they want and click on a link which opens a pdf file. All the pages are designed in the same way: the header has the other Neste Oil sites and a link to the main page, the top navigation has the main sections, the side navigation under the top navigation tells what is on certain pages, the footer has a link for giving feedback and reading instructions. The main content of the page has been placed on the middle of the page which is a standard solution.

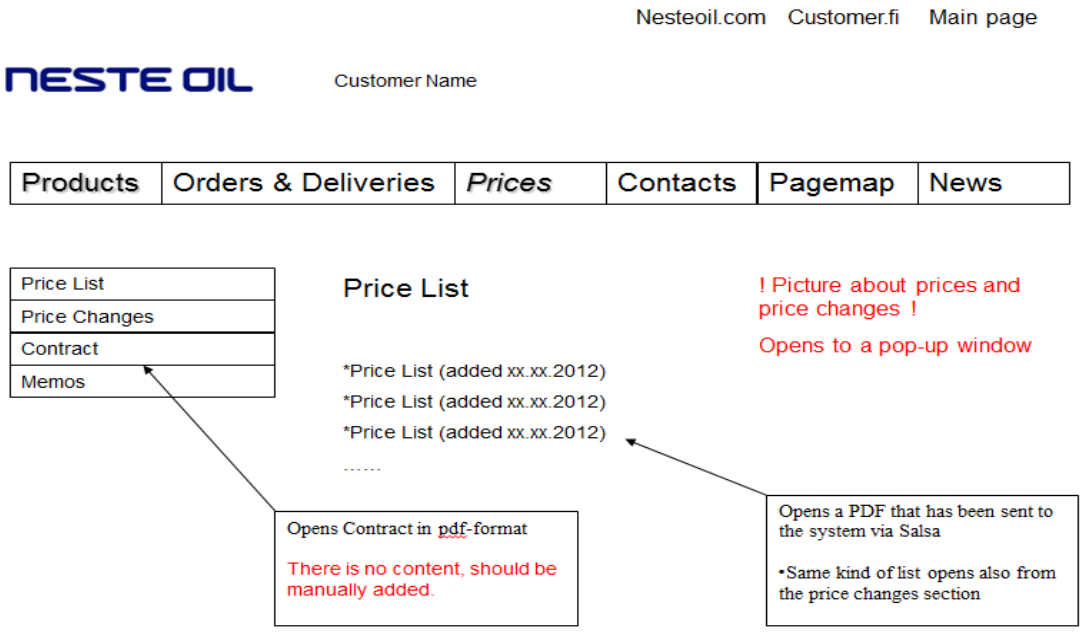


Figure 3.5. Price page as an example.

The idea on the maintenance is to show on the left hand side all possible functions as a list. When the user chooses one function the next step is to choose the customer on focus and afterwards the user is able to accomplish her/his task. All the functions can be done manually by adding a file or typing text and dates into the system. Then it can be published to a certain customer or if the procedure is a little different, it can be published even to multiple customers.

When there is integration involved normally the procedure can be fulfilled without any manual work. Prices differ from this because they need to be double checked. The application called Salsa will send the price file to extranet where the user checks it and publishes it. This is done separately due to the outdated technology and in the worst case will take a half an hour.

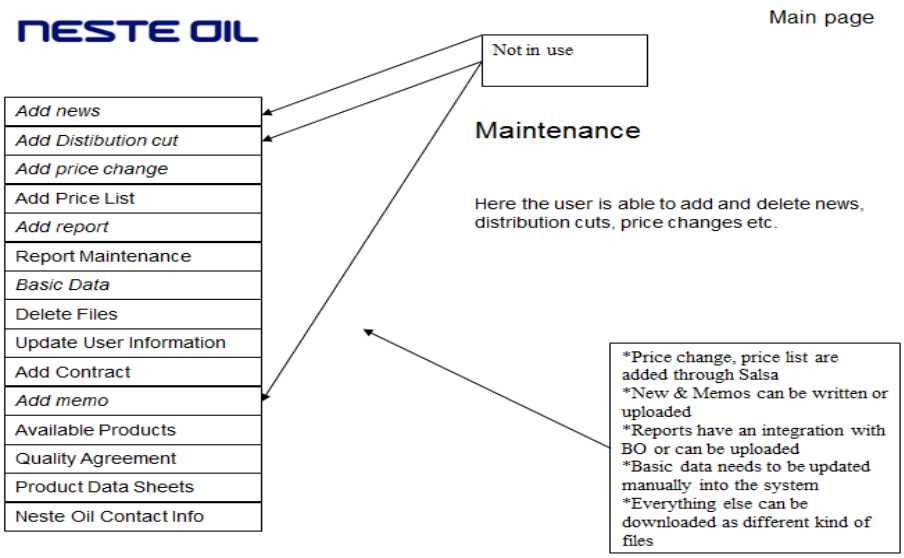


Figure 3.6.Maintenance page for Neste Oil users.

Figure 3.6 above demonstrates the basic pages in the current system. The current state analysis identifies clearly the necessary parts that should be included in the newer version and the ones that are not needed. When the new version is finalized and implemented it is important for Neste Oil to decide who is responsible for what. This will help to have all different sections up to date when it is clear who has to do and what. From the analysis it is possible to see which sections and functions have problems or are too difficult for the user to feel satisfied with.

3.4 Weaknesses and Strengths of the Extranet

With the current state analysis system the weaknesses and strengths can be named. These conclusions are confirmed through coordinator interviews. All aspects arisen from interviews and testing should be documented. This forms a check list which is used at the end of the process to make sure all aspects have been taken into consideration.

From Figure 3.7 below, it is easy to make a realistic summary about the different aspects of the current extranet. The strengths should be brought into the new system and the issues listed as weaknesses should be improved when creating the new version. Most of the issues will be repaired just by changing the technology and the rest by developing a new standard to do these. For example navigation could be possibly divided into clearer sections; reports would have their own section instead of being under orders and deliveries heading.

Weaknesses	Strengths
○ Old technology → more service breakdowns ○ Slowness of the system ○ Files need to be added separately ○ Unclear navigation - usability ○ User has to click many times to get what they want ○ Unused sections (orders etc.) ○ Maintenance does not show how the customer will see the added files etc. ○ Support for the system will end in December 2012 ○ Visual appearance does not match the current brand	○ Basic extranet needs of the customers are defined ○ Existing integrations with other systems (Salsa, BO) ○ Different access rights to certain users (price and contract access rights given separately) ○ Well-thought functions ○ Customers are used to extranet services ○ Same file can be added to different customers at the same time

Table 3.7.Weaknesses and strengths of current extranet.

The overall contentment with the current extranet is not good. There are many aspects making the user experience bad with unnecessary waiting time, error messages, files updated separately and the overall slowness of the system. There are well-implemented integrations that users think are self-evident. Prices and reports are appreciated and seem to be the biggest contentment source for users. From the current state analysis it is easier to see points that need attention during the designing and later on in the implementing process.

4 Benchmarking

Neste Oil has another extranet launched to customers in 2011 under the retail sale Neste Markkinointi. To save resources in this project it was decided to examine the

retail sale extranet to see if the wholesale extranet could be built upon the same platform. The retail sale extranet is using MOSS (Microsoft Office SharePoint Services 2007) which can be found to be old technology before the project has ended. If this is the case it will anyway offer a good base to start designing the structure. To see how the retail sale extranet is designed it is necessary to familiarize itself with it. When concentrating on the design and functions of the system it is important to see how those pages are organized.

There is another similar application used in the corporation called portal. The interface of the Neste Oil intranet portal is following the same designing style and is based on the SharePoint platform. This indicates these two systems are acceptable and designed to follow the current brand image. With some modification the layout could be used in the newer version of the wholesale extranet.

4.1 Neste Markkinointi Extranet

Tomi Nikula from the ITC department has access rights to the Neste Markkinointi extranet and he gave a presentation in a project team meeting. The basic functions and layout were explained. The difference between these two extranets is that the retail one is more commercial with ads. The user amounts of the systems differ from each other significantly with the retail department having thousands of customers and the wholesale department approximately a maximum of fifty users at the same time. The retail extranet also has more headings and different sections to serve private customers.

A couple of layout pictures from the system such as the front page and product page were taken. The designing was started by using these pictures as a basis. The basic layout for the new extranet was taken from the screen shots. Later on in the prototype phase, the functions and headings were placed on this layout.

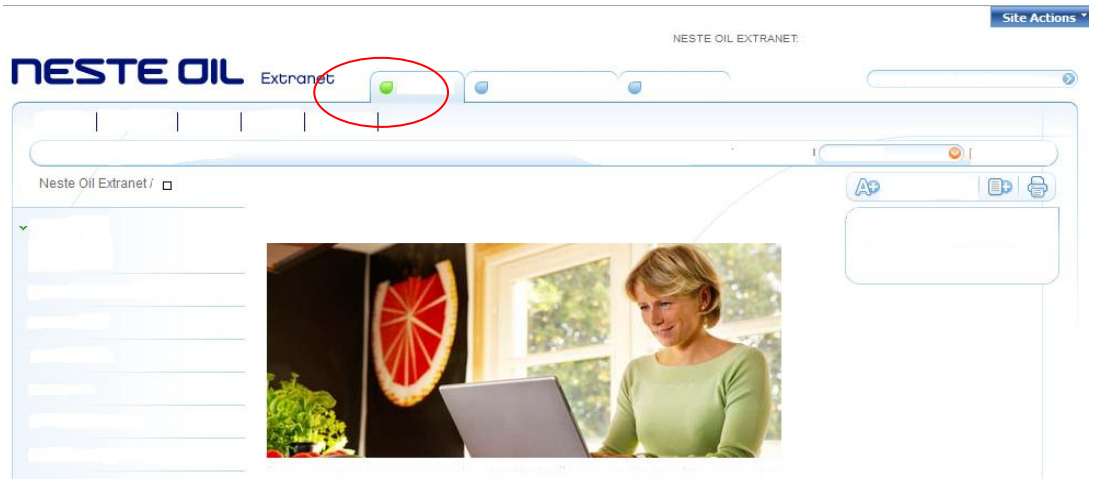


Figure 4.1.Layout on retail sale extranet.

The layout in the retail extranet is divided into the following four navigation sections: header, footer, top navigation and side navigation. The header contains the links to public Neste Oil sites, language options, site actions search and log out. The footer has the basic links and texts concerning the rights of the site, page map, manual, contacts and feedback. The top navigation has been divided into two: the main options about maintenance customer or usual functions are on top and the under navigation has its own sections depending on which sheet the user is on. The side navigation is a standard solution whereas the top navigation's heading has many sections beneath.

The structure and navigation in the extranet has been kept simplified and thus clear enough so the user can easily operate inside the service. This is not going to be a challenge in the retail extranet due to the fewer headings, sections and functions available.

4.2 Intranet Portal

Exploring the Intranet proceeded as a user test where different pages were being browsed. The ones with possibly suitable functions and lists were picked. Later on it will be possible to go back to see the solution used on those sections and see if they could be modified to match the needs of the wholesale extranet.

In this case, attention was paid to the systematic way of listing files under their own headings. When the main aim is to design the functions and integrations there is little attention paid to the appearance of the page. It is noticed that the structure and layout of the intranet resembles in many ways the retail sale extranet. The solutions made in these two systems have to be proven successful because the decisions have been made twice.

The ready prototypes were presented to the sales managers and coordinators who were not accustomed to looking at the pages. In this sense it was necessary to make the prototype resemble more like a normal web page. With the authentic feeling they were able to get a proper overview of the functions and such without paying too much attention to the visual appearance. Based on this the prototypes were designed to look like the retail sale extranet and intranet.

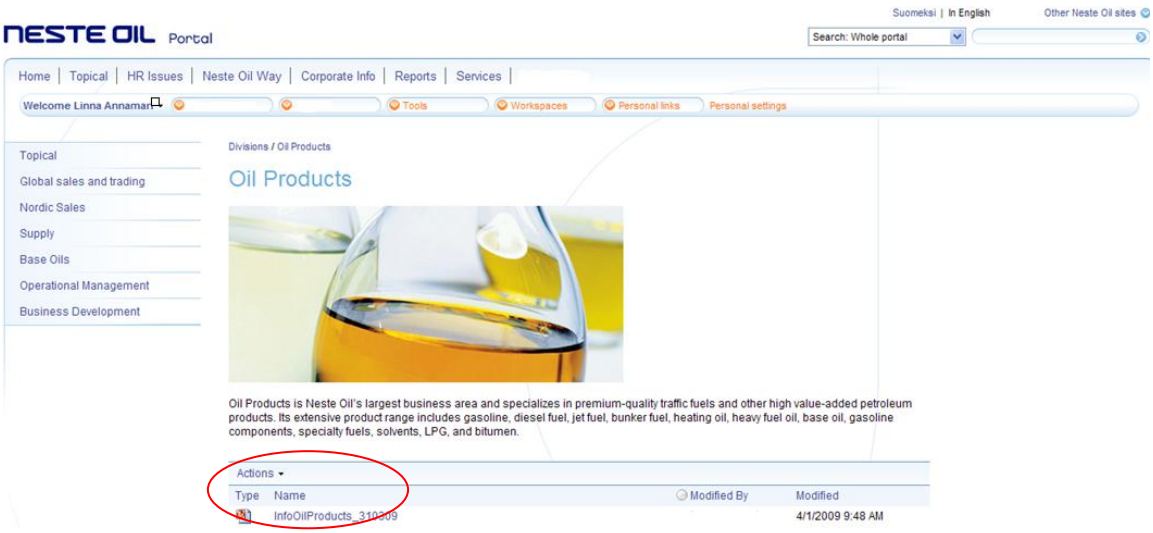


Figure 4.2.Layout on Neste Oil intranet

The Intranet site is structured in a same way than the retail extranet except for the top navigation. It has altogether two different sections which have nothing to do with each other while the retail extranet has one. This two sectioned top navigation is not going to be an issue in this project. There are not so many sections that could be put into navigation to make it two leveled. In figure 4.2 above the basic structure for lists in these two applications is shown. Normally, these mention the type of the file, name, who have modified it and the uploading date. Lists are simple and often have headings that specify what the content is about. The up loader is able to decide what information is shown next to the file.

The first prototype was presented to the sales managers and coordinators who were not accustomed to looking at the pages. In this sense it was necessary to make the prototype resemble a normal web page. With the authentic feeling they were able to get a proper overview of the functions and such without paying too much attention to the visual appearance. This is the reason why the prototypes were designed strongly based on the extranet and intranet.

5 First Prototype of an Extranet

With the data collected from the meetings, interviews and benchmarking the first draft of the prototype was shaped. The draft included the currently used basic functions and navigation parts. The draft was presented on a weekly project group meeting to hear everyone's comments. The group then decided on the ideas which would be added to the next prototype.

After the meeting the draft was modified and presented in a meeting which led to the acceptance of the model of the first prototype. At this stage, it was important that the whole project group agreed with the chosen direction and a use case excel could be shaped. This excel consisted of different customers and their own use cases with specific information on the sections, services and reports they have. These iteration rounds aimed at decreasing the amount of misunderstandings during the process and adding consistency to the whole outcome. In designing, application consistency is considered one of the most important aspects in the eight golden rules.

5.1 Draft of the Prototype

The draft of the prototype was created with PowerPoint. The basic layout was taken from the retail extranet and it was filled with functions and navigation familiar from the wholesale extranet. New features were added after the project group meeting when it had been decided where the new feature should be placed. The basic knowledge in the project group was wider and people in it were able to say straight away what systems exist in Neste Oil Ltd that should be linked to the newer version.

During an earlier project meeting ideas emerged for new integrations; Terminal Messaging (TEPI) and Reclamations or Deviations (NCR). These were put into the front page but were not placed elsewhere at that point. At this stage, these suggestions were ideas only and there was no guarantee that they could be added into this system with integration.

At this phase, the idea was to tackle issues noticed in the current state analysis based on testing and the interviews. The layout and structure with navigation and pictures were influenced by the benchmarking phase. Some aspects such as reports requested by coordinators and customers were added. In Figure 5.1 below, the examples describ-

ing this process are the front page and the reports section which were modified more than the other pages.

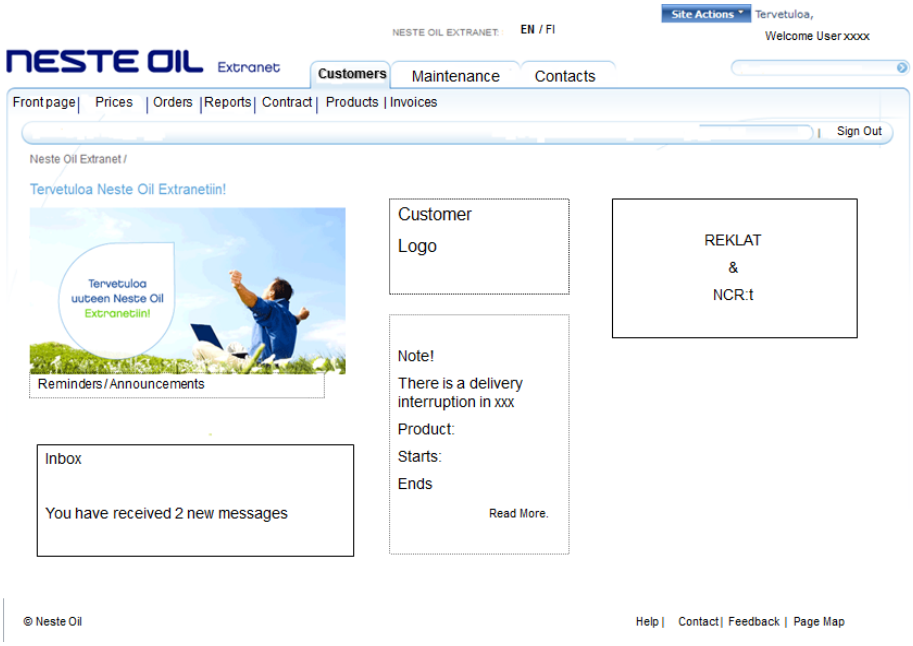


Figure 5.1.Front page on first draft of the prototype

On the draft, navigation was divided into four sections as in other systems: header, top navigation, side navigation and footer. Also, basic functions such as welcome, language, sign out and feedback were placed on every page. The top navigation was divided into two if there was a need to divide the main page and maintenance side separately.

A place for reminders and announcements to the customer was added in order to have something on the front page besides the navigations. To feel safe the customer logo was added with TEPI messages and reclamations. In the retail extranet there was a function that showed the amount of personal messages and this was also added to the draft with its own box.

Navigation was designed to support the divided access rights. Contracts and prices have their own sections where only a small number of people have access rights. This was done to guarantee to the customer that their price and contract information will be kept safe. Users who do not have access rights are not able to see these sections of the pages. The sections that are visible for them move to the places of invisible ones which have an effect only to the length of the top navigation.

Another example concerning the draft is the reports page, seen below in Fig 5.2, which includes separate sections for different report types; deliveries, import, difference and others. The section called others may hold inside for example the Bio Criteria and Certificate of Analysis reports mentioned in the interviews. Most of the customers have their own modified reports published in here. This makes it harder to find a common tag for all these different kinds of reports. It is not a good idea to design different sections that concern only one report each. It would be a waste of effort and affects usability negatively.

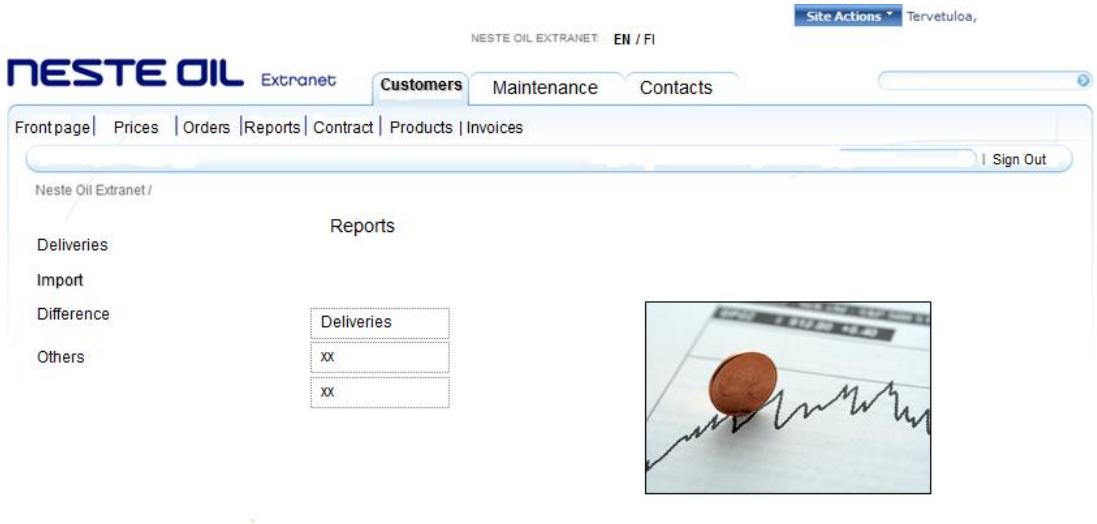


Figure 5.2. Draft of the reports sections.

The pictures in this draft and later on in the prototypes are there to make the model look more authentic. This helps the project team to remember, it is a must to decide on what to put in those sections. The aim is not to have unnecessary pictures on the pages or when the user clicks to see for example the report section, they are able to see it straight away. It should be accomplished with one click taking the user to see the appropriate information instead of a common explanation about what the reports are. If there are this kind of texts it forces the user always to see these pages before clicking the wanted report.

The draft contains error pages often forgotten in the beginning of the process as mentioned in designing guidelines. The error pages are there if the session times out, system is down or some other problem occurrs. A log out page is one must have page which does not exist in the current extranet which can confuse users.

5.2 1st Accepted Prototype

The draft of the first prototype was presented in a project group meeting. Every page was presented and comments were gathered. At some points, there were as many opinions as members in the group but finally, everyone felt satisfied with the solutions made, at least at this point. Most attention was paid to the front page and its content. After the changes decided in the meeting the first prototype was ready and accepted by the project group. This ensured that the prototype could be presented to operations coordinators responsible for the Baltics and Sweden, domestic sales managers and their operations coordinator.

In the first accepted prototype, the public content on the front page visible to all customers includes corporate news and annual reports etc. The same information is published on the corporate web pages and can be brought into this system without manual work. The place for these is on the right hand side of the page. Top navigation is changed; it is not divided into two anymore because there is no need to arrange a maintenance side and contacts can be added into top navigation with prices, reports, contracts etc. This one-level navigation helps the user to focus on what they are looking for without confusion.

The invoice section has been taken away from top navigation and the site altogether. The integration with Salsa to bring separate invoices into the system is too complicated to accomplish within the scope of this study. The sections contact and help have been taken away from footer navigation. The upcoming application will be easy enough to use and the users will be offered personal teaching if necessary. Between Neste Oil and customers there is a continuous relationship if they have something to tell they are able to contact the people responsible for their customer relationship.

Besides, the earlier suggested integrations TEPI and NCR there are mentioned Certificate of Analysis and Bio Criteria in the interviews. Currently, both of these services are delivered to customers via email. If they could be brought to the extranet it would decrease manual work. Files could be archived into the system for certain times and both parties would be able to access them and if necessary print them out. There are many files under these headings and it was decided to give them their own sections under reports. This helps to keep the structure of the page clear.

TEPI is thought to be present on the front page where the user can access them right away. The actual place for them is under the reports heading with Bio Criteria, Certificate of Analysis and Invoice Archive. The invoice archive is a service bought from Itella which will be brought to system through integration. This would be a new service that has not been possible to offer earlier. The project group decided to take the reclamation section away from the front page. It caused comments inside the project group and steering group where it was argued that the front page is focusing too heavily on the bad aspects of the co-operation with Neste Oil Ltd.

Terminal messages are divided into two categories depending if they are planned or unexpected ones. The idea is to show the latest interruptions per terminal on the front page where by clicking the user is able to see the whole message. On the front page there are links to see product and contact information. These were chosen to be there because all customers have the same kind of information on them and the front page does not have to be modified for every customer. There is a bigger place reserved for announcements given to customers. It is a customer oriented notice board where sales managers or coordinators are able to write their short messages such as Christmas wishes etc.

The customer logo was decided to be included on the page to show the customer it is their page in question. One extra function was to create a place for updating customer contact information. There the customer's admin user is able to update their own contacts and users. This will send an email message to the coordinator who can change operating habits to match the change.

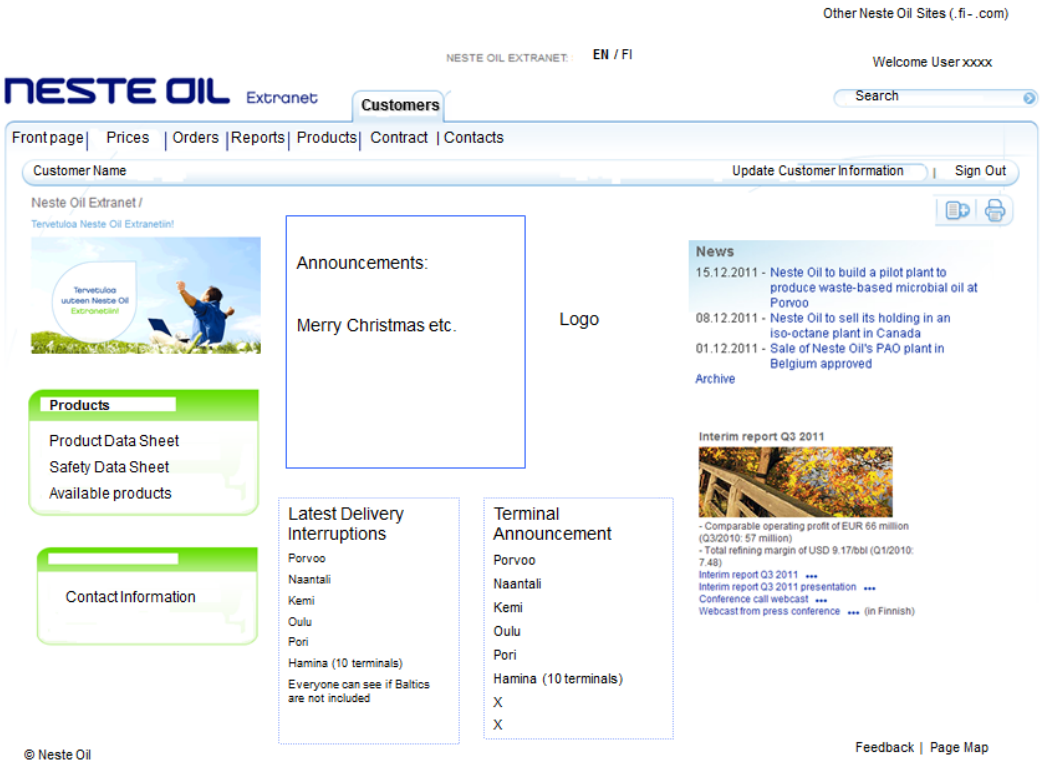


Figure 5.3. Front page of the first accepted prototype.

The reporting page experienced many changes after the meeting. Side navigation was rearranged. The headings are now ordered alphabetically starting from Bio Criteria, Certificate of Analysis, Deliveries, Deviations, Financials, Reclamations and Terminals. All of these consist of different kind of files opening either with their own pop-up windows or are put into the actual web page. It is not a concern of this project to decide what will be presented on the front page from the reports section. To avoid forgetting these sections on the page, the question "what here?" has been written on the page as seen as in figure 6.4 on the next page. Changes were also made to the headings of the side navigation. First the terminal sub-heading was called Delivery Interruptions but based on the comments it was felt to be too negative and was changed to Terminals.

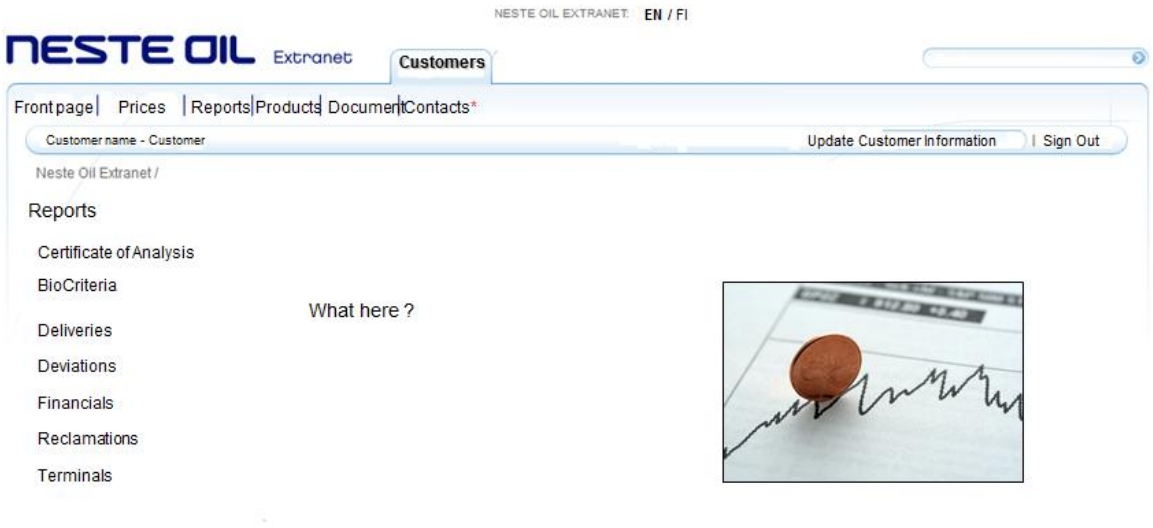


Figure 5.4.Report Section.

To show an example of the reports section's sub-headings there is a picture below concerning the Terminals and its announcements. When the user either clicks the see more -button on the front page or goes through the reports side the goal will be this page. It is divided into four different sections. Up on the page, five latest interruptions or announcements are shown that can be pressed open from their links. Under them are two boxes. One of them is for delivery interruption and other for terminal announcements, in this case planned delivery cuts organized by terminals. If the user is interested in older interruptions it is possible to go to into archive that has all the interruptions from the current year.

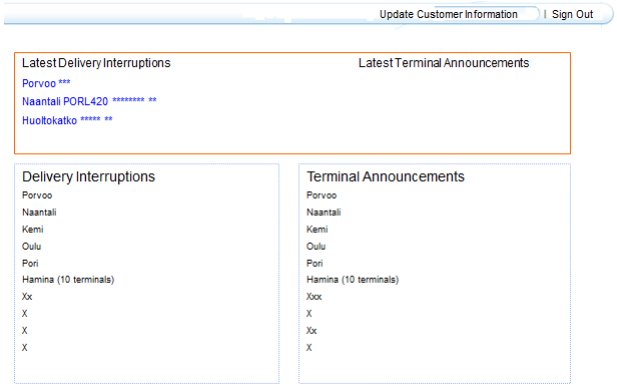


Figure 5.5.Page for terminal messages.

Changes regarding other pages are minor. Page functions are now more closely defined with file opening methods and listing. In a year there can be over 500 files added to the price section which will be divided weekly. In cases with monthly pricing they are divided by month.

5.3 Operations Coordinators responsible for Swedish and Baltic Customers

With the first prototype, interviews were conducted among the operations coordinators responsible for the Swedish and Baltic customers. This was done of the request of the steering group who wanted to get documented how this service could be implemented with these customers. Neste Oil is considering launching this kind of service with the regular customers outside Finland and with this interview they can see if it would be worth it. The results will be documented into the use cases Excel using a "by customer" sheet which summarizes which customer could have and what.

These three interviews with Ville Virtanen, Susanna Kämäräinen and Soili Järvinen showed how the customer relationship is organized with their customers. They indicated how much these customer relationships should be modified before this kind of extranet service would add value to their customers.

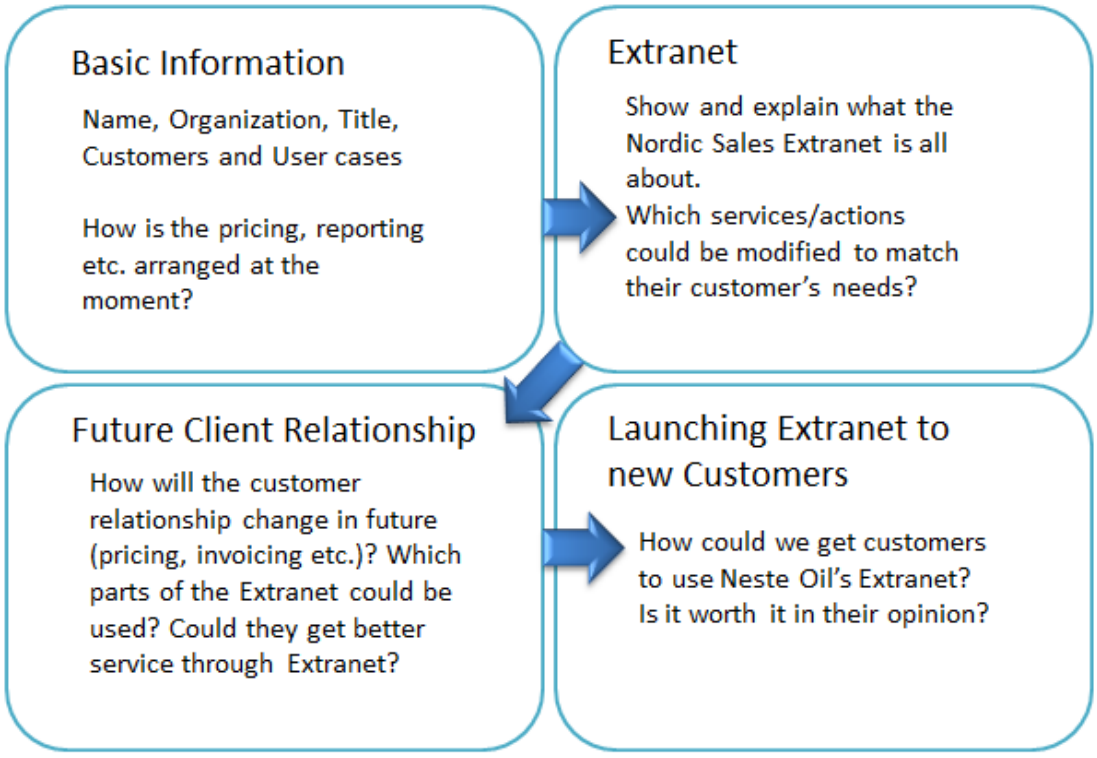


Figure 5.6. Question themes for Baltic and Swedish coordinators.

The structure of the interview was as follows; the names and customers were written down, the 1st prototype was introduced and commented on and then questions were asked on how solid the customer relationships are, whether there is any change ahead, and last, whether it would be worth launching the service to their customers.

As a summary, the interviews indicated the lack of services in the prototype designed to meet the needs of the foreign customers. There are only a few sections they can use at the moment; contacts and contracts. With some customers it could be possible to use some report sections such as Certificate of Analysis and Bio Criteria. These results indicate that the launching of the service is possible in future with some modifications.

5.4 Use Cases in an Excel

Based on the first prototype and interviews, the use cases were done using Excel. While designing applications or user interfaces it is important to make different kind of documentations to support each other. Here the use case documentation was divided into different sections: content by customer, quality of information and updating frequency. The task with Excel was started by creating own sheets to every domestic customer (1-6) and one example concerning the Baltic customer (7) to be filled in later.

Secondly the customer sheet was created and filled in with the details of the common site. This lists all the different pages and functions that will exist in the application. With this common sheet ready the customer oriented sheets were created. These explain in detail what the pages will hold inside in the case of a certain customer. Sheets, by customer and update, are filled later. The main idea with them is to show a summary concerning customer based content and updating frequency.

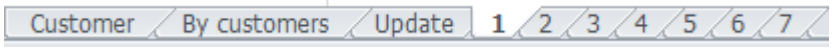


Figure 5.7. Excel sheets.

The basic structure on the customer oriented page is to have all the pages and their functions described on a certain level. The first level pages (top navigation) are bolded to see the difference between the sections. To make this clearer there is above a picture about customer 1 and their reports sections. This is narrow enough to show the basic idea without confusing.

In reports there is the front page with the side navigation of all the different types of services located here. After the reports main page the headings in the side navigation are detailed separately. For example with deliveries there is the front page where all the report on this page is named with the names used in BO. Surely, these will be changed to more customer friendly way when the implementation is done, but at this

point it is most important to tell the system name to know which report is in question. The same information is given to all pages under the reports before continuing to the next section called Contract.

Reports	Front page	?
	Side Navigation	Delivieries
		Financials
		BioCriteria
		Certificate of Analysis
		Claims
		Terminals
Delivieries	Front page (pdf & .xls)	
		Deliveries.pdf (daily)
		Customer_deliveries_date_refresh_time.xls (daily)
		Loading temperatures last year.pdf
		Loading temperatures, current year.pdf
		Bio component values.pfd
		Bio Values by Delivery - Biochecking v4.pdf
	Side navigation (reports)	
Financials	Front page (pdf)	
		TaxAttachment.pdf
		Invoice Archive (Itella)
	Side navigation about the reports (=archive?)	
Biocriteria	Front page (pdf)	
		Biocriteria.pdf (ship delivery/product)
	Side navigation (=archive)	
Certificate of Analysis	Front page (pdf:iä)	
		Certificate of Analysis (Oili)
Reclamations	Front page (pdf:iä, exceleitä, jotain muuta?)	
		Reclamations
		Expenses
		Reclamation summary
	Side navigation (=archive)	
Terminals	Front page	Latest Terminal Announcements (--> pop-up window)
		Latest Delivery Interruptions (--> pop-up window)
		Terminal Announcements (groupped by terminals) + all
		Delivery Interruptions (groupped by terminals) + all
	Side navigation (=archive)	
Terminal Announcements	Side navigation	
	Front page	List of the interruptions
Delivery Interruptions (Unexpected)	Side navigation	
	Front page	List of the interruptions
Deviations	Front page (NCR:stä, jos mahd.)	Picture
	Side navigation (=archive)	
Contract	Front page	Contracts.pdf (agreed contracts - annual contract & quality agreement)
	Side navigation (=archive)	
Products	Front page	Available products (public)

Customer | By customers | Update | 1 | 2 | 3 | 4 | 5 | 6 | 7

Figure 5.8. Customer 1 content on reports page

The same pattern continues with the other customer oriented sheet. When the content per customer is clear there is made a summary where the common customer page is put together with all possible content and customer. Numbers in the table presents the customers and the numbers 7-9 are different customer in the Baltics and Sweden. The mark x is used to show that the customer wants to have that part of the site. There can be seen clearly, especially in the reports section, that there would be no content on the foreign customer page. The picture shown here is from the basic content on the front page and does not show the emptiness of their service. The terminal messages

are not shown on the front page and on that part there are no marks on the table for them.

customer	1	2	3	4	5	6	7	8	9	10	New			
	x	x	x	x	x	x	x	x	x	x		**Customer Use Cases**		
	x	x	x	x	x	x	x	x	x	x		Role based access rights in extranet by content		
	x	x	x	x	x	x	x	x	x	x		Role based access rights in extranet		
	x	x	x	x	x	x	x	x	x	x		User management (All)		
	x	x	x	x	x	x	x	x	x	x		Error page if log-in failed (public)		
	x	x	x	x	x	x	x	x	x	x		Error page if system down		
	x	x	x	x	x	x	x	x				Search (header) (public)		
	x	x	x	x	x	x	x	x	x	x		Sign out (header) (public)		
	x	x	x	x	x	x	x	x	x	x		Print		
	x	x	x	x	x	x	x	x	x	x	x	Update "Customer" information (customer admin)		
													Customer extranet users	
													Interruption distrb.lists	
													Emergency contact info	
	x	x	x	x	x	x	x	x	x	x		Welcome User ,user name (identifying)		
	x	x	x	xx	x	x	x	x	x	x		Customer logo		
	x	x	x	x	x	x	x	x	x	x		Feedback footer		
	x	x	x	x	x	x	x	x	x	x		Pagemap footer		
	x	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**		**Font page**		
	x	x	x	x	x	x	x	x	x	x			Products	
	x	x	x	x		x					x		Latest Delivery interruptions/Planned + All	
	x	x	x	x		x					x		Latest Terminal Announcements/Unexpected + All	
	x	x	x	x	x	x	x	x					Announcements to Customer	
	x	x	x	x	x	x	x	x	x	x			Announcements to all Customers	
	x	x	x	x	x	x	x	x	x	x			Contact information	
	x	x	x	x	x	x	x	x	x	x	x		News, Annual reports etc.	
	x	x	x	x	x	x	x	x	x				Top Navigation	
	x	x	x	x	x	x	x	x	x					Front page, Prices, Orders, Reports, Products, Contract, Contacts

Figure 5.9. Summary of the customer content.

On the Update sheet the same page information with all its possible content is listed and there are table with parts; public, update, how. The public answers to the question if it something that all customers will have and their every user. The update tells the frequency how often for example the reports are refreshed in the service. How describes the way the information is got into the system, all the reports are available through BO which will send them throug email to this system. Most of the updating is done automatically via different applications but then there are data and contact information that is updated manually and the frequency time is estimated.

Public	Update	How			
			Delivieries	Front page	?
	daily	BO			Customer_deliveries_date_refresh_time.xls
	year				Loading temperatures last year.pdf
	year				Loading temperatures, current year.pdf
	year				Bio component values.pfd
	daily	BO			Bioseurannan tarkastus v4.pdf
	daily	BO			Truck Deliveries CustomerI (TS) by One Day KEMI
	daily	BO			Truck Deliveries Customer (TS) by One Day OULU
	daily	BO			Truck Deliveries Customer (TS) by One Day NAANTALI
	daily	BO			Truck Deliveries Customer (TS) by One Day PORVOO
	monthly	BO			Truck Deliveries Monthly Customer.pdf
	daily	BO			Deliveries.pdf
	daily	BO			Deliveries.xls
	daily	BO			Emission trade qualities.pdf
		BO			Difference History.xls
		BO			Difference Monthly.xls
		BO			Own Import History.xls
		BO			Own Import Monthly.xls
		BO			Delivery Request.pdf
	daily	BO			Certificate of Analysis
	daily	BO			Customer purchase (määrät, USD, EUR)
	daily	BO			Customer Sales (määrät, USD, EUR)
					Terminal Situation, Malmö
				Side navigation, reports (=archive)	

Figure 5.10. Updating frequency and "integration"

These use case definitions give a better perspective to write requirement specifications in the future. There it can be separately seen which customer has and what, if the main idea gets lost in the process. From this documentation it is easier to modify presentations to the sales managers and operations coordinators which will match their own customers.

6 Second Prototype

The second prototype was created based on customer sales managers' and coordinators' comments gathered through the meetings where the first prototype was presented. These meetings were arranged in mid-January. Always, when the prototype was modified the same changes were also made to the use case documentation.

6.1 Presentations for Sales Managers and Coordinators

Meetings with the sales managers and coordinators were organized after the prototype draft had been modified as many times as was needed for it to be accepted among the project group. The acceptance of the project group formed the first actual prototype. Presentations with the 1st prototype were held separately depending on employee's customers. Three different sessions were arranged where everyone was able to express their thoughts. With this separation it was possible to show as accurate a model of the 1st prototype as possible based on the customer specific needs and services.

This phase was not only about interviewing the sales managers and coordinators but presenting the existing prototype. The script for these meetings was more to go through the model and introduce functions and structure of the possible system than using certain themes. The presentation raised comments without asking any questions. The themes shown in Figure 6.1 below were created to get a solid understanding of what should be talked about. If there was a silent moment during the interview there were suitable questions to be asked. When the meeting was progressing to its end, the interviewer was able to go through these topics and make sure all of them had been taken into consideration.

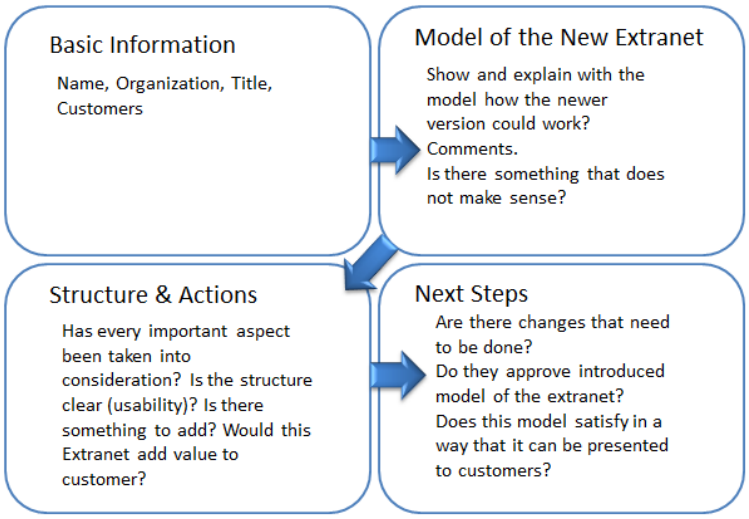


Figure 6.1. Question themes for Sales Managers presentation

During these meetings basic facts were written down such as names, customers, titles and employment time. The prototype was presented page by page; there was time given to the participants to comment on and express if something on the page bothered them. Before making a meeting summary, the usability and structure as a whole were discussed. The opinions were summarized and the next steps were construed.

6.2 Modifications Based on the Comments

As a result from the meetings, there were surprisingly many comments to go trough with the project group. All of them were not possible to accomplish due to the time limitations or their redundancy. In first meeting there were not so many comments than in the next ones. The comments were mostly positive. Some of them, however, paid attention especially to the front page's appearance with its negative information.

Terminal announcements exist because Neste Oil has had some problems in their service. This is naturally something the corporation doesn't want to emphasize on their front page. Certain aspects that are not working well should not be presented as visibly as it is in this model. The front page is taken into more designing with the project group based on the feedback. The same idea was behind the suggestion to take away the delivery interruptions from the front page. The minimum requirement presented was to give delivery interruptions a significantly smaller section on the front page.

Otherwise, mostly minor changes to headings and such were made and the Sales Managers agreed possibly to start using the extranet themselves; adding memos from meetings and writing messages into the system for customers to read. One meeting

offered many ideas on how to make it a better service. Unluckily, the customer in question is so special that this led to the rejection of most of the ideas. Figure 6.2 below is a list of the accepted and required changes. On the list is for example a suggestion to change the "contract" section in top navigation to "documents". Under documents term different kind of memos and files with own access rights can be added next to the quality agreement and contract sections.

At the moment	Suggestion
Reclamations	Claims
Stock value on the front page	No stock values anywhere on the site
Contract (in top navigation)	Documents
No place for memos	Memos visible to all customer users and memos visible only to certain customer users.
Quality agreement at the same place with contract	Quality agreement has its own section under contract (in future documents)
Contacts section should not have old pictures of the people	List of contacts
Announcements to customers	Two announcements boxes; to all customers and specifically to one customer

Table 6.2. Required changes.

Approval for changes was received in the project team meeting. The prototype and use case documentation were modified based on these suggestions to match the ideas. To tackle the issue with the front page design two different models were drafted. A query was organized to solve which one is more preferable in the eyes of the Sales Managers. In the first option there was "terminal announcements" box as a link and "delivery interruptions" had a bigger box where all the terminals and their latest messages are separated. In the second version there were two boxes for the "customer announce-

ments" and all terminal information was behind links. It is presently on the front page but does not take up all the attention of the user. The Sales Managers were almost unanimous and chose the second option with only the links on the front page.

Figure 6.3. Two optional models for front page.
On the right hand side is option one and on the left hand side is the option two with only link on it.

The final prototype was presented to the steering group which accepted all the changes. A choice was made to implement the service only in English to save resources. Most of the contracts, prices and reports handled with customers are already in English. This is an indication that it should not be a problem to publish the service in one language only.

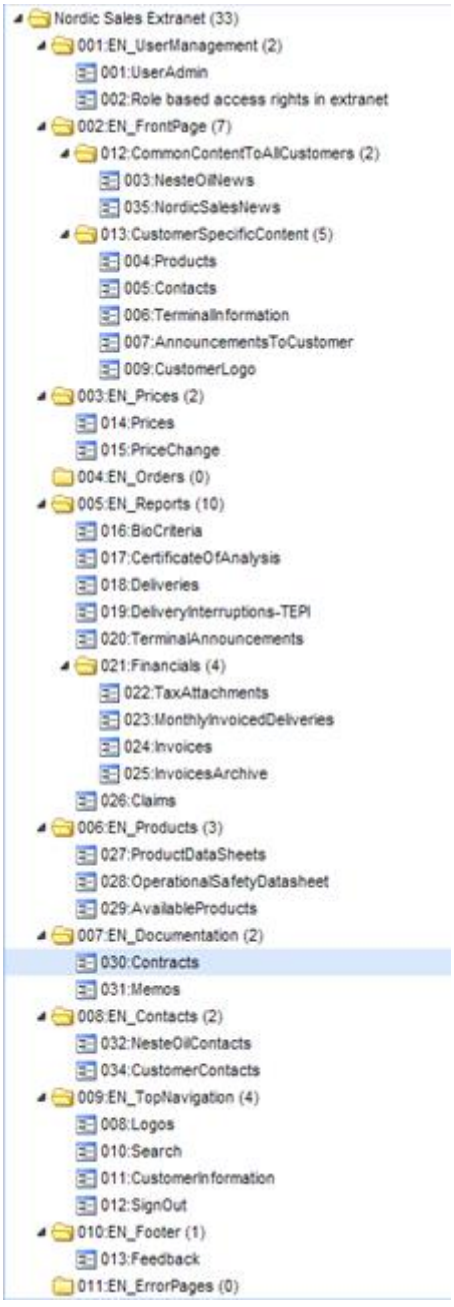
7 Pre-Requirement Specifications in TestLink Environment

The final phase, before the requirement specifications can be written open, is to create a model in a program called TestLink. A six-hour workshop was arranged at the end of January with the project group. The idea was to write together into the system the site requirements found in the final prototype and use case Excel. This is more detailed than the Excel version and contains, to some extent, different information.

The idea in TestLink is to be able to specify the requirements in one place where it can be seen what is needed; who has access rights, who has what services, and how and when they are updated. The web-art places and their requirements are documented here as well. In the implementation project, they are able to use the same system and use this Test Link environment straight away in the test cases.

Test Link as an application is a new service that Neste Oil has and Tomi Nikula from the project group is the one in the workshop to use the system and teach others how the page elements haveto be written into it. During the project group the final proto-

type is closely documented into the Test Link. If there are confusing sections the facts are checked from the use case documentation where it is explained what functions are behind certain access rights and why.



The structure of the site is divided in TestLink into different layers of pages and page items. There are three different layers used; one for the whole service, second to different "main" pages and third one for special sections under the "main" pages.

In this documentation, user management with the access rights and admins is detailed first. The front page is divided into sections that arethe same to all customers or customer specific content.

The only common content is the corporate news published also on public Neste Oil web pages. All other content is customer oriented which expresses how most of the customers have the same sections with their own content. For example the terminal information shows only messages concerning those terminals that the customer is using. Information from other terminals is found to be unnecessary and only disturbing users.

All pages are documented systematically; the orders page is documented among others to indicate that it needs to be designed in future developing products. After the pages there is detailed content of top navigation, header and footer. One important aspect is to design error pages which are easily forgotten during the designing project. If these are designed later on in the implementing phase it will cost more money to add them when the chosen vendor is part of the process.

Every section documented into Test Link has certain specifications to describe what kind of page it is, what content there is and how this is organized. As an example in contracts there is specified the maximum amount of files per year. How these files are organized and shown to users, in this case, files are sorted by the type and date. Every different type of contract, quality agreements and memos have own access rights; here the attention is on contract.

Some of them are public and others not. Sentence about data being available to all customers indicates that every customer has this section in their service. Updating has to be done manually; in other pages such as prices updating is automatic. Same requirement specifies at the same time the possible format to added files. Last specification concerns alerts, users are able to choose from a different page all the alerts they want to receive if files are added etc. In extranet it is designed that the user is able to receive notifications from most of the pages.

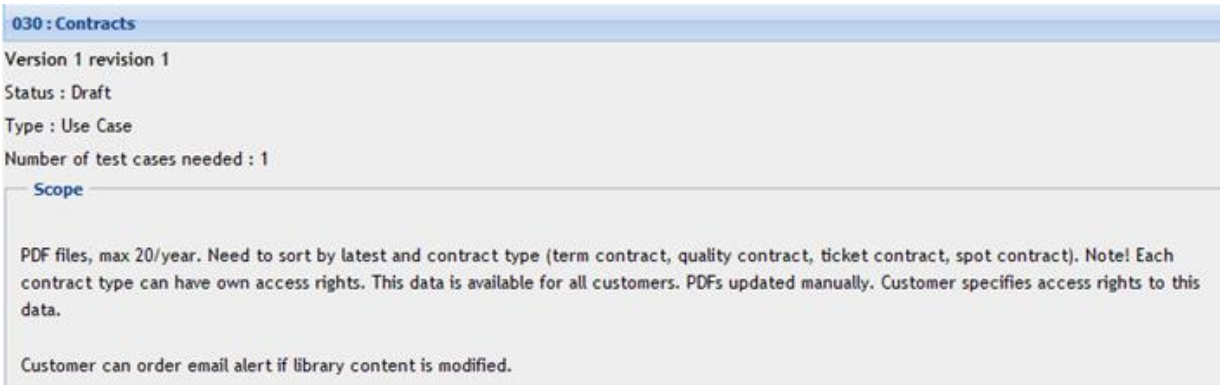


Figure 7.1. Test Link specifications.

With the help of Test Link, prototype and use case documentation it is easier to write down the requirement specifications for the newer version of the Extranet. Before writing the requirements there are technical aspects that need to be sorted out but the main structure is clear and the meaning of different functions have been documented.

8 Conclusions

The results of this study are three different kinds of documentation sets; prototype, use cases and TestLink. These designing tools create a solid base for starting to write off the requirement specifications. These lead to the implementation phase which will create a working extranet service to the Nordic Sales domestic customers.

Like in every study there are aspects in this one that could have been done better. If there had been more time and people invested into the project the documentation would have been even more thorough. The creation of an actual demo would have erased unnoticed issues.

8.1 Summary

The broad objective of this study was to create overall requirements to a new extranet version, which was designed for the Finnish company Neste Oil and more specifically for the domestic customers of Nordic Sales, responsible for the wholesale operation in the Nordic Countries. This objective was accomplished through prototype designing and use case documentation which were then put into TestLink.

This project was conducted as part of the engineering studies in the Industrial Management, a four-year degree programme at Metropolia University of Applied Sciences. Research was conducted following different interface and web designing theories from researchers such as Nielsen and Shneiderman.

During the first step the current extranet service was analyzed through Neste Oil employee interviews and testing of the application. Next in line was benchmarking of other Neste Oil services such as Neste Markkinointi extranet and the corporation's intranet portal. The structure of the new extranet is preferred to follow the same style with these portals.

The outcome of this study is divided into three different parts; prototype, use case and TestLink documentation. These together build up the base for the requirement specification. In prototype designing the material from the current system, interviews and best practices were put together to create a better service. The prototypes were modified based on comments from the project team, steering group, sales managers, operations coordinators and customers. To support the prototype designing use case documentation was done into Excel where customer and their specific content is detailed with updating frequency.

In a workshop arranged among the project team the final prototype and use case documentation was written into TestLink application which creates the pre-specifications. This makes the structure more visible and defines the different sections, access rights, maximum file amounts and updating style.

8.2 Next Practical Steps

From the objective of this study, the final requirement specifications for new Nordic Sale extranet should be written down. The next steps for Neste Oil Ltd is to send these requirements to a company capable of designing a demo version of the actual possible application.

This demo will help spot the problems areas and the issues still in need of more planning. The demo will be presented to the steering group who will make the final call to modify requirements and accept them to be ready to be sent to application vendors for offers. Before this is done there has to be data modeling done. This will explain and express in more detail the data and its sources, i.e. how should it look like and what should the content be.

After receiving offers the best one is selected and the implantation phase can start with them. At this point, it is estimated to be ready in the beginning of the year 2013. Most likely the project is going to take a longer time but in this case it is not crucial.

8.3 Evaluation

Altogether this study was successful and accomplished the goals set for it. The three different outcomes were all accepted by the project group. During the project I grew to be more of a consultant and learned to express my thoughts in a confident way with facts to back them up. It was important to hear all the different opinions and try to identify the ones that mattered.

Neste Oil gave at many points the freedom to create my own ideas and make the documentation as I saw efficient. Later on these ideas and documentations were modified within the project team. All comments were made in good understanding and everyone was able to express their own opinions.

On the other hand I am not a professional worker and experiences with this kind of a project have been rather rare. The final outcome will be better when the project group have ordered a demo from the software vendor. This demo will show more vividly the errors left in the design. The Neste Oil employees attending the project group were keen and sincerely interested in the redesign of the extranet. There was enough time given to find out solutions and opinions to problems. The sales managers and opera-

tions coordinators were ready to share their thoughts and were in no rush when interviewed.

Most of the success in this project is thanks to the project leader, Sirja Salminen. She knew what the aim was all the way through the project. Work was divided clearly and all members knew what they were expected to do and when. All steps planned were also accomplished.

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Title of the Appendix

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