CHALMERS

Integrating an interface for logged user activities in an existing organizational tool for a wide and diverse customer base

Master of Science Thesis in the Programme Interaction Design

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Preface

This report is a Master of Science Thesis conducted at the Interaction Design Program of Chalmers University of Technology. It was written and performed in cooperation with the company Stratsys AB in the spring of 2011, and aims at adding a feature concerning changes and events in their already existing product.

We as partakers of this project are very thankful of all the help received from various employees, at the company as well as our supervisors Anders Klintelius and Anders Hjalmarsson. We would also like to thank Magnus Ahlberg, Carl Arnesten and Tobias Eriksson that helped us during the implementation of the feature into the already existing product.

Anna Gryszkiewicz was our supervisor at the department of Applied Information Technology. We would like to thank Anna for all the help and inputs throughout this project and for keeping us on the right track when questions were brought up.

Lastly, additional thanks goes out to all the people around Sweden that agreed on participate in the interviews and questions that had to be asked.

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Abstract

This thesis describes an interaction design process of implementing an interface for a logging feature in local part of an existing organizational type of application. A data collection is performed with interviews of existing users. From them a persona is developed to aid the iterative design process. Several mock-ups are made and one chosen, is evaluated with a user task-analysis. Lastly, the final solution is implemented into the product. During the design process, theory of usability, information retrieval, information visualization and design patterns are taken in consideration.

Contents

1 Introduction

As the competition in the Information Technology and computer industry grows harder and harder, an increasing sales point for a successful product is, besides good performance, that also the human-computer interaction (HCI) is good. Sometimes, a well thought out interaction can even out sale a product that has significantly better performance but lack in usability. By increasing accessibility and usability of a product, it can attract bigger market shares. That is why companies are placing more focus on it in their development. They can, however, not start from scratch as they are already committed to their current customers. Therefore, a big hurdle for companies to overcome is to gradually reform their legacy design into a new and improved solution. This is not a trivial task as various limitations can hinder the intended design and force a compromise. It can also be risky to make a complete redesign as current customers may find the new design too unfamiliar for comfort and start to look into alternatives from competitors.

This project was tasked with implementing a user interface for a newly developed logging feature, a feature that is meant to help users keep track of processes and changes within the product of use. With many users, this presents a problem with large quantities of data that needs to be easily managed. At the same time, this new type of functionality must be presented in the same manner as the rest of the product in order to guarantee consistency and utilize the users' previous experience of the product.

Lastly, this report serves as documentation for the first practical work of a pair of interaction designers. The lesson learned when theory is put into action and the problems encountered in a real life environment.

2 Background

2.1 Stratsys

Stratsys is a company that develops a web based software solution, named Stratsys, for operation control, where operation control works as a procedure where a company's key performance indicators (KPI) are complemented with productivity, volumes and quality. The goal is to show the operations evolvement from a number of dimensions.

> "Stratsys helps companies and organizations to become successful and competitive by supporting them in their work to achieve their goals. With the help of Stratsys methods and tools, business strategies are made real. We enable our customers to reach their set goals faster and achieve better results."[1]

They feel that they are in a phase where they want to develop their tools further in order to achieve a bigger interest in their solutions by enhancing their graphical framework. Since the software is used by a lot of users in an organization, all with unique accounts, a desired goal to achieve is to implement a log that visualizes events that can help the users to keep track of how their organization develops and changes.

2.1.1 Balanced scorecards

Stratsys as a product is partly built with a focus on balanced scorecards that helps the users and their organization to keep track of their strategies, goals etc. Balanced scorecards is a common method to use when it comes to combining financial and non-financial measures that are compared to a target value within concise reports which suits the target costumer and their organizations well. In the product the scorecards are built up by having different columns that all have several "nodes", which can be thought of as a set of entities that can be of different structure such as activities, measures and so on.

2.1.2 Collaborative reports

Another part of the product is that it creates flexible reports for the organizations. This can be done by writing them without regarding the balanced scorecards, or the scorecards can also be included in the final report. A useful feature of the reports is that they can be divided into sections that can be assigned to different users or units of the organization. This lets them work on different sections independently, and later on the sections can be combined into a final outcome.

2.2 Stratsys product

There are six main areas of the product. The following sections will give a quick introduction into what they do for better understanding of the result in 4.2.1. It should be

[1] `http://stratsys.se/en/ABOUT_STRATSYS`

noted that the screenshots, represent the old interface. During the project, the product underwent a major visual redesign. However, the core interface functionality remains mostly the same.

2.2.1 Start-page

The start-page as seen in figure 1 is the first thing a user sees when logging in. It contains a billboard to post general messages to all users. Below that are listed items that the user is responsible for, with emphasis on the deadline by which they are due.

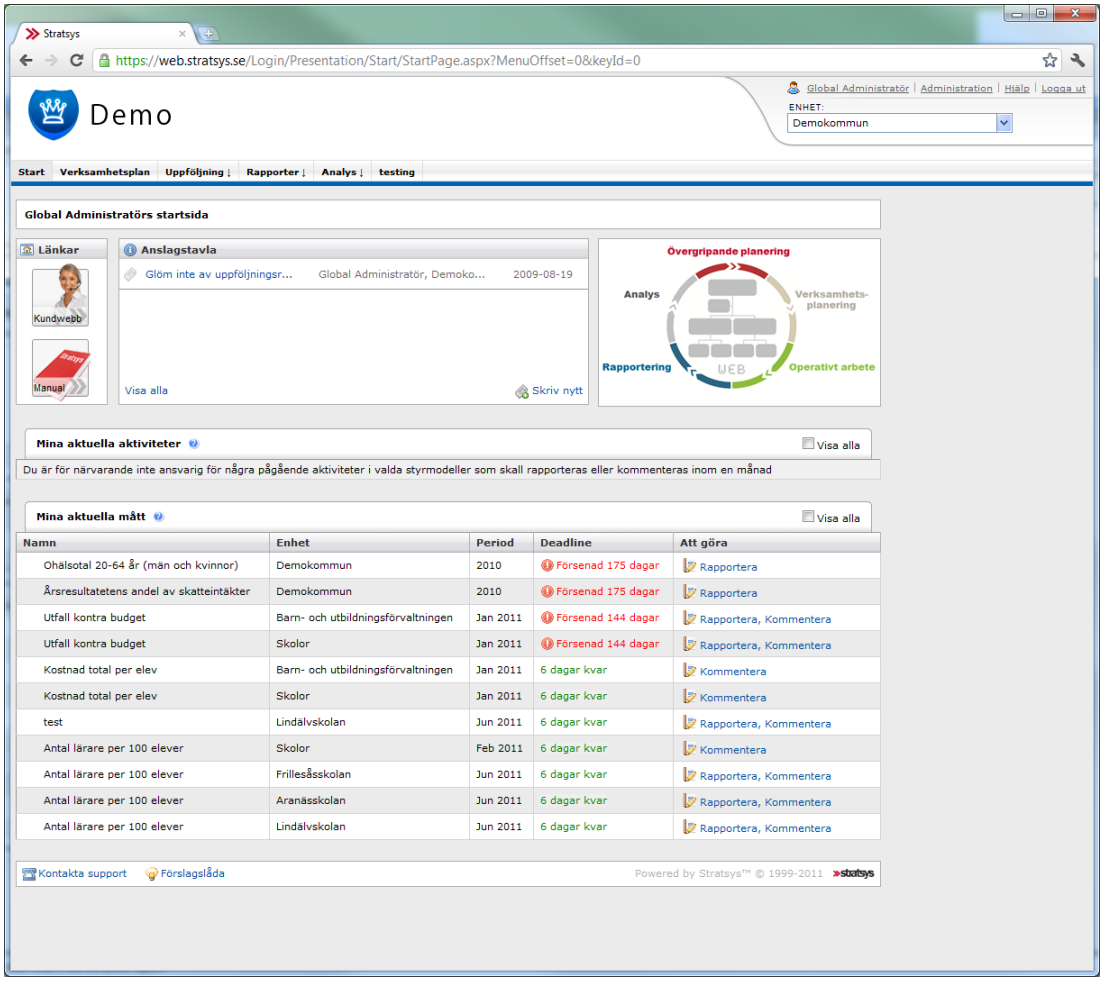

Figure 1: Stratsys start-page

2.2.2 Scorecard-page

The main area for exploring the balanced scorecard which the product focuses on, is demonstrated in figure 2. It can be formatted in different ways, from a simple text-table to an interactive view with drag-and-drop. From this view you can access and edit the properties of the nodes. It is also here where new nodes can be created, deleted and moved around within the scorecard.

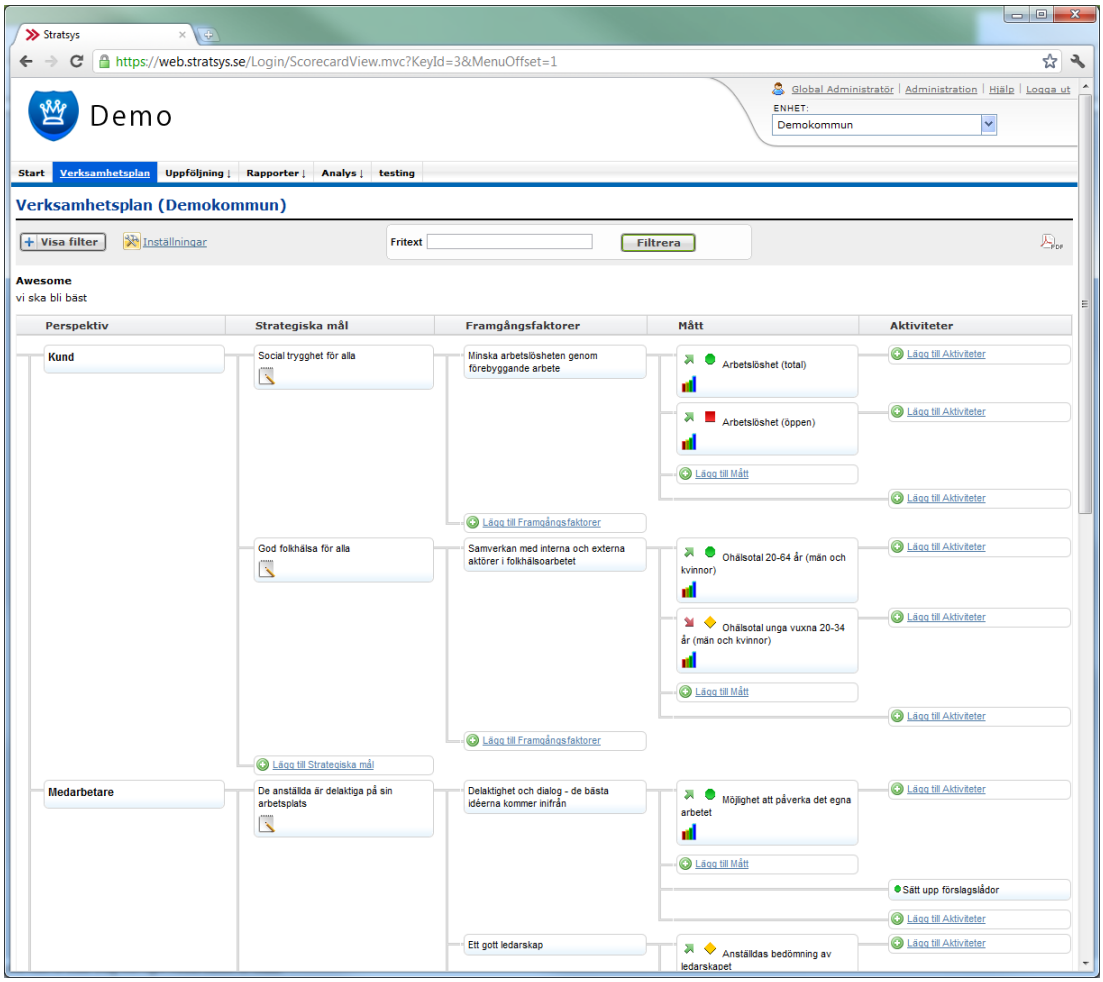

Figure 2: Stratsys scorecard-page

2.2.3 Node-popup

Editning a node brings up a popup, as seen in figure 3. In the popup the users are able to edit different types of attributes. They range from filling out a description, assigning responsibilities, reporting KPI values, change node specific settings, etc. The popup mostly consists of text fields and dropdown boxes.

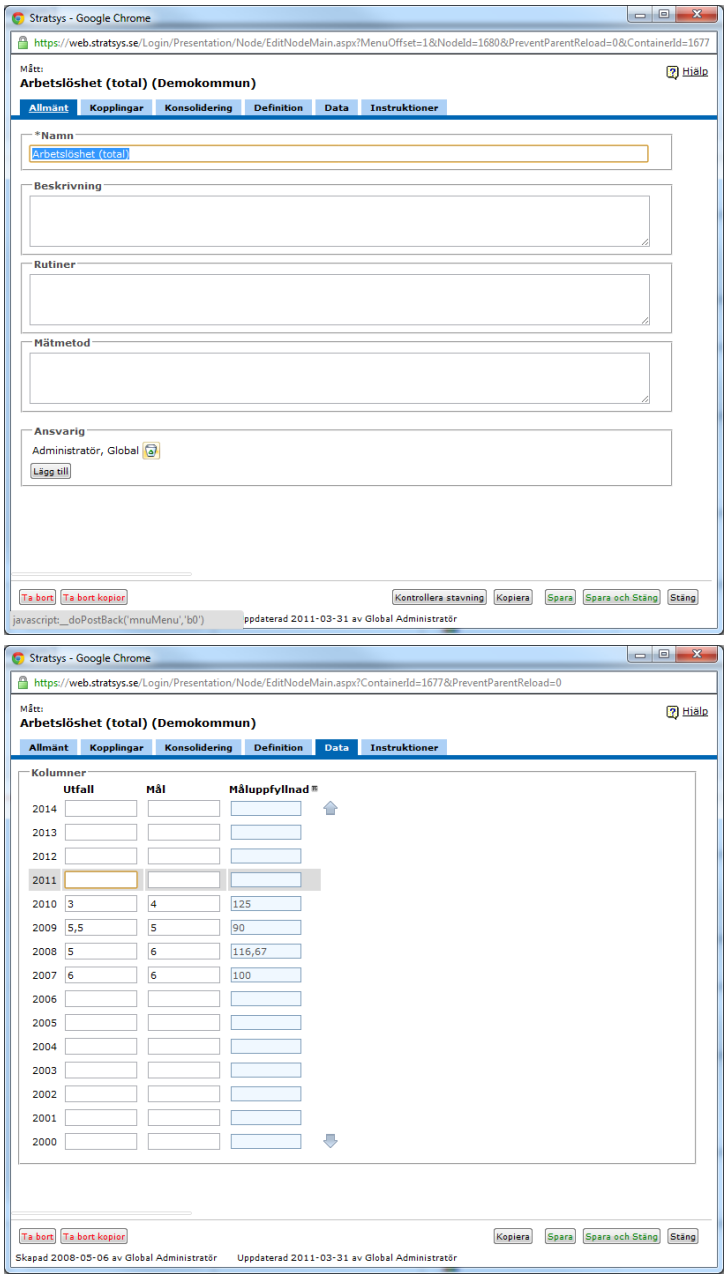

Figure 3: Stratsys node-popup

2.2.4 Report-page

All the reports within the Stratsys product are managed through the report-page, seen in figure 4. From here, reports can have their templates modified or be activated for other users so they can begin to write. Progress for the report is monitored and indicates if, for example, a certain part of the report is ready to be proof-read and approved.

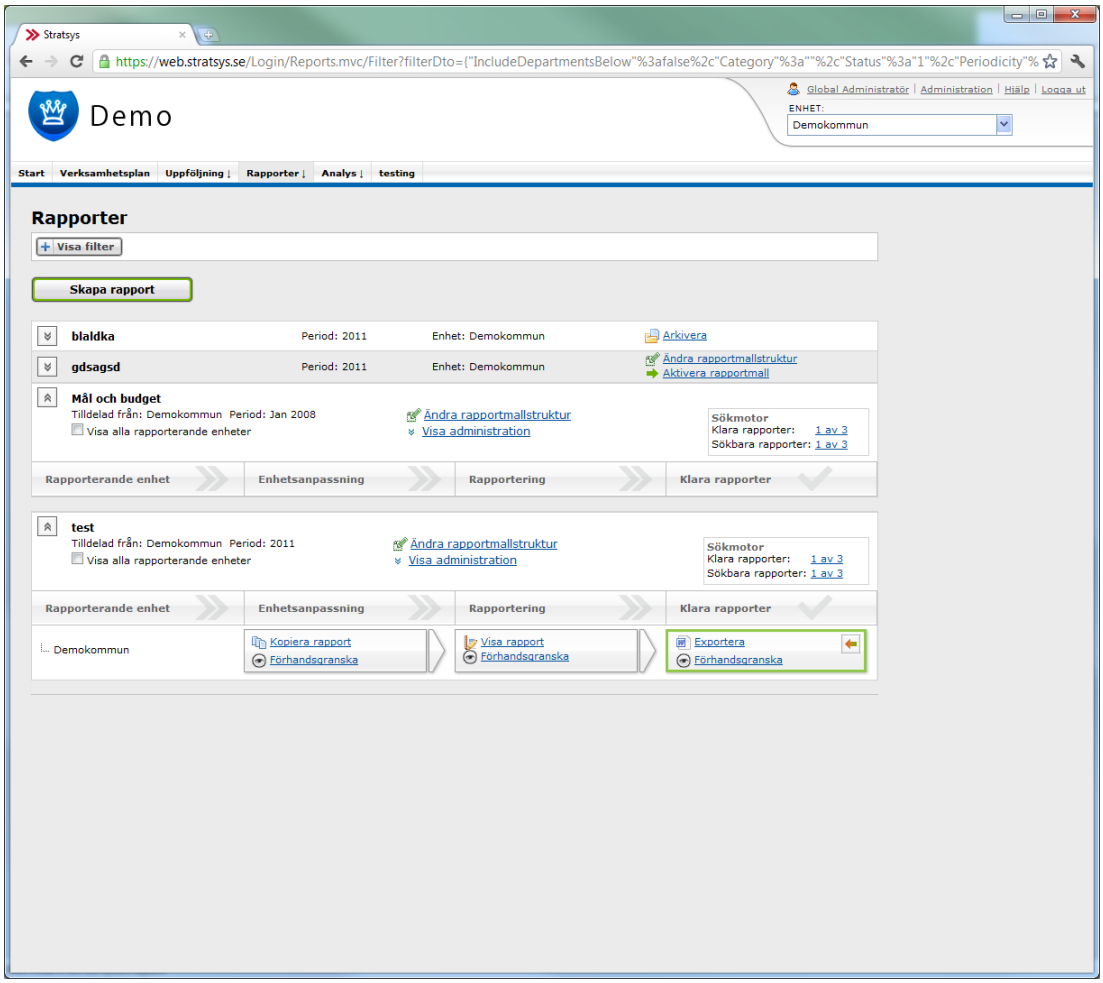

Figure 4: Stratsys report-page

2.2.5 Report

The report interface is demonstrated in figure 5. It can be given in two different contexts: one where the user creates and manages the template and structure of the report (this includes creating headings and paragraphs together with instructions on how each should be written) and the other context is where the actual writing is made. When the written part is done, it can be marked for review before it is completed.

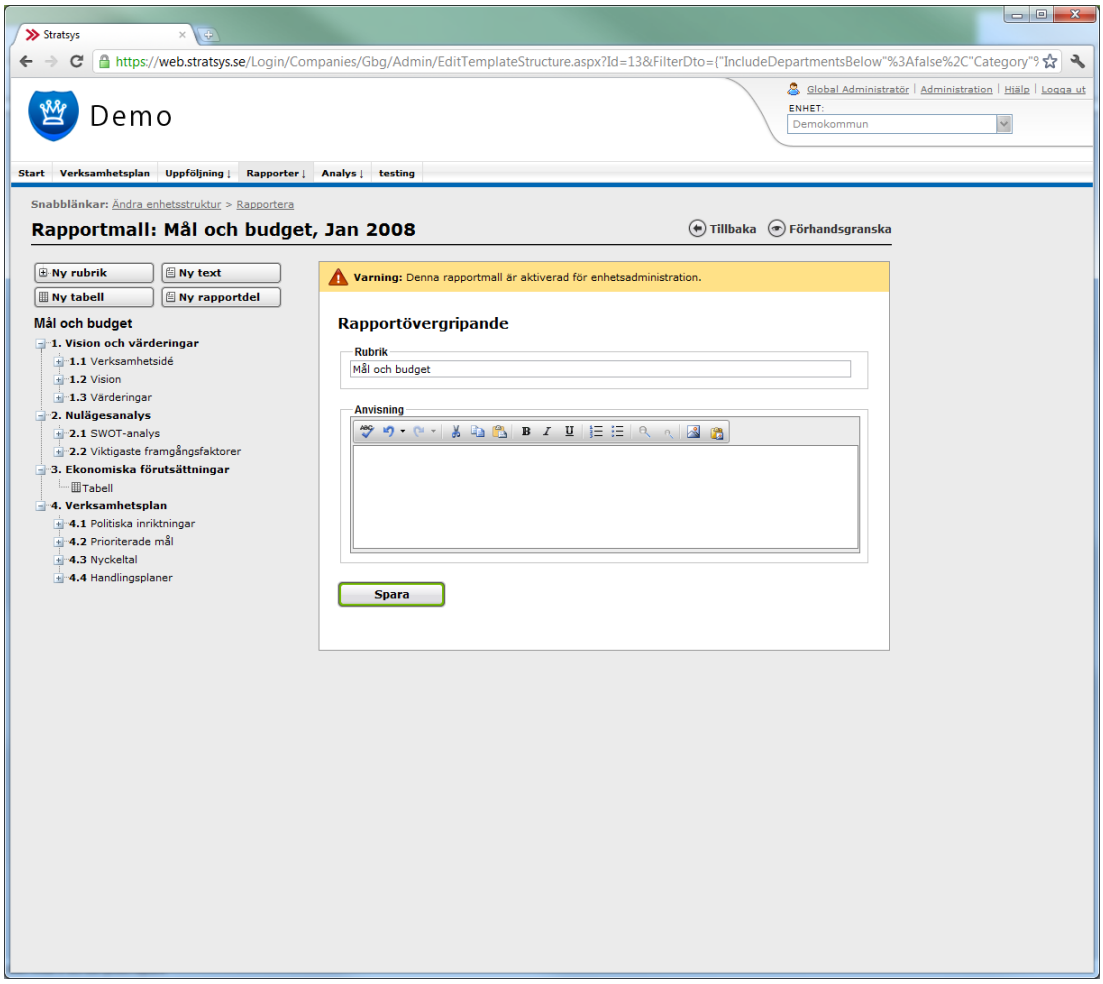

Figure 5: Stratsys report

2.2.6 Administration-page

All administration for the product is handled in the page that is demonstrated in figure 6. This involves a variety of things that affect the product and the users, such as for example how the different scorecards are supposed to look and what authority the different users should have. It has a higher complexity due to it needs to be flexible enough in order to support customers individual work process. The creation of scorecards is also managed from this page.

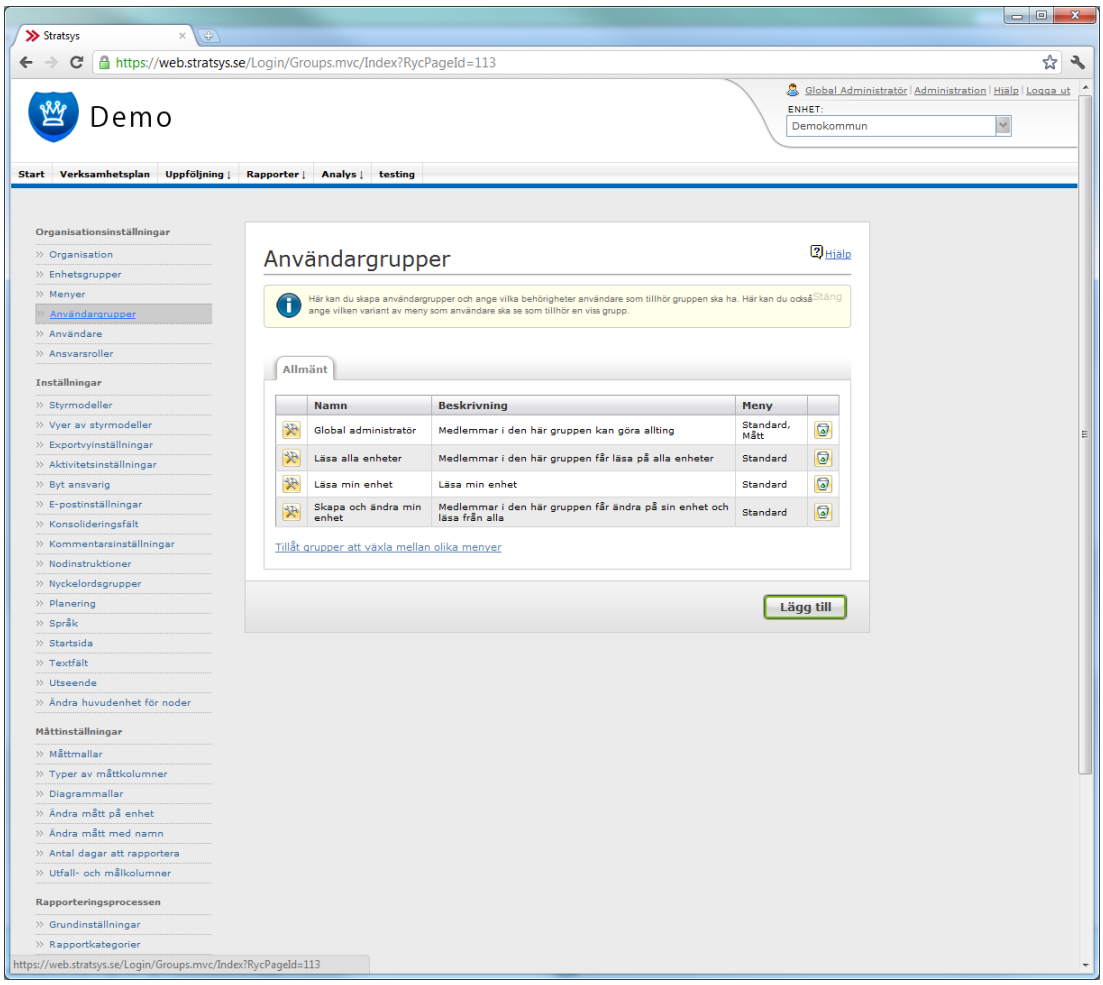

Figure 6: Stratsys administration-page

2.3 Outline of this project

A new feature has been developed at Stratsys, enabling a user's actions to be logged. This feature has not been deployed to customers during the course of the project and was only available in the internal development and testing. Because of this, only test-data generated from the internal development could be used. As each customer usually involves a large user base, a lot of data will be generated through the logging. The project was limited to focus on only one part of the interface, due to it being most beneficial for the development of both the project and Stratsys company. The focused area was the node-popup. During the project, the Stratsys product also went through a complete graphical redesign.

This project was tasked with making a graphical interface that utilized this new logging. This was done in two steps. Firstly, data collection in order to analyze and determine what type of needs and usages a user has of the logging feature. This is to ensure that the design fulfills an actual need and also to find other usages for the logging. Secondly, perform an iterative design process based on the collected data. This gives the project a holistic process from an interaction design perspective.

The design stage also had a set of restrictions. The new logging features must be presented in a manner that is consistent with the existing product. Secondly it has to be easy to access and navigate the data, due to the huge amount generated. Thirdly, it has to maintain a good performance to ensure a fast response rate for the users. Lastly, there had been a request to look at how the social media aspect can be incorporated. However, due to lack of time, no deeper research was made into this area.

2.4 Related work

There is work done in the area of enterprise resource planning (ERP) and its usability issues. Some examples of work are "Collaborating to improve ERP usability" (Babaian et al., 2004) and "Identifying usability issues with an ERP implementation" (Topi et al., 2005) which bring light on how highly complex and error prone ERP tends to be. Some of the larger issues deal with how hard it can be for the users to see the cause and effects of their actions. Another work done by Tamara Babaian et al. (Babaian et al., 2006) deals with how logging the action of a user can result in a dynamic context sensitive interface with regards to the user. It also speaks of how data can be collected from the users in order to perform usability analysis to improve later versions of the interface.

Other related systems and products are most social media which usually log user activity and have it available through the interface. This includes among others Facebook, Twitter and blogs.

2.5 Theory

2.5.1 Good interaction is the new black - Usability

Today, usability within the HCI of a product can be a strong force in how a company manages among the competition. The Nielson Norman Group has published a report about many case studies involving usability projects and how the return of investment (ROI) turned out (Nielsen, 2008). The report goes into detail on how it looked before and after the usability project was realized, with many having very successful results. Even though ROI for usability recently is declining, usability is still a very valid part of a sound business model. This is mostly due to the standard for usability has gotten higher. There are no more major design flaws as there had been previously that had a remarkable impact on the users and potential customers. Looking from a company's perspective, the typical gain of a usability project is increased productivity by reducing the amount of support needed by customers. There can also be a gain in higher conversion rates and increased loyalty and reputation among customers. As the report by Nielsen Norman Group is focused on websites, increased sales due to a usability project can be more directly measured. It is however harder to couple increased product purchases directly with the products usability (Jokela, 2004). Reason being, that the product needs to be used in the users' real life to determine how well it behaves. This cannot be done within the sort try out in the store. Instead it shows after it has been used for a while.

There is however one way, usability can influence the sales. Even though usability can affect the customers at a basic and shallow level during the purchase moment, the reputation of the product can have a much greater impact. By having a strong reputation, a product or a company will attract more customers (Jokela, 2004). By shipping "Product 1.0" with flawed usability, it will have negative effect on the reputation. This will probably not affect zero-day buyers, but the second wave of customers may be smaller due to reviews of papers and friends. At the same time, the launch settings for "Product 2.0" will be at disadvantage and will be forced to prove its worth. How to avoid receiving a negative impact on the reputation could be explained by the Kano model (Noriaki et al., 1984). By not fulfilling today's standard in usability, the minimum level customers take for granted, customers might openly display their disappointment to others. As innovative ideas which give extra excitement slowly descend into the bare-minimum area, the standard for usability slowly rises. This will force usability to play a larger role in a products success, because of the increased maintenance to keep up with the minimum level of standardized usability.

The core for achieving usability in a project lies in the iterative design process. By continuously involving users and evaluate the design, many important issues are caught and handled. The circumstances for the product must be taken into consideration when planning on how to integrate usability in the development process. How much time and resources are at disposal and how easy relevant users can be found and involved.

2.5.2 Getting your hands on the data - Information Retrieval

When dealing with large amount of information, you need to be able to pick out relevant pieces of interest. On some occasions, you know exactly what you are looking for. Other times you have no idea and just want to look around. For each task that needs to be done, there is a different approach (Zhang, 2007). Information retrieval studies how these different combinations manifests. One way of dividing the different tasks, is to categorize them into lookup, learning and investigating (Marchionini, 2006). Lookup is the most basic task, extracting the exact information about something. It can be the telephone-number to a person, what year a nation was founded, how many units were sold last month, etc. For each question there is a definite answer unless the information is incomplete or missing. On the other hand there are tasks related to learning and investigation. These two together form exploratory search. These tasks are of concern when there is no strict question to be asked. Learning can be used to increase your own personal knowledge or explore an unfamiliar domain. Perhaps you have come across a new web store and just want to browse around to see what is available.

Investigating tasks analyses the information on a higher meta-level. Every third year the total sales for a month triples, why is that? In order to answer that question, various information sources must be gathered and compared. By comparing with special holidays, you could perhaps find out that a special festivity increases the tourism which in turn increases the sales. These types of questions can never be answered based on one information source alone. When dealing with highly dynamic content, it should be vital to support both approaches. The dynamics will show up in the content when looked at from a larger perspective, and at the same time it is possible to easily filter out information needed for typically ordinary work.

2.5.3 Seeing is believing - Information Visualization

While information retrieval deals with functionality of how to retrieve data, information visualization deals with how to present it. The main goal is to present it in such manner that it is as accessible as possible for the user. Several factors can be considered in order to increase the cognitive capacity of the user (Liu and Stasko, 2010). For example, the cognitive load can be reduced if data is written down and stored, instead of being forced to keep it in the users head. In order to achieve this cognitive offloading, mental models need to be taken in consideration. These models will enable us to understand how a user reacts to a system through a cognitive perspective. One thing that is notable is that a person's cognitive ability is not contained within just the mind, but can be distributed and enhanced with external systems.

A computer can augment and increase a user's cognitive capacity. While understanding mental models gives us insight in how we gain knowledge, it is also good to look into which sensory and cognitive channels are more favorable to absorb information from (Zhang, 2007). Sight is our most developed sense through which we analyze and inter-

pret the world. It consists of several parallel systems that handle different attributes such as color, motion and form. There is also the concept of cognitive facilities, stating that the two important ones handle our knowledge process. One process works with the spatial domain while the other handles semantics. In order to maximize the cognitive potential, both must be used. By enabling the user to better analyze the information, higher meta-data can be extracted. This is information that gives a more holistic perspective and is essential for information retrieval when dealing with the more indirect and unclear questions, such as why something behaves as it do.

2.5.4 Avoid reinventing the wheel - Interface Design Patterns

A first rule when designing a more complex application should be consistency (Tidwell, 2005). When the tools themselves already are hard to learn, the interface should not add to the learning load. Consistency will ensure that the user is not surprised and know what to expect from the interface. For that same reason, it is also important to follow the present interface conventions. A usual scrollbar scrolls the page and does change the position of the window. Having clear entry points reduces confusion. In order to achieve this, it can be good to look through and apply design patterns. The patterns should cover most of what a user typically expects. By going through the list and consider if and where a pattern can be applicable, the application ensures a certain level of standard. This can safe-guard against design-flaws that may cause the users annoyance and disappointment. For details about what specific patterns were used, see section 4.2.1.

3 Method

3.1 Data collection

Throughout this project several methods and techniques with different aims of achievement were implemented and worked through. Here follows a description of them, why they were used and how the results of them turned out.

3.1.1 Interviews

Why semi-structured interviews? Since all projects that involve interaction design comes down to designing for the users, there was a clear need of getting out in the field and meet actual users to hear and see how they worked with the software. A lot of information about the users had been given from Stratsys the company and it seemed like they already knew a lot about their users, luckily Stratsys is a company that works close to their users and always make sure to weigh in opinions and suggestions that are given, into their solutions regarding the software. Just to make sure that the company's picture of their users was somewhat reflecting the truth, a decision of conducting interviews with users from different organizations was made. Another purpose for conducting the interviews was also to confirm the fact that a need of a logging feature was present and something that was not just made up by the company because they thought it was a cool feature. Some topics that had to be covered were discussed and since the project aims at creating a service that can provide information regarding history and events, some of the questions were formed to make sure to elicit whether the users actually had a need for it or not. Because of the different topics that were created and that there was a need of getting some questions answered a decision of conducting semi-structured interviews was made (Rogers et al., 2002). Semi-structured interviews suits well, when some topics have to be covered and the answers within are preferred to be as detailed as possible.

How the interviews were performed Before the interview session, all the interviewees were sent the questions in advance. This was done to prepare them of the nature of the interview and also give them a chance to remark on questions they did not feel appropriate. Three interviews took place in Stratsys office and the rest at their corresponding office. In the controlled environment, a conference room was used that had no computers or mediating tools present. The others had their computers present. This is reflected in the interviews as they sometimes refer and demonstrate the product Stratsys through their computer. Before each session, permission to record the interview was requested, so that all parts were agreed upon the circumstances. With recording the session, one person could focus on unresolved questions that would show up during the interview. This helped guarantee that core questions were fully answered. The interviewer followed a prepared guide that highlighted probing details that were of interest.

Interviewees For the first interview, it was of great interest to meet someone with a high level of domain knowledge. This would help to establish a good overview of the usage of the product Stratsys. The person chosen for this interview was a system administrator in charge of activity development questions, who had been working with Stratsys as a product for a very extensive period of time. This interview gave an indication of who the core users were and this user group was placed into focus for the remaining interviews. The second interview was with a quality executive in the highest layer of the organization. The contrast between the first and second interviewee, was that both worked with development questions, but only the first interviewee was highly active within Stratsys as a product. This contrasting image lead to the hypothesis that users in higher layers only delegates high level work down to lower levels and that the core users are system administrators and activity executives. The third and fourth interview was with consultants. As many Stratsys users at lower levels are season users, it would be hard to gather proper material as their usage and experience is very brief. This was compensated by interviewing the consultants who have had an extensive contact with customers. While their views can suffer from biasing, it would give a good overview of the different types of users and how they respond to Stratsys as a product. The last two interviewees had the same position, but worked in two different types of organizations.

Analysis Using the transcripts as basis for material, the analysis was done in a matrix manner. From the interviews, three categories of what the answer related to was formed. The categories were: Personal, professional and organizational. Every answer could be addressed into one of these categories. The analysis then proceeded by defining an initial set of keywords of interest. This list of keywords was dynamic and served as anchorage to explore and find different patterns. For each keyword, the transcript was read through. When an answer was found relating to the keyword, it was then put into the matching category. The character of the answers could either be statements or read between the lines.

Post Mortem Interviews As previous experience of conducting interviews was limited, it was decided to perform a Post Mortem after every interview to evaluate the performance. This was a way to ensure a level of consistency across all interviews and to limit the amount of bias.

3.1.2 Persona

Why a persona? Trying to please as many people that are using the product as possible is shown not to be the ultimate way of creating it. As stated in the book *"The inmates are running the asylum"* by Alan Cooper (Cooper, 1999), you don't achieve satisfaction by trying to make the entire group of users 50% satisfied, it is better trying to make 50% of the users 100% satisfied with the product.

Since a persona represents a group of users, and states their goals and needs it is an

excellent tool for getting to know the common user and how to get into their mindset and how they operate the product. The people at Statsys are not the common user of the product that they are developing for; this is a common situation for a lot of companies that develop a product. Therefore it is of most important to, in some way; create a set of guidelines that reflects the common user that can work as a source of inspiration while designing any solution. As described in the book *"The Persona Lifecycle"* by John Pruitt and Tamara Aldin (Pruitt and Adlin, 2005), just to refer to the word user and hope that the developers will understand how they should think while they are implementing new functions is of little help.

> "However, people who talk about the user are almost never asked to further define the term, and it is a sure bet that each person in the organization would describe "users" in a different way" - (Chang et al., 2008)

To have a persona that states the most common features and the goals of a typical user makes it easier for the developers to refer to the same source of information, and since a persona is a fictive person it can also create a sort of emotional band between them that can make them more interested in actually developing solutions for that "person".

How was it created? In order to be able to actually create a reliable persona that represented the common user of Stratsys as a product it was important to collect information from different sources so that they could be merged and cross examined to find common set of goals and properties. The easiest way of doing so were found to be to go out there and attend some interviews. (Read more about the interviews in section 3.1.1). There are different opinions on whether a persona should be based on one specific person or a mash-up between lots of different users. Some people say that the founder of the concept, Alan Cooper, "personas" means that a persona should represent one single user and it is that user that the design should be made for (Chang et al., 2008). This is just a bad misinterpretation of the essence of what Cooper actually means. What he tries to state here is that a persona should act as a single user indeed, but the information about that persona should be based on information gathered from a lot of different sources (Cooper, 2003)

With all the information that was gathered during the interviews, some main points could be established and worked as keystones for the foundation of the persona. It is often said that a persona should be created early in the design process, usually after the user studies has been conducted since it is at that time you have enough of information available about the users so that a reliable persona can be founded. In this project the decision were made to follow that guideline with a little twist to it. As stated in a paper (Chang et al., 2008), a persona doesn't necessarily need to be set directly after the user study and then never altered with. Instead the persona can be left incomplete so that it can be improved during the rest of the iterative process. Stratsys is a company that in some ways work very close with their costumers, they have consultants that work as sellers but they do also make sure to maintain the relationship to their already existing

costumer and teaching them about the usage of the product. By having a structure like this, the consultants create a great knowledge about their users and can be used as a source of inspiration and to secure the quality of the information given from the persona. It also enables the possibilities to leave the description of the persona open, so when some new important information has been elicited it can easily be added to the persona.

Since a persona is meant to be a fictive person there are some important factors to think of. The most essential part is to give the persona a real name.

> "Giving the persona a name is one of the most important parts of successfully defining one. A persona without a name is simply not useful. Without a name, a persona will never be a concrete individual in anyone's mind." - (Cooper, 1999)

It is also good to give specific attributes like a certain city of where he/she lives and works with. To connect the person with a picture is also a good thing to think of since it is easier to create some emotional bonds to the persona.

The persona that was used during this project was created based on the procedures already mentioned in this section. It was divided up in different sections such as, profile, commons situations, goals, needs and problems.

- **Profile**
  This section works as an introduction to the character of the persona as well as a detailed description of who she is and what she works with. The part were her work is described it is also stated what it means to work with what she does and also what is demanded from her. By that a description of how she works with the product provided by Stratsys follows.

- **Common situations**
  In this section four different situations are stated and described. The reason of having this section is to generate a feeling of how she behaves in her work life and what she wants to achieve with the usage of the product.

- **Goals**
  The goals stated here are exclusively for the product, it states what she wants to do with the product and in somewhat it also states what she normally does within the product.

- **Needs**
  This section states what she needs in order to operate the product as a whole. It can be, for example, a slim interface so that she easily can switch between different units to create a general overview of how the process is going.

- **Problems**
  Problems stated here describe issues that appear because of the product in her

daily work. The purpose of this section is to create an understanding of what to avoid while developing new features or improved already existing ones.

3.2 Iterative design process

To make sure that the design solution became revised and tested in order to achieve the best outcome as possible, an iterative design process consisting of brainstorming, prototypes and task-analysis were implemented and performed.

3.2.1 Brainstorming

Why brainstorming? In all design processes, initial ideas need to be created and worked through in order to create any material that later on can be used to create prototypes and eventually final solutions that are to be realized. A good technique that brings out the creative way of thinking is brainstorming. A common issue when trying out new ideas is the fear of authority and what they would think about the solutions. The essence of brainstorming is that no ideas are to be criticized and no ideas are worse or better than any other. The general term brainstorming was founded by Alex Osborn, and with this a set of general guidelines was created (Osborn, 1957). The essence of these guidelines is that ideas are not to be criticized and that quantity favors quality. The mantra here is that with a lot of ideas, the probability that some of them will be useful increases. Although the term has a founder attached to it, the approach to how to perform the technique can alter. In the following section a description on how the brainstorming was worked out within this project is presented.

How was it performed? Brainstorming is often used within projects where the aim is to come up with new ideas and also to find out what should be created and what should not. Within this project it was already known what should be made, and also where it should be implemented. With this information the brainstorming had to be altered a bit to fit in with the rest of the iterative process, the brainstorming technique was in the project more used as prefaces when solutions came to problems. For instance, behind every prototype that was made, a small brainstorming session initiated the making of it. Since the project did consist of two individuals it was decided to do brainstorming both individually and together as a group, the outcome of the individual brainstorming session was presented to the other participant for second opinions and to find out what was good and what might not work.

A technique that was used during the individual session was to set a deadline and during that deadline one was supposed to come up with a set number of different solutions (Rettig, 1994). This technique worked out really well and helped the process to go forward when it felt hard to come up with new ideas, it was also found that with having only two or three ideas, these ideas could be merged together and then form even more innovative ideas that looked little like their original ideas. As said before the brainstorming was held open and did not work as a specific part of this project, it just did not work in

that way since the need of creating whole new concepts was not necessary. Instead the brainstorming sessions were implemented when needed, for example when the making of prototypes came to a stall and needed new ways of thinking.

3.2.2 Prototypes

Why prototypes? To get from an initial idea to a final solution is not a simple task, a technique that works as a bridge over that gap is prototyping. With prototyping many realizations of the initial idea can be tested, and this within a short amount a time and of low cost for the process as a whole. Prototypes can come in many forms and solutions, it can be made straight out of post-its, photos can be used, and it can also be made by code and represented digitally. The biggest sale-pitch for prototypes is that it takes little time to develop and by that you quickly can find design flaws and logical errors in steps needed to be made early in the design process. Another advantage with prototypes is that a lot of different solutions can be cross-examined to figure out what works best and what can be combined. Prototypes can somewhat be graded according to fidelity were low fidelity corresponds to prototypes made with material nothing like the final outcome will exist of (Rogers et al., 2002). For an example a low-fidelity prototype of a website can be made out of hand drawn sketches and post-its and the flow can be controlled by a human that acts as a computer. High-fidelity prototypes are on the other hand prototypes that are made in the same way the final product will be, with worked out details and such.

The prototypes used within this project started out as low-fidelity prototypes and ended in to being relatively high-fidelity solutions. According to a paper by Marc Rettig, a good thing with low-fi prototypes is that it enables a lot of user testing and that you in a short amount of time can perform a lot of tests and by thus go through a lot of iterations, something that is not possible with prototypes with higher fidelity since they take longer time to produce (Rettig, 1994). A thing that does not seem to be considered here is that the user tests can and most probably will take a lot of time to perform, with a product that already exist and has a set customer base, it can be hard to assemble a group of people for a test ad-hoc, usually a lot of planning is needed to be done. In situations like this a persona can come quite in handy, as it did for this project.

By having a persona, solutions can be made and then examined with the sense of how just that persona would experience working with the prototype. In the following sections it is described how the prototypes that worked as a corner stone for this project went from being simple sketches on a paper in to being a fully digital solution that differed little from the final outcome.

How was it created? As the company were in a phase where the whole graphical user interface was going to be changed and improved, a lot of worked out print-screens and concept solutions were available. These print-screens worked as a base for the low-fi prototype that initially was created. The section where the solution of this project was

meant to be implemented was cut out and used as backbone for the first sketches. In this phase everything that was done was later on examined towards the persona and then revised as more knowledge about what would work or not were elicited. The goal this early in the process was to come out with many optional and most preferably different solutions so that the good parts of every solution could be pointed out and later on merged together to achieve a solid solution. The focus lied on finding an overall solution where all the steps needed to be done in order to achieve a task was supposed to be covered. It was found out during this project that it is easier to begin with the big picture before getting down to specifics and details. This procedure worked really well since it is not easy to know what would work beforehand and also that it is very hard to come out with the perfect solution on the first try.

After this phase the paper was left behind and other digital tools that are used for making prototypes and sketches were used, such as balsamiq[2] and inkscape[3]. The reason for using these tools were that now when the general idea of a solution was worked out, the prototype had to become more detailed concerning color-schemes, choice of fonts, positioning of various buttons etc. Tools dedicated to making prototypes can sometimes be hard to operate if no previous experience of that system is present and the making of prototypes can therefore be very time consuming. By that it is better to choose tools that feel comfortable to use even though they are not made for making prototypes primarily. The sketches produced in this phase were presented to other instances within the corporation in order to get second hand opinions from people that have expert domain knowledge about the product as a whole. Opinions elicited by this came well in handy and helped to finish the sketches that later on were made into a complete interactive solution, written in html[4] and jquery[5], that were used in the task-analysis that is described in section 3.2.3. Throughout the entire mockup session conventional design patterns were followed to confirm that the design would work in a graphical user interface spectra, for further information on how this turned out see section 4.2.1.

3.2.3 Task-analysis

Why task-analysis? When a mockup reaches enough fidelity, a task-analysis can be performed. This is done in order to gather first impressions and reactions of the interface. By having subjects perform actual tasks instead of having a discussion about what they think about it, design issues that could be filtered out on an intellectual level will be caught. As a mockup most likely is a rapid prototype, no resources will be wasted if there will be a need for a complete redesign (Rogers et al., 2002).

How was it performed? A protocol was made beforehand in order to decide which factors were of interest for this study. The factors can be divided into performance and

[2] http://balsamiq.com/products/mockups
[3] http://inkscape.org/
[4] http://www.w3schools.com/html/default.asp
[5] http://jquery.com/

cognitive. Performance factors checked that the tasks could be completed and how easy and well it went. Cognitive factors dealt with how the subjects related to the interface and its behavior. The factors were:

- **Performance**
  - **Total time for all tasks**
    Measured in metrics.
  - **Performance for a specific task**
    Graded 1-3: 1 for no deviations, 3 for major deviations.
  - **Number of questions asked**
    Graded 1-3: 1 for no questions, 3 for many questions.
  - **Number of completed tasks**
    Measured in metrics.
- **Cognitive**
  - **Highest level of filtering used**
    Graded 1-3: 1 for only using the result list, 2 for using a hierarchical tree, 3 for trying to access a filtering option.
  - **Ratio of passive/active actions**
    Graded 1-5: 1 for almost only passive actions, 5 for almost only active actions.

The subjects for the evaluation were employees at Stratsys. The reasoning being that the evaluation needed to be observed at firsthand. Setting up meetings at this stage was going to be too time-consuming. The mockup was also a bit too rough and would require a certain level of computer experience to see past that. The subjects were however mixed in regards to their domain knowledge of the product. Half of them would be considered experts, while the others are to be considered novice.

The tasks that were created were based on the persona that was developed, giving typical use-cases for the historical interface. All factors in the protocol were either graded or measured in metrics. The setup did not have a camera that would be required for deeper and detailed quantitative analysis such as exact number of miss-clicks.

The session was done by first giving a short introduction about what the subject should do and also pointing out some of the restrictions in the mockup that would, if let untold, be guaranteed to be raised as questions by the subjects. The subjects were then asked to perform the given task and to say out loud when they found an answer. This was to increase certainty for when the subjects' had completed a task. Questions or uncertainties raised by the subjects were answered and clarified. If the subject was deemed to be stuck, hints were given to proceed with rest of the tasks.

3.2.4 Agile methods

Why agile methods? A design process is naturally divided into iterations to accommodate new ideas and information that was not available in the beginning of the project (Rogers et al., 2002). This division is to ensure flexibility that changes to critical issues always can be dealt with. When working agile, it is also import to place a strict time and load schedule (Beck, 1999). This limits the complexity of the work by having a few distinct items that needs to be finished within a certain deadline. A deadline is more cognitive favorable as the person most likely will work better under some amount of pressure.

How was it performed? Stratsys employs four agile sprints between each release. When planning how the time for the project should be distributed, it fell naturally to map it towards some of the sprints, especially for the implementation in later part of the project. A personal Kanban board was created in order to divide the individual workload (Benson and Demaria Barry, 2011). This served as a good overview for documentation of what has been done and what task are still left to do. The work in progress (WIP) limit was set to two as every task needed full focus and to make sure that no tasks were lingering. Some tasks were divided further when it became apparent that this was possible. When specifying the task it was of most importance to make them as descriptive as possible to avoid any kind of subjective interpretation. In addition to the traditional "In progress"/"Doing" column, a "Check" column was grouped together with it, forming the "Work" column. This master column had the WIP limit attributed to it. So when a task gets done, it had to be reviewed together in the project group before it was moved to "Done".

4 Result

Along with the iterative process, a solution took shape and also started to be implemented with the rest of the system. This section describes how the outcome of working with the methods and techniques mentioned earlier in this report was formed.

4.1 Data collection

4.1.1 Interviews and Persona

With the interviews a massive source of information was created and needed to be sorted and managed in order, as described in section 3.1.1. With this method a lot of results within the keywords/layers were found, a collection of generalized statements that were elicited follows hereby (a complete overview of all the keyword/layer matrix can be found in appendix B)

> *"There is a need of being able to make continuously follow-ups."*
>
> *"It has to be easy to get an overview of how the work is evolving."*
>
> *"There is a need of being able to get an overview control so that the results are reported as expected."*

The main result that could be elicited and relevant to the project was that the biggest usage for the logging feature would be for error-correction. Many issues that were brought up dealt with how to handle support and errors for when users among the customers do mistakes. Another factor was to keep the interface simple and reduce the number of clicks. This was because of the tedious and repetitive task they had to perform on a daily basis.

The result from the different keyword/layer sections used when sorting the information was of great help when it came to create the persona. Since the persona were divided up in different headlines that together formed the outcome of the final persona, it was easy to group the sections together and put them in the right headline. For example, all the information given in the "work role"/ "tasks" section could be merged and form a general specification of the common work role and what it meant, placed in the profile sections of the persona. All this went on and created a quite specific persona that worked as the backbone for creating the prototypes that eventually ended up as a final solution (the complete persona is found in appendix A).

4.1.2 Task-analysis

The results showed that a key factor for the efficiency of the interface was how much domain knowledge the subject had. Those with lesser domain knowledge went back in order to check or gather information about how the popup was structured. However, when they had that knowledge, the interface gave a natural mapping (Norman, 2002).

It became clear that the three first tasks could be considered lookup questions, while the fourth task was an exploratory search(Marchionini, 2006). All subjects tried to apply a filter. This may be due to their higher computer experience; however, the persona also has a high level of computer experience which gives a good match.

4.2 The node-popup

The final solution concerning design and visual result was implemented in the part of Stratsys as a product, were most of the action take place, namely the node-popup.

4.2.1 Visual

As mentioned earlier in this report, design patterns were applied whenever possible and as support of knowing what design pattern were applicable where, the book Designing interfaces by Jenifer Tidwell were used as reference (Tidwell, 2005).

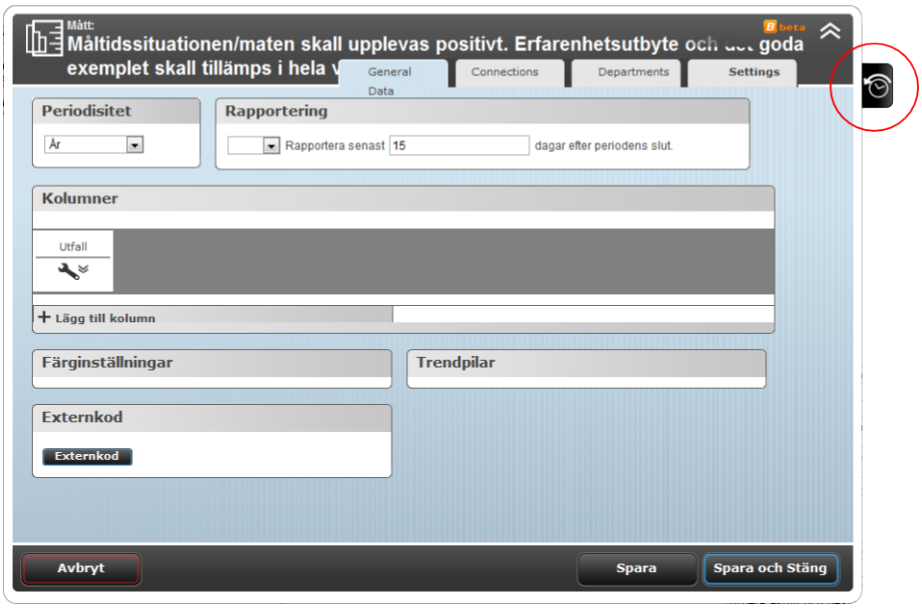

Figure 7: Initial frame of the node-popup with entry point

Figure 7 shows what the users see when they bring up the node-popup. The node-popup has been modified to have a toolbar to the side containing the entry point to the log (marked in red circle in figure 7), following the ***Clear entry points*** pattern. The icon represents a clock with a rewinding arrow. When the icon is clicked the log interface slides down from the header of the node-popup, by thus creating an ***Animated transition***.

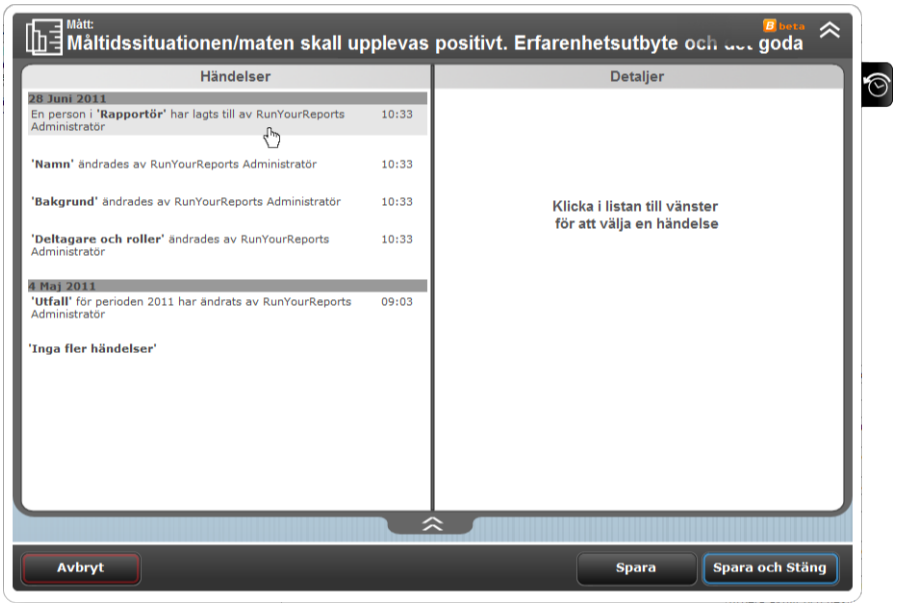

Figure 8: Initial frame of the logging interface

The main interface for the log in the node-popup, it is structured as a ***Two panel selector***. The left panel contains a list of all events related to the node and the right contains the details for a selected event. Initially, the details panel is empty with a hint on how to get started according to the ***Input hints pattern***. The color scheme is taken from the design guidelines given for the new graphical design of the product of Stratsys, which follows the rules of ***Few hues, many values***. To close the interface, the user can either click the icon once more or the collapse icon at the bottom of the interface to facilitate a ***Prominent "done" button***. The collapse icon is the same icon as the one for collapsing the node-popup in accordance to the users ***Habituation***. Opening and closing the log interface has no impact at all with the underlying node-popup. In other words, edits made by the users in the node-popup is preserved when accessing the log interface. This behavior meets the requirements of ***Safe exploration***. The structure of the entries in the list of events panel is made with regards to different ***Preattentive variables***. Events are grouped together under corresponding dates. The time of day is placed in the right margin. Different font formatting is done on each headline, emphasizing the affected items in question with ***Contrasting font weights***.

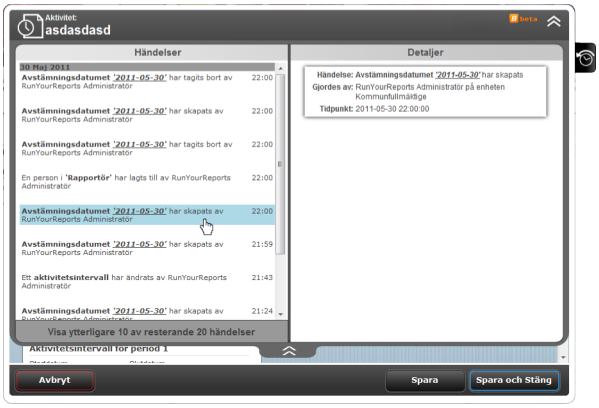

Figure 9: Selected event with belonging details

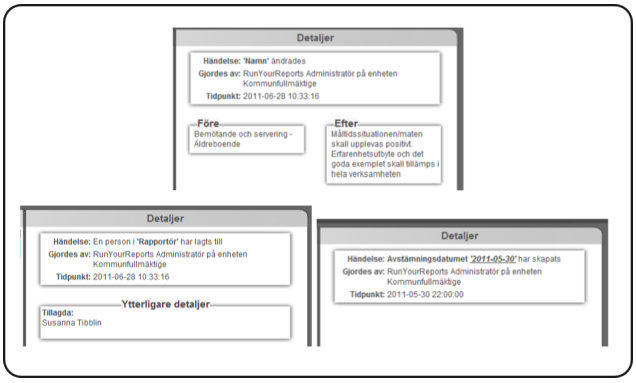

Figure 10: Visual framework containing different views of details

An event has been selected and the details are loaded into the details panel. The event is highlighted with a unique blue color. As the details can be displayed in different manners, a ***Visual framework*** was deployed. Three different variations of the detailed view can be found. They are a generic view, an extended view and lastly a before and after view. All three contain the top box that gives the general details that is always available. The details in the top box have been formatted with ***Right/Left alignment***.

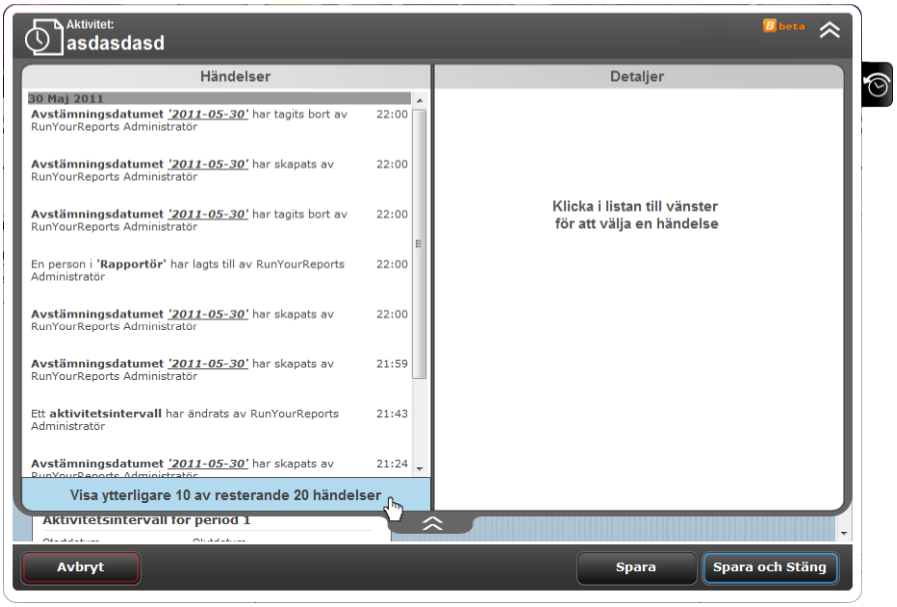

Figure 11: Log interface with more entries

Here is another screenshot of the initial state of the log interface. This time there are more than ten entries. A button is shown down to the left, that when pressed reads ten new log entries. When no more entries are available, the button acts according to the ***Responsive enabling*** pattern and disappears. A ***Hairline*** is used around the button to separate it from the event list. The text inside the button is dynamic and changes to the context, as with the ***Smart menu items*** pattern. It informs how many entries will be read and how many more are remaining. When pressed, the new entries are appended to the list, and the list scrolls down to the first new entry, which plays on the users' ***Instant gratification***.

Besides the graphical layout there are also some behavioral designs. The previous mentioned pattern also includes that nothing more than what is needed by the user is loaded. This increases the performance of the application and makes it faster and more responsive. The user's ***Spatial memory*** is preserved by maintaining the position scrollbar, so that it does not reset when collapsing the node-popup or the log interface and generally make use of ***Animated transition*** for the interface. The interface is also quite slimmed down with information initially and if the user wants more they can retrieve it, which are the ***Extras on demand*** pattern.

5 Discussion

5.1 Execution of the project

5.1.1 Factors that had a great impact

The fact that the Stratsys product during the project went through a complete graphical redesign made the implementation of the logging feature a bit tricky. The color scheme and the definite look of the rest of the product was not really set to stone which led to that the choice of colors etc. of the feature that was about to be created needed to be held open. The redesign also led to a limitation when it came to testing the design solutions. Since the feature that was made during this project went under the new graphical framework, it would have been hard to test the feature properly out in the field. It would more or less be impossible to get any relevant data out a task-analysis since the users would not identify them self with the bigger picture of the product because of the unawareness of how it actually would look like.

The Stratsys product is targeting companies and organizations, which gives a very specific user base. Using a generic group of people for evaluation will not do, as they would lack the domain knowledge needed. It is also however not valid to only ask users at one company or organization, due to the great cultural differences among them all in how they relate and work with the Stratsys product. Getting a broader view would require much more time and effort as the customers are spread out geographically and usually has a tight schedule. Arranging for example a mixed focus group would be very hard. Performing the interviews with different users was very time consuming in itself. At some points there were downtimes, due to waiting for the appointed interviews.

Since the consultants at Stratsys the company, had a genuine and constant contact to the users, they worked as a great source of information when question about the users had to be asked and answered in a short period of time. To have the consultants nearby also made it possible to conduct more interviews since the time spent on interviewing various consultants was lower than having to travel around Sweden and meet up with other users. Another good aspect with the consultants was that they are responsible for different areas around Sweden. This made it possible to see similarities and differences concerning the geographical spreading of the users.

5.1.2 What worked well

The methods were well known beforehand and we knew how to approach them in order to get them to work within this project which saved a lot of time in research and made it possible to spend that time on improving the use of them instead. The brainstorming sessions proved to be very creative with the structure we decided upon. To have two partakers working separately and later on demonstrate those to one another allowed a lot more ideas than what would have been if the sessions would have been done together.

The different tools such as jQuery and Inkscape proved to be very effective when it came to produce the different prototypes. Some other tools like sketchflow[6] was tried out, but the time needed to be spent on learning how to manage that tool in a reasonable way seemed as a waste, since it was easier to use the already mentioned tools.

To make use of a Kanban board helped a lot in structuring the workload and it was easy to get an overview of what had been done and what came next. When working in pairs it can be difficult to divide the work between each other and at the same time have a good grip on what is done and not. With the Kanban board everything was set up as a task that had to be done no matter who did it, and by that you could always see what was in progress and what was waiting.

To spend some extra time developing a good and representative persona really paid off as it was used as a guide when it came to developing prototypes and also testing the solutions towards that persona. It has already been mentioned that due to the time constraints it was hard to conduct proper user-test. With the persona it was possible to test the solution in other ways instead.

5.1.3 Improvements

Before the interviews, more effort should have been done on studying the domain. This would have eliminated confusion and uncertainty during the interviews. Many of the interviewees talked in a matter that was natural to them but not to us. Terms, procedures and hierarchical structures that was previous unknown, were brought up during the interviews. This could have been prevented by either being clearer before the interview that they should answer more explanatory or do a more extensive study beforehand. Also during the task-analysis, the subjects should have been picked from outside the Stratsys company in order to avoid bias. However, as the mockup was only a part of the Stratsys product, domain knowledge on how it is used was required. It is uncertain what type of impact that would have if the subjects did not have previous domain knowledge.

5.1.4 Alternative approaches

The interviews could be switched out to use an observational method instead. Documenting a complete day for a user and observe how the Stratsys product fits into their work. This could have given a clearer picture of the actual work and tasks that is performed in the field. The probing however would most likely be shallower as the elicited information would be restricted to what happened that day. The rapid mockups could also be done in a lower fidelity, such as a paper prototype. It was however more beneficial to use a slightly higher fidelity of the mockup as it worked both as a learning experience before the implementation. Some of the solutions from the mockup could also be reused in the implementation.

[6] http://www.sketchflow.com/

5.2 Final result of the project

5.2.1 Relation to theory

By enabling the users to be able to track the history of a node, they will be able to fix some errors on their own instead of calling support. Having less support calls is usually a factor in calculating ROI which would suggest that there is something valuable to gain from the log interface. The support department does not have to manipulate the system directly as much as it was done previously.

During the task-analysis it was confirmed that two different methods are required depending on what questions a user want to query to a system. When a lookup question was related to the spatial and hierarchical structure of the events, the users used their internal mapping to look it up. However, when users had questions that did not match this criteria, they searched for an alternative approach, by looking for a filtering option that lets you query more specific details. Both types of questions might be considered lookup questions, but it was clear that a user quite quickly builds a mental model on how the filtering works and what the limitations are. Understanding what questions will arise is necessary in order to determine the relevant amount of filtering that should be available to the user.

The design patterns worked very well in synergy with information visualization. The aim for information visualization in this project was to expand and offload the cognitive capacity of the user, in order for the user to better absorb the information. Care was taken to preserve the spatial location of the entries so that it hopefully matches the users' mental model. Focus was also placed on the visual sensory in order to speed up the processing needed to go through the list of log entries. The pre-attentive variables played a big part in achieving that.

Lastly, the design patterns also worked very well as standardization. It raised the quality of the design and worked as a deciding reference for some discussions. Even though most patterns came out naturally during the development, some patterns were discovered by referring to the book. By going through all the patterns, the interface went through a rather thorough check of the basic functionality. This will hopefully ensure that future evaluations are focused on user specific needs instead of basic functionality of the interface.

5.3 Complements missing to the project

5.3.1 Missing log data from the field

The logging of user activity had not yet been deployed with customers. Therefore there is no field data to analyze. How much data is generated or what typical patterns you can find, could not be answered. This needs to be addressed later on when proper field data is available. Since the logging feature is new, it is also hard to determine

what information is of interest for a user. How a user relates and uses the log data is unknown. By exposing the user to what the possibilities are with the logging feature, more relevant suggestions can be elicited from the users. Larger quantities of data may force a redesign of the interface to accommodate better filtering options.

5.3.2 The risk of Big Brother paranoia

An issue that could be relevant when the logging feature is actually implemented and used within the real product, is that the users might feel scared using the product since everything they do is logged and can be seen by other users. As it worked before nobody could actually see what you did except from the final result. This issue was brought up under a few of the interviews and was believed by the interviewees not to be an issue. Hopefully this will not be an issue, but time will tell and probably as the time goes on and the users will be more and more familiar with the logging the anxiety will decrease and eventually disappear.

5.3.3 Social media

The log data is entirely based on user generated content. This makes it ideal to look into it more closely on how social media can be incorporated into it. As the project only consider a log interface for a limited part of the Stratsys product, a more in depth analysis should be performed when field data and a more complete logging framework, that covers the entire product, has been done. This can later on involve subscriptions and the ability to generate meta-data such as tags, comments and discussions to items. Cross-linking is another part that can be under consideration.

6 Conclusion

This project resulted in a final solution regarding how to, with usability and information visualization in mind, visualize a logging feature containing a huge source of information. The focus of this project lies within the part that is most commonly used within the product as a whole, since it is believed that most feedback can be drawn from that part and later on merged into other segments of the product. To make large quantities of data accessible to the user, care was taken to emphasize design factors that enables and utilizes the most of the users' cognitive capabilities. The information retrieval techniques chosen were based on the typical user query elicited from the persona.

The project was divided into two parts where the first part aimed at collecting data in order to gather a deeper knowledge of the users as well as getting an idea of how the actual product was used and thought upon. By having a good interaction design process, this project was enabled to progress, despite lack of real logs from the customers' side and not being able to perform proper user evaluations of the mockups and prototypes due to external circumstances. The data collected gave enough information to ensure that there was a real user need for a logging feature and served as a basis for creating a persona. The persona served, for the remaining of the project as a guide to compensate for the lacking logs and evaluations.

The latter part was divided into small iterations to keep a stable progress with many evaluations regarding design solutions to avoid major design flaws that would be expensive in time to redo. Design decisions were made with regards to commonly known design patterns and the graphical guidelines given from the company, in order to keep a consistent visual solution. The design patterns served both as an inspiration for solutions to typical problems and could also settle discussions of which approach is most suitable. Most discussions also incorporated the persona to ensure the design matched the intended target user group. To continuously use the knowledge within the company as a cross reference, was important when it came to make the new feature work in the same way as the rest of the product regarding functionality, to avoid making a completely different solution from the rest of the product.

7 Future work

Due to the time constraints the focus in this project had to lie on one section in the product that was used the most. For a full solution, the logging feature is to be implemented with the rest of the product as well. As with all solutions with graphical nature, improvements and alternative looks can always be found. This solution is no exception to this, a lot of small additional design solutions have been found throughout the entire project and this can as it seems go on forever. After the first version of this feature has been out on the market for a while it has to be followed up to see how it is used and managed in order to make it work even better. But to go into detail on what small extra functionality that could be added to this solution as it is for now would not add much to the project as a whole and is therefore decided to be left out.

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A The Persona

In this section, the final result of the persona is presented. It is written in swedish since the parttakers of the result are from Sweden and use it as their native language.

Lisa - hon med koll

Mål

- Följa upp arbeten
- Förmedla mål och sätta upp styrkort från kommunfullmäktige
- Få kommunen att arbeta på ett homogent strukturerat sätt
- Skapa slutrapporter
- Instruera personalen hur de ska arbeta

Behov

- Hitta avvikelser snabbt för att kunna följa upp dem
- Slimmat interface för att snabbt kunna navigera mellan enheterna
- Möjlighet att snabbt få en grov överblick för att sedan kunna fördjupa sig
- Bra formattering på slutresultat
- Snabbt återställa när någon gör fel

Problem

- Folk ringer henne om småsaker och problem
- Massa klick
- Laddningstider
- Småbuggar
- Inkontinuitet
- Spenderar mycket tid för att hitta förändringar

Persona

Profil

Lisa är en 44-årig gift kvinna i Hohors kommun. Där bor hon med hennes man och dotter på 9 år. På fritiden följer hon med sin dotter ut på hennes ridtävlingar och spenderar mysiga hemmakvällar med sin man. Under 90-talet grät hon blod över Sveriges fatala nederlag i fotbolls-VM, samtidigt som hon kämpade på med sina ekonomistudier på Handelskolanhögskolan i Göteborg. Under studietiden träffade hon sin nuvarande man Lars. Efter studierna flyttade de tillbaka till Lars hemtrakter i Hohors kommun. Där fick Lisa ett arbete som ekonomiassistent på Stadshuset. Under årens gång har hon jobbat sig upp i kommunen och arbetar nu som verksamhetsutvecklare på kommunledningen. På grund av hennes långa erfarenhet av kommunarbetet har hon väldigt god insyn i organisationen. Hennes arbetsuppgifter har alltid krävt att hon ska använda IT-stöd, vilket har resulterat i en god IT-vana och hon har lätt för att ta till sig nya program. Eftersom hon genom tiden märkt att hennes arbete kan göra en stor skillnad, så har hon utvecklat ett stort engagemang för kommunen och är en väldigt drivande person.

Som verksamhetsutvecklare har hon fått i ansvar att se över hur utvecklingsfrågor ska genomdrivas i kommunen från kommunfullmäktiges nivå, ner till verksamheterna och flyta på så bra som möjligt. Som ett verktyg till detta ändamål använder de inom kommunen Stratsys, som hon nyttjar flera gånger i veckan. Det var tänkt att all administrering inom Stratsys ska läggas på helpdesk, men då Hohors inte kommit så långt i arbetet än, har Lisa fått den rollen tillsatt utöver sina vanliga arbetsuppgifter. Många ringer därför till henne för att fråga om alla problem och hinder de stöter på. När Lisa inte själv klarar av problemen, ringer hon till supporten. Dessa problem kan ibland endast lösas genom funktioner tillgängliga för supporten, exempelvis återställa till tidigare lägen. Rollen som administratör är dock inte hennes primära. Hennes egentliga uppgifter består av att strukturera upp arbetsrutiner och instruera personalen hur de ska arbeta med utvecklingsfrågor. Under tidens gång övervakar hon arbetsflödet för att kunna påpeka viktiga ärenden till kommunstyrelsen. Lisa sammanställer även olika delårsrapporter utifrån vad verksamheterna har rapporterat. Hon har en väldigt vital roll i att få strukturen i arbetetsflödet att gå ihop genom hela kommunen.

Rent praktiskt innebär det att Lisas arbetsuppgifter kräver att hon har en väldigt noggrann överblick över verksamheternas arbete. När hon är inne i Stratsys kollar hon främst om deadlines hålls och om det finns några avvikelser som kräver uppmärksamhet. I början av året vid varje planeringsfas, för Lisa in kommunfullmäktiges mål i styrkort som bryts ner på verksamheterna. Därefter följer hon bara upp arbeten. Till sist är hon även ansvarig att rapportera inför kommunfullmäktige. Hon samlar ihop de rapporter hon har fått från verksamheterna och sammanställer det i verksamhetsberättelser för varje år.

Lisa - hon med koll

Persona

Mål

- Följa upp arbeten
- Förmedla mål och sätta upp styrkort från kommunfullmäktige
- Få kommunen att arbeta på ett homogent strukturerat sätt
- Skapa slutrapporter
- Instruera personalen hur de ska arbeta

Behov

- Hitta avvikelser snabbt för att kunna följa upp dem
- Slimmat interface för att snabbt kunna navigera mellan enheterna
- Möjlighet att snabbt få en grov överblick för att sedan kunna fördjupa sig
- Bra formattering på slutresultat
- Snabbt återställa när någon gör fel

Problem

- Folk ringer henne om småsaker och problem
- Massa klick
- Laddningstider
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- Inkontinuitet
- Spenderar mycket tid för att hitta förändringar

Vanliga situationer

Brådskande ärenden

Lisa ska iväg nästa vecka på ett möte med kommunstyrelsen. Som underlag samlar hon in alla ärenden som behöver uppmärksammas. Hon går då in på aktivitetsvyn i Stratsys och sorterar efter statusfärg. De aktiviteter som är röd-markerade blir de som Lisa tar upp på mötet för vidare diskussion. Hon tar även en titt så att alla statusar är gällande. Har en aktivitet varit inaktiv ett längre tag, tas denna även upp på mötet. Detta tar en del tid eftersom listan med aktiviteter är väldigt stor.

Uppföljning av rapport

En aktivitet har gått ändrats från grönt till gult utan närmare förklaring, då Lisa har till uppgift att följa upp avvikande ärenden måste hon genast kontakta personen som står som ansvarig för aktiviten för att följa upp förändringen. Problemet för den ansvariga personen är att han direkt inte kan svara på vem det är som har ändrat aktivitetens status utan lovar dyrt och heligt att han ska kolla upp det för att kunna få en förklaring till varför processen har blivit satt i viloläge.

Informera personal

Ett sätt för Lisa att publicera nyheter och information, är att använda sig av anslagstavlan i Stratsys. Hon kan dock ibland känna att information inte alltid uppmärksammas av personalen, utan ibland förblir olästa. Detta kan delvis bero på att man har väldigt mycket liggandes på anslagstavlan och endast de fyra senaste är direkt synliga. Dessutom tar de aktuella mått och aktiviteter man är ansvarig för en stor del av startsidan.

Utbilda personal

Det börjar närma sig delårsrapportering för personalen. Eftersom det var några månader sen sist som de använde programmet, anordnar Lisa en workshop-vecka, där folk kan komma och få hjälp med sina rapporteringar. För att enkelt kunna instruera övrig personal i hur de använder Stratsys på det sättet som är tänkt, utvecklar Lisa mindre guider då hon själv anser att manualer givna från Stratsys själva är aldelles för ingående och svåra att förstå. Hon jobbar mycket med ljud och bild för att på ett enkelt och pedagogiskt visa hur man gör.

B Interviews

B.1 The guide

With all the interviews, a prewritten guide was used as a reminder for the interviewer so that no question was left behind and became unanswered. In this section, all the questions asked during a session is presented. Since probing was used as much as possible, a lot of sub questions were asked ad-hoc and are not documented because of their dynamic nature and that they varied a lot from interview to interview.

Presentation of the interview

Start with a small presentation of us and what we do.

Preface:

Present the aim with this interview and why it is performed.
Question 1:

Who are you and what is your role in the organization?

Question 2:

What does the organization do and what responsibilities does it have?

Question 3:

What is the main purpose for using Stratsys as a product?

Question 4:

How frequent is the use of Stratsys as a product when it comes to the daily workload?

Question 5:

What is Stratsys mostly used for?

Question 6:

How is the experience of cooperating with other users when working with Stratsys?

Question 7:

Are there any limitations/shortages or common problems that can affect and limit the usage of the product?

Question 8:

Is there anything that is missing with the product that could enhance the usage of it even further?

End face:

A short presentation of the thesis and what kind of implementation our task aims for.

B.2 Analysed material

From all the interviews, a huge source of information was created. All this information had to be sorted out in a manageable way so that it could be used further on. In this section, a summary of the most relevant and most common information from the interviewees is presented. The structure of the presented material follows the same structure that all the information elicited from the interviews is sorted in.

Keywords/Layers	Personal	Work role	Organization
Tasks	• High domain knowledge of the system • Control the system • Send/ use reminders • Use other media (e-mail etc.) for sending out reminders • Overall control so that things is managed the right way	• Bosses has most usage of the system • Operation control • Operation and follow-up question • run political goals • Take care of the city councils report/scorecard • System administrators • Run IT support to rest of the organization • Overview of the different units • Make reports • Have a formal responsibility	• Presentation to outer instances • Yearly setup of goals • Merge the goals into the operations • Planning and follow-ups • Share knowledge and material • Works both ways • Uses un-measurable goals • The result works as a reference material towards media • Two way communication
Needs	• Continuous follow-up • See active changes • Receive reminders • Only wants useful and clear information • The technical language should be understandable • Get an overview of the situation • Consistency within the measures • Filtering on notifications and information • Publish messages • Useful and clear guides		
Personal information	• More women than men • 40+ years old • Works as the “go to guy” • Starts on the floor and works the way up • Economical background • Experience of IT varies		

C Task-analysis

Here follows a presentation of the tasks that was performed by the test-users and the score chart used to document the result from the test-session. The test was performed on mock-ups that looks similar to the final solution.

Question 1:

What changes has happened to the general tab, since you were previously logged on?

Question 2:

A result has recently been reported. Who did it and when was it reported?

Question 3:

What did the initial draft of the description look like?

Question 4:

Lena has done some changes the 4th of April, but she is not sure of what she actually did. What was it that she changed?

	Person 1	Person 2	Person 3	Person 4	Person 5
Time	6 min	4 min 50 sec	5 min	3 min 30 sec	3 min 40 sec
Errors/Tasks					
Question 1	3	1	2	1	2
Question 2	3	1	2	1	3
Question 3	2	1	2	2	3
Question 4	2	2	2	2	1
Amt. Question	2	1	2	1	2
Dones	4	4	4	4	4
Filtrering	3	3	3	3	3
pass/act	4	3	2	3	4