

RESEARCH AND DEVELOPMENT OF A CLIENT PORTAL

Increasing functionality and efficiency for a recycling subscription

Master's thesis in the master degree programme Industrial Design Engineering

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Abstract

Upon initiation of this project, the recycling company with which the project was carried out in collaboration desired the outcome to be a solution that would create added value for their clients. With ambitions like understanding the clients' needs and desires regarding recycling in offices and to investigate how digital solutions could be implemented in recycling, a vision became definite; to create a client portal tailored to the office segment that strengthens the relationship between client and company by improving communication, creating clarity and trust between the parties. An additional ambition was to integrate the principles of Design for Sustainable Behavior into the solution, enabling users to minimize their climate impact connected to waste management.

To gain a comprehensive understanding of the company's prerequisites and the users' needs, various methodologies were employed, including client and employee interviews, service staff observations, and an ideation workshop. Based on the insights gained from these activities, a digital prototype of the client portal was developed, which underwent rigorous evaluation with users, primarily focusing on its functionality. Incorporating feedback from the user evaluations, an updated version of the client portal was created and once again subjected to evaluation, this time emphasizing its usability. Ultimately, a client portal for a recycling subscription was designed and tested by clients, yielding very positive results.

Keywords: UX design | UI design | Usability | Design for Sustainable Behavior | Recycling

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1. Introduction

This chapter presents the project background, an introduction to the area of recycling, the aim, goals, demarcations and ethical considerations of the project.

1.1 Background

Every day, we get reached by news of how climate change continuously affects the life of plants, wildlife as well as humans. It is a general fact that this change is caused by human activity, but nations, organizations and individuals are working hard to reduce the negative impact in several ways.

1.1.1 Design for Sustainable Behavior

One way of taking responsibility for climate change is by minimizing emissions from the use of products and services. Design for Sustainable behavior, or DfSB for short, is an approach to design that aims to encourage and enable people to adopt more sustainable behaviors in their everyday lives. This approach recognizes that sustainable design is not just about creating products or services that are environmentally friendly, but also about understanding how people use those products or services and how their behavior can be influenced to promote more sustainable outcomes. By designing for sustainable behavior, designers can help to reduce the environmental impact of their products and services and add to an even more efficient circular economy model. Read more about Design for Sustainable Behavior in Subchapter 3.3.

1.1.2 Recycling

Another way of taking responsibility for climate change is by recycling waste. The Butterfly Diagram by the Ellen MacArthur Foundation and the Waste Hierarchy by the UN are two frameworks used to promote sustainable waste management practices. These are commonly used and referred to in the area of recycling. Many companies refer to the Waste Hierarchy and track their waste according to this framework, however, it is also important to see the bigger picture presented in the Butterfly Diagram. To understand how the frameworks work together as well as their similarities and differences, they are presented below.

The Butterfly Diagram, created by Ellen MacArthur Foundation (2019), presented in Figure 1, shows a visual representation of the circular economy system. The diagram consists of a biological and a technical cycle. The biological cycle concerns renewable sources and materials that are typically *consumed* such as foods and natural textiles. These are things that cannot be reused while the technical cycle concerns products made from finite sources that are typically *used* such as metals and electronics. In the technical cycle there are four methods for creating a circular economy where recycling is the last and least preferred one. The Ellen MacArthur foundation explains that recycling should be used as a last resort or for materials that are not suited for the other methods, such as single use packaging. Even though recycling is seen as the least preferred method in a fully circular economy it is still an important method to avoid materials leaving the loop. The Butterfly Diagram aims to optimize resource utilization and minimize environmental impact by addressing the underlying drivers of waste and pollution.

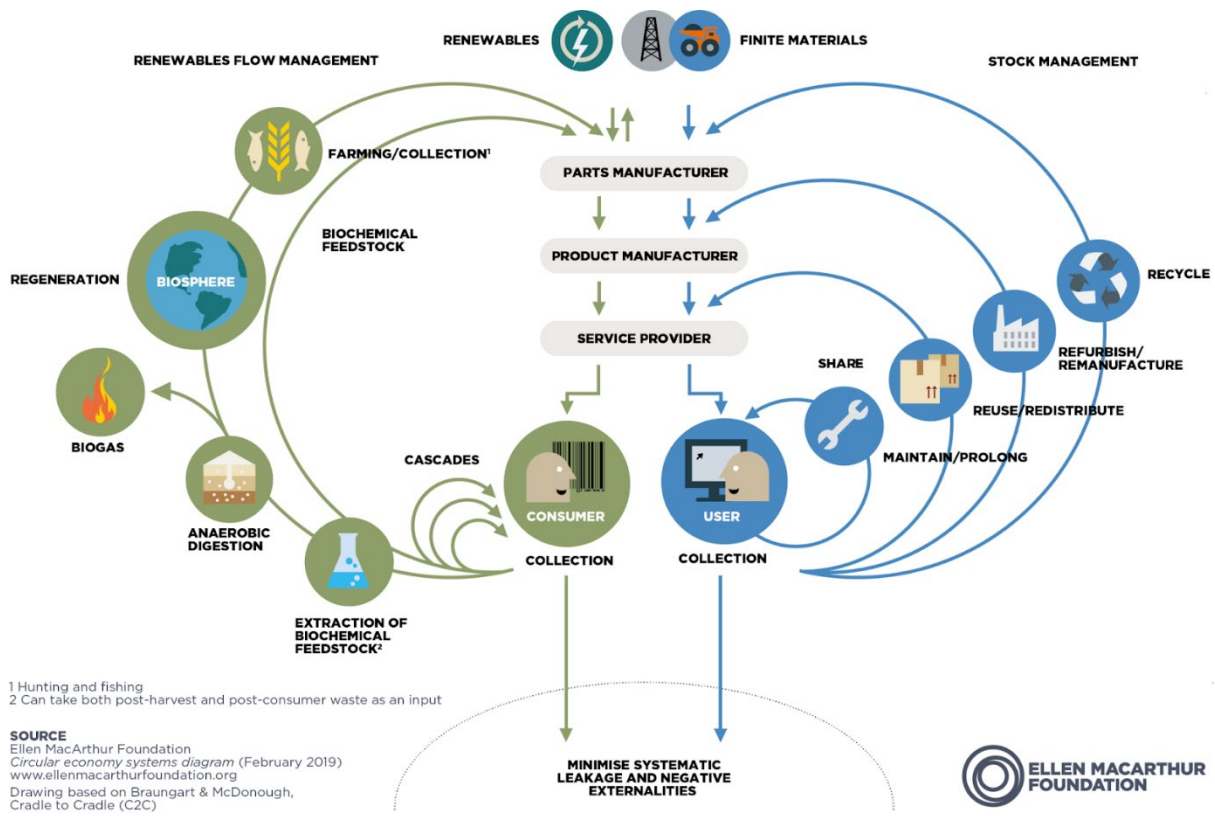


Figure 1. The Butterfly Diagram, Ellen MacArthur Foundation.

The European Union’s Waste Framework Directive (European Commission, 2008) presents a visual representation of the Waste Hierarchy, presented in Figure 2. The Waste Hierarchy shows five different methods for waste disposal and which ones are preferable. The top step ‘prevention’ should be prioritized to secure a sustainable society and the bottom step ‘disposal’ should be seen as a last resort.



Figure 2. The Waste Hierarchy.

The second to last step, ‘recovery’, also known as energy recycling, is the process of turning waste into energy and should only be used for materials that cannot be reused or recycled to new material. The Waste Hierarchy emphasizes the importance of reducing waste and

promoting sustainable waste management practices but does not address the broader systemic issues related to the design and production of goods and services. Even though recycling is seen as the least preferred method in a circular economy, recycling still plays a crucial role in reducing waste and conserving valuable resources. The Butterfly Diagram focuses on designing out waste and pollution in products and services but does not touch upon the use phase of the products and services. Therefore, Circular Economy and Design for Sustainable Behavior complement each other in designing for a sustainable future. By optimizing the clients' use of the service, transportation routes can be minimized and by implementing strategies for DfSB the users can be influenced to increase their recycling rates and minimize their waste production.

1.1.3 Business X

The company this project was carried out with will remain anonymous and therefore be referred to as Business X. Business X is a Stockholm based company that offers recycling services for offices, property owners and stores. Business X works to minimize waste sent to landfill as well as minimize energy recycling in favor of material recycling. This allows for keeping more materials in the loop for a longer time, and therefore promotes a more circular economy.

Business X equips their clients with bins and units that are designed to fit well in an office environment. These are continuously emptied, either on a schedule or when necessary, by Business X's 100% fossil free transportation. When managing waste in the garbage room, the service staff takes the bins with them and leave new clean ones instead of emptying the bins on-site and leaving dirty, smelly bins behind. Moreover, they compete by offering flexible solutions such as same day pick-up and the ability to take extra waste outside of the agreement if necessary. They accept a variety of different waste types, everything from metal and cardboard to electronics and solid waste.

With a wish to strengthen their position on the market further, Business X wanted to create something that added more value for their clients. During the Initial Research presented in Chapter 4. Initial Research, it was found that Business X faced multiple problems connected to external communication. By finding a solution that improves the communication towards clients, Business X would be able tie their clients closer to the company. With this as a starting point, along with the wish to create something that added to a more circular economy and sustainable future, the aim of the project was defined.

The project was conducted in collaboration with Business X and their consultants, Xvii. Xvii is a specialized consulting firm focusing on sustainable and circular design and business development. They assist their clients in enhancing the sustainability and circularity of their products, services, strategies, and business models. Business X is one of their clients, and both companies are key stakeholders in this project. By contributing with valuable insights, Xvii served as a mentor to the project team during the research and development of the services provided by Business X.

1.2 Aim and goal

The main aim of this project was to strengthen the relationship between Business X and their clients.

Based on Initial Research (see Chapter 4) and Interviews with Business X's clients (see Chapter 5) the goal became to improve the communication between Business X and their clients by developing a digital prototype of a client portal directed at the office segment.

This project can not impact the design of the items being discarded and collected by Business X, but there is a possibility to work with making sustainable changes to the service they offer, as well as impact the behavior of the clients and their use of the service. Therefore, to make the project beneficial for the environment, a sub-goal was that the clients should become aware of their climate impact and get motivated to reduce it with help and support from Business X.

1.3 Demarcations

To facilitate the workload and make the aim and the goals of the project clearer, demarcations were drawn. Some areas that the project did not touch upon were:

- Logistics and transportation line.
Traffic control, route planning and fleet management were excluded from the scope.
- Clients with garbage rooms with bigger bins and containers.
The focus of this project was on recycling in offices and larger garbage rooms were not studied.
- The design of the bins and other products that Business X purchases from other companies.
- Marketing of services and products towards potential new clients.
- System boundary. The project did not focus on what happened:
 - before the salesperson made the call to a potential new client
 - what happened after the waste was loaded onto the van.
- The visual style of the Client portal.
The project focus was on functionality and usability rather than visual aspects.

1.4 Ethical considerations

The outcome of this project was beneficial for both Business X and their clients as well as society as it contributes to more efficient recycling, thereby minimizing resource waste. However, an important aspect of the project was to make the design meaningful in the sense that it truly benefited the environment and not just commercial interests. Even though Business X is a company with a high focus on sustainability, they are still a company, which means that they need to make a profit to survive. It was important to keep this in mind during the project and to be aware of the underlying reasons for certain actions, such as the balance between making a solution that adds value for the clients while being beneficial for the environment as well as being profitable for Business X.

2. Process

This project can be divided into three main phases; Phase 1: *Empathize & Define*, Phase 2: *Ideate* and Phase 3, which is an iterative cycle of *Prototype, Test & Evaluate*. These three phases are shortly described and motivated in this chapter and illustrated in Figure 3.

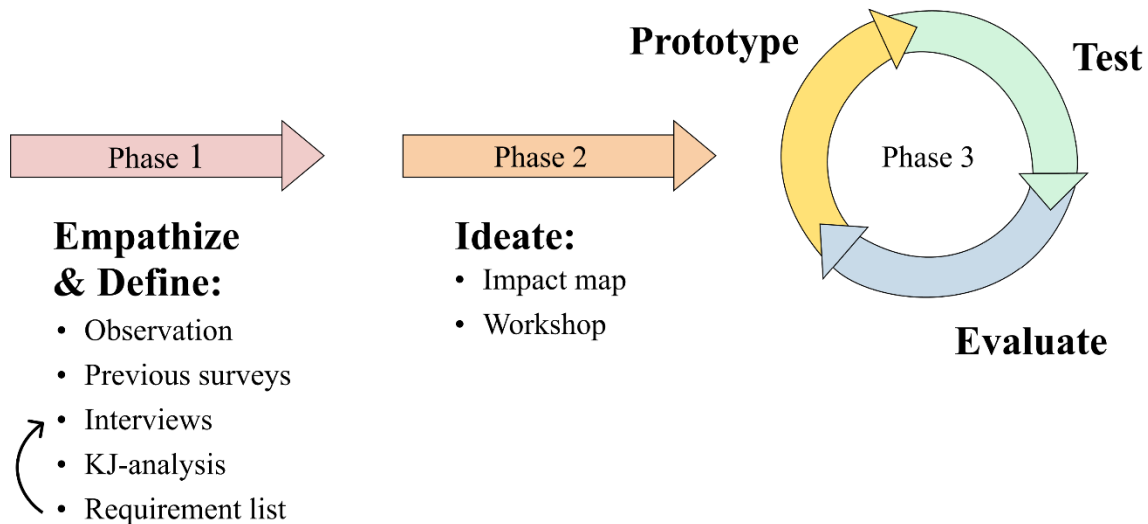


Figure 3. Illustration of the project process with the different phases.

2.1 Phase 1: Empathize & Define

The first phase started off with initial research with the purpose of getting a better understanding of Business X and their services. In this phase participatory observations with the service staff were executed, the project group took part of previous client surveys and evaluations and listened to a follow up meeting regarding workshops that had been carried out at different departments at Business X concerning improvement opportunities within and between the departments. Lastly, interviews were held with employees at Business X working with customer service, marketing and sales. The result was summarized with the help of a KJ-analysis to get an overview of potential problems and determine how to continue the project.

To get a better understanding of the clients and their situation, interviews were held with 14 different clients to Business X. The interview results were analyzed with a second KJ-analysis from which the decision to make a client portal was made. To further investigate the use of a client portal related to waste management, four interviews were held with people who had experience of this. Moreover, a list of requirements for the future portal was created based on the findings of this phase. The first phase of the project is described in *Phase 1: Empathize & Define*.

2.2 Phase 2: Ideate

The ideate phase started by creating an impact map with different user categories as a way of including all the different types of users that may interact with the client portal. The impact map was then used as a base during a workshop held at the headquarter of Business X, but also as inspiration in the last phase of prototyping, testing and evaluating. The workshop was carried out as a way of taking advantage of the knowledge available at Business X and verifying the results from the previous interviews with their employees. The impact map and the workshop are described further in *Phase 2: Ideate*.

2.3 Phase 3: Prototype, Test & Evaluate

The last phase of this project was an iterative cycle of prototyping, testing and evaluating. By utilizing a physical prototyping method called paper prototyping as well as testing ideas in a software called Figma, different ideas were tried and evaluated before finishing the design in Figma (Read more about Figma and the prototyping phase in Chapter 10.1.3 Figma Prototyping). The first prototype was integrated in an evaluation with potential future users of a client portal to find areas of improvement regarding the functions incorporated in the portal. The results of these tests were analyzed and the prototype was updated accordingly. Thereafter, a round of usability tests were carried out with the new prototype, both to see how well the users understood the layout of the portal and could navigate around it, as well as to test whether the updates made an improvement to the functionality. Lastly, the result of the usability test was analyzed and compiled. The prototyping, testing, evaluating and the final result is described further in *Phase 3: Prototype, Test & Evaluate*.

3. Framework

It is important to be familiar with some of the underlying theory that the result of this project is built upon. Therefore, this chapter covers relevant theory about both the design of web applications and design related to sustainability, two subjects closely related to the aim and goals of this project. Three main areas are discussed: *Design for UX & UI*, *Design for Usability* and *Design for Sustainable behavior*. These are three very extensive areas with a lot of different theories, facts and perspectives and the limited literature in this chapter is carefully chosen to present a general view of the areas and connect to the aim and goals of this project. Much information is gathered from the company Nielsen Norman Group, experts in User Experience and Usability.

3.1 Design for UX & UI

This subchapter defines the concept of UX and UI Design and explains how this has been utilized and implemented into the project.

3.1.1 UX

User Experience, or UX, is a relatively new term coined by Donald Norman in the 1990's, one of the two founders of Nielsen Norman Group (Norman, 2016). The use of the term has become more and more frequent and The International Organization of Standardization, ISO 9241:210, defines it as:

A person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service.

Note 1 to entry: User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviors and accomplishments that occur before, during and after use.

Note 2 to entry: User experience is a consequence of brand image, presentation, functionality, system performance, interactive behavior and assistive capabilities of the interactive system, the user's internal and physical state resulting from prior experiences, attitudes, skills and personality, and the context of use.

Note 3 to entry: Usability, when interpreted from the perspective of the users' personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be used to assess aspects of user experience.

3.1.2 UI Design

One of the goals of this project was to improve the communication between Business X and their clients by developing a digital prototype of a client portal. Because of this, the project is also concerned with User Interface design, or UI Design, as it revolves around the digital interface of the client portal. The ISO definition (9241-110) for a user interface is: “*all components of an interactive system (software or hardware) that provide information and controls for the user to accomplish specific tasks with the interactive system*”. User interface design focuses on the looks and style in a digital interface and how the users interact with the interface. It includes the elements the users see on their screen and how they use them to reach their goals (Harris, 2017). In 1994, the second founder of Nielsen Norman Group, Jakob Nielsen, presented 10 general principles for user interface design called “10 Usability Heuristics for User Interface Design”. They are called Usability *Heuristics* because of how they are more broad rules of thumb to consider when working with UI Design instead of specific usability guidelines. All ten guidelines are presented below:

1. **Visibility of system status.** The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.
2. **Match between system and the real world.** The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.
3. **User control and freedom.** Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.
4. **Consistency and standards.** Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.
5. **Error prevention.** Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
6. **Recognition rather than recall.** Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.
7. **Flexibility and efficiency of use.** Shortcuts — hidden from novice users — may speed up the interaction for the expert user so that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
8. **Aesthetic and minimalist design.** Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.
9. **Help users recognize, diagnose, and recover from errors.** Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.
10. **Help and documentation.** It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

3.1.3 Implementation

This project aims to strengthen the relationship between the client and Business X and an important part in doing so is to create a positive user experience. If the client portal succeeds in creating a positive user experience, it will hopefully create a more transparent and open relationship between the two parts where the clients understand more about both the services provided by Business X and their own part in it. The clients will know more about their own

agreement but also how they can change their behavior and consequently their environmental impact. As the first note to entry in the ISO definition of User Experience implies, user experience includes the users' emotions etc. both before, during and after using a product. Likewise, the client portal has been created with a vision to impact the client's usage of the whole service provided by Business X, not only when using the client portal. By equipping the client portal with important functions and tools, the client's behavior when using the whole service should change and it should become easier for them to accomplish their goals. This will hopefully create emotions of happiness and satisfaction and strengthen their relationship with Business X.

When reviewing the second note to entry in the ISO definition of User Experience, it is mentioned how the user experience is a consequence of, among other things, the functionality of interactive system. What functions the client portal should include has been investigated thoroughly throughout the project. Trying to understand which functions the user wants and needs is an attempt at creating a favorable user experience. Moreover, the second entry implies how user experience is a consequence of the presentation, functionality, system performance, the interactive behavior etc. of the interactive system within the product, i.e. the user interface in this project. Phase 3 of this project included thorough prototyping in an attempt to create an interface that would contribute to a good user experience. Taking inspiration from Nielsen 10 general principles for user interface design by contributed to the design of the interface. By following these 10 guidelines, the interface will achieve a high usability as well, the third note to entry in the ISO definition of User Experience and the second area discussed in this chapter.

3.2 Design for Usability

One important part of User Experience is Usability. UX, as the broader concept of the two, includes the whole experience before, during and after using a product while usability solely concerns aspects during the use of the product. Creating a high usability is, as the ISO definition of user experience implies, a part of creating a positive user experience. According to the International Organization for Standardization and ISO 9241-11, the definition of usability is the “*extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use*”. Consequently, a product with good usability needs to facilitate high efficiency, effectiveness and satisfaction. The definitions of these three words, based on the same ISO standardization ISO 9241-11, is listed below:

Effectiveness: Accuracy and completeness with which users achieve specified goals.

Efficiency: Resources used in relation to the results achieved.

Note 1 to entry: Typical resources include time, human effort, costs and materials.

Satisfaction: Extent to which the user's physical, cognitive and emotional responses that result from the use of a system, product or service meets the user's needs and expectations.

Note 1 to entry: Satisfaction includes the extent to which the user experience that results from actual use meets the user's needs and expectations.

Note 2 to entry: Anticipated use can influence satisfaction with actual use.

The following subchapters will explain further theory and some design guidelines to keep in mind while designing for a positive user experience and high usability.

3.2.1 Posture

In the fourth edition of the book *About Face; The Essentials of Interaction*, Alan Cooper (2014) together with the other authors explain the term *posture* and how it should be considered while designing a digital product with good usability. The posture of a product is explained as “*its behavioral stance—how it presents itself to users*”. While identifying the posture of a product, the designer should consider the level of attention the user gives to the product while using it and in which context and environment the product is likely to be used. Having identified the posture will give the designer support in what to consider while designing for the circumstances. How well the designer manages to match the posture with the context will affect the usability of the product, how easy the product is to use and which extent it creates a good effectiveness, efficiency and satisfaction (Cooper et al. 2014).

3.2.2 Web application postures

Web applications are what the name suggests; a website behaving like a desktop application in the sense of how complex and interactive it is, with several different functions. A web application can be either sovereign or transient depending on how complex it is. An application with a sovereign posture usually includes many different functions and is used during a longer period of time for more complicated tasks. A transient application on the other hand is used for a shorter time and for a smaller variety of tasks. An advantage with having a web application instead of a software application is that many different users can use the same data and that the application can be used for occasional tasks without the user having to download a software. Unfortunately, this advantage can also be a disadvantage since the same web application can be one user’s sovereign application and another user’s transient application. The different postures and use cases require different postural considerations from the product in order to achieve good usability which will complicate the design process and the choices that needs to be made (Cooper et al. 2014).

When designing a sovereign web application, it should be designed for intermediate users. An intermediate user spends more time with the application than a beginner but less than an expert and requires more complicated tools than a beginner but easier tools than an expert. Compared to how much time they are likely to spend in the application, the time it takes to go from beginner to intermediate user is quite short. However, it is always good to offer tools that are easy to use, as long as they don’t interfere with more complex functions and the efficiency that more advanced users require. Moreover, a sovereign web application should be designed for full-screen presentation and use as much space on the screen as needed. It should also use a minimal visual style with a limited color palette that the user can look at for a long time. Since the application is used for complicated tasks, it should both give rich visual feedback and enable rich input from the user (Cooper et al. 2014).

When designing for a transient web application, there are other postural considerations that should be included in order to create a good usability for beginner users. Because of its more temporary character where the user doesn’t spend much time getting to know the application, it is very important that the interface is easy to use and understand with a straightforward orientation and navigation. Icons and headings need to be obvious and rather self-explanatory since the user might not remember what they represent from the last time the application was used. Unlike sovereign applications, transient applications are not looked at as much and can therefore afford to make use of a striking visual style to guide the users even more, without risking being too straining on the eye. A similarity with a sovereign application however is that the application should provide rich and explicit feedback. Lastly, the interface should be simple.

Everything should fit in one window without the need for sub windows and dialog boxes and every important function should be directly visible in the interface (Cooper et al. 2014).

3.2.3 Design for Beginner and Intermediate users

How to design a web application with strong usability for users of different levels, from beginners to experts, is a frequently asked question that is hard to answer in a simple way. However, most users are not beginners or experts; they are intermediates. After using an application for a quite short time, the beginners become intermediates when they learn and understand the structure of the application. Becoming and staying an expert requires much time and hard work which is why many experts degrade to being an intermediate again. Because of this, a general rule for creating a web application that can be used by many different users is to design for the intermediate user (Cooper et al. 2014).

3.2.4 Design Guidelines for Usability

There are several important guidelines to keep in mind when designing a web application with a favorable user experience for all user levels, but they are extra important when adapting to beginner and intermediate users since they spend less time working with the application compared to expert users. One of these guidelines is to try to create user flow. When the user experiences flow, they are 100% concentrated on their task. Everything else around them fades away and they get very productive and effective. A higher effectiveness is, as mentioned earlier, an indication of a better usability. To achieve this state, the web application needs to minimize disturbing events that can interfere with the user's productive state (Cooper et al. 2014).

By considering and implementing common user mental models when designing, errors can be avoided and the efficiency while using the product will improve. Mental models are internal depictions of users' comprehension of, for instance, interactive websites created through their interaction with them. For instance, a user constructs a mental model of the arrangement of web pages by exploring various web pages. This mental model is subsequently utilized to predict how a web page functions and guides the user in expecting the locations of specific features and elements, such as a settings menu, a button for returning to the homepage, a search field, and so on. Understanding and taking inspiration from these models when designing can both prevent errors and improve the users' interaction efficiency and ability to navigate on the web page (Roth et al. 2014), hence improving the user flow. Despite mental models being unique to every individual, it is plausible to assume the existence of what can be described as "common" mental models. Common mental models are the same mental models shared by many different users and emerges when users possess similar experiences regarding aspects such as the structure of web pages.

Another design guideline to consider in the attempt to create good usability and ultimately achieving a positive user experience is the idea of *Less is more*. Nielsen (2017) explains that if an interface is to be easy to overview and comprehend, the interface shouldn't be too cluttered and the number of eye-catching elements should be limited. More importantly, the interface shouldn't be overflowing with features and ways for the user to navigate. The user shouldn't be presented with several ways to achieve the same result since that can cause confusion and make the user wonder whether the different features mean the same thing or not. Only the core features should be available.

An additional design guideline is to prioritize the most used functions when designing. Nielsen (1999), states that the aim when designing a product is to give the user what they need to achieve their goals. This is closely connected to the ISO definition of Usability and the term

effectiveness, which can only be reached if the users are able to achieve specified goals when using a product. The functions that will help the user to achieve the most important goals are probably the ones that are used the most and should therefore be prioritized in size and location etc., giving them a bigger headline or a more eye-catching placement. Designing like this would be to design for higher efficiency since less time and effort will be required if the functions are easy to find.

3.2.5 Implementation

To create a product with high usability was very important in order to satisfy the users. With poor usability there is an impending risk that the users find it time consuming to use and that it can't meet their needs, possibly resulting in the users not wanting to use the client portal. In order to achieve high usability, it was important to investigate which types of users that would interact with it, beginners or intermediates, and consequently whether it should have a sovereign or transient posture. Being able to identify this through client interviews gave an opportunity to adapt the complexity of the application to the user and their needs.

In the effort of designing a product where the users can achieve their goals with good effectiveness, it is necessary to know which goal the user has. Chapter 5. Client interviews and 6. Client portal user interviews explains how several users working at client companies to Business X were interviewed in order to identify their goals and needs. Chapter 7. Requirement list shows a list that was created with requirements that the client portal needed to fulfill for the users to be able to achieve their goals. Making sure that all these requirements were achieved should be enough to create a client portal with a high level of effectiveness.

Several different methods were used in order to design for efficiency, where limiting the time and effort needed by the users were in focus. One way to do this was to design by the idea of *Less is more* where the number of features should be limited to create an interface that is easier to understand, i.e. requires less time and effort for the user to comprehend. However, limiting the number of features can not be done at the expense of too few functions, which would force the user to work much harder to achieve their goals or making them unable to reach their goals at all. That would reduce both the products' efficiency, effectivity and probably user satisfaction. A middle ground was attempted to be achieved through extensive prototyping, testing and evaluations, see Phase 3. Another way to try and minimize the required time and effort and consequently design for higher efficiency was by using common mental models for websites. The focus here was to use more overall common mental models regarding the structure of a webpage, but also more detailed ones like symbols etc. that would help the user navigate through the client portal. This was also attempted at during Phase 3 through prototyping and later a usability test where the users were asked to navigate through the client portal and complete different tasks. A third way to try and create better efficiency was to prioritize the most frequently used functions. If these functions are easier for the user to find, one could think that the process of performing the most frequent tasks will become more efficient and lead to better usability and a more favorable user experience. Through client interviews, the functions that would most probably be of frequent use could be identified.

Lastly, user satisfaction was attempted to be achieved by trying to design in a way where the users' cognitive and emotional responses would meet the users' needs and expectations. Creating user flow and preventing errors from occurring while using the product was a way of avoiding negative emotions such as irritation or frustration that can arise when things go wrong. Moreover, it was of utmost importance to identify the users' needs and expectations when using a client portal, which was done both through the client interviews in Phase 2 and the user

evaluation and the usability test in Phase 3. This made it easier to design a client portal that could match these expectations and thereby create a better user satisfaction.

3.3 Design for Sustainable Behavior

Design for Sustainable Behavior (DfSB), the third and last area of this chapter, is an approach to design that aims to encourage and enable people to adopt more sustainable behaviors in their everyday lives. This approach recognizes that sustainable design is not just about creating products or services that are environmentally friendly, but also about understanding how people use those products or services and how their behavior can be influenced to promote more sustainable outcomes. By designing for sustainable behavior, designers can help to reduce the environmental impact of their products and services and add to an even more efficient circular economy model.

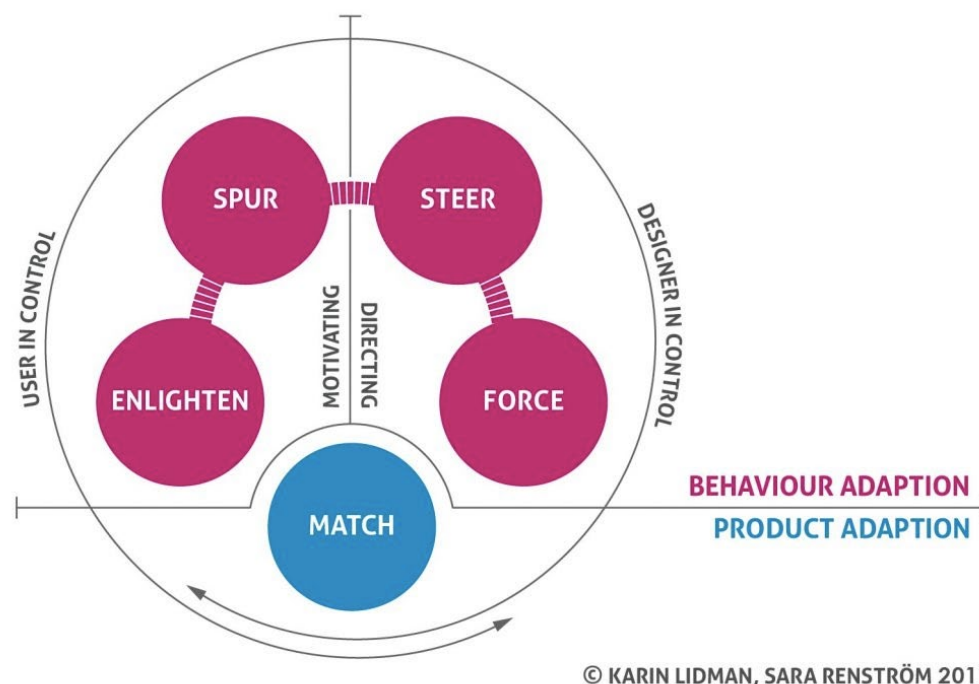


Figure 4. The five types of design strategies for Designing for Sustainable Behavior.

As seen in Figure 4 above, Lidman and Renström (2011) categorized five different types of design strategies that can be used to design for sustainable behavior. The four strategies *Enlighten*, *Spur*, *Steer* and *Force* aim to change the behavior of the user, while the last one, *Match*, is concerned with matching the product to the user's behavior. Since the sub-goal of the project was to inform the users about their climate impact and motivate and help them to reduce it, this project is mainly concerned with *Enlighten*, *Spur* and *Match*. These strategies work as helpful tools for the users to behave more sustainably without forcing them to take certain actions that they might not want to. If the design of the client portal forced or steered the users too much, it would potentially lower their satisfaction and in turn the usability of the client portal. A poorer usability would in turn make the relationship between the client and the company worse, and thereby go against the aim of the project; to strengthen the relationship between clients and Business X. Therefore, the three strategies chosen for this project are explained in detail below.

Enlighten means strategies that can be used to motivate people by increasing their knowledge and give them information about the effects of their behaviors.

Spur strategies deal with how people can be encouraged to reduce resource consumption by highlighting additional positive effects besides environmental gains, for example by rewards, challenges, and competitions.

Match strategies address how products and services can be adapted to existing user behavior and designed to reduce the environmental and social consequences of that behavior.

3.3.1 Implementation

The decision to implementing methods of Design for Sustainable Behavior in this project originated from interest the project group had in this area and the fact that it potentially could create an added value for the clients, something that was requested by Business X (see Chapter 4.2.2 Departments at Business X). The three strategies were chosen because of how compatible they were with web design and how they didn't reduce the usability or user experience of the client portal. They were implemented through specific features and functions in the client portal that by enlightening, spurring or matching should influence the user towards a more sustainable behavior. Phase 3 explains the whole process on how DfSB methods were implemented, from prototyping and user evaluations to the final design.

Phase 1: Empathize & Define

01

4. Initial Research

The project started off with initial research with the purpose of acquiring an understanding of the company, their services and the clients in order to define potential areas of improvement within the service of Business X. This chapter presents the methods that were used in this phase and what they resulted in.

4.1 Method

During the initial research, several different methods were used. Participatory observations and interviews with employees at Business X contributed to a thorough comprehension of the company and their business which together with reviewing previous evaluations facilitated an understanding of the clients and their situation. To get an overview of the information the research generated, the results from the observations, interviews and evaluations were summarized in a KJ analysis.

4.1.1 Participatory observations

To gain firsthand insight into the service provided by Business X, participatory observations were carried out together with the service staff. For two days, two members of the service staff were observed by riding along in their vans and following them on their missions around Stockholm. Not only was the staff observed when performing their job, but the project team also participated in the tasks by moving and emptying bins, carrying waste etc. The days contained visiting offices and taking care of the waste at the sorting facility. In between the participatory observations, there were long periods of sitting in the car with the service staff where unstructured interviews took place. There were no prepared questions and the only goal was to understand the service staffs work situation better. The participatory observations were used to gain a profound understanding of the core part of the business which was valuable later in the project to be able to ask relevant questions during interviews.

4.1.2 Previous evaluations

Before the start of this project, client surveys had been made by Business X. The company sent out a client survey in 2021 and another one in 2022, which were answered by 64 clients. This mostly resulted in quantitative data where the clients were asked to rate on a scale from 1-5 how satisfied they were with Business X's services, their service staff, sales department and customer service. It also generated some qualitative data where the clients were asked about their main reasons for choosing Business X and the client could leave comments at the end of the survey if they had something to add. Moreover, Business X ordered exit investigations in both 2021 and 2022 from the company Next Research & Consulting AB with 37 clients that had decided to end their agreements with Business X. Business X stated that the purpose of this investigation was to measure client satisfaction and client loyalty by gathering both quantitative and qualitative data in phone interviews. The questions touched upon, among other things, the client's opinion on the price, invoicing, the service as a whole and why they decided to end their agreement. Lastly, Business X had performed internal workshops in the departments of sales and service staff with the purpose to identify flaws in, and between, the different departments. The results of these workshops were discussed in a meeting where the project team was allowed to participate and take notes. Being able to view material from earlier evaluations of the service was very valuable since it gave a good understanding of the company and their clients. This, in turn, provided an indication of which areas to explore in the following interviews.

4.1.3 Interviews with employees at Business X

Semi-structured interviews were conducted with employees from the departments of customer service, marketing and sales at Business X with the purpose of getting a better understanding of how the company operates and the responsibilities of each department. With such a broad topic as ‘to understand the company’ and not many prepared questions, the interviews were sometimes more of a conversation and close to being an unstructured interview. The prepared questions touched upon the work duties of the interviewed employees to create an understanding of what the different departments relationships with the clients looked like. The interviewed employees and their job title are presented in Table 1.

Table 1: The interviewed employees at Business X.

Employee	Job Title
No. 1	Customer Manager
No. 2	Team leader (Sales Department)
No. 3	Market Manager
No. 4	Head of Sales Department

4.1.4 KJ analysis

After gathering data through interviews and observations, it was analyzed with the help of a KJ analysis to get a profound understanding of the problem areas and to be able to draw conclusions from the data. A KJ analysis is carried out by collecting quotes and information from interviews and observations, writing them down on e.g. Post-it notes and then grouping them by identifying common themes. By adding titles to the clusters of Post-it notes it becomes easy to get an overview of the current challenges and strengths, as well as which ones are the largest (Scupin, 1997). When analyzing the data found in the initial research, several different challenges and problem areas were identified and the groups were created and labeled accordingly. The Post-it notes received different colors depending on which method the information came from, which made it easier to remember the source of the data.

4.2 Result

The research methods resulted in a thorough comprehension of Business X which is presented below, together with identified areas of improvement that were considered to be potential focus areas when moving on with the project.

4.2.1 The service of Business X

To fully grasp this project and the design challenges it brought, it was important to understand Business X. The company is based and operates in Stockholm and the surrounding area with the main business idea of a recycling subscription where they pick up waste at their client’s locations. Some clients have a rolling schedule where the waste is picked up regularly while other clients contacts Business X each time their bins need to be emptied. The clients are either offices, property owners or stores, but one of the demarcations of this project was to focus on recycling in offices. Because of this, larger garbage rooms often found in stores and properties such as apartment buildings were not studied and the result presented concerns only recycling in offices. The clients are provided with nicely designed bins which are emptied by the service staff and transported to Business X’s own sorting facility where the waste is sorted and compressed before being sent to an external recycling facility. The transportation is performed by a fleet of 100% fossil free vehicles, a fact that Business X is proud of and wants to highlight. They are also marked with “*Bra Miljöval*” which is a certification from Naturskyddsforeningen

and means that they have passed certain environmental requirements for services and products. Business X collects almost all types of waste fractions except hazardous waste, food waste and household waste. The waste fractions that Business X can handle include:

- corrugated cardboard
- paper packaging
- plastic
- colored and clear glass
- metal
- paper
- confidential papers
- electronics
- wood
- light bulbs and fluorescent tubes
- small batteries
- toner cartridges
- solid waste
- PET Bottles
- Landfill

When a client wants to recycle more unusual waste fractions such as a fridge, sorted as solid waste, it is most often done by contacting Business X to request an extra pick-up of something that isn't included in their regular agreement. These situations require documentation of the weight of the waste since that will affect the price, but also that the clients declare the measurements of the waste. That information will help the service staff to plan how they should load their van and their route between different clients.

Business X offers several different types of bins, both individual ones but also whole recycling units containing several different waste fractions in one piece of furniture. The company acts as a type of retailer where they buy bins and recycling units from other companies and then provide them as part of their offer to their clients. However, Business X have one bin that they have designed themselves called "Miljörör". It is a standing cardboard cylinder with a height of approximately 1.20 m, standing loosely on a base plate on wheels. The bins have different labels on them depending on what waste fraction it contains. This bin was observed as one of the most common ones at the client offices during the participatory observations.

Business X can do more for the clients regarding their waste than just collecting it. Quite regularly, they arrange webinars and breakfast seminars where they invite the employee at the client companies who are responsible for the contact with Business X. These events can involve lessons on how to recycle correctly or be an opportunity to inform about news and other things happening at the company. Another service Business X provides is a climate report. On request, the client can receive a report containing different data regarding their collected waste such as how much, in weight, they have recycled of each waste fraction and how many CO₂ equivalents that has saved compared to not recycling the waste. A further service provided by Business X is delivering soil bags. One of the products that Business X sells as a retailer is a compost machine that can break down food waste to soil in only 24 hours by using microorganisms. The soil is very nutritious-dense which is why Business X collects the soil and delivers it back to the client, packed in small paper bags perfect for gardening. Moreover, Business X sends out newsletters by email to their clients on a regular basis, informing them about news and upcoming webinars/seminars.

Earlier, the different departments used different digital systems that did not work very well with each other. However, Business X are, at the time of writing this thesis, in the process of implementing a new CRM-system that, according to Business X, will create a stronger bond between the departments and make it easier to share client data within the company. CRM stands for Customer Relationship Management and is an IT-support and tool that provides full control over customer relationships, helps with customer prospecting, sales and marketing

strategies, and creates flexible solutions for customer support and analyses (Lime Technologies, 2023).

4.2.2 Departments at Business X

Business X is organized into many different departments - service staff, facility staff, sales, marketing, customer service etc. The service and facility staff are based at the sorting facility while the other departments are placed at the office in the city center. The three key departments in this project are the service staff, sales team and customer service as these are the departments that are in direct contact with the clients.

Service staff

The service staff visits several different clients, picks up their waste and places it in the van. After filling the van with waste, they drive to Business X's sorting facility to empty it before visiting new clients. Depending on where the clients are located and how much waste they have, the service staff will empty the van at the sorting facility one to four times in a day. When emptying bins or recycling units with garbage bags in them, the staff takes the bag and replaces it with a new one. To avoid carrying multiple, possibly heavy bags, they often bring a big garbage bin with them to put the bags in. This bin is then placed in the van (see Figure 5) and sorted at the facility. In the rare cases where an office has bigger, and less aesthetic, garbage bins, often found in garbage rooms, the service staff brings the whole bin with them to the van and replace it with a new clean one. If the service staff encounter extra waste, a bin overflowing or a waste fraction outside of the client's agreement, they are supposed to ask the client if they want to be charged for an extra pick-up before taking it and informing customer service about this. If they find a lot of waste that is sorted in the wrong bin, they should report it to customer service and the clients might have to pay an extra fee.

Most often the service staff works with the same clients which is usually appreciated by the clients as they recognize the staff and can build an acquaintance. It is also beneficial to the service staff as it enables them to get to know the client and their office by heart - where to park the car, where the service entrance is, where the bins are, how many bins there are etc. The service staff should report "leads" to the sales team if they find that a client might need changes to their agreement such as more frequent pick-up of a certain waste fraction. Moreover, the service staff works on commission which means that if they visit high-paying customers, the more the service staff gets paid themselves.



Figure 5. View of the service van from behind during loading.

Sales Team

The salespersons are the ones at Business that signs agreements with new clients. Every client has one responsible salesperson, meaning that that salesperson oversees the agreement of that client. Moreover, the client can reach out to their salesperson with questions regarding pricing and if they would like to change their agreement. The price each client has to pay for a pick-up depends on factors such as how many bins they have and where their office is located. The salespersons also work on commission, meaning that they earn more if the clients that they are responsible for has a more extensive, and in turn more expensive, agreement. Some clients might benefit from having a salesperson visit their office to help them create a sorting solution that perfectly fits their needs. This doesn't happen very often, which is why the salesperson often has to *"sell with blind eyes"* as Employee No.2 stated. The salespersons should also reach out to their clients regularly to do check-ups and make sure everything is running smoothly, but the frequency can vary quite a lot depending on the salesperson and if it is a new or older client.

Customer Service

The word 'client' is used throughout this report to describe the companies that pay Business X to receive a service from them. However, Business X uses the word 'customer service' themselves, and therefore this department will continue to be called customer service in this report. Business X has no client portal today and the primary way for the client to communicate should be to reach out to customer service by phone or email since they are able to answer almost all types of questions. If customer service doesn't have the answer, they will redirect the client to the correct department. Except for answering questions, customer service is responsible for planning the route for the service staff. By knowing when which clients should be visited and how much waste they have, customer service is able to optimize the routes and inform the service staff on how to prepare, how many extra bins to bring etc. The customer service department are also in charge of processing requests for extra pick-ups from the clients.

After talking to and engaging with different people at Business X, it was not possible to pinpoint a specific matter that they wished to be the focus for this project. The only thing they requested was something that created an added value for their clients.

4.2.3 Main problem areas

The KJ analyses contained data gained through the all the methods mentioned in 4.1 Method to achieve an understanding of Business X and its services that was as comprehensive as possible. It was quite extensive with multiple problem areas, where the biggest ones are shortly described below.

Modifications of bins

During the observations, it was noted that some companies created their own labels for bins and units that they put either on the item or on the wall behind it. The “*Miljörör*” was also an area of improvement. During the participatory observations, some service staff commented on how the bin should be able to open from the side instead of having to lift the waste out of the bin in a vertical direction since it could be extremely heavy sometimes. Other observations were that it could be hard to make the cylinder stay on the base plate since there was no way to strap or connect them together. If bumped into by mistake when there was no waste inside working as a counter force, it happened that the “*Miljörör*” tilted and fell off the base plate.

Service staff

One problem area that was identified was different aspects regarding the service staff. This concerned both their working environment and the van they were driving, but also about how they performed. Mistakes occurred, intentional or unintentional, when they collected the waste; it was said at the meeting regarding the internal workshops that the service staff sometimes chose not to pick up everything the client had in their agreement and the observations showed that they sometimes took extra waste even though they are supposed to ask the clients first. Some service staff that were interviewed during the participatory observations talked about how hard it could be to find their way around a new office that they hadn't been to before because of a lack of instructions on where the bins were placed etc. Moreover, the service staff were sometimes met with a mistrust from the clients because of how they were doing their job and working on commission seemed to affect them both positively and negatively.

Commission

Working on commission seemed to cause some problem, mostly regarding the service staff. The service staff explained that they knew about colleagues who state that they did an extra pick-up when finding two bins of the same fraction where one was half empty and one was overflowing. In reality this counts as one normal pick-up since the total volume of the waste did not exceed what would fit in the two bins included in the client's agreement. Since they work on commission, the service staff would earn more money by declaring an extra pick-up.

Agreements

Both the clients and the sales team seemed to be unsatisfied with how the agreements were made. Clients from the previous evaluations disliked how the binding time for the agreement was one year but they were only able to cancel the agreement within the two last months before the next year started. If the client missed these two months, they had to continue with the agreement for another year. One fact that irritated both the sales team and the clients was that they had to write a completely new agreement if they wanted to add a waste fraction, resulting in some clients having many different agreements that were hard to keep track of.

Sorting of waste in the office

During the observation, it became obvious that some clients didn't sort their waste in a correct way. By, for example, sorting a milk carton as plastic instead of paper packaging, the waste was sorted wrong at the sorting facility as well since the service staff doesn't have the time to look through every bag of waste.

Communication

The most obvious and striking insight was that there were multiple communication issues connected to the service. Several problems identified could be partly explained by a lack in either internal communication between the sales team, customer service and service staff or external communication towards the client. The internal issues were mainly due to the fact that Business X used multiple different systems that did not communicate well with each other and information was therefore sometimes lost. Business X were aware of this and they were already in the process of updating the CRM systems when this project was being executed.

The external communication issues were most often about how Business X could become better at explaining different aspects of their services to their clients. One example is the fact that the clients seemed unaware of whom to turn to with questions. The team leader at the sales department, employee No.2, said that many clients contacted their salesperson even when they had questions that should be directed to customer service instead. This led to an increased workload for the salespeople as well as an inefficient service for the client. The same employee also stated that some of the clients were unaware of the fact that they would be charged extra for an overflowing bin or sorting the waste incorrectly. This was confirmed by clients from the previous evaluations where one specifically requested that Business X should be more transparent with the underlying reason for some of the invoices. Lastly, some of the service staff from the observations experienced a feeling of mistrust from clients. They had received complaints when they put several bags of different waste fractions in one big bin to transport it to the van, probably because of the clients being unaware of how the sorting at the sorting facility worked.

4.3 Reflections and implications

The methods used in the initial research resulted in a wide variety of problems, probably because so many different methods involving people from all different parts of the service were included. This also resulted in some problems that were impossible to change because of limited authority and they were discarded quite quickly. Two examples are the commission and the agreements, two areas that were deeply rooted at Business X and hard to overcome within the frames of this project.

Business X requested a result that would provide an added value for their clients; however, the majority of the people observed or interviewed during the initial research were employees at Business X instead of clients. This resulted in a KJ analysis that was a bit simplistic and didn't include the client's point of view that much. Because of this, the initial research mostly helped to provide an overview of the company and its service rather than pinpointing exactly which problems that the clients wanted to solve. This was one of the reasons why the Post-it notes had different colors for different methods, it made it easy to remember the source of each comment and Business X's suggestions wouldn't be mixed up with something that the client requested. However, acquiring this overview was very important for the proceeding work with conducting interviews with clients, a moment where their point of view would be in focus. It was necessary in order to decide which questions to ask and to be able to understand and analyze the clients' answers.

Several of the problems identified could be explained with lack of external communication between Business X and their clients. To really verify whether this was something that affected the clients and not only the employees at Business X, several questions regarding different types of communication and their knowledge about the different services was introduced into the upcoming client interviews. *What did the clients think about their contact with Business X? Had they received a visit from their salesperson? Did they know that they could request a climate report?* When going through the KJ analysis, an early idea arose; that the clients' whole user experience when engaging with the services would benefit from having a client portal. A client portal is an electronic gateway, often a website, that most usually works as a way for organizations to share information with their clients and provide them with services and files to download (Wikipedia, 2023). In this particular case, the client portal could possibly be used as a way for Business X to communicate with the clients and solve some of the earlier identified problems. It could be an aid to inform the clients about which department to contact with which type of questions, how they sort their waste in a correct way and how Business X handle the waste at the sorting facility. Because of this, a very open question about client portals was formulated for the interviews; *“If Business X had a client portal, what type of content would you like to see there?”*.

5. Client interviews

When a thorough understanding of the company and their business had been created, the project team continued with interviewing clients to empathize with them and obtain an understanding of their usage of the services. 14 employees at client companies to Business X, often an office manager, were interviewed about their contacts with Business X and their usage of the services Business X offers. This chapter presents the structure of the client interviews, what they resulted in and how they contributed to the process of defining the project.

5.1 Method

Semi-structured interviews were carried out with employees at client companies with responsibility for the respective office's recycling solution. The interviews were carried out online via the video collaboration tool Zoom and recorded, with the participants approval. These interviews were held with 14 different clients with the purpose to get the interviewees opinions on the services offered by Business X in general, but also on specific topics such as external communication, the bins, the recycling itself etc. These interviews were more structured compared to earlier interviews because the purpose was more defined. However, they were not completely structured since the order of the questions could vary and different probing questions were asked in different interviews depending on the direction the interviews took, hence semi-structured. The interview guide can be found in Appendix A.

Most often there was one, or a few, persons at a client's office responsible for communicating with Business X. They often had the occupation of office manager, sustainability manager or, at smaller companies, CEO, where the tasks related to recycling were added to their other work duties. The different interviewees and their job titles can be found in Table 2.

Table 2. List of interviewees in the interviews with clients.

Interviewee	Job title
No. 1	Facility Manager
No. 2	Office Manager
No. 3	Office Manager
No. 4	Economist
No. 5	Office Manager
No. 6	Head of Public Procurement
No. 7	Office Manager
No. 8	Controller
No. 9	Founder, consultant in finance & accounting
No. 10	Publishing assistant
No. 11	HR Manager

No. 12	Office Manager
No. 13	CEO
No. 14	Office Manager

After conducting the interviews, the recordings were transcribed and the most interesting findings were added to a new KJ analysis. After grouping the different Post-it notes together, the second KJ analysis was completed by adding some of the notes from the first KJ analysis. Not all of the identified problems in the first KJ analysis were relevant for continued work since they included areas that couldn't be addressed within the frames of this projects. However, the Post-it notes that touched upon important topics that could be included in the scope of the project were added to the groups in the second KJ analysis. Most of these notes originated from the previous evaluations with clients. Using different colors on Post-it notes for different methods for gathering data was again useful in order to keep track of the source of the data.

5.2 Result

The created KJ analysis was analyzed to find the most striking problems mentioned by the clients and consequently be able to define the project. The most important findings are presented below.

Contact

Most clients stated that they don't contact Business X particularly often, not when everything is "normal" and nothing extra is needed. However, the most common reasons for contact were when the clients wanted to order an extra pick-up of something, both of waste fractions in and outside their regular agreement, or when they had to change the date of a pick-up. That could either mean that they wanted to pause their pick-ups complete during a couple of weeks, for example during vacation weeks, or just move it a few days. For these matters, most clients stated that they used email to contact customer service.

Bins

The clients were asked about which types of bins they had in their agreement, their general opinion on them and if it was something that could make the bins better. Again, the clients mostly had "Miljörör" for different fractions and they seemed very happy with those with hardly any complaints. Instead, they explained how they were flexible, easy to move and looked good in an office environment where their aesthetic fits much better compared to the big garbage bins.

"We are an advertising agency so the office has to look nice and in a certain way... so it is quite important how the bins look. – Interviewee 3

Sorting and instructions

When it came to the sorting of waste there were varying responses regarding how well it was done in the different offices. The interviewees said that they do what they can but often see other people not sorting their waste. They thought this was mainly due to laziness but also partly due to a lack of knowledge among their colleagues. Some of the interviewees said that they often look in the bins and correct others' mistakes and other print out their own signs and sorting

instructions to help colleagues do the right thing. On the other hand, many people found it important to keep the office nice looking and therefore expressed that they thought signs and instructions are ugly and that most often nobody reads them anyway.

Arrival of Service staff

Usually, the same service staff visits the same clients. This was appreciated by clients as they found it nice to see a familiar face. The client generally did not know exactly which time the service staff were to arrive and in some cases the client didn't see them. This was especially common at bigger offices or when the waste was kept in a separate room and could create uncertainty about whether the service staff had been there or not. Some users rarely saw the service staff and were even unaware of which days they would come to pick up the waste.

“I actually don’t really know when they will arrive. I feel like it is quite irregular, although it is probably regular. It would have been nice to have a small note on the back of the bin, showing when it was last emptied.

– Interviewee 2

Additional services

When investigating knowledge about and interest in the webinars and lectures offered by Business X, it was found that few clients knew that the company offers these on a regular basis. Business X can also provide a climate report for their clients and when asked about this even fewer were aware of this possibility. The interest in these things varied a lot from client to client, mainly depending on the size of the company and the role of the responsible employee, but also personal interest. Larger companies, with a dedicated office manager, normally showed more interest in attending webinars and lectures as well as having a more elaborated climate reporting in the organization. Even though not all the interviewees showed interest in the webinars and climate report, those who did were usually very positive towards it. The conclusion was that the knowledge about these services needs to be increased for the clients to be able to decide for themselves if they are interested or not.

“I think I might have heard something about a climate report, but I haven’t seen anything about it or received any information. It could be something for us to use in the future when we start to work more with sustainability.

– Interviewee 2

Customer service vs. Salesperson

There was a general distrust towards the department of customer service detected in some of the interviews. This distrust was not directed specifically towards Business X’s customer service since the people who did utilize Business X’s customer service were very satisfied with the help received. Instead, it was the phrase ‘customer service’ that had bad associations to some people. The initial research showed that some clients might not know whom to turn to with their questions, resulting in the salespeople often having to redirect the client to customer service since they did not have the answers to those questions. The client interviews added on to that problem since some clients seemed to prefer to contact their salesperson with their questions.

“I prefer to have a salesperson to discuss things with or reach out to with questions. It is always nice to have some type of personal contact.

– Interviewee 3

The project group deducted that this behavior was due to a wish for personal service and, the former mentioned, distrust towards customer service. Moreover, some clients also explained that it was hard to find contact information to “their contact person”, meaning that they didn’t know who their salesperson was.

“When I was going to email yesterday, I didn’t know who to email because we got a new contact person this summer but when I emailed him, I only got an auto-replay. I think someone called me, but I can’t find anything in my email so I wasn’t sure who our new contact person was. – Interviewee 12

Sustainability

Business X works a lot with sustainability and wants their clients to be aware of that, therefore the question “A. Do you perceive Business X as a sustainable company?” and the follow up question “B. Is it important to you to hire a sustainable company?” were asked in the interviews. Seven of the interviewees said that they perceived Business X as a sustainable company and ten interviewees said that it was important to them to hire a sustainable company. One interviewee stated that;

“It is quite important for us so it was a criterion, but I actually didn’t check in what way they were sustainable. – Interviewee 7

In conclusion, many presume that Business X is a sustainable company as they work with recycling, but the clients lack insight into the company. Almost everyone thought that it was important to hire a sustainable company but did not take the time to investigate it, either by asking or checking the information available at Business X’s webpage. Several clients seemed unaware of the fact the Business X have a transportation fleet of 100% fossil vehicles and that they are marked with “Bra Miljöval”. These are two actions Business X have made to become a more sustainable company that they are proud of.

Client portal

The idea of creating a client portal came from the initial research as a way to enhance communication and help Business X to inform their client about their services. Because of this, the clients were asked about what type of content they would like to see in a potential client portal. The most common answers, not in prioritized order, were:

- Contact details, especially to their salesperson
- Invoices
- Their agreement with changes/updates and prices
- Schedule of their pick-ups

- The ability to pause/skip a pick-up and order extra pick-up
- Climate report
- Business X's products and services
- Updates on what Business X does, engagements, webinars, what happens to the PET-bottles etc.

5.3 Reflections and implications

After analyzing the initial research, it was observed that the “*Miljörör*” was a bit tricky for the service staff to work with, having to lift vertically could be very heavy and the card box cylinder fell off its base plate sometimes. When talking to the clients however, they had almost exclusively positive things to say about the “*Miljörör*”, both how it looked and how flexible it was to use. Because of this, a decision was made to not create any modifications for the bins since it probably wouldn't create any added value for the clients, which was what Business X requested.

Instead, the focus was directed toward the external communication, another identified problem area from the initial research. Among other things, the initial research indicated how the clients were unaware of whom to contact with questions and how some didn't know how to sort their waste correctly. These things were confirmed through the client interviews and showed together with other findings a lack in communication. Some examples are how several users didn't know that Business X offers climate reports and webinars, they didn't know their pick-up schedule, who their salesperson was or that Business X has a 100% fossil free transportation fleet and are marked with “*Bra Miljöval*”. It was established that Business X could become better at communicating with their clients; informing them about and explaining different parts of their services, but also informing the client about their own agreement. Because of this, a decision was made to create a client portal that would help Business X to solve these problems and enhance their communication with the clients, a decision that really defined the project. Wanting to have a client portal was not something that the clients expressed specifically, it was more something that the project team saw as a possible solution on the problems the clients did mention. However, when asking the clients what type of content they would like to have, several clients gave really detailed answers and seemed genuinely interested in having a client portal. Apart from that, this question generated answers on what types of content and functions the client portal could include that had not been discussed earlier in the interviews, such as showing Business X products and the client's invoices.

The interviews helped to create an understanding for the clients and their needs and wishes, as well as for the relationship between the company and their clients. However, when the decision was made to create a client portal, it became obvious these client interviews were not enough since none of the clients to Business X had any experience in using a client portal connected to their waste. Because of this, further interviews were needed with people who had used a similar client portal before.

6. Client portal user interviews

While conducting interviews with clients of Business X, it became clear that there was a gap in knowledge about client portals and the use of statistics connected to recycling in this interview group. To fulfill the sub-goal of making the clients aware of their climate impact, the project team wanted to find out more about the use of data and statistics connected to recycling. To fill these knowledge gaps, four interviews were conducted with users of different client portals who were clients to other companies within the recycling business.

6.1 Method

The interviews with client portal-users touched upon three main areas: the interviewees’ general attitude towards, and perception of, recycling in offices; their use of their current client portal, how they use it, what they like and dislike, areas of improvement etc. and lastly how they use data and statistics connected to recycling. The client portal-user interviews were, like the client interviews, carried out online and followed an interview guide. The guide was not adhered too strictly and different probing questions were asked depending on what the interviewees had to say, hence, the format of the interviews classified as semi-structured. The four participants and their job titles are presented in Table 3 and the interview guide can be found in Appendix B. After conducting the interviews, the recordings were transcribed and important insights were added to the second KJ analysis created after the client interviews.

Table 3. List of interviewees in interviews with users of client portals.

Interviewee	Job Title/Responsibility
No. 13	Recycling Contract Manager
No. 14	Sustainability Coordinator
No. 15	Compliance & Quality Assurance
No. 16	Knowledge Area Manager for Products and Services

6.2 Result

The four users of client portals all worked at larger companies with multiple stores or offices and were, to some extent, responsible for the company’s climate reporting. All the users were therefore interested in statistics and appreciated when it was well-presented and easy to work with in the client portals. One of the users worked actively with statistics and data to identify trends in the company’s waste and used the client portal to generate reports. Others only used client portals once a year to collect data to compile a climate report for the company. Nonetheless, all the users had a need for advanced statistics and said that the most important factors for them when working with the waste data was to be able to view each store, or office, separately or clustered in specific areas; to be able to download or export data to Excel and to be able to track the waste according to the Waste Hierarchy. Exactly what type of data and which parameters the users were interested in seemed to vary quite a lot depending on which industry the companies were active in and was not investigated any further.

Since the client portal users interviewed only worked with waste statistics and had no connection to the planning or execution of waste pick-ups, they demonstrated that client portals

can have more than one user. In turn, this indicated a need for user management. User No.1, who visited the client portal very frequently to generate data, stated that she was familiar with the portal but that the employees working in the stores who only used the portal every now and then found it hard to understand and navigate. She used to view quite advanced data gathered from every different store while the employees working in the stores only saw more simple facts related to their particular store. This shows that bigger clients might have a need for several different logins to the client portal with different levels of authorization.

Concerning the type of statistics and data the interviewees requested, they said that they can appreciate visualized statistics but if so, it should be very clear how the calculations are made and it should also be possible to convert the calculations to raw data. The parameters need to be highly flexible to suit the specific needs of each company. For example, the client should be able to adjust the date intervals, unit of measurement for the waste (Kg, CO₂ etc.), and allow for comparison between different years etc.

“I don’t like pictures, if there are visualized statistics it should be downloadable to Excel.” – Client portal-user 1

6.3 Reflections and implications

These interviews were conducted to gain an understanding of the usage of a client portal connected to recycling, something that the client interviews couldn’t provide. This purpose was fulfilled since they generated insights on how the waste data could be used and processed. However, one important realization was that the users interviewed worked for companies that were bigger and had a stronger focus on recycling statistics compared to most of the client companies interviewed earlier. This different type of client would from now on be viewed as a potential future client if Business X wishes to expand to a new client segment. Moreover, it is possible that the smaller client companies that don’t engage much in sustainability today will have to work more with recycling statistics in the future, either because of their own interest or from directives from EU or the Swedish government. Therefore, conducting the client portal user interviews was still rewarding and most parts of the insights gained applies to Business X’s clients today.

During the Client interviews, it was established that there often is one or a few people at the clients’ offices responsible for the communication with Business X, here classified as the primary users of the client portal. This user might work as an office manager with the purpose to overlook the recycling and contact Business X when needed. After conducting the Client portal user interviews, a second type of primary user was identified. Bigger companies and companies working a lot with sustainability might have an employee working primarily with recycling statistics and climate reporting. This employee is identified as another type of primary user with other needs, related to these advanced statistics. The client portal is aimed at the two primary users, where some clients might have one user of the first category or one of each while others have a user that is a combination of the two. The client portal will only be used directly by these two primary users and not by other employees in the office. Nevertheless, a sub-goal of the project was to generate a greater impact by influencing the rest of the employees to sort better as well, classified as the secondary users. To reach these secondary users, the client portal should provide the primary user with tools and data to influence the secondary users to minimize and sort their waste better. The coming chapters explores how different methods for DfSB can help the primary users reach the secondary users.

The posture and UI regarding the statistics and recycling need to be adapted for intermediate users, since the users who work with statistics require more advanced functionality. However, spending a lot of time analyzing the data doesn't automatically mean that the users spend that much time in the client portal since they can export the raw data to another software, e.g. Excel, and use that as their primary tool instead. Because of this, the content about statistics should be adapted to intermediate users rather than experts. On the other hand, there are users who only visit the portal a few times a year and therefore the portal also needs to be adapted for beginner users. The client portal-user interviews showed that statistics connected to waste management is a very important tool for companies who care about tracking their climate impact, and it was something the project team focused on in the development of the client portal. These interviews also highlighted the need for user management for certain, often bigger, companies; e.g. to allow companies to add, limit and delete users from the client portal so that the correct users can get the information and use out of the portal that they need.

7. Requirement list

Based on the interviews and the KJ-analysis, a requirement list was created. The requirements concerned the functions the client portal needed to contain and which client needs it had to meet in order to be a useful and efficient client portal for Business X's clients. The user needs were identified by examining the result from the interviews and the KJ-analysis and the purpose of the requirement list was to use it as a checklist during the development of the client portal. The requirement list was a living document throughout the project and was updated and refined as the project unfolded, however, the final version of the requirement list is presented in this chapter.

The requirement list is divided into two parts. The first part lists all the specific functionality the client portal needs to include to satisfy the user needs identified during the initial research, client interviews and client portal user interviews. Some examples suggest that the client portal should provide downloadable statistics and provide an overview over invoices and pick-up schedule. Moreover, the first part includes requirements connected to Design for Sustainable Behavior. These requirements are connected to user needs and partly arose during the different steps in Phase 1: Empathize and define. These requirements are believed to be able to add value for the client but were also added due to the project team's wish to explore these aspects in the project. The requirements connected to DfSB are marked as such.

The second part of the requirement list focuses on what the interface of the client portal needs to include, primarily with the aim of presenting the functions to the users in the best possible way and give them a positive user experience. Some of these requirements states that the interface should be adapted for beginner and intermediate users and prioritize the most frequently used functions. The project focus was first and foremost on functionality, and secondly on creating a visually appealing product, as this can be done in a later stage. Therefore, requirements regarding aesthetic aspects such as radiuses, shadows, decorative colors etc. were excluded from the list of requirements. The two parts of the requirement list can be seen in Table 3 and Table 4, together with a short description of the origin of these requirements.

Table 4. The requirement list regarding the functionality of the client portal.

Requirements for functionality:	Information source:
1. Be customized for each client	Initial Research
2. Be private and secure	Initial Research
3. Inform about involvements/projects/news	Initial Research & Client interviews
4. Encourage and help increase recycling	Initial Research, DfSB
5. Provide user management a. Add, delete and limit users	Client portal user interviews
6. Provide overview for the clients a. invoices b. agreement c. schedule for pickups	Initial Research and Client interviews

<ul style="list-style-type: none"> d. contact information e. which questions each department can answer f. upcoming “events” g. info about the service (execution) h. show offers and products 	
<p>7. Make the service easier to use</p> <ul style="list-style-type: none"> a. Display contact details to the client's salesperson b. Provide a contact form for: <ul style="list-style-type: none"> i. order extra pick-up of regular waste ii. order extra pick-up of waste outside of the agreement iii. pause pick-up iv. change date for a pick-up c. enable clients to submit information for service staff d. Provide recycling guidelines and instructions e. Provide signs for recycling 	7a, 7c-e Initial Research, 7a-e Client interviews, 7d-e DfSB
8. Offer insight into the clients recycling rates and environmental impact	Client interviews, Client portal user interviews, DfSB
9. Make suggestions for environmentally friendly improvements	Client interviews, Client portal user interviews, discussion with supervisor, DfSB
10. Encourage environmentally friendly improvements	Discussion with mentor, DfSB
<p>11. Provide downloadable statistics</p> <ul style="list-style-type: none"> a. Data b. Graphs c. Images d. Climate report 	Client interviews and Client portal user interviews

Table 5. The requirements list regarding the user interface of the client portal.

Requirements for user interface:	Information source:
12. Be easy to understand	From Subchapter 3.1 UX & UI

13. Be adapted for beginner and intermediate users <ul style="list-style-type: none"> b. Be effective c. Be efficient d. Be intuitive e. Create satisfaction 	From Subchapter 3.1 UX & UI
14. Provide rich visual feedback	From Subchapter 3.1 UX & UI
15. Support user input	From Subchapter 3.1 UX & UI
16. Prioritize the most frequently used functions	From Subchapter 3.1 UX & UI
17. Match the users' mental models <ul style="list-style-type: none"> a. processes b. functionality c. icons 	From Subchapter 3.1 UX & UI
18. Support user flow	From Subchapter 3.1 UX & UI
19. Prevent errors	From Subchapter 3.1 UX & UI

Phase 2: Ideate

02

8. Impact map

If the client portal is to be used by many people, it is of utmost importance to capture all different types of clients. Based on the answers from the interviews with the clients and client portal users, an impact map was created to pinpoint the different types of clients based on their incentives, motivations and requirements while using a client portal. Moreover, design challenges for each type as well as suggestions on how to overcome the challenges were listed for every client type. Subchapter 8.2 Results presents the impact map in list form.

8.1 Method

This method was suggested by the mentor from Xvii who gave support and feedback during the process of creating the impact map. The mentor provided some examples on how an impact map can be executed which served as inspiration together with a description of the method from the company InUse. They describe the method as a tool to explore, discuss and evaluate the impact of a digital service and help to create a service that will deliver the intended values for the clients. This is done through a graphical representation presenting *Why* the service is needed, *Who* the client using the service is, *How* some challenges may arise during usage and *What* can be done to overcome these challenges. InUse explains how an impact map based on client research will help to identify and present what is needed from the service for the clients to like and use it. They define the purpose of the tool as a way to “*make sure that the designed and developed solution meets expectations on impact, that the solution will support clients in the intended way, and that the expected business impact will be achieved*”. Moreover, it can be used as a tool to guide the design work and be a basis for evaluating prototypes (Domingues, 2017).

The client research used in this project was the interviews with clients and client portal users together with the KJ analysis. These were examined with the purpose of identifying the different needs the clients have while using Business X’s service, and possibly the future client portal, as well as what their attitude and motivations are. These needs and attitudes were grouped together in eight different client types together with a text explaining *who* the client type is and which needs they have when using a client portal. It was investigated *how* a design challenge could arise from them having these specific needs. A possible challenge that could arise when using the client portal was identified for each client type. Lastly, several suggestions and ideas on *what* to do to overcome these design challenges and make the clients more prone to using the client portal were brainstormed for each client type.

8.2 Result

The impact map is based on the interviews by finding attitudes and needs in the statements made by the interviewees and then combining these into different client types. This means that the interviewees are not just one client type but could have features from one or more of the different client types. One example is Interviewee 13 who worked as a facility manager. During the interview she was very focused on the price of the service, how she wanted proactivity and get the most out of the service for a lower price. Because of this, she was identified as *The Economist*. An identified area of improvement was how customer service was presented. Some users had a negative attitude towards the phrase customer service in general and preferred to contact their salesperson, also with questions more suited for customer service which created an unnecessarily long contact chain. These clients were identified as *The Contact seeker*. Another identified area of improvement was the sorting of the waste and instructions regarding the sorting of waste. Many clients said that they did what they could to influence their

colleagues and help them to sort the waste correctly, but that laziness and a lack of knowledge among the colleagues resulted in incorrect recycling. Some said they often looked in the bins and corrected colleagues and their mistakes. These people were identified as *The Climate Hero* and/or *The Recycling Sheriff*. The Impact map in its entirety can be seen in Appendix C, but the different client types with the belonging design challenges and suggestions are presented below.

The Economist

The Economist wants a service as cheap as possible. They don't care too much about aspects such as style, climate impact or that the same person picks up their waste every time etc. All those things are just bonuses while the price is the most important factor.

Design challenge: Benefits of a client portal needs to gravely outweigh extra cost.

Design suggestions:

- A custom-made client portal makes it feel more priceworthy.
- A free trial and short binding period invites testing out the portal and experiencing its value.

The Contact Seeker

The Contact Seeker appreciates having a closer relationship with the company. They want a personal contact and not just an anonymous email address. They want to feel valued, get personal offers and be able to tailor the service to their own needs.

Design challenge: The contact seeker might not want to use a client portal as it feels less personal. It might be hard for them to accept contacting customer service with certain matters.

Design suggestions:

- Make the client portal feel welcoming and personal by customization and helpful technology.
- Present contact information to their salesperson.
- Make it clear which matters should be directed to the client's salesperson and which to customer service.

The Recycling Sheriff

The Recycling Sheriff makes their own signs and notes with recycling instructions and points out to colleagues and guests what waste goes where. They are principled but helpful, things should be done in the correct way.

Design challenge: Create something that aids and interests the Recycling Sheriff and does more than just stating the obvious.

Design suggestions:

- Provide downloadable signs with a clean design presenting instructions on how to recycle.
- Provide tools to motivate colleagues to sort better and create an increased awareness about sustainability.

The Scatterbrain

The Scatterbrain doesn't really keep track of their agreement and pick-up times but thinks that the service works well. They would appreciate a better overview of their agreement and the service in general.

Design challenge: Help them understand the benefits of a client portal and get them to use it.

Design suggestions:

- The portal should be adapted for beginner/intermediate users and facilitate an effective learning curve.
- The portal should prioritize and favor the most used functions and information.
- All important information about agreements etc. should be stored in the client portal for easy access.

The Climate Hero

It is a natural behavior for the Climate Hero to take care of their own waste and they want to help their colleagues to do the same, both at the company and in their personal life. The Climate Hero values working for a company with a climate policy that advocates working with other environmentally friendly companies such as Business X.

Design challenge: Help the Climate Hero influence their colleagues and provide the more advanced tools the Climate Hero need in their sustainability work.

Design suggestions:

- Showcase Business X's ongoing sustainability work.
- Present advanced tools for statistics and measurements.
- Provide the means to influence the colleagues both in the office and in their personal life.
- Advertise Business X's offers and events to develop their sustainability work even more.

The Practicalist

The Practicalist wants a fast and flexible service. They can appreciate a sustainable service and that the same person picks up their waste every time, but the most important thing is that the Practicalist doesn't have to interact with Business X too much. If they must, it should be as quick and easy as possible.

Design challenge: Make the client portal so efficient to use that it eliminates all hassle.

Design suggestions:

- Design for beginner/intermediate users and quick learning by matching mental models and using simple design language.
- The portal should prioritize and favor the most used functions and information.

The Interior Designer

This user category was added later in the project after the participants in the workshop identified it as a client type. The most important thing for the Interior Designer is that the workplace and the bins look and feel nice. That the service staff is clean, neat and polite and that they do a professional, quick and quiet job is also of importance.

Design Challenge: Help the Interior Designer realize the sustainability advantages with Business X's service and engage them in doing more for the environment.

Design Suggestions:

- A custom-made client portal feels more high-end and elevates the impression of the service, leading to increased engagement from The Interior Designer.
- Engage them by using nudges, presenting recycling data and facts in a comprehensive and accessible way along with a call for action.
- Engage them and make them more interested in the work performed by Business X by presenting articles, news and upcoming events.

The Big Future Client

This user category is based on the client portal user interviews where all interviewees worked for a big company with more advanced requirements regarding environmental statistics. The Big Future Client's focus goes beyond encouraging and handling recycling at a single office. They work for a bigger company and need to be able to compile data from many different parts of the company to get an overview of the climate impact.

Design challenge: Be able to meet the Big Future Client's complex needs, both regarding the client portal and other more logistic matters.

Design Suggestions:

- Enable user management where the company can have several logins with different authorities and content depending on the position of the user.
- Provide the opportunity to view data, statistics etc. from specific regions, departments, stores and so on.
- Be able to collect this data (more of a logistic/facility problem).

8.3 Reflections and implications

Using an impact map had a good and important influence on the whole project. The impact map would serve as both a transition between and a unification of the three different phases of the project. The result of the first phase was used to create the impact map in the second phase, which was later used as a basis during the prototyping, tests and evaluations in the third phase. Thanks to the impact map, the end result of the project could become closely connected to the first findings.

When creating and using the impact map, inspiration was taken from InUse. The method for how to create the impact map was followed almost exactly; use client research to explain the *why, who, how* and *what*, where *why* was the aim and goals of the whole project. Moreover, how the impact map was utilized in the project further on followed the explanations given by InUse as well. The main purpose for creating an impact map in this project was to identify client needs and attitudes and use it as a tool to design a service that would deliver the intended value for the clients. This would be a way to achieve high usability and make the clients more inclined to using the client portal. Moreover, the impact map became a tool to use in the workshop that followed (see Chapter 9. Workshop) to explore, discuss and evaluate the impact of a client portal with employees at Business X and generate ideas on what features the client portal should include. Later, the design suggestions given for the design challenges were used as inspiration during the prototyping and as a basis for evaluating the prototype before testing it with users. The impact map was used in a similar way as the requirement list, almost as a checklist to make sure all design suggestions and therefore all client types were considered in the client portal. By using the clients' attitudes and needs to create an impact map and let the impact map influence the ideation and prototyping, the interviews were really used to their full capacity to create a well-founded prototype.

Before deciding to use an impact map, the method of creating a persona scenario was considered. The purpose of creating a persona scenario is to guide a designer when designing a product or service by highlighting the client's needs, experiences, behaviors and goals. Based on user research, one or several personas is created with name and age together with their listed values, interests, lifestyle, needs, attitudes, desires, limitations, goals and behavior patterns. Adding a scenario describing the context of the usage can help to build empathy (Interaction Design Foundation, 2023). However, the way the project team has been taught to use this

method is quite limited, where only one or a few different personas and some short scenarios are created based on the findings from the user research without any listed values, interests, limitations etc. It has been used more as a way to get a brief understanding of the users and the context in which the product is used, not as a bridging tool between different phases like the impact map was in this project. Using a persona scenario in a more detailed way could possibly have generated an end result just as well-developed as the impact map; nonetheless, the project team experienced that an impact was way more useful than using the kind of persona scenario encountered before.

9. Workshop

A workshop was held with four representatives from Business X to evaluate ideas that had already emerged, ideate new ones as well as to discuss questions where their expertise was needed. The representatives were the CEO, vice president, sales manager and the marketing manager as these held important knowledge and insight into the potential use of a client portal. The following subchapters presents the planning of this workshop together with the results it generated.

9.1 Method

The workshop lasted for 4.5 hours starting with an introduction to the project, presentation of guidelines for the workshop, some warm-up exercises to get into a creative mood and showing and discussion of the Impact Map. The workshop was carried out in a conference room with the equipment of a TV screen, a whiteboard, multicolored pens, paper and post-it-notes. The TV and the whiteboard were used by the project team to show the instructions for the exercises and the other material was free to use to the participants' liking. The workshop was documented in writing during the execution and all the material that was written and drawn by the participants were collected at the end.

The main part of the workshop consisted of three exercises to generate ideas as well as a final exercise to evaluate the ideas that had arisen during the workshop. The first exercise involved mind mapping. The participants were asked to draw mind maps that represented the functionality and use of a client portal based on the premises *Who, What, Why?* - *Who* is going to use the client portal, *What* are they going to use it for and *Why* do they need this function. For a visual representation, see Figure 6 below. When thinking about *Who*, the participants were asked to use the Impact Map as a support to come up with ideas that would be beneficial for all the client types. The participants got about 10 minutes to draw their mind maps, and after that they presented and compared them to each other's. This exercise aimed to generate ideas as well as create a common understanding of the future use of a client portal.

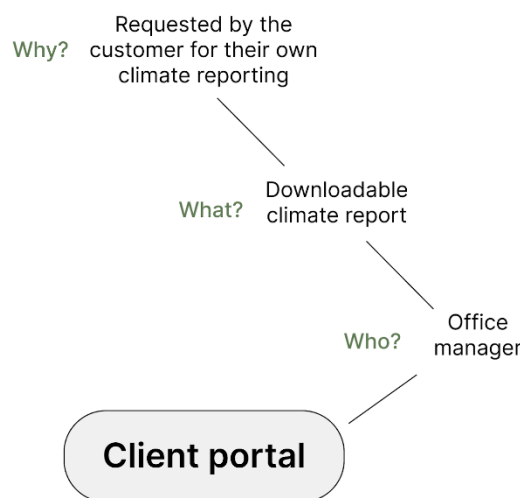


Figure 6. Example of mind map.

The second exercise was about getting to the root cause of different problems. The participants were asked to think of a problem they were facing as a company, then discuss *Why* that problem arises. If it is possible, once again ask "*Why?*" and discuss the answer, this cycle continues until one reaches the root cause of the problem.

The third exercise was called *I, 2, 4!* and was a solution generating exercise. One of the problems defined in the second exercise was chosen and the participants were asked to take five minutes to write and draw ideas to how that problem could be solved with the help of a client portal. When the five minutes were up, they were put into pairs and got ten minutes to present their ideas to each other and then ideate together. Finally, they got 15 more minutes to present their result to the group and ideate all four together. The reason for this exercise was to allow all participants to come up with their own, individual ideas as well as collaborate and build on each other's ideas.

Lastly, the workshop was finished with an exercise called *Wow, Now, How* from Hyper Island (2023) that aims to evaluate ideas with the help of a matrix, shown in Figure 7.

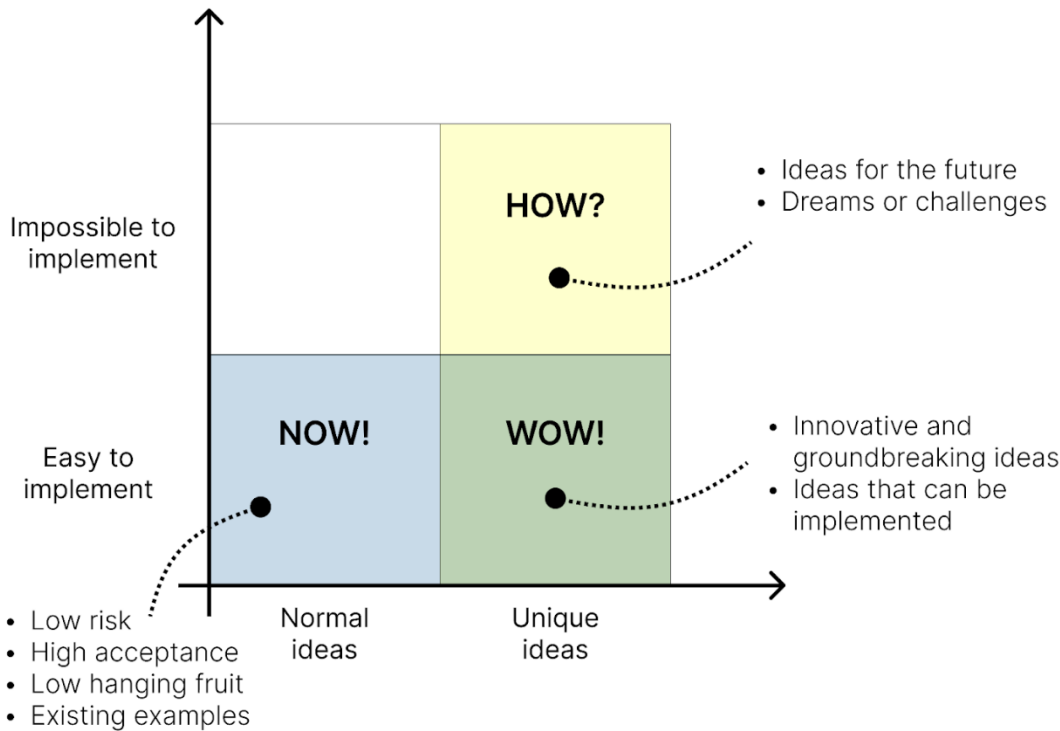


Figure 7. *Wow, Now, How matrix.*

The participants were asked to think about all the ideas generated throughout the workshop and place them in the matrix based on what types of ideas there were. This exercise helps to sort through ideas and prioritize which ones that should get more focus. Ideas that get classified as *Now* and *Wow* should be prioritized and implemented right away, although *Wow*-ideas might need a little extra development work to completely define the idea. Ideas that are classified as *How* are ideas that are impossible to implement currently and might therefore need to be put on hold until the resources for implementing these ideas are available.

9.2 Result

The outcome of the workshop was very useful as it both confirmed the previous ideas generated by the project team as well as added new ideas, thoughts and perspectives to the project. The most relevant results will be presented below in the same order as they emerged in the workshop.

9.2.1 Impact Map discussion

The participants of the workshop agreed with the suggested client types in the Impact Map but, granted that all the participants did not have direct contact with clients, they had not encountered all of the client types. The sales department recognized The Economist and The Practicalist especially. The participants also identified one more client type based on their experience of clients - The Interior Designer. The participants agreed that clients who want to do something for their brand and who care about good looks often hire Business X, due to their fast and flexible pick-ups and their good-looking bins and units. This client type was later added to the impact map (to read more about The Interior Designer, see Chapter 8.2 Result).

9.2.2 Mind map

The result of the mind map exercise is presented with the different client types as headlines and the ideas aimed at this specific client type listed below. Ideas who benefit more than one client type or are not connected to any of them are presented first. The participants were asked to think about *Who*, *What* and *Why* when coming up with these ideas, however, not many of them wrote down their *Why*'s and therefore mostly information on *Who*, and *What* can be found in the following list.

- The client portal should enable working with the client proactively. Example: *“Do you have Christmas trees in the office that you need to get rid of in January? Book a pick-up now!”*
- The client portal should enable working with the client reactively. Example: *“You made a sorting mistake, the first one is on us but remember...”*
- There should be the ability to book a time to be called by a salesperson.

The Big Future client

- The portal should provide good overview of all the client's units.
- The client should be able to click on each unit to get specific information.

The Practicalist

- There should be the possibility to follow the service staff in real time to see who is on their way and when they arrive, since it gives the user control.
- There should be a button for ordering extra pick-up (on specific bins). Possibility to upload a photo of the waste.
- The client should be able to view their schedule etc. without calling customer service. This is efficient, saves time in “unnecessary” matters.

The Recycling Sheriff

- A catalog for downloading a kit with recycling signs and instructions should be available on the client portal. Possibility to custom make signs and instructions with the company logotype.
- There should be a possibility to order nice looking signs and instructions to avoid the work of laminating.
- There should be comparison parameters to compete with others - either compete with the whole client base, a branch, companies of similar size etc.

The Climate hero

- The portal should provide in depth statistics, Excel variants. There should be a short and a long perspective of statistics, can be used both in a business-to-business purpose but also for the employees at the client company.
- Suggested improvements from a climate perspective - *“Add this in order to...”*, to increase the usage of Business X’s services.

The Scatterbrain

- Provide overview: their latest pick-up, next pick-up, costs, agreement etc.
- Provide pick-up schedule.
- Pictures of the bins the client has so that they can easily see their sorting solution, makes it easier to talk about improvements.
- Show clearly compiled invoices and costs.

The Contact Seeker

- Work with the personalization of the interface - *“Hello, ‘Name’, welcome back!”*
- Remind the client that Business X are close even though the client is not in direct contact with Business X.
- Provide personalized tips to make the client feel seen.
- Clearly display the different contact persons in the client’s team - who to turn to with what questions.
- The client should be able to reach the contact persons directly with phone, videocall, mail.
- A live helpdesk, one person from customer service is always live and ready to answer questions in a video chat room.
- Provide a photo and name to the person the client is talking to.

The Economist

- Illustrate invoices, to give the client a handle on costs.
- Show schedules, optimize costs.
- Suggestions of improvements - *“You have a bin for combustible waste, if you want to reduce costs you can sort this waste into plastic and cardboard”*.
- Be able to set a budget, the cost cannot exceed X (this function should not be available for everyone).

9.2.3 Finding the root cause

The exercise started with an example of an identified problem; the clients often turn to sales instead of customer service with their questions. The discussion revealed that a while ago Business X had some problems with their customer service that lead to the clients contacting sales instead. The workshop participants said that the salespeople do not know their mandates and they turn into someone who just passes the client on to customer service. The participants concluded that the root cause of this problem was that the contact channels are not communicated clearly enough to the client. Moreover, the customer service has a more efficient and unpersonal mindset in their handling of clients compared to the salespeople who build a relationship with the clients leading to increased trust for the salesperson from the client. The final formulation of the root cause was *“We do not communicate the contact ways clearly enough to the client”*.

Another problem that was brought up was that Business X works hard to recruit new clients but lacks proactivity against losing current clients. The reason for this was argued to be a lack of clarity around who owns the client and routines around client care such as calling and checking in regularly. The challenge was decided to be faults in their support system, how they communicate with clients, which signals they observe from clients and how they can work proactively with these factors; *“We lack proactivity against terminations”*.

The third problem that was discussed was that *“Most clients do not know about all of the services Business X offers”*. The discussion around why this happens mentioned that previous salespersons have not carried out complete needs analyses as well as that these previous salespersons have now quit so the new sales contact lacks a complete understanding of the solution. Another *why* was that marketing often made campaigns around one single service, such as *“book a pick-up of your solid waste”* but not as often the total package. Another *why* identified was that the newsletters sent out don't always reach the clients through the ‘noise’ that is newsletters and emails.

9.2.4 Exercise 1, 2, 4!

The final idea generating exercise was performed three times, one time on each of the problems identified in exercise two, *Finding the root cause*. This exercise generated numerous ideas for solutions. The most important ideas, where some were further developed in this project, are presented below.

- Create a smart timeline of the client journey. The timeline should be client specific and show important milestones and events. Examples are when a contract is signed or updated; when there is a change of contact person, either from the client or Business X; when the client reaches out with a question; when an unordinary order is placed, etc. This gives an overview, creates transparency for both parts and allows Business X to see patterns in the client's behavior as well as work with them proactively.
- Use the client portal to inform the client about upcoming events and webinars and market the other services offered by Business X with the help of notifications.
- Work with the handing over of clients from sales to customer service and the whole of the communication aimed at the client. When the salesperson has signed a new client, it is important to have a thorough handover to customer service so that the client knows that this is their new first point of contact, in most cases, and that they feel familiar with it. Explain what errands should be directed to the salesperson and what should be directed at customer service.
- Connect the client portal to a public address register so when a client is about to move Business X gets a notification and can act proactively.
- Connect the client portal to a Business Intelligence system that can identify deviations in the client's behavior or use of the service. For example, if the client has been ordering a lot of extra pick-ups, their salesperson should contact them and see if there is anything they can do to optimize the agreement.

- Give the client the opportunity to give feedback on the service, either specific things or in its entirety, continuously in a quick and easy way.
- The client portal should be available as a mobile application to enable taking and sending photos. Photos could be used when ordering pick-up of unusual waste or with a 'sorting AI' that scans an item and says how to sort it.
- Provide pop-up notifications about services and news. Provide sustainability tips, educational articles and videos about sustainability that engage the client in Business X's services. The client gets points for being active, i.e. make use of gamification as a strategy.
- Ability for the client to view their fractions, as well as the fractions they do not have and read about them and why one should have them.
- Find out the client's client type, from the impact map, in order to customize the client portal for each specific client.

9.2.5 How, Now, Wow

The *How, Now, Wow* method was very useful in assessing all the different ideas in terms of their value for the client and their plausibility of being implemented. During the workshop the participants were encouraged to let their creativity flow and save judgment for later. When performing the *How, Now, Wow* and taking a step back from the creative brainstorming mode the participants were able to logically evaluate the different ideas and sort them into categories of which ones were the most plausible and should be further developed. The ideas that were put under *How* will not be presented in the report due to the fact that Business X might want to work with these later on and in the meantime not reveal these to competitors.

Now!

- Ability for the client to view their pick-up schedule.
- The client portal should guide the client to the right point of contact.
- Present the client's team, who are their different contact persons.
- Notification settings.
- Show the client's fractions and bins as well as the ones that Business X can offer, along with the environmental benefit.
- Possibility to order signs and instructions.
- Possibility to upload company logotype to custom make climate reports etc.
- View in real time where the service staff is.
- Reports of hazardous waste should be available on the client portal.
- Possibility to update client contact information.
- The client portal should facilitate ordering of signs, soils bags for the compost machine, training courses etc.
- Possibility to recommend the service to others.
- Certificate for destruction of private documents should be available on the client portal

Wow!

- Timeline of all interactions between client and Business X.

- Prevent termination - track how many times the client has been in contact with customer service, various misses, etc. - push notifications about these things.
- Mobile application.
- Comparison parameter that gives the ability to compete between different office buildings, companies or between your own branches.
- Custom made offers and tips of all kinds for the client.
- Be able to give the client a sustainability score and provide suggestions for improvement.

The *How, Now, Wow* was the last exercise in the workshop and when it was done one of the participants commented, regarding the ideas mentioned above:

“All of these ideas are very cool but what we really want fundamentally is a very clear and easy to use portal that people want to use.” – Business X employee

9.3 Reflections and implications

The workshop was held with two main purposes; to make use of the expertise of the employees at Business X to review early ideas that had emerged, and to ideate new ones. The employees were satisfied with the ideas generated before the workshop and confirmed that the project was on the right track. Moreover, the workshop generated several new ideas that were brought into the prototyping phase, such as the timeline concept. The workshop and the Business X employees added a sales and business perspective to the idea generating that had not been present earlier in the project, since the focus then had been solely on the users and their needs. Because of the sales perspective, the eighth client type – The Interior Designer, was identified since aesthetically designed bins and units were a part of their selling points. It was interesting to get this viewpoint as well and it opened up new ways of tackling and understanding the problems. The workshop showed that the company, Business X, was open to new ideas, excited about change and had a wish to constantly develop their service, which boded well for the project. The quote above regarding what Business X really wants in their client portal also resonated with the project team’s ideas and was kept in mind for the development.

Phase 3: Test, Prototype & Evaluate

03

10. First prototype

The workshop resulted in several ideas that needed to be adjusted, combined and refined before becoming a finished client portal. After using different methods of ideating, a prototype of the client portal was tested with future potential users before being redesigned. This chapter presents the methods used when prototyping and a detailed review of the first prototype.

10.1 Method

The method for creating the first prototype consisted of first collecting all the ideas generated throughout the previous steps in a comprehensive list of functions and pages to include in the portal, then using paper prototyping to find the layout of the portal, and finally creating the prototype in Figma. Figma is a free digital prototyping tool that allows teams to work together on interactive user interface prototypes.

The client portal was decided to be designed as a web application to which the clients get their own login. Because the portal should be personal to the company, it needs to be adapted to the client and hold information about their agreement. The different clients will most likely use the portal in different ways; however, all functionality should be available to all clients. Some clients might spend a lot of time working with the portal using different tools for statistics while others only log in once a month to check the pick-up schedule. This puts extra constraints on the postural design of the portal; should it be a sovereign application adapted for intermediate users or a transient application for beginner users?

10.1.1 Defining functions and pages

When starting the prototyping phase, a document describing the different functions and pages the client portal should include was created, this can be found in Appendix F. The requirement list, the impact map and the result from the workshop were reviewed and all ideas for functions that where necessary or seemed reasonable to continue working with were added to a list. The connection between the different functions were thoroughly discussed and multiple combinations and variations were explored before choosing a final design. It was important that the functions were grouped and located in a way that seemed logical to the users, as specified in several of the requirements regarding the design of the interface such as no. 12. *Be easy to understand*, no. 13c. *Be Intuitive* and no. 17. *Match the users' mental models*. Moreover, it was important to place the functions according to Requirement no. 16. *Prioritize the most frequently used functions*.

The discussions about functions and pages were held simultaneously with the paper prototyping where pen and paper were a tool to figure out the layout of the portal. In this way, the list of functions and pages was a base for the paper prototyping but was also updated from what the paper prototyping generated until the layout of the whole prototype was decided. Before moving on to Figma prototyping, the list was once again compared to the requirements, impact map and workshop result. Finally, the prototype, created in Figma, was compared to the list of functions and pages to make sure everything was included (Read more about Paper prototyping and Figma prototyping in the upcoming subchapters).

10.1.2 Paper prototyping

As a tool to quickly get started discussing thoughts and ideas, paper prototyping was utilized. Paper prototyping is a method that enables quick and easy sharing of ideas with the help of low fidelity sketches done by hand (Interaction Design Foundation, 2021). This makes it easy to

adjust and combine ideas and try different versions of the user interface, which was very helpful, as before this step there were a lot of unfinished and loosely connected ideas. By finding out what different pages the client portal needed and then going through them one by one, the project group could work out the layout and functionality of each page and find the best place for each function. There were some ideas for functions that did not have a clear place in the prototype and no clear connection to other functions, these were mainly ideas connected to DfSB. In the first prototype these functions were incorporated in the portal to see what the users thought of them, while also examining where the best placement for them would be. After agreeing on the layout of each page the work of making the actual prototype could be divided and done simultaneously, with the paper prototype as a blueprint (How the functions and pages were divided is presented in Subchapter 10.2 Result).

10.1.3 Figma prototyping

When moving on to Figma to create the actual prototype the project team focused mainly on creating the functionality and logic of the portal, not so much the visual aspects. This meant that details such as radii, shadows and use of decorative colors were not prioritized, contrary to the placement of tools and functions, the structure of the portal, how the user navigates and the choice of headlines, etcetera. This was a set demarcation, mostly due to the fact that when Business X creates their client portal in the future, they will most likely have to adapt the visual style of it, whereas the functionality and logic would still be relevant.

When all the graphic elements of the portal were created, the prototype was made partially interactive. It was made interactive to allow the test subjects to get a better feel for the portal, and it was not fully interactive mainly due to time pressure forcing the team to prioritize the most important features. The prototype was made in Swedish since the majority of intended users speak Swedish as their first language.

10.2 Result

During the prototyping it became evident that some parts of the client portal, especially the statistics pages, would be of a sovereign posture with several sub tabs and complicated tools. To compensate for this and make it easier for beginner users, a lot of time was used during the prototyping to make the client portal as easy to use and understand as possible, enhance user flow, have a straightforward navigation and intuitive icons and headings. Nevertheless, this had to be accomplished with care to avoid making the client portal annoyingly simple for the more experienced users. Most users are most likely intermediate users since neither beginners nor experts stay on those levels for a long time. Therefore, the first prototype became a mixture of sovereign and transient postures, with the intention to create an application for intermediate users but with extra consideration shown towards beginner users.

How the client logs in to the portal, whether it will be through Business X's website or not, has not been taken into consideration in this prototype since it will most likely depend on the future CRM-system of Business X. When the client eventually has logged in to the client portal, they will be presented with a start page and a menu with six main tabs:

- First, there is the *Start page* that holds a contact form that can be used to order extra pick-up etc. The page also shows pictures linking to articles and general information about the service.

- Secondly, the *Contact page* displays contact information to customer service, the client's salesperson and the service staff, and explains who to contact with what questions.
- The third page is the *Schedule* where the user can see their previous and upcoming pick-ups, but also follow the service staff through a GPS function to see when they will arrive.
- The next page is the *Statistics page* that provides tools and graphs for the users to see data and statistics connected to their recycling.
- The fifth page is called *At Business X*. It contains articles about events, news and other facts that can be interesting for the users to know about.
- The last page is *My pages*. Here the user can see all their waste fractions and bins, previous inquiries in a timeline and update their company information such as address and contact information.

10.2.1 Start page

When the user logs in to the client portal the first thing they see is the Start page illustrated in Figure 8. The symbol to the left in the top menu (indicated with no.1) is the company logo and takes the user to the Start page when clicked on. This goes along with the fourth one of Nielsen's 10 Usability Heuristics for User Interface Design called Consistency and standards. By using Business X's logo in the top left corner as a way to return to the start page, a standard for many web pages is followed. At the top of the Start page, there is a carousel (no.8) presenting different news or articles regarding what is happening at Business X. As indicated with the four dots, the client has four different news to browse between and the news will be replaced regularly. Further down on the page (no.11), there are two more articles presented that inform about the projects and services of Business X. Articles and news like these are gathered under the tab At Business X (no.4) in the top menu, but some of them are also placed at the Start page as a way of piquing the user's interest and guiding the user to the articles and events the client portal offers.

One of the first things the user will see at the Start page is the contact form. At the Start page the form is closed (no.9), but the form will expand downwards when one of the options is selected. Under the contact form there are two boxes, these both hold information and work as buttons (no.10). When clicking on the left one, the user will be able to download and print signs and instructions on how to recycle. This function corresponds to the requirements about how the client portal should provide recycling guidelines, instructions and signs in order to make the service easier to use (Requirements 7d, 7e). Moreover, providing signs and instructions are design suggestions made to overcome the design challenge of The Recycling Sheriff.

At the bottom of the Start page there will be a demo (no.12) of how to use the client portal that the user can watch whenever they want. This function was a result of the workshop and is an approach to handling the fact that the client portal should be adapted to beginner users (Requirement 13) but still hold complex functions like different statistics tools. With this demo readily available, the user can easily learn about functions and tabs they haven't used yet. This is a way us using the last one of Nielsen's 10 Usability Heuristics for User Interface Design called Help and documentation. If necessary, the demo can help users understand how to complete their tasks.

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1. Kontakt 2. Schema 3. Statistik 4. På Business X 5. Mina Sidor 6. 7.

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Business X

Figure 8. The Start page.

10.2.2 Contact Form

One of the needs identified in the client interviews was that the process of contacting customer service to pause, skip or order extra pick-ups could be made more efficient (Requirement 7b). Moreover, many clients stated that their contact with Business X almost exclusively regarded those matters. Therefore, it became important to create a function that could facilitate this, a function that supposedly would be used quite frequently judging by the interviews. Based on these findings a contact form was created. It is important to prioritize often used functions to create an efficient user experience (Requirement 16), both for users in general but particularly for the two client types *The Scatterbrain* and *The Practicalist*. Because of this, the Contact Form is placed at the top of the Start page (Figure 8, no.9) where it will be easy to find and invite to frequent use.

The Contact Form makes it possible for the user to order an extra pick-up, order a pick-up of something outside of their regular agreement, switch date for a pick-up and pause a pick-up by clicking on one of the radio buttons. Figure 9 shows what it would look like if the user chooses to select the first button and order an extra pick-up. Here they have the option to choose if they want the pick-up to happen as soon as possible (no.1) or if they want to choose the time themselves (no.2). If the user wants to choose the time themselves as Figure 9 shows, they will be able to choose a date (no.3) and time (no.4). Next, the user needs to choose which waste fractions that should be picked up by checking the boxes and using the plus- and minus symbols to indicate how many bins that should be emptied (no.5). The waste fractions that are shown in the form are based on what waste fractions are included in the client's agreement. Before pressing the send button at the bottom, the user will be able to leave a description (no.6) of their order to help Business X plan the work; How much extra waste is there? Where is it?

Kontaktformulär

Jag vill: Beställa extra hämtning Beställa hämtning av något utanför mitt vanliga avtal Byta datum för en hämtning Pausa hämtning

När? Så snart som möjligt ^{1.} Jag vill välja en tid ^{2.}

Vilken dag? ^{3.} Vilken tid? ^{4.}

00 : 00 - 00 : 00

Vilka fraktioner? ^{5.}

Metall Papper Plast Kartong PET Tetra

Beskriv din beställning: ^{6.}

Här kan du ange information som kan hjälpa servicepersonalen planera sitt arbete.
Ex. Vad är det? Hur mycket är det? Var är det?

Skicka Rensa formulär

Figure 9. The Contact Form.

10.2.3 Contact

During the initial research it became evident that there was a lack of communication between Business X and their clients in certain areas. When talking to the departments of sales and customer service, they explained how the salespeople quite often received questions from their clients that should be directed to customer service. The opposite didn't occur that often since most of the questions should be directed to customer service. Moreover, it became evident during the client interviews that many clients had a hard time keeping track of who their salesperson was. This can affect both Business X and the clients negatively when the clients want to contact the sales department about their agreement. This led to the requirements where the client portal should provide an overview of contact information and make the service easier to use by displaying contact details to their salesperson (Requirements 6c, 7a). These requirements were made especially for *The Contact Seeker* client type. Because of this, the client portal includes a contact tab in the top menu (Figure 8, no.2). The Contact page can be seen in Figure 10. Here, the user can find contact information to the three departments they are most likely to contact, together with a short description of which questions the respective department deals with. The client can find the email address and phone number to customer service and their salesperson as well as the option to report information to the service staff about things that concern the pick-ups. This information will be visible under the client's profile in the work phones of all the service staff.

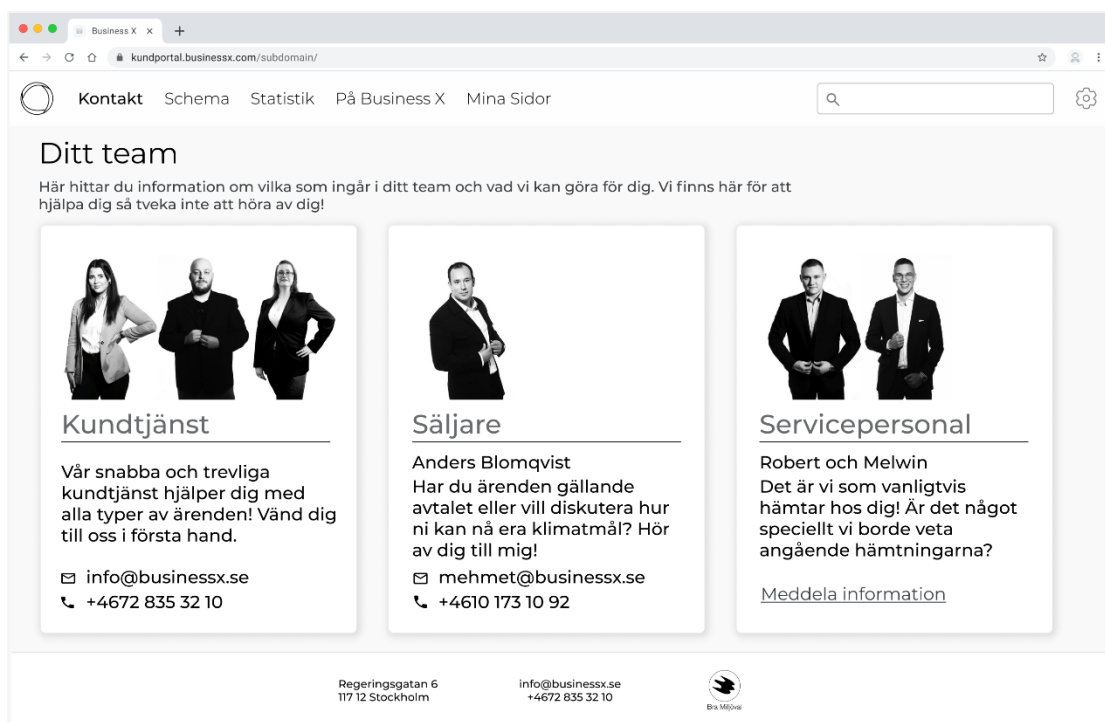


Figure 10. The Contact page.

10.2.4 Schedule

The client interviews showed that some clients, later identified as *The Scatterbrains*, didn't know exactly when their waste was to be picked up according to their agreement. This could sometimes result in the pick-up not being executed since no one was at the office to let the service staff in. Moreover, when asking the clients straight out what they would like to see in a client portal almost all of them mentioned a pick-up schedule. Because of this, a requirement about providing an overview of the pick-ups was listed (Requirement 6b). When clicking on the Schedule tab (Figure 8, no. 3) in the top menu, the user will be transported to the page

presented in Figure 11. At the top left (no.1), the user has their pick-up schedule where they can see all their previous and future pick-ups. They are visualized with different colors where green indicates previous pick-ups, red a missed pick-up and yellow a pick-up ordered with the Contact Form that is not yet confirmed by Business X. When clicking on one of the pick-ups in the schedule, a bigger pop-up box will appear where the user gets more information about the pick-up. In Figure 12, the user has chosen to click on a pick-up that is not yet confirmed which is indicated with the yellow box at the top right corner. In addition, the pop-up box shows date and time, which waste fraction that should be picked up, a comment that the user gave while using the Contact Form and a link to the form if they would like to change the order.

In the top right corner (no.2) in Figure 11, the page has a GPS-feature where the user can see where the service staff is at the moment and get an estimated pick-up time. This feature was a result of the workshop and was included in the client portal to help the user plan their time better. At the bottom of the page in Figure 11, the pick-ups are shown in list format (no.3). Even though it displays the same information as the calendar format at the top, it works as a complement and makes the overview of the pick-up schedule even more profound. Previous pick-ups can be seen to the left and future pick-ups to the right.

Business X x
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🔍
⚙️

🏠
Kontakt
Schema
Statistik
På Business X
Mina Sidor

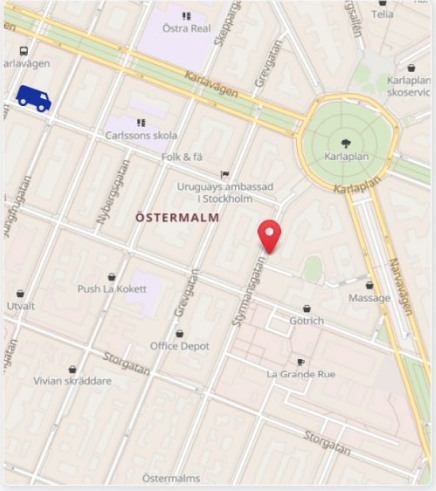
Hämtningsschema 1.

◀ Mars 2023 ▶

Måndag	Tisdag	Onsdag	Torsdag	Fredag	Lördag	Söndag
		1	2	3	4	5
6	7 Hämt. pant...	8	9	10	11	12
13	14 Hämt. bränn...	15	16	17	18	19
20	21 Hämt. pant...	22	23	24	25	26
27	28 Bom bränn...	29 Hämt. bränn...	30	31		

Vill du ändra i ditt hämtningsschema? Ta kontakt med vår kundservice genom att maila info@businessx.se eller ring +4672 838 32 10.

Följ servicepersonalen i realtid 2.



Antal stopp innan servicebilen anländer: 1

Preliminär ankomsttid: 13:00 - 14:00

Hämtningar 3.


Datum	Fraktion	Tid	Status	Servicepersonal
23-03-28	Brännbart	13:12	Bom	Anton Larsson
23-03-21	Pant, plast, returp...	10:38	Hämtad	Anton Larsson
23-03-14	Brännbart	15:25	Hämtad	Anton Larsson
23-03-07	Pant, plast, returp...	10:38	Hämtad	Anton Larsson

Kommande

Datum	Fraktion	Status
23-02-29	Brännbart	Obekräftad
23-04-04	Pant, plast, returpapper...	Bekräftad
23-04-11	Brännbart	Bekräftad
23-04-18	Pant, plast, returpapper...	Bekräftad

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info@businessx.se
+4672 835 32 10



Bra Mjöl

Figure 11. The Schedule.

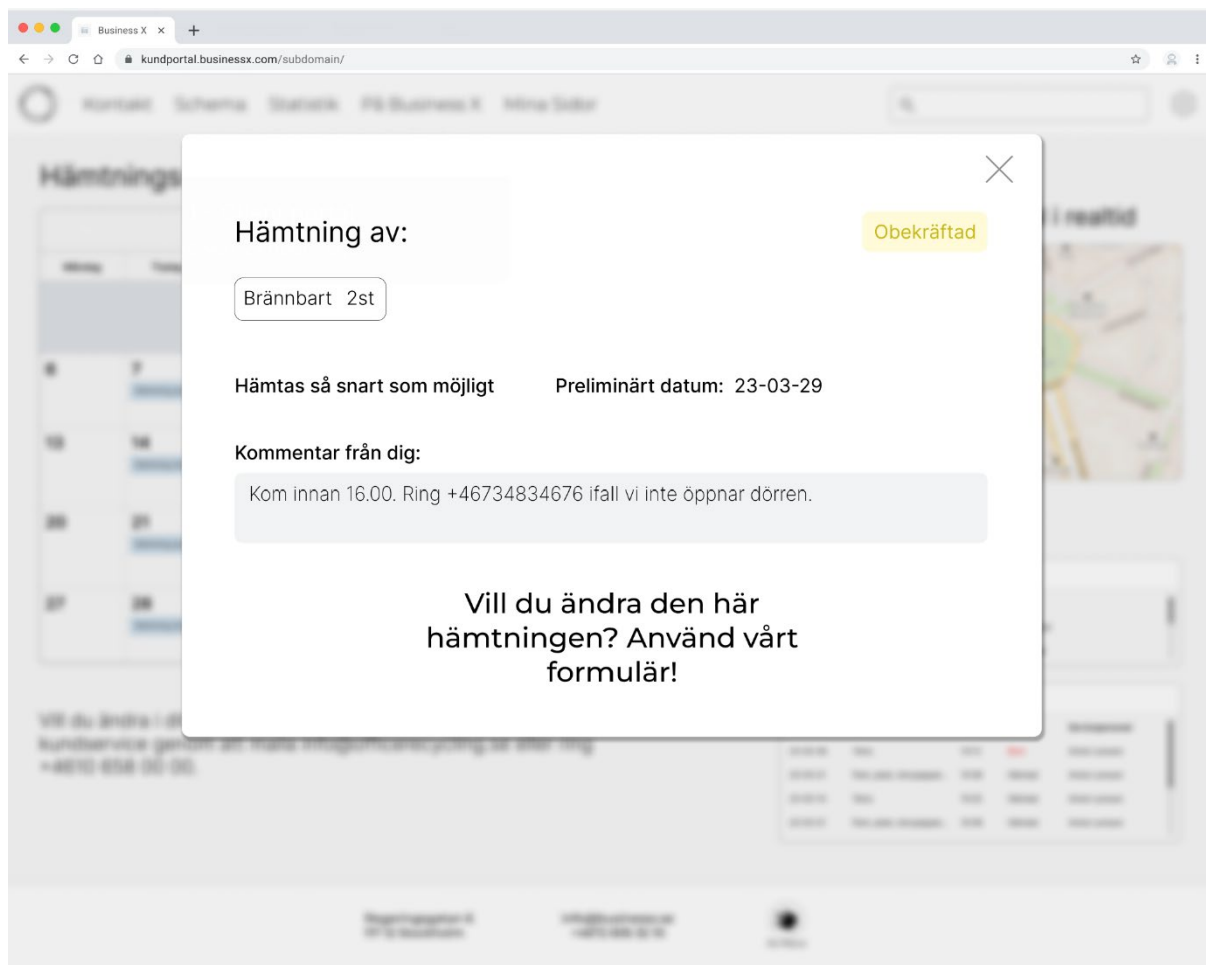


Figure 12. View when clicking on a booking in the schedule.

10.2.5 Statistics

During the client interviews it became clear that some clients, later identified as *The Climate Hero*, need some sort of statistics regarding their recycling for both internal and external sustainability reporting. In the current situation the client companies need to reach out to Business X to get a climate report which makes it less available and seems to raise the bar for some clients to do it. The interviewees in the Client Portal User Interviews were all employees at bigger companies that worked quite a lot with recycling statistics and client portals. Interviewing them made it obvious that the client portal needed to include a quite elaborate statistics page for these companies, identified as the *Big Future Client*, for them to even consider becoming a client to Business X. The recycling statistics need to be easily accessible and the clients should not have to go through their salesperson or customer service to attain it. Because of this, requirements about offering insight into the clients recycling rates and environmental impact and providing downloadable statistics in data, graphs, images and reports were listed (Requirements 8, 11).

When clicking on the Statistics tab in the top menu (Figure 8, no.4) the user is transported to the page presented in Figure 13. Two smaller graphs can be used to obtain more easily understood data about all recycled waste fractions. The left one shows the variation in kilograms (Kg) or carbon dioxide (CO₂) for one waste fraction during a year (no.3) while the right one compares several fractions in Kg between different years (no.4). If the user needs more complicated data, they can use the sub tabs Advanced statistics (no.1) or Climate report (no.2). What is presented there depends on which data Business X is able to measure, but all data

should be available in both graphs and charts and be able to download in different file formats. Lastly, an informative figure is placed on the page (no.5) that displays how much CO₂ equivalents the client company saved by recycling their waste last year and how many polar bears this saved. These numbers are fictional, only meant to act as placeholders to get the users to understand the intent of the figure. The figure should work as an informative nudge and encourage environmentally friendly behavior and improvements, listed as Requirement 10.

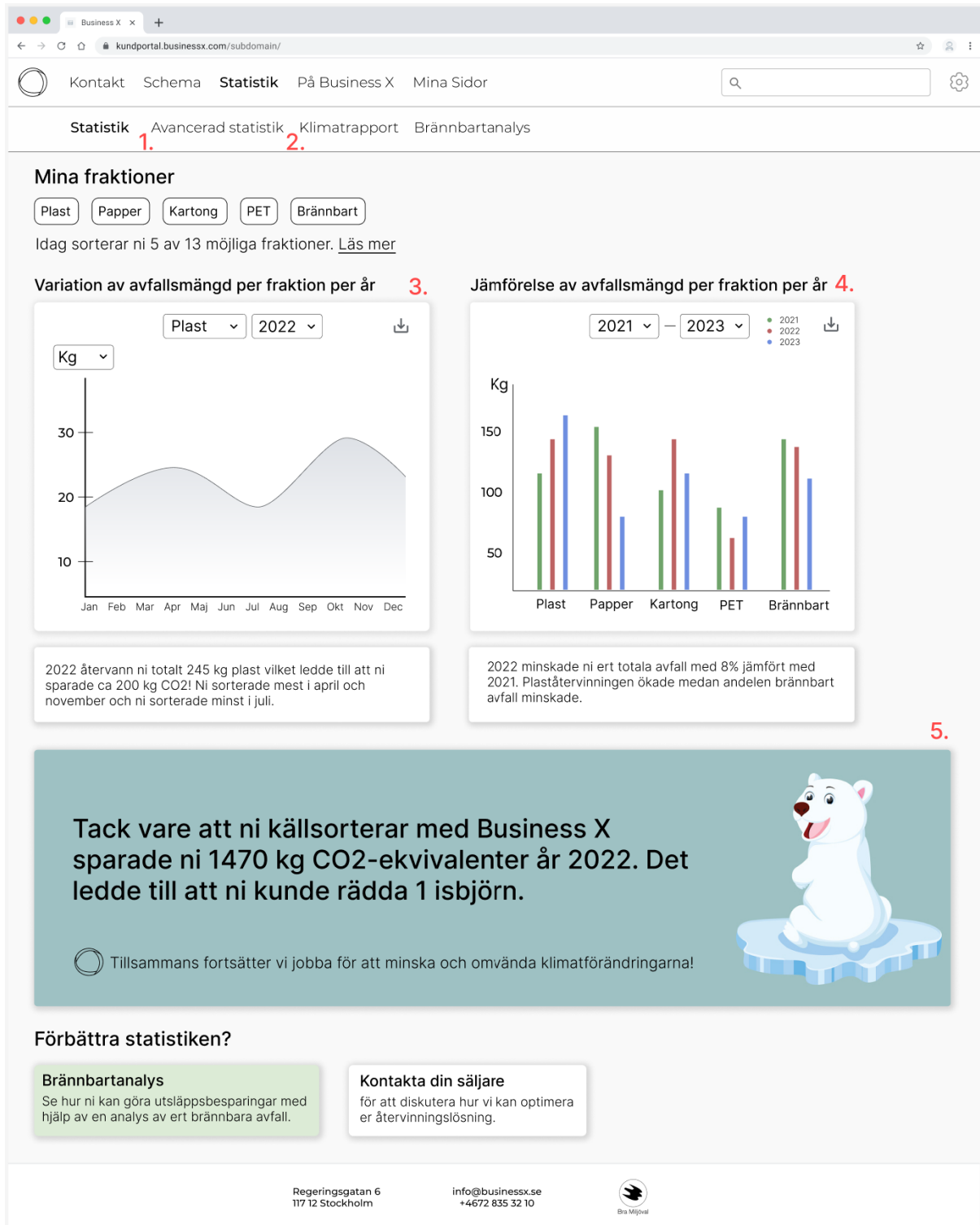


Figure 13. The Statistics page.

10.2.6 At Business X

When clicking on the tab “*At Business X*” in the menu on the Start page (Figure 8, no.5), the user will reach the page seen in Figure 14. Here, the client automatically enters the first out of four sub tabs where they are presented with different news, articles and events etc. related to Business X, a mix of the content of the three remaining sub tabs. The second tab displays upcoming events like webinars and breakfast seminars (no.2), the third one displays news like if Business X is offering a new waste fraction (no.3) while the fourth one displays articles about different matters like waste management etc. (no.4). If the user opens an article, they are presented with similar articles to invite them to continue reading. During the client interviews it became clear that many users have a quite poor understanding of which services Business X offers. The content in the tab “*At Business X*” is directly responding to the requirements that the client portal should inform about involvements, projects and news but also provide an overview of upcoming events and info about the service like execution etc. (Requirements 3, 6d & 6e). Moreover, the page will be beneficial for both the user category *The Climate Hero* by showcasing Business X's sustainability work and advertising Business X's offers and events, but also *The Interior Designer* by engaging them and making them more interested in the work made by Business X.

Business X x +
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Kontakt Schema Statistik På Business X Mina Sidor

1. Allt 2. Utbildningar & Evenemang 3. Nyheter 4. Artiklar

Vad händer med sekretessen?
 Lär dig om hanteringen och avfallsresan efter att dina sekretessbelagda dokument lämnat kontoret.

Återvinningsprocessen - så funkar det
 Följ med på vår resa, från att vi hämtar avfall hos våra kunder till att vi sorterar och återvinner. En process som är 100% fossilfri.

Tre heta begrepp inom green tech
 Green tech är en term som beskriver de teknologiska framsteg som har för avsikt att mildra eller omvända människans påverkan på miljö och klimat.

Frukostseminarium

25/4 Vad betyder de olika miljömärkningarna?
 8/5 Gör det lätt att sortera rätt

[Boka din plats här!](#)

Din pant stödjer byprojekt i Indien

Business X är stolta att kunna meddela att vi nu har möjligheten att vara med och stötta en by i Indien tillsammans med Hand in Hand.

[Läs mer](#)

Visste du att vi även hämtar mer ovanliga fraktioner så som elektronik och batterier?

[Surfa in på vår hemsida för att se alla våra erbjudanden](#)

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Figure 14. The At Business X page.

10.2.7 My pages

When the user clicks on the tab *My Pages* (Figure 8, no.6), they will be transported to the page shown in Figure 15. During the client interviews it became clear that some users would appreciate getting a better overview of their own waste fractions and bins, but also that they did not know much about what else Business X had to offer. Requirements about how the client portal should provide an overview of the company's agreement and the offers and products provided by Business X were added (Requirements 6a, 6f). With this in mind, the carousel displaying different waste fractions was developed (no.1). The white cards with a green shadow show which waste fractions and how many bins of each type the user has according to their agreement while the gray cards show other waste fractions offered by Business X that the client doesn't have. The gray card has a "read more" button where the user can read about the climate benefit the recycling of this waste fraction contributes with. This corresponds to the requirement about how the client portal should make suggestions for environmentally friendly improvements (Requirement 9). During the interviews with employees at Business X it was mentioned that their information about the clients weren't always up to date, since often when the clients change contact person they do not inform Business X about this. When interviewing the clients, many interviewees mentioned that they would like an overview of their agreement and invoices. Consequently, the functions My Information (no.2), where the client can update contact details such as name, phone number and email, and My documents (no.4) were added to the page.

During the workshop the idea of a timeline was mentioned as a way of giving the user a better overview of their contact with Business X. When looking at this timeline named My Inquiries (no.3), the user can see things like when they have been in contact with their salesperson and with customer service, when they ordered an extra pick-up of something etc. This could later be turned into a smart function that based on actions during earlier years could make suggestions like *"The last two years you recycled more glass during the month of May, would you like to order an extra pick-up?"*. The two features at the bottom of the page were added as nudges to make the users act more sustainable. By using gamification, the feature My Awards (no.5) aims to encourage the user to use the services in more ways and earn badges to get a discount. The purpose of the element is both to promote environmentally friendly actions but also to make the users engage more with the service. The information box at the bottom is similar to the box with the polar bear at the statistics page, trying to applaud and encourage the user by displaying how many CO₂ equivalents the client company has saved since they became a client (no.6).

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Kontakt Schema Statistik På Business X Mina Sidor

Fraktioner 1.

Pant Du får 11 lit PET/Pant

Plast Du får 11 lit Plast

Returpapper Du får 11 lit Papper

Sekretesspapper Du får 11 lit Sekretess

Brännbart Du får 2 lit

Kartong Läs mer Kartong

Matavfall Läs mer

Vilka kärl har Business X?
 På vår [hemsida](#) kan du se alla olika produkter och kärl som Business X erbjuder!

Mina uppgifter 2.

Företagsinformation
 Namn: BB Tools
 Adress: Drottninggatan 58
 Postnummer: 113 61
 Postort: Stockholm
 Organisationsnummer: 554976 - 7364

Personlig information
 Namn: Therese Johansson
 Telefon: +46 73 694 7843
 Mail: therese.johansson@tools.se

Logga: **TOOLS** [Ändra](#)

Mina ärenden 4.

14 april 2022 · Byte av kontaktperson

Beställt hämtning glas

3 maj 2022

8 juni 2022 · Beställt hämtning glas

Byte av säljare

2 september 2022

5 november 2022 · Beställt hämtning elekt.

2023

Kontakt med Säljare

21 februari 2018

1 mars 2023 · Utökad avtal

Kontakt med Kundtjänst

4 april 2023

Mina dokument 3.

- Mitt avtal
- Fakturor

Mina utmärkelser 5.

3 kärl

Beställt extra

Beställt storstöd

5 kärl

3 fraktioner

Frukostseminarie

5 fraktioner

Kompostmaskin

Utökad ditt avtal

Tipsat en vän

Minskat CO2

Brännbartanalys

Du får 5% rabatt på nästa hämtning!

Du får 10% rabatt på en brännbartanalys!

Du får 10% rabatt på nästa hämtning!

0 utmärkelser 4 utmärkelser 8 utmärkelser 12 utmärkelser

6.
 Ni har sparat 2 869 764 864 kg CO2 sedan ni blev kund hos Business X!

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 117 12 Stockholm

info@businessx.se
 +4672 835 32 10

Om MyPages

Figure 15. The My Pages page.

10.2.8 Settings

The last page to be presented in this chapter is the Settings, reached by clicking on the classic gear symbol to the right in the top menu (Figure 8, no.7). When clicking on the gear, a side menu will fold out which can be seen in Figure 16. In this menu the user can change password and switch between light or dark mode by checking the check boxes. The user can also choose how they would like to receive notifications, by email or text message, and in which situations. Lastly, the user will be able to manage user profiles (no.1). Exactly how this will work will depend on the CRM-system, but it became clear during the client portal user interviews that some companies need several logins for several employees with different authorization levels (Requirement 5).

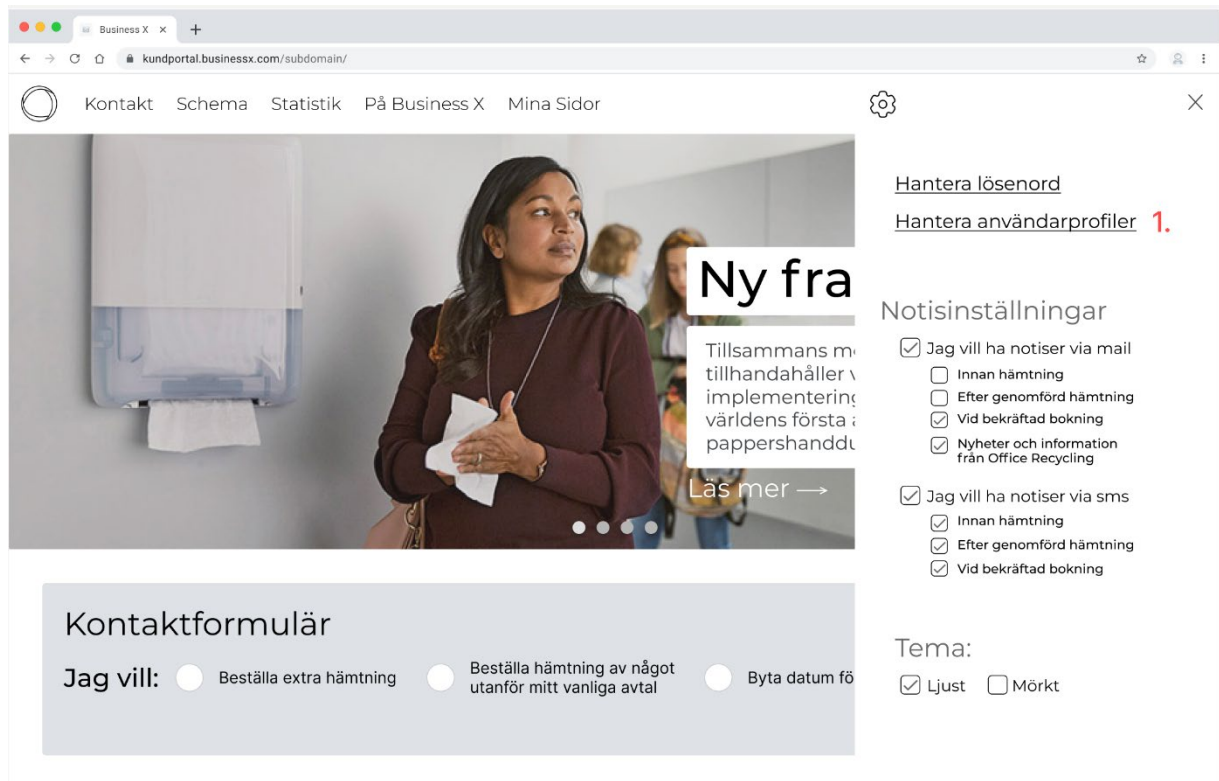


Figure 16. The settings menu.

10.2.9 Adaptation for beginner and intermediate users

One requirement regarding the interface of the client portal was that it should provide rich visual feedback (Requirement 14). Visual feedback is important for several different reasons, but the main one is that it should make a webpage easier to understand and interpret for all users. This is especially important in this project because of the goal of constructing a client portal with a web posture somewhere between sovereign and transient that can be used by primarily intermediate users, but also beginner users. Visual feedback was therefore used throughout the whole prototype. Two examples are how the headlines in the top menu become bold to show which tab is open and the usage of colors in the schedule.

Another important aspect to make the client portal easier for beginner users is that it should be efficient, effective and intuitive to interact with. A goal while prototyping was to make the necessary clicks as few as possible to increase the efficiency and reduce the risk for mistakes. One example of this is how the third option in the contact form, to change date for a pick-up (Figure 9), is selected automatically when the user clicks the link in the schedule to change the

order (Figure 12). Moreover, a lot of work was put into deciding which features should be under which tab in the menu to make the client portal effective and intuitive to navigate.

A third thing that has been done to create a better user experience is to enable good user flow. One way to do that is by designing with the principle *Less is more* in mind. This was done throughout the whole prototype by using calm colors and not presenting too much information in one page. One example of this is the Statistics page (Figure 13) where several sub tabs were used rather than trying to make everything fit in one cramped page. This is also a clear example on the struggle that can appear when making a webpage for both beginner and intermediate users. In transient webpages for beginners, the use of extra windows and tabs should be limited in order to make the webpage easier to use, but on the other hand, all functions are important in order to fulfill the intermediate user needs. By using clearly labeled sub tabs instead of a trying to fit everything in one page, a balance between simplicity and functionality was pursued. Another thing that can enhance user flow is to match common mental models in the prototype. One example of this is the look and placement of Business X's logo in the top left corner (Figure 8, no.1). When clicking on this the user is automatically transferred to the Start page, a function quite common on web pages and in web applications.

11. User evaluation

The word ‘user’ will be used in this chapter to describe the person at a client company that partook in the evaluation of the client portal, this means that the ‘user’ is also a client.

The plan for the project was to create a first prototype, evaluate it with potential users, update the prototype based on the evaluation results and test the second prototype with users again. This iteration enabled feedback in an early stage of the prototype, allowing the project team to make changes based on the users’ experience of the portal and create a better final product. This chapter presents the first evaluation of the prototype where the users were mainly interviewed with the prototype as a mediating object but also asked to complete a few tasks.

11.1 Method

At this stage in the project, the intention was to mainly evaluate the functionality and navigation of the client portal. For example, the logic of the portal, how the user gets around, how they interpret signs and symbols and their thoughts on the functions were of high interest in these tests. Hence, the user tests were performed with the prototype as a mediating object and focused on questions such as *“How would you have used this function?”* or *“How do you think this functionality would affect your usage of the service?”*. The user was asked to navigate around the portal, click on different things and answer questions about their thoughts and opinions of the content as well as perform a few tasks. The tests were voice recorded, with the permission of the users, and the full evaluation guide can be found in Appendix D.

To find users to perform the tests with, the project team was given a list of clients who worked as office managers and whose company had their waste sorting bins in the office, compared to in a garbage room. These clients were contacted on the phone and seven of them wanted to participate in the evaluation, performed physically at the clients’ offices. The same tasks and questions were used in all evaluations, however, the time it took to perform it varied greatly between the users depending on how vivid they were in their answers and discussions. The fastest evaluation lasted around 25 minutes and the longest an hour.

After the evaluations were carried out the users were matched to the Impact Map based on their answers to find their client type. Five out of seven client types were identified in the seven users and most users were a mix of two client types. Table 6 shows that the most common client types in the evaluation were Scatterbrains, Climate Heroes and Practicalists. There were no Economists or Contact Seekers identified in these users, but there is still reason to believe that these two client types are rather common among Business X’s clients based on the earlier interviews and support from the employees at Business X.

Table 6. The different client types identified in the first user tests.

User	Economist	Contact Seeker	Recycling Sheriff	Scatterbrain	Climate Hero	Practicalist	Interior Designer
1							
2							
3							
4							
5							
6							
7							

11.2 Result

The result for each page and function that was evaluated in the user test is presented below. The tests were carried out in Swedish and any citations are therefore translations into English.

Start page

To evaluate the Start page the users were asked to think about all the content they had seen on the client portal and if they would have chosen to prioritize something else to show on the Start page. The results varied greatly, some requested the contact details and schedule to be more easily accessible. Most users thought it was good that the contact form was available on the Start page.

“I like that the Contact Form is at the top of the Start page because it is something that I would use a lot.” - User 5

Some areas of improvement that were identified were to reduce the number of articles on the start page to free up space. This space could instead be used for other functions and features to make them more visible and potentially increase their influence on the users.

The Contact Form

The Contact Form was evaluated by asking the users to order pick up of a broken refrigerator. The goal was to get them to use the Contact Form, choose “Order pick-up of something outside of my regular agreement” and then fill out the form. Five out of seven users went straight to the Contact Form without hesitation. One user selected the wrong option in the form and one missed the form on the home page, went to the Contact page and said that they would have called customer service. All users were positive about a Contact Form and the main advantages of a form were said to be that it was flexible, it saves time and it creates clarity for both the client and Business X.

“Having a Contact Form like this would be great. It will always be a longer process if you should use email instead. You need to get it confirmed, which time are you coming? You usually end up sending more emails than you want.” - User 6

When using the Contact Form, one user wondered how to get feedback regarding the status of the order. How would the user know whether the order was approved or not? Other areas of improvements were to better communicate to the client that Business X has the ability to handle bulky and unusual waste as well as better communicate that the client should fill out the amount or volume of the waste.

Contact

The users were asked to navigate to the Contact page and then take a minute to look around and think out loud. When they were done reading they were asked to answer five questions about who they would have turned to with a specific question; these are presented in the list below. There is an optimal intended answer to each question but it is never incorrect to contact customer service. Table 6 presents how well the users answered the questions.

Who would you contact if you wanted to:

- | | |
|---|----------------------------------|
| 1. Inform that you have a new port code? | <i>Answer: service staff.</i> |
| 2. Get a new fraction? | <i>Answer: salesperson.</i> |
| 3. Ask a question regarding your latest invoice? | <i>Answer: customer service.</i> |
| 4. Notify about a dirty or broken bin? | <i>Answer: customer service.</i> |
| 5. Discuss improvements to your sorting solution? | <i>Answer: salesperson.</i> |

Table 7. Number of correct answers for each user regarding who to contact in certain errands.

User	No. correct answers	Comment
1	5/5	All correct without hesitation.
2	2/5	Said customer service on the first two questions as she believes they should have all the basic information and take care of the daily work. Requested contact information to finance.
3	5/5	Question 3: <i>“Then I would have contacted customer service and they can forward me to if they have someone in finance.”</i>
4	4/5	Chose customer service instead of sales on the last question because “they can refer to the right person”.
5	3/5	Was very indecisive because of bad contact with their salesperson, hardly knew who it was.
6	3/5	Said customer service on the first question and salesperson on the third as she thinks there is a lack of information about finances.
7	4/5	Willing to contact customer service in all matters.

In conclusion, most participants performed well on the questions and the most common mistake was to contact customer service when the intended result was sales or service staff, which, if unsure, is the best alternative. Some mentioned a wish for contact details to finance which is an area of improvement for the updated version of the portal. The users liked that there was a clear division between the different points of contact and they thought it was nice to be able to see photographs of their team, especially their salesperson. Another area of improvement was to clarify what happens with the information reported to the service staff, where and when it will be visible.

Schedule

To evaluate the schedule the user was asked to look around, click and scroll and think out loud about what they saw. They were then asked to share how they interpreted the colors in the schedule, if they found the function helpful, if they would use it etc. Overall, the feedback on the schedule was very positive. All the users said they would appreciate a pick-up schedule. They thought the schedule gave a good overview and created a feeling of security about knowing when the service staff was to arrive and what was to be picked up each time. Most participants appreciated the preliminary time of arrival but did not really care to follow the service staff in real time.

Areas of improvement are to be able to sync the schedule to the user's normal calendar as well as clarify the colors in the schedule. The colors were the main problem with the schedule as almost none of the users interpreted them in the intended way, as well as that the interpretations varied greatly between users. All users understood that red meant failure in some way and most user understood that green meant a successful earlier pick-up, but the meaning of the yellow color seemed harder to figure out.

“I didn't really understand what yellow meant at first, but I understood that it meant that it wasn't confirmed when I clicked on it.” – User 4

“At first I thought that the different colors showed what waste fraction would be picked up, but then I saw what would be picked up when I clicked on the order.” – User 6

Statistics

The statistics page was evaluated by asking the user to look around and think out loud. The questions asked about this page concerned the client's need for data and statistics regarding their waste, how they use this data and what type of data they are interested in.

Most users appreciated the easy-to-understand statistics that provided a quick overview as these graphs and diagrams could be of interest for them to share internally at the company. Not many of the users used advanced statistics, thus not much feedback could be obtained on that function. Although, the users who normally didn't use statistics much in their work said that it was interesting to see the simpler graphs.

Thoughts and areas of improvements for the statistics page included being able to export the diagrams and graphs to both excel and PowerPoint. One user mentioned that it would be

interesting if the system could on its own identify deviations such as if one fraction increased significantly from one month to another.

At Business X

When evaluating the page At Business X the users were asked “*When do you think you would go to this page?*” and “*What content would you like to see here?*”. Many of the users liked the page when they clicked on it and became interested in the showcase articles even though they didn’t think they would be interested in visiting the page very often. The users thought they would visit the page if they saw an interesting article on the start page or if they were curious about something regarding Business X’s services, which motivated the decision to put some of the articles on the Start page.

Some users also found the heading of this page, At Business X, a bit confusing in comparison with the content it displays.

“I don’t really understand why it says At Business X, not even linguistically when I am at this page. Maybe News would have been a better word, now I thought the page would have information about the company.” – User 7

Other areas of improvement for this page were identified as enabling customization of the content for each client, a possibility to share the articles and one person requested the option to switch language to English.

My pages

The user was asked to navigate to My Pages, look around and think out loud. Most of the users thought it was valuable to be able to view their waste fractions and bins under My Pages but there was problems understanding the layout. The users didn’t interpret the green outlines as the fractions included in their agreement and did not understand that the gray ones were waste fractions outside of their agreement that are available through Business X. Moreover, some didn’t detect that the green rectangles said “You have: 2”. Some guessed that they grayed out rectangles were waste fractions that were not available right now or that the green ones were sustainable in some way.

“I wondered why some squares were lightened up and some were grey. I think it means that Business X doesn’t handle electric waste their own since it is gray, I think it’s a collaboration with another company that takes care of that.” - User 2

The timeline under My Pages called My Inquiries was appreciated by most users and they said they would use it for different matters. My Rewards, on the other hand, got a lukewarm response. The concerns with My Rewards were that the users said they wouldn’t go to My Pages to look for it and it didn’t entice the users enough for them to engage with it. Areas of improvement for My Pages were to clarify the carousel with waste fractions and bins, refine My Awards and move them to a more visible location.

11.3 Reflections and implications

All of the test users were very happy with the prototype overall, which indicated that the first prototype was a promising base for a future client portal. After the evaluation was performed many of the users expressed a genuine curiosity for the project and said that they hoped it would be implemented soon as it would be a great addition to Business X's service. Nonetheless, the users also had opinions about how to improve the prototype and came with suggestions for changes. This indicated that the planned iteration of the prototype should be conducted and had the possibility to make a significant difference for the User Experience. The identified issues are mentioned above and some things that were focused on in the second iteration of prototyping, testing and evaluating was the design of the carousel of waste fractions under My pages, the usage of colors in the schedule and the placement of My Awards. By removing some articles on the Start page, My Awards can be placed there to potentially gain a bit more exposure. To further improve My Awards some changes to the content needed to be done since it did not entice the users enough during the first evaluation. No needs for new functions or pages were identified during the test but by simply rearranging and developing the current functions the hope was to be able to drastically improve the User Experience of the client portal.

12. Second prototype

After the first iteration of user testing, the result was analyzed, and the prototype was modified to better meet the user needs. The following subchapters present the prototyping process and the final result of the second prototype.

12.1 Method

During the first round of evaluating with users many areas of improvement were identified for the client portal. By transcribing the user tests and comparing the answers side by side the project team evaluated the feedback and decided what should be updated for the second prototype. After compiling the changes that were to be made, the prototype was duplicated in Figma and the changes were made in the new duplicate. This was done because the second iteration was simply an update and not a completely new prototype, so this method saved time, as well as that it might be beneficial to keep the old prototype as a comparison. Most of the changes consisted of moving things around, either to new tabs or changing location on the current page. This was to give more attention to certain functions or de-prioritize others. Only the two smaller sized rectangles with articles on the Start page were removed and a green rectangle showing how much CO₂ the client company has saved since becoming clients was added. This indicates that the content in the portal was mostly satisfactory, but the navigation and usability of the portal needed to be examined in the second test.

12.2 Result

The updates and additions that were made to the prototype after the user evaluations are presented below.

12.2.1 Start page

All users were quite satisfied with the Start page which is why only a few changes were made. Some space was freed by removing two articles since they had the same purpose as the bigger carousel at the top, which was to inform the user about news, articles and events. This complies with the eighth of Nielsen's 10 Usability Heuristics for User Interface Design labelled Aesthetic and minimalist design, that interfaces should avoid showing information that is irrelevant or redundant. Instead of the articles, My Awards (Figure 17, no.2) and a green rectangle informing about CO₂ emissions (Figure 17, no.1) were added to the Start page (See Subchapter 12.2.7 My Pages to read more about My Awards).

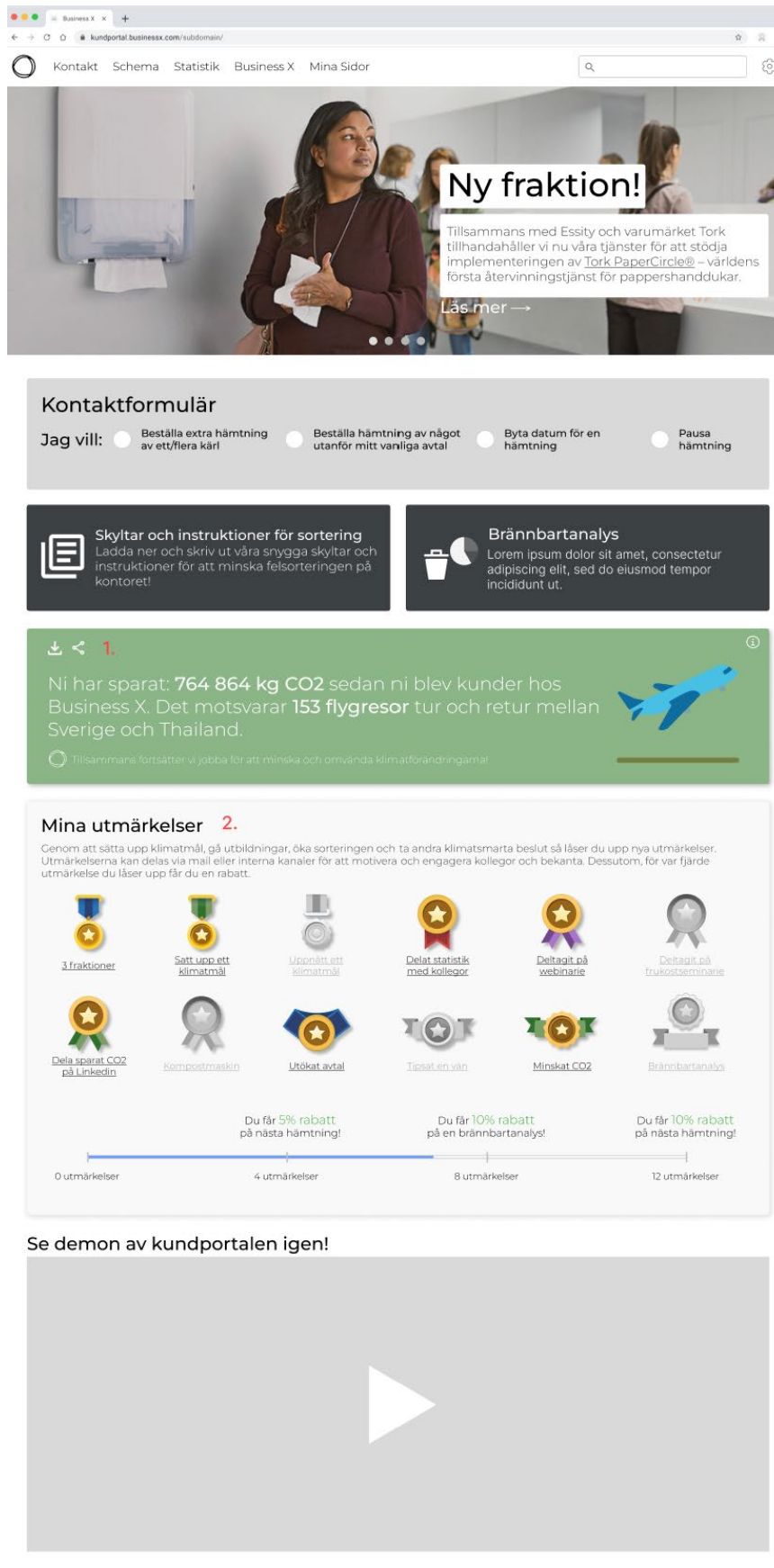


Figure 17. The Start page after the second iteration of prototyping.

12.2.2 Contact form

Overall, the users liked the contact form and were interested in having a function like this to order extra pick-ups etc. However, some of their comments pointed out areas of improvement which resulted in smaller changes. Regarding getting feedback about the order status when using the Contact Form, a message was added which the user will see on the Start page after sending the order, see Figure 18, informing them that they will get an email when Business X has processed their order. This complies with the first one of Nielsen's 10 Usability Heuristics for User Interface Design labelled Visibility of system status, where this message keep users informed about what is going on.

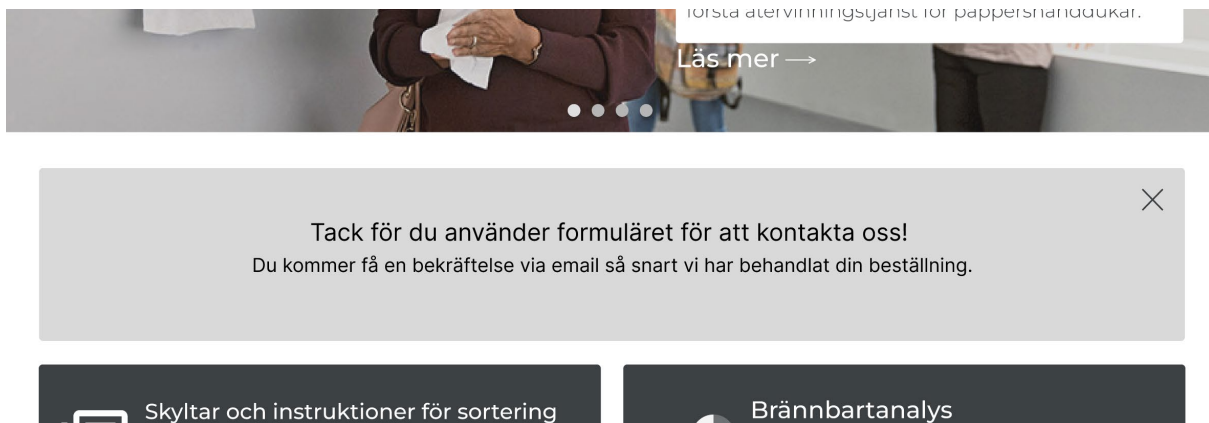


Figure 18. Message after using the Contact Form.

Other areas of improvement were the communication of Business X's ability to handle bulky and unusual waste, and that the client should fill out the amount or volume of the waste they want to get picked up. This was solved by adding a short text at the bottom of the contact form to make the users aware. Another change is how the users chooses the time (Figure 19, no.1), but also which bins should be emptied (no.2). To make that task easier to understand and be more adapted to beginner users (Requirement 12 & 13), pictures were added for each bin to easily show which bins to choose. There is also an option to select all bins at once to make the task more efficient (no.3). Moreover, only the type and number of bins that the users have in their agreement are available in the form to make it easier for the user. This goes along with number 6 of Nielsen's 10 Usability Heuristics for User Interface Design, Recognition rather than recall. By only showing the user which bins they can use instead of them having to remember this themselves, the user's memory load is minimized.

Kontaktformulär ✕

Jag vill: Beställa extra hämtning av ett/flera kärl Beställa hämtning av något utanför mitt vanliga avtal Byta datum för en hämtning Pausa hämtning

När? Jag vill välja en tid Så snart som möjligt

Vilken dag? Vilken tid? **1.**

← Mars 2023 →

SUN	MON	TUE	WED	THU	FRI	SAT
-	-	-	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Markera alla timmar som passar mellan kl. 07.00 och 17.00.

7	8	9	10	11	12	13	14	15	16	17

Vilka kärl behöver hämtas? ⓘ **2.**

Välj alla kärl **3.**

Pant



◀ 0/1 ▶

Plast



◀ 0/1 ▶

Returpapper



◀ 0/2 ▶

Sekretesspapper



◀ 0/1 ▶

Brännbart



◀ 0/2 ▶

Beskriv din beställning:
 Hur mycket är det? Var är det? Ex: Ett kärl med glas plus en back utanför, i entrén.

Skicka
Rensa formulär

Figure 19. The contact form after a second iteration of prototyping.

12.2.3 Contact

The users performed very well answering the questions regarding the contact page and gave this page mostly positive comments. One of the few areas in need of improvement was to clarify who the user should turn to with questions about invoices and other economic issues. This was easily resolved by adding this information in the description about the customer service. Moreover, some users wondered what happens with the information reported to the service staff, where and when it will be visible. This was also solved by adding an explanatory text that is visible when clicking on the communicate information link (Figure 20, no.1). Another update made was that the user can book a time to receive a call from their salesperson (no.2), a feature that was discussed during the workshop but forgotten about during the first iteration of prototyping.

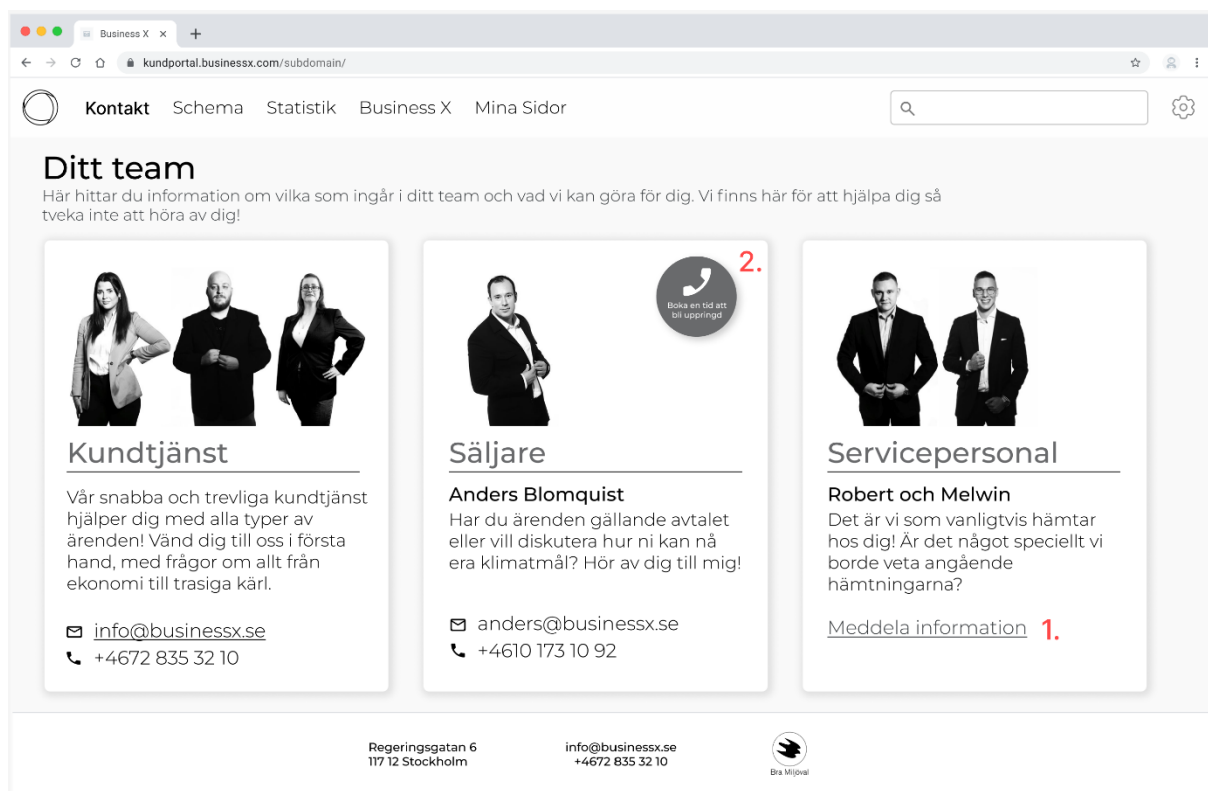


Figure 20. The contact page after a second iteration of prototyping.

12.2.4 Schedule

Having a pick-up schedule was one of the most significant wishes that stood out during the interviews and the appreciation for this page during the user tests came as no surprise. Nonetheless, there were a few possible areas of improvement which were resolved during the second iteration of prototyping. Some user requested a possibility to export the pick-up schedule to their own work calendar, which is why this option was added at the top of the schedule (Figure 21, no.1). The second change is the usage of colors for the pick-ups to indicate different statuses (no.2). Instead of using red, yellow and green where red meant fail, yellow a booking not confirmed yet and green an earlier successful pick-up, four different colors were used. Red and yellow continued to mean the same things as in the first prototype while green was changed to gray, and white indicates future pick-ups, a category not shown in the first prototype. Moreover, the text in the small colored rectangles was changed from showing what will be picked up to saying if it is either a regular pick-up, a failed pick-up or an extra pick-up. The intention was that the text should complement the color to indicate the status of the pick-up.

When clicking on a pick-up, the user is presented with a bigger pop-up box like the one in Figure 22. The design of this box was not changed much from the previous prototype except from moving the features around a bit and changing the way the time is displayed (no.1). It has the same design as the time function in the contact form in order to keep continuity throughout the client portal.

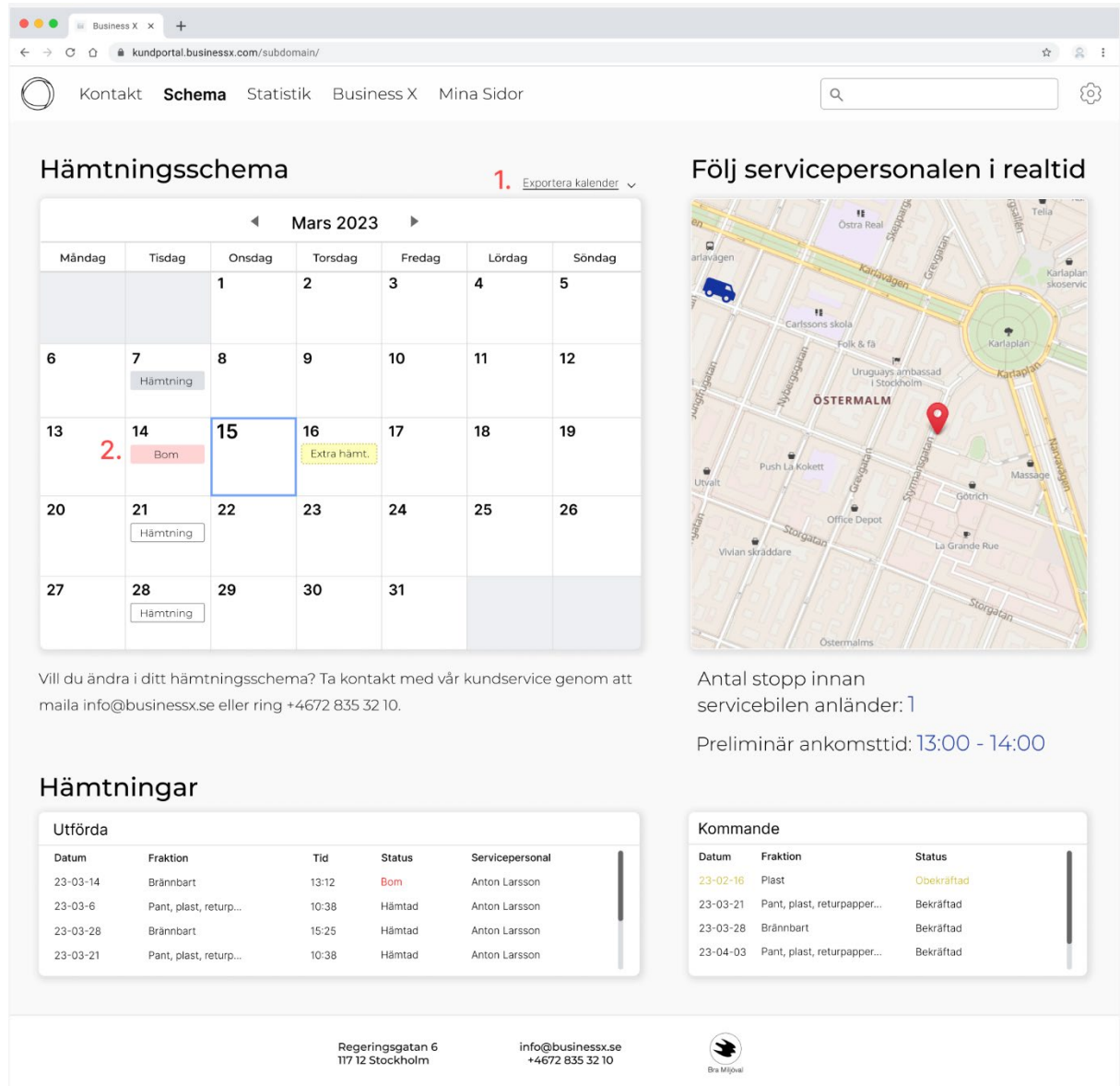


Figure 21. The Schedule after the second iteration of prototyping.

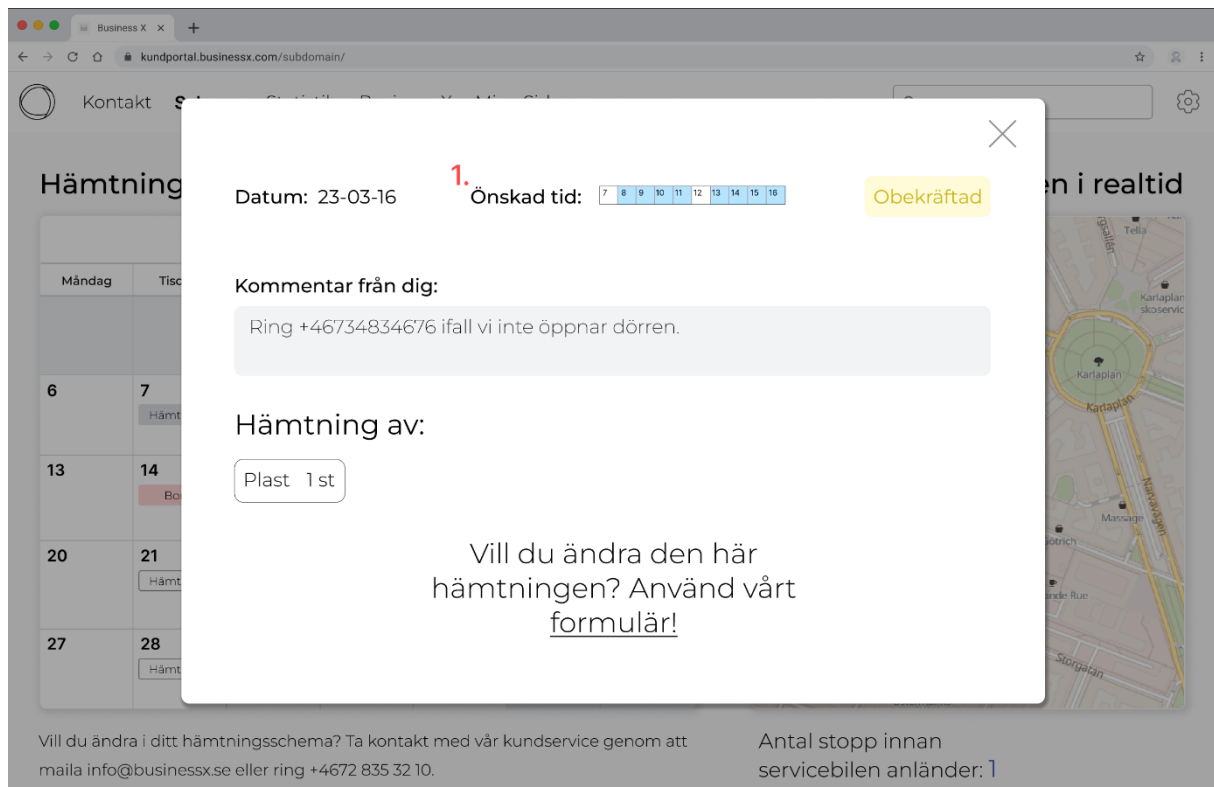


Figure 22. View when clicking on a pick-up in the schedule after the second iteration of prototyping.

12.2.5 Statistics

When asking the users about the statistics page in the first user test, the feedback was quite limited since most of the users didn't work with data like this on a regular basis. Therefore, not many updates were made to this page. However, the figure with a blue background that shows a polar bear was updated to include a more factual and informative text. The intention with this figure was to motivate the users to behave more sustainably, by displaying the total amount of CO₂ equivalents the company saved last year by recycling their waste with Business X. In the second prototype, the figure explains how many CO₂-equivalents the client company saved last year and compares that amount to the CO₂-equivalents saved the year before. This figure, along with the green figure on the Start page (Figure 17, no.1) is part of the DfSB efforts of this project. The figures serve the same purpose, to *enlighten* the users about their climate impact and how their actions affect the environment.

12.2.6 At Business X

The content on this page in the second prototype was barely changed from the content in the first prototype with the exception of one thing. Some users found the heading At Business X a bit confusing and not fully representative to the content on the page. After long discussions, the decision was made to not change the heading simply because no other option was found to be better. Instead, an informative text was added right under the sub menu in order to clarify the name of the page. The following text was added; What happens at Business X? Here the user can find information about everything from upcoming seminars and events to news about recycling and articles with exciting reading. The page At Business X is an important part of the external communication with the client and is also a part of the DfSB efforts. By utilizing this page to inform about climate news, the benefits of recycling and more, the aim is to use the strategy *enlighten* to show the client how the recycling industry works and its importance for the circular economy.

12.2.7 My Pages

When the users reviewed My Pages, they appreciated the timeline and the carousel with waste fractions and bins, however, many struggled to interpret the carousel correctly which was why it needed a redesign (Figure 23, no.1). First, the heading was changed from saying “*Material fractions*” to “*Material fractions and bins*”. Next, the green light was removed from the white rectangles since some users thought that this indicated environmentally friendliness in some way. Lastly, a line was added between the white and the gray rectangles to separate them and small headings were added. The heading over the white rectangles says, “*My waste fractions and bins*” while the heading over the gray ones says “*Available waste fractions*”. By showing which fractions, bins and how many of each the client has, as well as the client’s agreement and invoices, the client portal gives the user control and overview of their agreement, thereby minimizing unnecessary phone calls or emails. The possibility for the user to view their fractions, and especially the fractions not included in their agreement, acts as a reminder for the user that their sorting solution currently does not cover all possible waste as well as informs about what solutions Business X can offer.

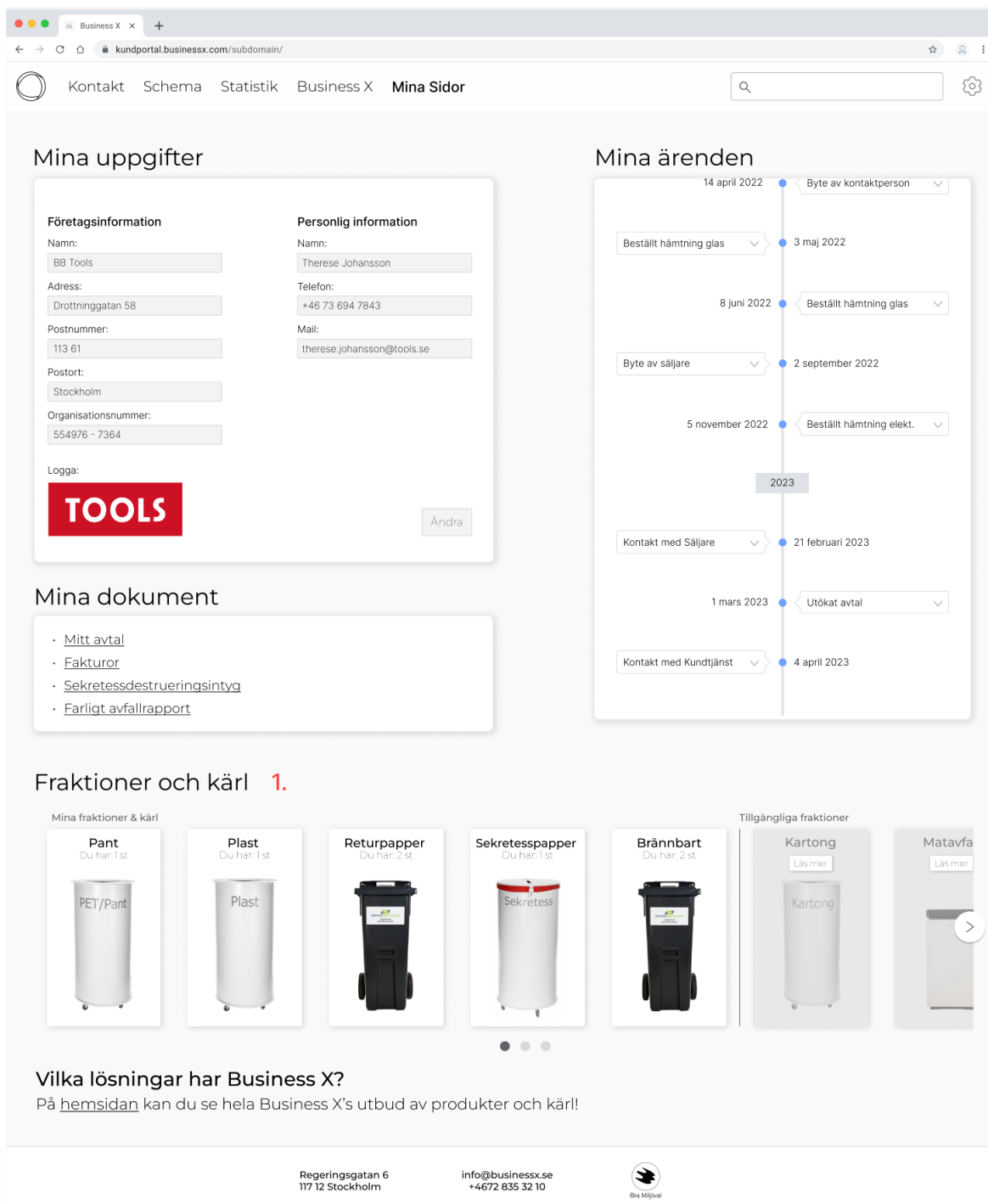


Figure 23. My Pages after the second iteration of prototyping.

The users' reactions to the My Awards function during the user evaluation were less positive. Several users found the placement of the feature illogical in the first prototype, they didn't expect to see something like that under My Pages. Because of this, the feature was moved to the Start page instead where it would be easily found and probably reach more users (Figure 17, no.2). Moreover, the users were doubtful whether the feature would influence their usage of Business X's services which was the intention with the feature. To overcome this, some of the different awards were changed from actions such as "Get 3 fractions" and "Order an extra pick-up" to more environmentally conscious actions. By encouraging the users to "Set a climate goal" and "Share statistics with colleagues" the intention was to get the user to see a bigger purpose with the awards and maybe change their usage of the service. By placing My Awards

directly under the green rectangle displaying the saved CO₂ equivalents (Figure 17, no.1), the intention was that these two functions would reinforce each other and encourage the user to act more environmentally friendly. The functionality of My Awards was implemented with the hope to use the DfSB strategy *spur* to get the clients to behave more sustainably by gamification. The awards aim to encourage the client to create a better sorting solution as well as give examples of climate positive actions that they can take.

12.2.8 Settings

During the user evaluations, one user suggested that it should be possible to change the language from Swedish to English. This feature had been discussed during the prototyping but not visualized yet. The possibility to change language was added to the settings menu since that was considered the most logic place to put it regarding the rest of the content available in the settings menu. The function was designed similarly to the other options already existing in the settings menu (Figure 16).

12.2.9 Design for Sustainable Behavior

Two DfSB strategies have been mentioned in this chapter but yet another one was implemented in the client portal - *Match*. The match strategy aims to match the behavior and the needs of the client, even needs they didn't know they had. The client portal aims to do this by providing easy and efficient tools to facilitate the clients' use of the entire service offered by Business X. The client portal helps the client avoid failed pick-ups by providing a schedule as well as a preliminary time of arrival, which avoids irritation and unnecessary emissions. The client portal guides the user to the right point of contact and thereby minimizes waiting times and, again, irritation. It also becomes easy for the client to see which bins are available as well as which waste fractions they are missing in their sorting solution.

13. Usability test

As mentioned earlier in the report, the second evaluation with users aimed primarily to evaluate the usability of the prototype, but also the functionality. The method and result of the usability tests are presented below.

13.1 Method

To evaluate the usability of the portal, the second test consisted of more tasks and less interview questions, as well as rating scales to generate quantitative data. The functionality of the client portal that was of extra interest to evaluate in this test was the Contact form, the Schedule, My Pages, At Business X, as well as the elements of Design for Sustainable Behavior. The test ended up having 12 tasks taking the user through different tabs and functions of the portal with follow up questions such as “*How did you experience the execution of this task on a scale from 1-5? Where 1 is very hard and 5 is very easy*” as well as “*How logical did you find the placement of this function?*” once again on a scale from 1-5. Asking the users to rate the tasks facilitated a comparison between the different users and gave a usability score for each task. Five (5) was always the highest score independent of the question and all functionality that received average ratings above four (4) was considered approved. The usability tests were carried out online with seven users and the whole test guide can be found in Appendix E. Three of the users had participated in the first round of client interviews, two of them were representatives from Business X and the last two were clients that had no previous knowledge of the project. The tests were executed via the video collaboration tool Zoom, the user was sent a link to the Figma prototype and was then asked to share their screen. While screensharing they were guided through the test, which was recorded for the convenience of the project team. The result of the usability test is presented below, one page at a time for the convenience of the reader; however, the tasks in the test were not completed in this order since the test aimed to evaluate the navigation of the portal. The usability test guide can be found in Appendix E.

13.2 Result

The usability test generated very good responses. Overall, the users were satisfied with the functionality and the logic of the portal. Requirement 13 states that the portal should be adapted for beginner/intermediate users by being efficient, effective, intuitive and create a feeling of satisfaction. Users 3 and 7 made the following comments after the test:

“Clear and clean, nice-looking portal. I am quite used to portals and I think it was intuitive.” – User 3

“I think it looks great. Fun and good site, clear, much better and more fun than all the others. This feels easy to use and structured.” – User 7

However, some areas of improvement were identified and a detailed presentation of the results from the usability are presented below.

13.2.1 Start page

To get to the Start page the user must click on the company logotype in the left corner. The usability test aimed to find out how intuitive this was for the users. The prototype starts on the Start page and after performing a set of tasks the user was asked to navigate back to the Start page. All seven users solved the task with one click but the ratings of how easy the task was to perform varied a bit due to concern for how others would perceive the symbol.

“Maybe it was not crystal clear, but somewhere you know that it [the symbol for the Start page] usually sits on that side, but maybe you should write ‘home’.” – User 4

“For me who has computer experience it was very simple but for older people it can be tricky.” – User 1

The ratings ranged from 2-5 and the task ended up with an average rating of 4.1, shown in Figure 24 below.

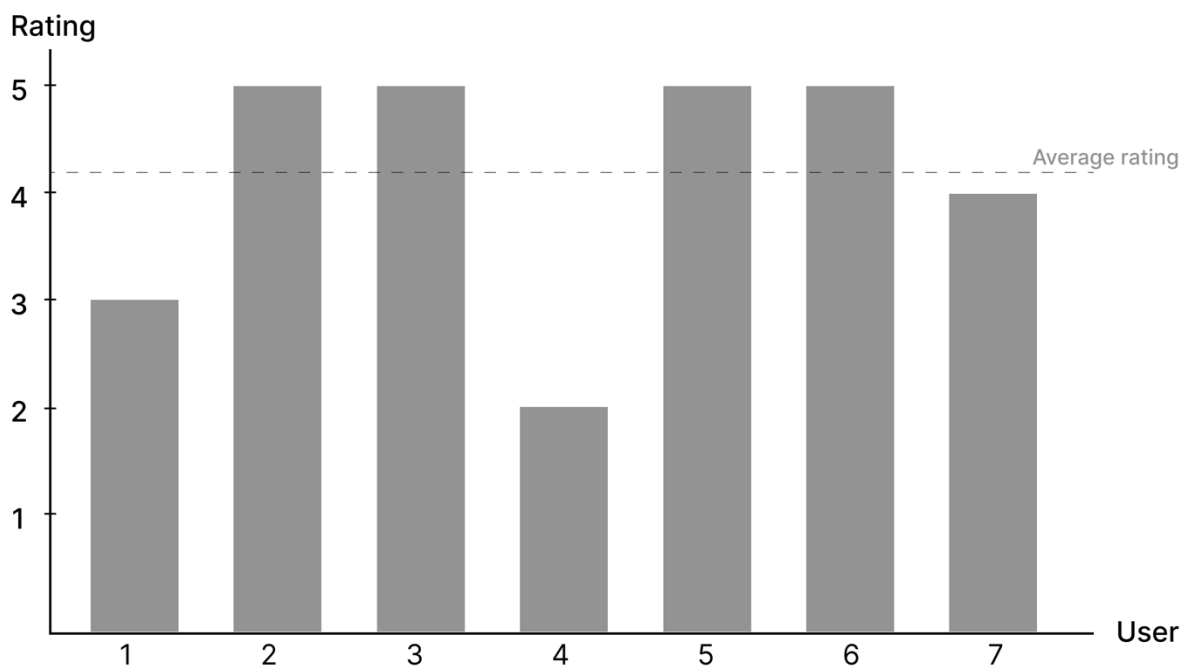


Figure 24. Rating of task: Navigate to the start page.

In the final prototype the function My Awards was moved to the Start page to be more visible. The function generated very different responses throughout the tests. A minority was very excited about this function and said that they thought it would motivate them to make more climate friendly actions.

“It is a fun function, you get a little excited to think about how you... I think it’s good because you think ‘oh, now I’m going to be good’. I think maybe it would motivate me a little to think about being even better at reminding my colleagues to sort better.” – User 7

However, the majority of the users were not very impressed with My Awards. Some said that it might interest them a little bit and that they might be glad when they unlock a new award but they would not actively use the function. Some users were not interested at all.

“Honestly I think it’s a little childish. Maybe a little bit exaggerated. But at the same time when I see that I can get discounts from it...” – User 3

Lastly, the green square on the Start page was added to inform about the client’s CO₂ emissions and savings (Figure 17, no.1). This square was added for the same reason as My Awards, as an attempt at Design for Sustainable Behavior, and received more positive feedback during the usability test. The users said that the information was interesting and eye-opening. Some users expressed that it gave them hope to realize that sorting their waste contributes with such major CO₂ savings while some users were shocked about this fact. The users said that they might share this information internally with their colleagues to inform and engage them but were not as inclined to share it on social media or LinkedIn.

13.2.2 Contact Form

The evaluation of the Contact Form got very good responses. It was an appreciated function by all the users and the placement of it on the Start page was said to be efficient. In the first task, which was: *1. Your regular bin of plastic has overflowed and you need to order an extra pick-up. You want them to collect the bin sometime tomorrow between 8 and 17, except between 12 and 13, because you have lunch then. How do you go about it?* the average rating of how easy the task was to carry out was 4.3 out of 5. The individual ratings are shown in Figure 25.

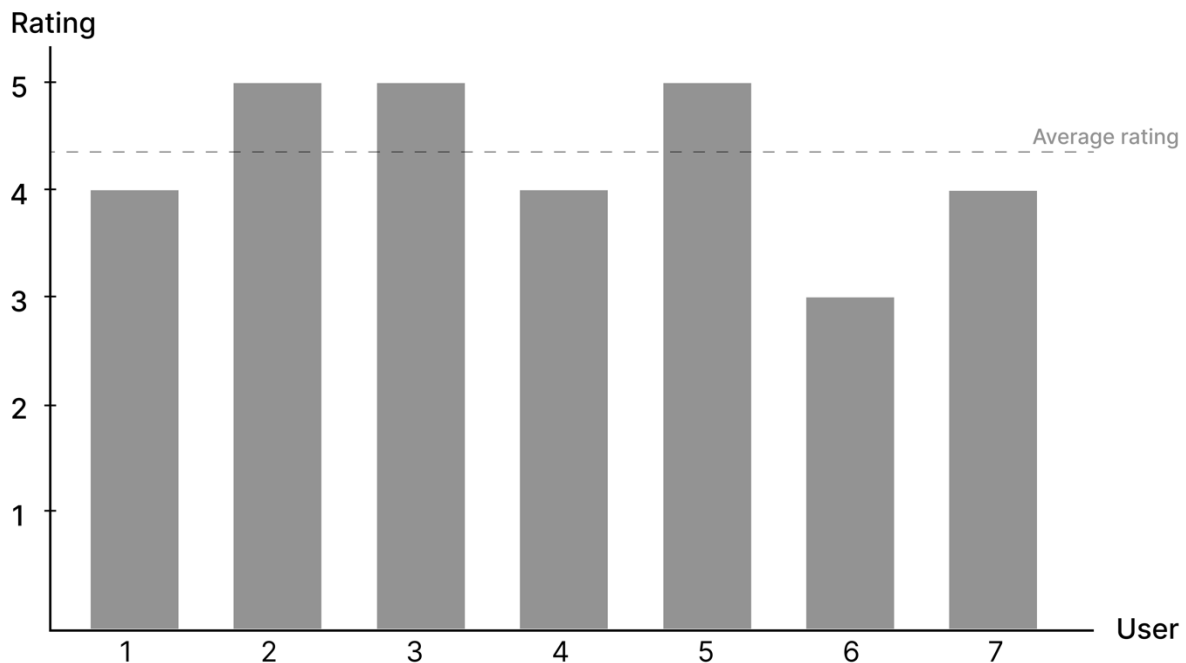


Figure 25. Rating of task: Use the contact form to order an extra pick up.

Two of the users made mistakes when filling out the time (Figure 19, no.1). In this time scale there are 10 timeslots that turn blue when marked. The first timeslot represents the hour between 07-08 and the last timeslot represents the hour between 16-17, meaning the users were supposed to mark timeslot number two till timeslot number ten, minus the sixth timeslot that represents the hour between 12-13. One user left 12-14 o' clock unmarked and another user added the hour between 07-08 to their selection. None of these users recognized their mistakes and gave the form good ratings. The project team believes that these mistakes were due to stress or not taking the time to read carefully. Many of the users also expressed that it was time-consuming to mark each timeslot individually.

13.2.3 Contact

The contact page was evaluated with the same five questions as in the first user test. Once again, most users answered the questions as intended and, in those cases when a user did not choose the option the project team was looking for, they chose customer service, which is always an approved answer. Some comments regarding the Contact page were that users wondered what happens with the information that is communicated straight to the service staff, as well as that it was nice to see the pictures of "Your Team" as it made the user feel closer to Business X.

"It is quite nice with the pictures, makes you feel closer. Very good."

– User 4

The Contact page performed well in both tests but might need some work to make the contact information even more detailed and sharply formulated to further improve the page for the user.

13.2.4 Schedule

All the tasks involving the schedule went very well, the users understood it perfectly and stated that the functionality on the page was useful and helpful. User 4, who has dyslexia, expressed that the schedule was clear and easy to understand.

“It is easy with my dyslexia, it’s clean.” – User 4

The schedule got a rating of 4.7 out of 5 in terms of its understandability. See the individual ratings in Figure 26 below.

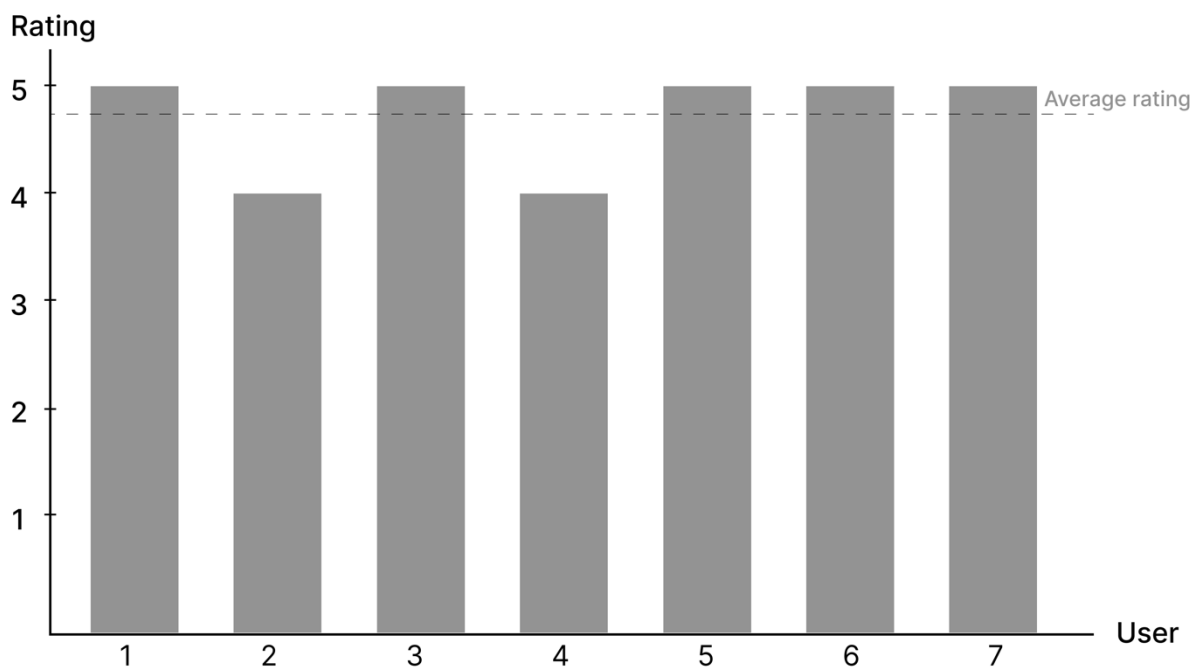


Figure 26. Rating of the understandability of the Schedule.

When the users were asked to explain how they interpreted the colors in the schedule most of them understood the color coding right away and the rest understood and felt it was intuitive after clicking on the different events in the schedule.

“The colors are good, they’re clear.” – User 3

13.2.5 Statistics

Since no major changes to the content of the statistics page were made from the first prototype to the second, the content of the page was not evaluated in the usability test. Instead, the first task related to the statistics page was for the users to find the climate report as the project team wanted to evaluate if the placement of it appeared logical to the users. All seven users went straight to the Statistics page, where most of them saw the sub menu and found the report right away, while some focused more on the content on the page and missed the sub menu at first but found it relatively quickly. All in all, the task to find the climate report received an average rating of 4.7 out of 5, where 5 corresponded to *very easy* and 1 corresponded to *very hard*. Figure 27 below shows the individual ratings of this task.

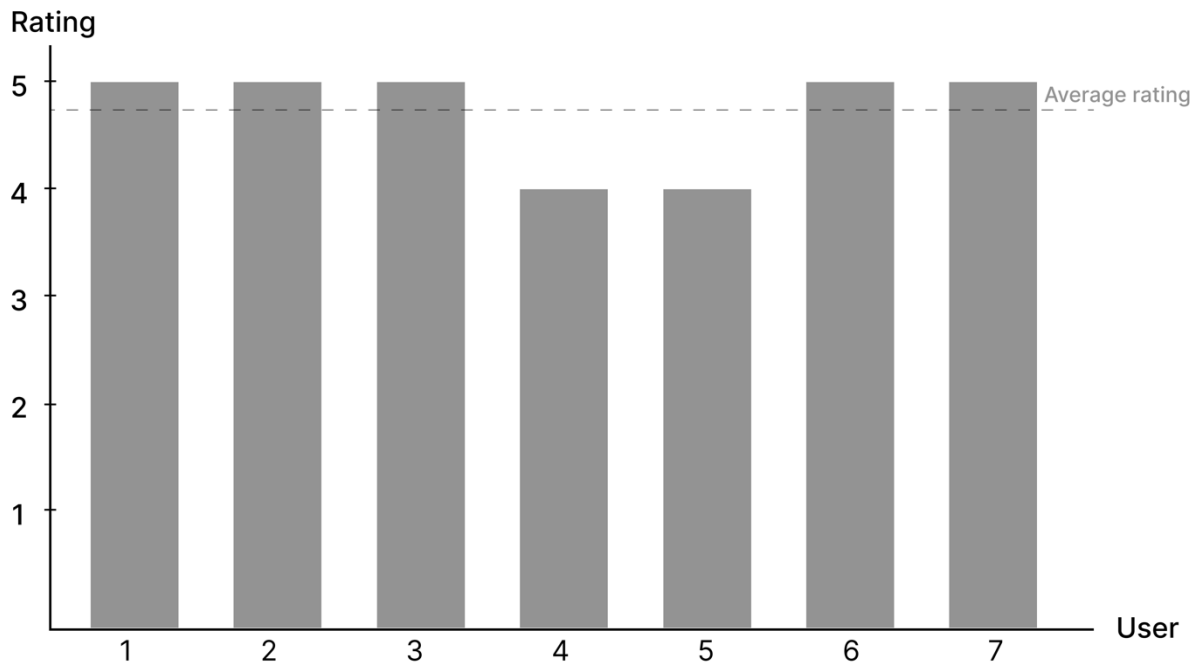


Figure 27. Rating of task: Find the climate report.

Later in the test the users were asked to use the client portal to find out which of the last three years their company sorted the most cardboard. This task could technically be solved in many ways by using the different tools under Statistics, but the easiest way is to check the smaller graph to the right (Figure 13, no.4). Again, all the users went straight to the Statistics page to look for the answer. All of them saw the smaller graphs on the first page and some started looking to see if they were interactable, not realizing that the right one already showed the right information. One user went to Advanced Statistics and wanted to get the answer using the tools found there. Two of the users saw the list of waste fractions at the top of the page and tried to interact with the one that said cardboard. Two of the users wanted to use the graph to the left that shows variations in the amount of waste collected over a year instead of the right one that shows a comparison between each fraction between years. The project team believes that the variation of results may be caused by the users having different levels of experience with graphs and statistics, since the layout of the graphs follow normal conventions on how to present data. The users who did not immediately recognize that the right graph held all the necessary information might not be used to viewing graphs, or they may have been nervous or stressed to “perform well” in the test.

13.2.6 At Business X

The results from the first user evaluations indicated that the page At Business X held interesting information and was quite appreciated. In the usability test the goal was to find out how well the name At Business X corresponded to the content on the page. The task was for the user to find out when the next breakfast seminar was going to be held, and five out of the seven users went directly to At Business X. One of the users looked around a little at My Pages before trying At Business X and the last one could not find it and had to be guided to the right place. When asked to rate how well the name At Business X corresponded to the content on the page it received a rating of 3.7 out of 5, see Figure 28 below.

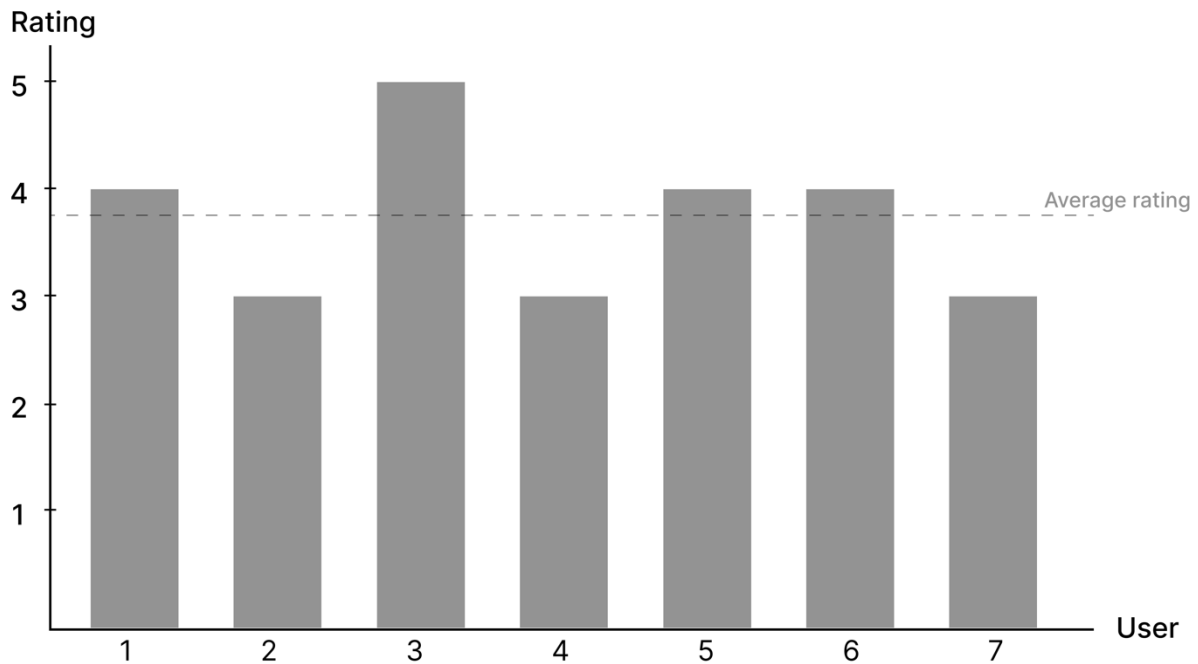


Figure 28. Rating of the name 'At Business X'.

The rating of the name for this tab does not pass the goal rating of 4 or higher and should therefore be reconsidered. User 4 commented the following regarding the name:

“It wasn’t crystal clear, but on the other hand, what else is there to write?”
 – User 4

13.2.7 My pages

One of the tasks in the usability test was to check that the company address was updated. This information is available under My Pages and six of the users went straight to My Pages. The seventh one tried the Contact page first but quickly changed to My Pages instead and found the information. During this task the project team was informed that companies often have one address for invoices and another one for the office where the pick-ups happen. Therefore, under My Pages it is recommended to add the option to provide two, or more, addresses for each company.

In another task the users were asked to find out when they last contacted their salesperson. This information can be found under My Pages in the function My Inquiries. The logic of the placement of this function received an average rating of 4.4 out of 5. Many of the users pointed out that this is a function they have rarely seen before and therefore they hesitated for a second, but after giving it some thought all the users found My Inquiries with three clicks or less.

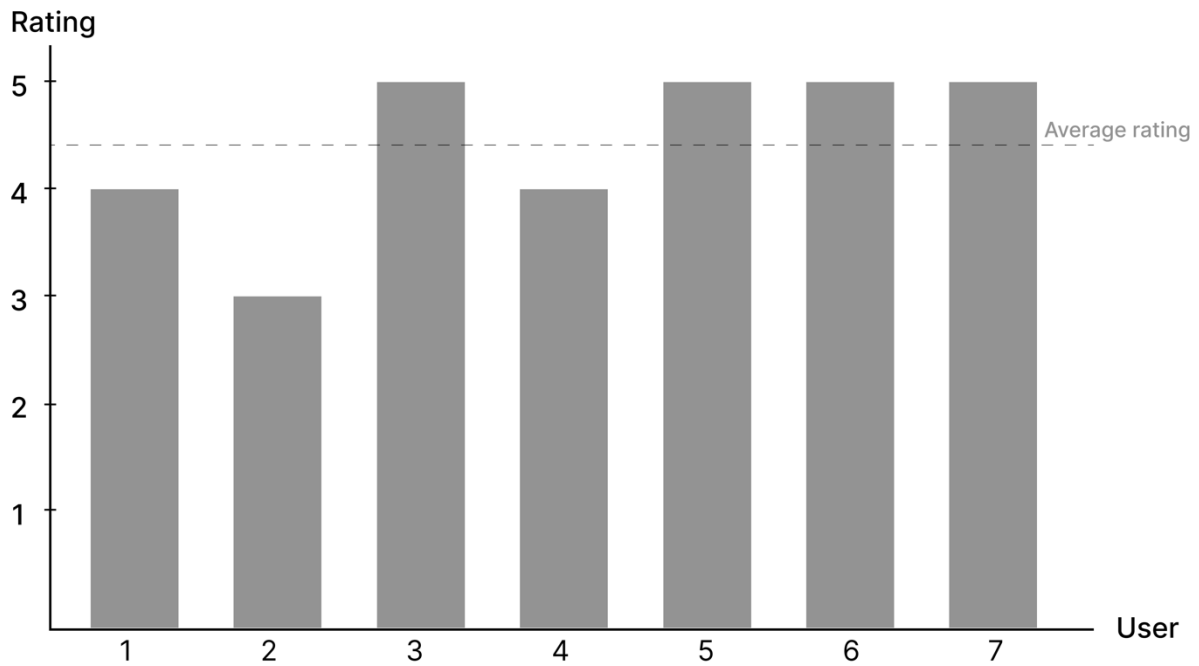


Figure 29. Rating of task: Find out when you last contacted your salesperson.

“It is unusual, there is rarely documentation. It was a new feature so I was a little unsure.” – User 4, regarding the function My Inquiries

The last task regarding My Pages was for the users to find out which waste fractions and bins they have in their agreement (Figure 23, no.1). Five of the seven users found it on the first click, one user tried the Schedule first and one user tried both the Schedule and the Statistics page before going to My Pages. When the users were asked to rate both how logic the placement of this function was it received an average score of 4.3 (see Figure 30); and the understandability of the function received an average score of 4.9 (see Figure 31). When asked to rate the logic of the placement, the answers varied greatly as five users gave it a 5 while one user gave it a 2 and one user gave it a 3.

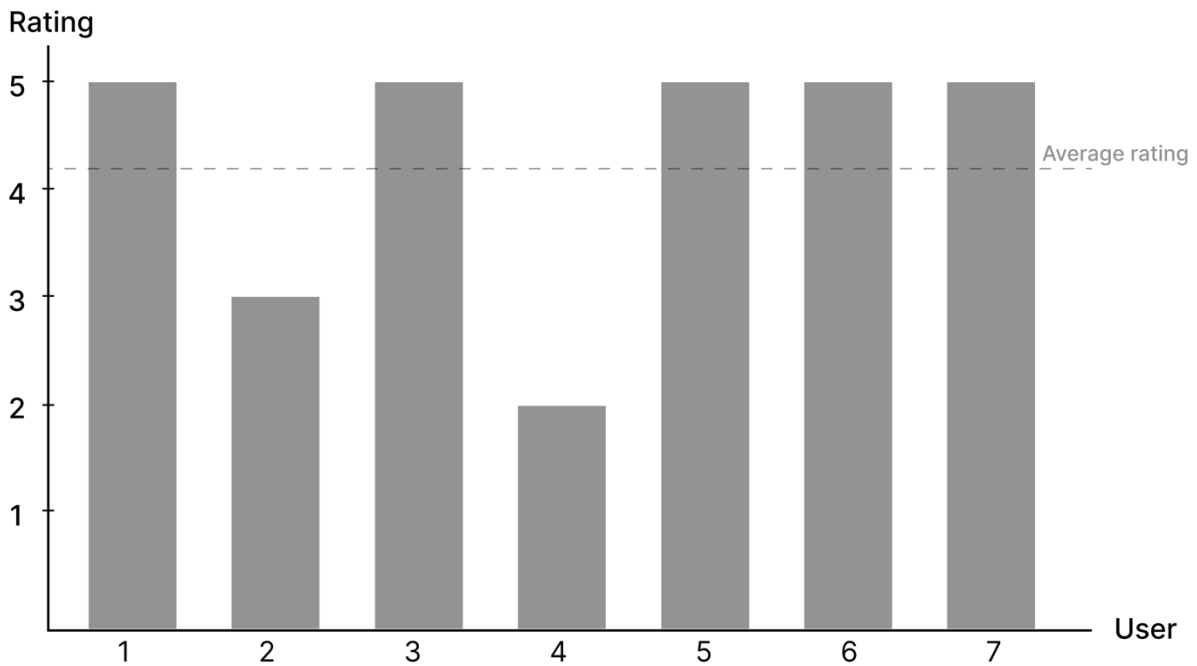


Figure 30. Rating of the logic of the placement of the function *My fractions and bins*.

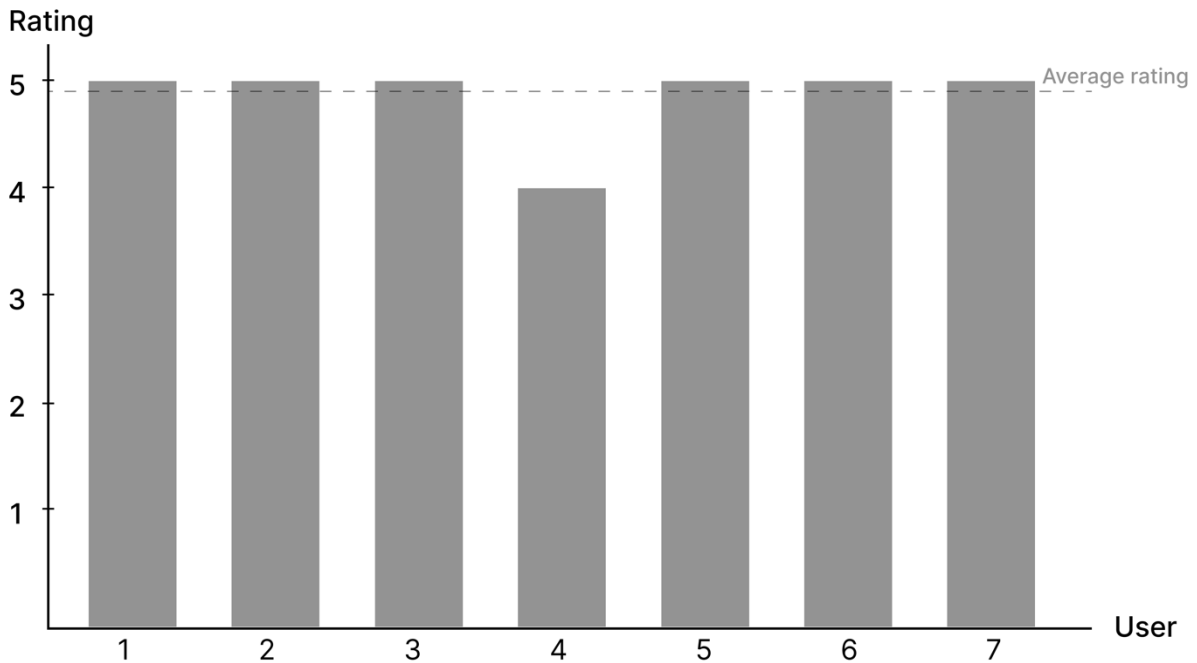


Figure 31. Rating of the understanding of the function *My fractions and bins*.

13.2.8 Settings

When the users were asked to change their notification settings, seven out of seven users went straight to My Pages. This function can be found when pressing the cog to the right in the top menu bar. A few of the users noticed the cog after a while of looking around but some had to be directed to the cog to find it. The average rating for how easy this task was to perform was 2.9 of 5, which is far below the goal of 4 or higher, indicating that the placement or design of

this function need to be reconsidered. Some of the users suggested making the cog bolder so that it would grab more attention and some suggested moving the settings to My Pages.

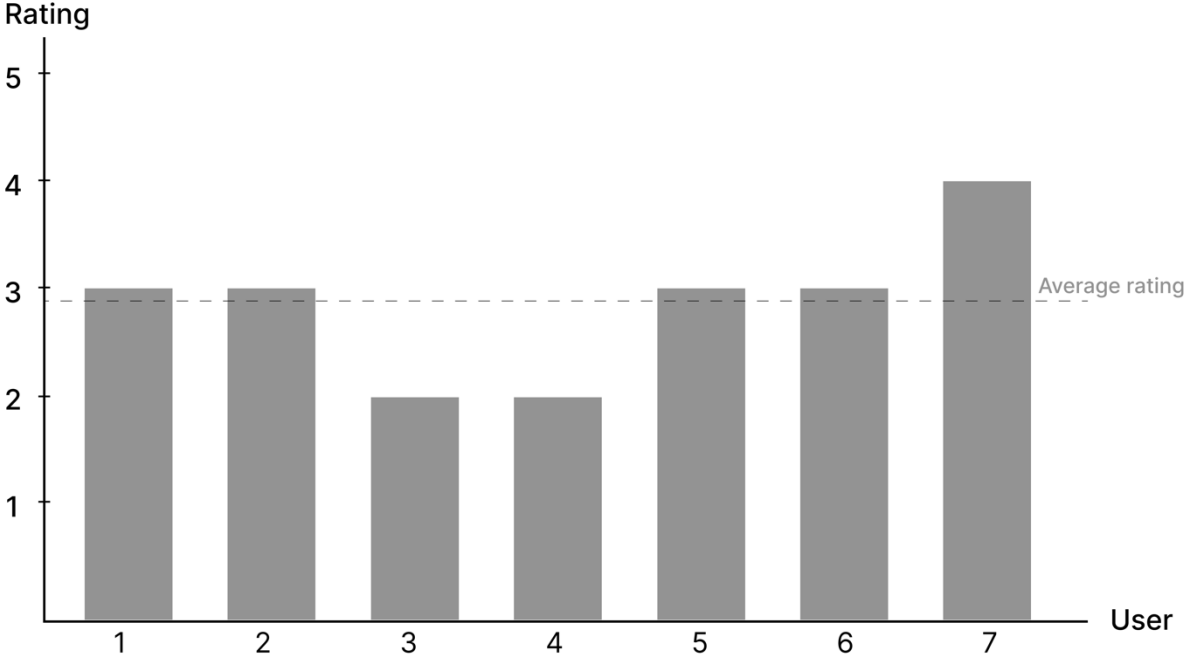


Figure 32. Rating of the placement of the Settings.

13.3 Reflections and implications

After the usability test was performed, like after the user evaluations, some users expressed an appreciation for the portal and hoped that it would become reality soon. The execution of the usability tests went well and most tasks and functionality received good feedback. However, the goal of receiving ratings of four (4) or higher on a scale from 1-5 was fulfilled for all tasks but two, the placement of Settings and the name At Business X. The project team believes that moving the Settings to My Pages would be the best solution to make this function easier to find, since My Pages is where all of the users intuitively went to look for the settings. The name At Business X was discussed during the first round of prototyping as well as after the user evaluations, however, the project team was not able to find a better name for the tab. There is also reason to believe that after visiting the page once or twice the user should relatively quickly create an understanding of the content on the page.

The functionality My Awards was not rated on a scale but received varying feedback that suggested that further improvements were needed for this function. The users reacted very differently when evaluating My Awards, which might indicate a difficulty to adapt this function to all types of users. During the test, the users only got to take a look at the function and did not get the chance to interact with it or experience how it works when they receive an award. There is a good chance that this impacted their judgement of the function. The other attempts solely at DfSB, the green figure on the start page and the blue figure on the statistics page, that inform about saved emissions thanks to recycling, received better feedback from the users. These figures are more straight forward and can be used for whatever purpose the users like. Since they are easy to share with others they have the ability to generate wider impact and reach the secondary users as well.

14. Final Design Proposal

The prototype generated good critique and pleasing results both during the user evaluation and the usability test. The suggestion for Business X is to develop a client portal very similar to the second prototype. However, a few elements did not achieve satisfactory user experience and would therefore benefit from a redesign. They are listed below as possible improvements that can be done to increase the usability of the client portal.

14.1 Improvements

There are some aspects of the final prototype that the project group believes would benefit from certain changes or that might need further development. One of those things are the Settings (Figure 8, no.7). The settings include user management, changing of password, notification settings, language and color mode settings and received an average rating of 2.9 out of 5 regarding how easy it was to find. The settings are reached by clicking a cog symbol, in the top right of the menu bar, which is commonly used to symbolize settings. However, since the client portal has a page called My Pages that handles other information connected to the client it seemed intuitive for the users to look for the settings there. Therefore, it is suggested that the settings are relocated to My Pages to support a better user flow and minimize the navigational options. To further improve user flow it is also suggested to change the way the users select the time for a pick-up in the Contact Form. Currently, the user can select every hour between 07-17 that they are available for the service staff to come and pick-up their waste, by marking every hour with a click. To minimize the amount of clicks and speed up the process of marking the hours, it is suggested to implement a click-and-drag method.

Another suggested improvement is to re-think the name of the tab At Business X. How well the name matched the page content received an average rating of 3.7 out of 5 which is just below the accepted score of 4. Many alternatives were considered and suggestions for other names from the users were 'news' or 'articles'. However, these suggestions do not match the entire content on the page since it contains both articles and news as well as seminars and events. The project team considered names such as 'News & Events', 'Newsletter' and similar but concluded that none of these fully encapsulated the content of the page and the recommendation is therefore to continue the search for a better name.

The function My Awards received a lot of varying feedback that suggested the need for further development. Some users expressed that they liked the function and that they thought it would affect their use of the service, while most users did not find it very useful or interesting. One concern for many of the users was that the look of the function appeared childish and in turn not serious enough. This is believed to be mainly based on the visual appearance and not so much the functionality itself. To combat this the suggestion is to work with the appearance of the function such as colors and icons. Another improvement could be to work with what actions are awarded as well as how they are presented to the user.

One of the requirements was that the client portal should make suggestions for environmentally friendly improvements (Requirement 9). The project team finds that this requirement is met but that more suggestions for environmentally friendly improvements could be incorporated in the client portal. In the final prototype the client portal provides information about the waste fractions the client currently does not have in their agreement and explains why these would be beneficial to have. The project team considers this to meet Requirement 9 but suggests incorporating more suggestions of environmentally friendly improvements. This would be valuable for both the environment and Business X as it would create the feeling that Business

X cares about and wants to help their clients, as well as that it would be an opportunity for additional sales. However, it is important to put these suggestions at appropriate places and times so that they are not perceived as advertisement and creates a feeling of annoyance for the user.

The function on the contact page where the client can provide information directly to the service staff (Figure 20, no.1) would benefit from a redesign. The goal with this function was to provide a way for the client to easily document information regarding their pick-ups or as a facility that could be of use for the service staff, for example the port code, if the bins are placed in an unusual way or similar information. This information is supposed to be available for all service staff when checking the client's profile in their work phones and to be of a more permanent nature. It might be difficult to clearly express to the clients what information should be entered here compared to what information should be communicated to customer service. It also came to the project team's attention later in the project that customer service wanted to take part of in all kinds of information provided by the client as customer service should have all information regarding the clients. How the information entered by the clients moves through Business X's database and who can access what is something that the project team had no knowledge of during the project and would have to investigate in order to find out how this function could be implemented.

Another function that could benefit from certain updates is the possibility to view the waste fractions and bins in the company's agreement under My Pages. This function was appreciated by the users but many had trouble understanding the presentation of the function in the first evaluation of the prototype (Figure 15, no.1). Therefore, this function was refined in the second prototype (Figure 23, no.1) and in the second evaluation none of the users had any trouble understanding the function. However, the text that states how many of each type of bin the client has could be made bigger or more eye catching in some way, as some users expressed that it was hard to see.

On the statistics page, a few of the users in the usability test tried to click on the boxes on top of the page showing which waste fractions are included in their agreement (Figure 13). These boxes are very similar to buttons and it would be recommended to remove the outlines and simply have text listing the fractions to avoid confusion.

15. Discussion

The user evaluation and usability test showed good results and it can be concluded that the client portal developed in this project could provide added value for Business X's clients. However, the validity of the final result and methods used during this project will be discussed in this chapter to verify how credible the outcome of this project is.

15.1 Result

This subchapter delves into an assessment of whether the aim and goals of the project were effectively met. Moreover, it discusses the usability of the final design and evaluates the effectiveness of the DfSB methodology applied.

15.1.1 Aim & Goal

The main aim of this project was to strengthen the relationship between clients and Business X. Based on the Initial Research and interviews with Business X's clients the goal became to improve the communication between Business X and their clients by developing a digital prototype of a client portal directed at the office segment. To make the project beneficial for the environment, a sub-goal was that the clients should become aware of their climate impact and get motivated to reduce it with help and support from Business X.

Concerning the goal of the project, it can be established that a digital prototype of a client portal has been created that improves the communication between the client and Business X. The client portal aims to improve communication in many ways. First, the Contact Form makes the communication regarding special pick-up orders faster and easier for both parts as the Contact Form guides the client through what information they need to submit. This saves time for both the client and Business X as follow up emails are avoided and the order can be processed faster. Second, there is the contact page that shows the client their contact options, explains what errands should be directed where as well as acts as a reminder of who the client's salesperson is, as this was a problem detected during the client interviews. The page At Business X is also an important part of the external communication as it informs the client about what is going on at Business X, what services they can offer, what seminars they have coming up as well as other informative articles and news connected to their recycling.

Regarding the sub-goal of making the clients aware of their climate impact and motivating and helping them to reduce it, the client portal holds several DfSB-features that intend to do that. These include the green figure on the Start page (Figure 17, no.1), the blue figure on the Statistics page (Figure 13, no.5) as well as My Awards (Figure 17, no.2) and certain articles and events under the tab At Business X. The function My Awards gives examples of climate friendly actions that the users can take and the portal in its entirety aims to enlighten the client on climate friendly improvements to their agreement along with who the client should contact or what steps to take to achieve these. Many of the users said, during the evaluations, that these features, especially the blue and green figures, gave them motivation to sort better and influence their colleagues to do the same, whilst others were unsure whether it would affect their behavior. Whether these functions are successfully designed to motivate the users or not cannot be confirmed only by the users' statements. Consequently, it is hard to establish if the sub-goal of motivating the clients to reduce their climate impact is completely met. To really find out whether the DfSB functionality would have any long-term effect on the behavior of the users, more detailed observations would be necessary. The client's behavior from an environmental point of view would have to be studied during long periods, first before using the client portal

and then after or during using the client portal to see if these features affect the behavior in some way. A longer study like this was not possible within the time frame of this project and had to be deprioritized.

All in all, the users showed high approval for the prototype throughout the evaluations and especially by telling the project team so after the evaluations. The users expressed a belief that the client portal would improve the service offered by Business X and conveyed appreciation for the functionality in the portal, especially the Contact Form, Schedule, preliminary time of arrival and Contact page. Based on these results it can be established that the aim of the project was achieved – to improve the relationship between clients and Business X.

15.1.2 The main areas

This subchapter discusses how the three main areas in the framework has contributed to the final design proposal.

Design for UX & UI Design

By interviewing the clients and creating an impact map, their needs and values have been thoroughly investigated and included in the final design. Judging by the overall positive feedback by users during the evaluations and tests, it could be established that the final design results in a positive user experience. The monitoring of the users' emotions, behaviors, responses and accomplishments and the listening to their preferences and perceptions indicate that the users had a positive user experience while using the product. However, the concept of user experience includes considering the time before and after the usage of a service as well, which have not been investigated any further in this project.

Nielsen's 10 general principles for user interface design were used as inspiration in order to create a client portal with a user interface that contributes to a good user experience and high usability. Exactly to which extent these general principles have contributed to the user experience and usability has not been investigated since the features inspired by the principles have only been tested and evaluated as a part of the whole interface and not in their own. However, by judging by the general feedback from the users during the evaluations and tests, they did appreciate features inspired by the principles such as the contact form only showing the client's own waste fractions in order to minimize the memory load. Another feature inspired by the guidelines was Business X's logo at the top left corner taking to user back to the start page, a common standard within web design.

Design for Usability

In order for a product to have high usability, the product should be easy to use and the user should be able to achieve specified goals with effectiveness, efficiency and satisfaction. During the usability test, several users said that they liked the client portal because of how simple and easy it was to understand, which indicates that good usability has been achieved. After some tasks the users were asked to perform, they got to rate the experience of the execution where 1 meant very hard and 5 very easy. The majority of these tasks received a score above the approved value of 4 which further supports the conclusion of good usability. No questions or ratings were asked about how certain functions etc. made the users feel which would have been a way to measure user satisfaction. However, judging by the positive mood and comments given by user when performing the tasks, they seemed happy and satisfied with the client portal. It was only when trying to find the settings (which received an average score of 2.9 on how logical the placement was) that signs of dislike and frustration could be detected. At the end of the user evaluation, the users were asked if they could think of anything that was missing from the client

portal that they would like to have. Almost no one had any suggestions on functions or features to add. This, together with the fact that almost all users were able to complete all tasks in the usability tests without guidance shows that the prototype provides a basis for effective usage. Lastly, much effort was put into creating an efficient client portal, the user shouldn't have to use more clicks or put in more effort than necessary. One example is how there is a link to the contact form in the schedule that users could use to directly change a pick-up instead of having to navigate to the start page first (Figure 22). In order to really measure this and determine whether the client portal offers good efficiency, more detailed test would have been necessary (See Chapter 15.2 Process). Nevertheless, it can be concluded that the design process has resulted in a client portal with good usability.

Design for Sustainable Behavior

Something the project group thought of early in the project which was also discussed in the workshop as well as mentioned by clients was the ability to make comparisons and compete in recycling rate between different companies. This would be a way of incorporating Design for Sustainable Behavior and gamification in the client portal even more to increase the engagement regarding sustainability. The project team believes that this would be an interesting feature but found some challenges in the execution of the idea and therefore decided to not elaborate on this function in this project. One of the challenges concerned how to count points in the competition since one goal in the competition would be to sort as much as possible of the produced waste but the main goal in regard to sustainability is to produce as little waste as possible, which makes the two goals contradict each other. Moreover, the recycling conditions can vary greatly between different companies depending on type of industry, number of employees, number of office etc. Some premises have waste collection in the building and only need Business X's services for specific things such as confidential papers and a comparison between a company like this compared to one of similar size that uses Business X for their entire waste collection would not be fair.

15.1.3 Additional aspects to explore

During the interviews some clients commented on how useful and convenient it would be to have a mobile application to use for certain matters. Most of the users agreed with this statement when asked about it during the user evaluation. Due to the limited duration of the project the interface for a mobile application was not developed but the project team recommends Business X to investigate the possibility to create a complementary mobile application. This application could contain the most used functions such as Contact Form, Schedule, Contact information and My Pages. The application would also be useful as it could easily allow the client to take a photo of what is to be pickup up and attach it when using the Contact Form.

A design suggestion for *The Recycling Sheriff* was to provide signs with a clean design holding instructions on how to recycle that the user can print out and place by their bins, this is also recurrent in the requirement list as Requirement 7d. Provide recycling guidelines and instructions, and 7e. Provide signs for recycling. In the final prototype there is a link on the Start page that should take the user to a page where they can download signs and instructions. What these signs and instructions look like has not been developed in this project, mainly due to the demarcation of not working with the visual style of the client portal. Since the suggestion for The Recycling Sheriff was to provide signs with a clean design it felt important to the project team that this design was in line with the graphical profile of the company providing them, something that currently could not be achieved. Even though the signs themselves have not been developed, the project team found it valuable to include the function in the prototype and the placement of it on the Start page.

15.2 Process

The project results are dependent on the process and the chosen methods, which supported the project well.

Phase 1: Empathize & Define

By starting off with Phase 1: Empathize and Define the project team obtained a thorough understanding of the company, their service, their strengths and their challenges. By utilizing both participatory observations and interviews, a comprehensive understanding of all parts of the company was obtained. With this knowledge as a base the process moved on to client interviews and interviews with users of client portals. The user's voice is always an important part in creating a good design, but by also conducting interviews with none-users of Business X's service other insights could be achieved and needs connected to client portals that Business X's users didn't even know that they had were identified. By carefully analyzing the information gathered from the interviews the project was ready to move on to Phase 2: Ideate.

Phase 2: Ideate

During the ideation phase two main methods were applied, the creation of an impact map and the execution of a workshop with employees at Business X. These methods generated a good set of ideas and solutions and provided valuable insight into both the clients' as well as the employees' thoughts and opinions of the service. However, it is also important to consider that even though there was a planned ideation phase, ideas arise all the time. Many ideas were born early in Phase 1 but were not discussed and developed further until Phase 2. This means that a project plan and process is essential to have to be able to carry the project forward, but often the process is not as black and white as it is presented.

Phase 3: Prototype, Test & Evaluate

The last phase of the project, Phase 3: Prototype, Test & Evaluate was an iterative phase. This phase consisted of creating a prototype, testing and evaluating it with users. Two different test formats were utilized, one focusing on the functionality and one focusing on the usability. These tests were of much importance to find out how well the design worked and how the users reacted to it, however there were some aspects of the tests that might have affected the final result in different ways. Firstly, the user evaluations were carried out in person as the project team traveled to Stockholm and visited the clients in their offices, while the second tests, the usability tests, were carried out online via Zoom. These two different set ups create different circumstances that may have affected the tests in different ways. The prototype works in accordance to how one would normally use one's computer, but there was one user in the online usability test who struggled a lot with scrolling in the prototype and sometimes the participants wanted to use the keyboard to go back and forth between pages, instead of clicking in the prototype as intended. Things like this would have been easier to control and correct if the test was carried out in person instead of online. These issues made the test take longer but the project team still believes the outcome of the test was useful and true to the user's experience of the prototype.

Secondly, in the usability test of the final prototype, three persons who had been interviewed in the client interviews participated. It could be argued that this may have colored their judgement in some way, but since the first client interviews were about Business X's services in general and not very oriented around client portals the project team does not believe this selection of users to be a disadvantage. Furthermore, two persons in the usability test were employed at Business X. One of them was the manager for customer service and had valuable insight into the use of the Contact Form. The other was the CEO of the company. Both of these had many

thoughts and opinions about the portal that were of interest for the project team. However, in order to make the tests comparable to the other usability tests the project team made it clear for the two users from Business X that the tests were to be carried out as if they were clients to Business X. Moreover, all discussions would be taken after the test was finished. Additionally, the test guide was modified slightly in that a few questions were skipped since the employees had inside knowledge about Business X that would interfere with the result. For example, who to contact with what questions.

Thirdly, it is always of importance to formulate the test questions carefully to not influence the user. Following are examples of questions that might have benefitted from being formulated differently or asked in another order. In both user tests the user had to answer who they would reach out to with certain matters. The user was asked to click on the Contact page, read the descriptions and then answer five questions, one being: *“Who would you contact if you had questions about your latest invoice?”*. The correct answer to this question is customer service. A few of the users asked about contact details to the finance department and wanted to contact them directly. It is hard to say if this is something they were actually missing on the page or if it was just something they thought of because of the way the question was asked. Another task, in the second test, was for the user to find out when the next breakfast seminar offered by Business X was going to be held. Most of the users found the right page, At Business X, relatively fast although the title of this page had been discussed throughout the project as it is not evident how well it suits the content. The problem here is to know if the users would have looked at At Business X if they had not already gone through all the other pages in the test.

During the usability tests, the number of clicks that the users used to perform a task were counted with the intention to compare it to the lowest number of clicks needed to complete the task. This was a good thought in theory since this would indicate whether the design of the client portal achieved good efficiency in regard to clicks. However, it did not fully work in practice. Some users clicked on many unnecessary tabs or features but were very fast in completing the tasks, while others went very slow but used fewer clicks. It is hard to conclude which of these two users experienced the best efficiency and a comparison in terms of clicks related to the time it took to complete the task would be needed to draw any conclusions.

Even though the methods in the last phase faced some obstacles they are still believed to have contributed significantly to the result as they allowed for feedback and in turn updates and corrections of the prototype before deciding on the final design.

16. Conclusion

The overall aim of this project was to *strengthen the relationship between Business X and their clients*. This should be achieved by reaching the goal of *improving the communication between Business X and their clients by developing a digital prototype of a client portal directed at the office segment*. A subgoal was to make the clients *become aware of their climate impact and get motivated to reduce it with help and support from Business X*. To achieve this, a digital prototype of a client portal was created where the user can order extra pick-up of their waste, see their pick-up schedule, their waste fractions, statistics about their recycling and other functions that are important for the service. Moreover, some elements were included in the portal with the purpose to motivate and assist the users to act in a more environmentally friendly way.

With the help of user evaluations and usability tests, it became evident that the aim and the first goal were reached. The users expressed a distinct sense of clarity and trust when they used the prototype and explained how it gave them a better overview of everything that was included in their agreement and the services that Business X offers, indicators of a strengthened relationship between the parties. In addition, the client portal contained several different features with the purpose of improving the communication, features that received very positive results in the evaluations and tests held with users. Judging by the results from the user tests, it can be deduced that the subgoal has been achieved as well, at least to some extent. However, the elements added to create motivation to reduce the climate impact received varying feedback from the users during the tests and would need further investigations to establish whether they would have any long-term effect on the behavior of the users.

In order to reach the aim, different methods were applied. By interviewing the clients, their needs and desires regarding recycling in offices became clear and helped to understand how a digital solution could be implemented to optimize the user experience of the service. Thorough prototyping methods helped to design the prototype and to understand how methods of Design for Sustainable Behavior could be implemented. Finally, the prototype was evaluated by performing user- and usability tests and by comparing the design to the set requirement list. The final client portal meets all the requirements and the tests showed good results. There are some adjustments that can be done to bring this client portal to an even higher level, but the work done in this project can be seen as a promising and advanced starting point for the future development of Business X's client portal.

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18. Appendix

A. Interview Guide for Client Interviews

Intro

Tack för att du vill ställa upp på den här intervjun! Du kommer att vara helt anonym i rapporten och redovisningen. Om du inte vill eller kan svara på en fråga så är det inget måste. Är det okej om vi spelar in samtalet? Inspelningen kommer att raderas senast 9 juni.

Hur länge har ni varit kunder hos Business X?

Varför valde ni att anlita Business X?

- För Business X är det viktigt att vara ett hållbart företag, upplever ni att de framstår som det? Varför/varför inte?
- Hur viktigt är det för er att anlita ett hållbart företag?

Allmänna frågor om tjänsten

Vad är er allmänna uppfattning om tjänsten? Fungerar det bra, dåligt?

Vad har ni för kär!?

Vad tycker ni om dem? För- och nackdelar, snygga, fula, smidiga...

- Har ni testat olika kär!?
- Skulle ni önska att en säljare besökte er, antingen före eller efter installationen för att se över att lösningen blir rätt?
- Är det något ni saknar hos era kär!?

Vad har ni för abonnemang, hur ofta har ni tömning?

- Får ni ofta "extra" avfall? Beställer ni extra tömning eller töms det vid behov?
- Hur tycker ni att tömningen funkar? Låter det, blir ni störda, töms det som har avtalats, tidspassning?
- Har ni fler företag som sköter andra delar av avfallshanteringen? Varför inte Business X?

Brukar samma person från Business X komma till er?

- Känner ni lätt igen på kläderna att det är en anställd från Business X? Är det viktigt för er? Tycker ni att kläderna ger ett gott intryck?

Sortering

Tycker ni att de anställda brukar sortera rätt?

- Tror du att de anställda vet vad som får slängas var?
- Upplever du att de anställda bryr sig om att sortera?

Har ni skyltar som informerar om vad som får slängas vart?

- Hur kan det bli lättare att sortera rätt?

Kommunikation och fakturering

Hur brukar kontakten med Business X se ut? Säljare, kundservice, SP

- Hur tycker ni att den fungerar? Hur hade du velat att den fungerar?
- Vad brukar kontakten handla om? T ex frågor, ändring av avtal, klagomål

Har ni någon gång fått en faktura som ni inte upplevde stämde? Om ja: Vad var det som inte stämde?

- Upplever du tjänsten som prisvärd?

Vet ni att Business X erbjuder webinarier/utbildningar? Är ni intresserade av det?

Vet ni om att de kan sammanställa en klimatrapport åt er?

Outro

Har du något som du saknar hos den tjänst Business X erbjuder idag?

Vad hade du velat se på en kundportal? Tror du att ni hade haft nytta av den?

Finns det något mer du vill tillägga?

B. Interview Guide for Client Portal User Interviews

Källsortering på kontoret

Vad tänker du när vi säger källsortering på kontor? Vad väcker det för känslor?

Hur arbetar ni med att främja källsortering på kontoren?

Vad är den allmänna inställningen bland kollegorna?

Ni har ett företag som hämtar er källsortering, hur vill du att den tjänsten ska fungera?

- Hur involverad vill du vara i den tjänsten?
- Hur mycket insikt vill du ha i tjänsten? schema etc

Upplever du att du som ansvarig måste påminna/instruera de anställda om hur de ska källsortera?

Får du något stöd från leverantören i det? Är det något du uppskattar/efterfrågar?

Vilken typ av stöd skulle du vara intresserad av kopplat till hur ni kan förbättra eller utveckla sorteringen på kontoret? (ex inspirerande exempel, guider, platsbesök)

Vad är drivande i valet av källsorteringslösning? (kostnad? Funktionalitet? Utseende på kärl? Tilläggstjänster? Servicegrad?)

Kundportalen

Hur använder du dig av kundportalen? Hur ofta, till vad?

Vad gillar du med portalen?

Är det något du saknar med portalen?

Hade ni varit beredda att betala lite mer för att få tjänsten ännu mer skraddarsydd utefter era behov?

Vad skulle du vilja ha mer information om? (tex om vart avfallet tar vägen, hur bra på att sortera ditt företag är jämfört med grannen, vad händer om man slänger fel, myter kring återvinning, vilken nytta sorterandet gör, mm)

Mätning och data

Vad mäter ni kopplat till avfallet idag och vad används datan till?

Vilken typ av data kan du se i portalen? Är den enkel att förstå? Vilken typ av data är svår att förstå?

Vad finns det för behov av uppdelning/allokering till olika platser eller avdelningar?

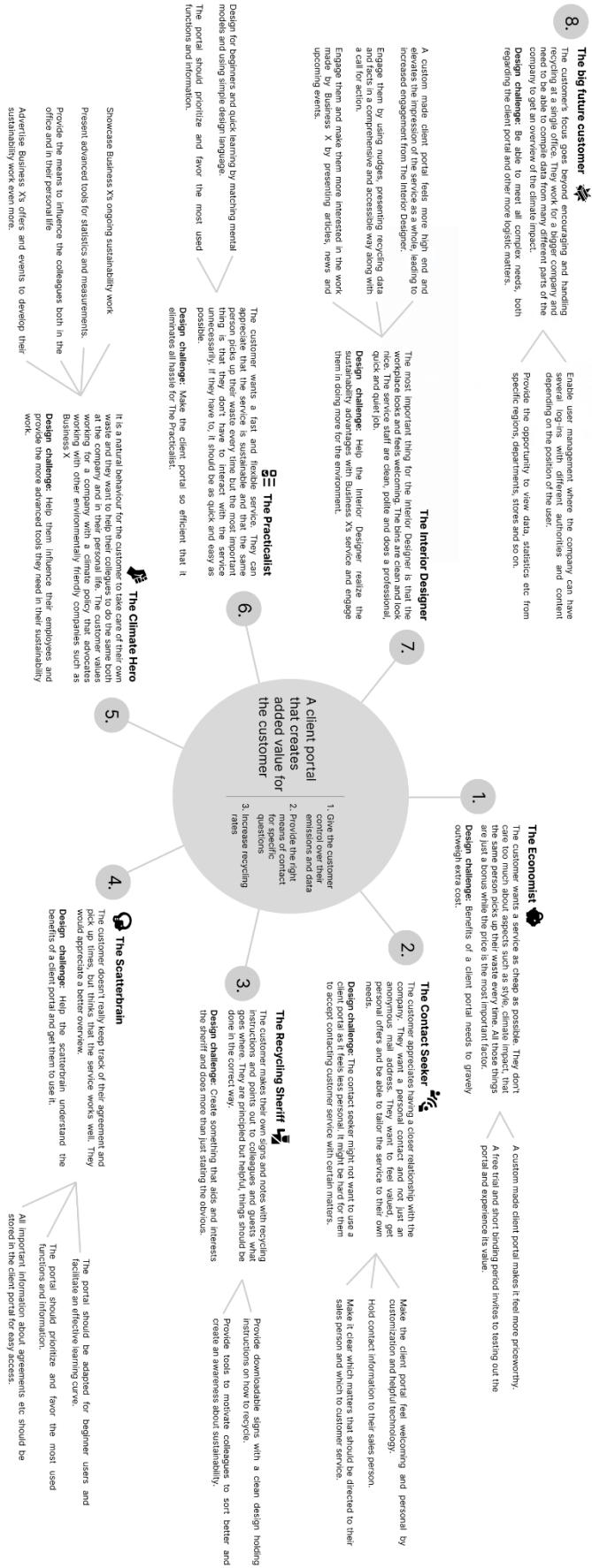
Behöver du bearbeta datan, eller finns det färdiga tabeller/grafar som du drar ut eller tittar på?

Vad finns det för mätetal eller data du önskar du hade kunnat få?

Vad skulle göra det enklare eller roligare att jobba med avfallsdatan?

Vad finns det för tidskrävande moment som du hade velat slippa/förenkla när du hanterar datan?

C. Impact map



D. Interview guide for User evaluation

Intro

Vi skriver vårt examensarbete på Chalmers tillsammans med Business X. Vårt arbete går ut på att vi har undersökt deras tjänst och identifierat förbättringsområden som vi tror kan skapa mervärde för kunden. Utifrån detta så har vi tagit fram en kundportal som i första hand riktar sig till den person ute hos kunden som har mest kontakt med Business X, alltså till dig. Så det vi vill göra nu är att utvärdera funktionaliteten i kundportalen för att se hur användbar, effektiv och användarvänlig den är.

Så vi kommer att visa en prototyp av kundportalen och så kommer vi be dig att utföra lite uppgifter och ställa lite frågor kring hur du upplever portalen samt be dig att tänka högt när du utför uppgifterna. Vi vill vara tydliga med att det inte är själva utseendet på portalen som utvärderas utan funktionerna och din upplevelse av dem. (Ex. Krångligt att hitta mellan flikarna = relevant, fula färger = irrelevant). Sist men inte minst så vill vi också trycka på att det är prototypen som vi utvärderar och inte dig.

Inledande frågor

Hur ser din kontakt med Business X ut?

- Hur ofta och i vilka ärenden?

Vad vet du om de olika tjänsterna som Business X erbjuder?

- Vilka tycker du är de största fördelarna med Business X som gör att ni vill anlita dem?

Kan du lite kort berätta vilka typer av kärll och fraktioner ni har?

Startsida:

Kontaktformuläret

Vi har ett scenario där ni har ett trasigt kylskåp som ni vill att Business X ska hämta. Använd dig av kundportalen och visa hur du hade gått tillväga för att göra det. Tänk gärna högt.

Hade du velat använda dig av ett formulär för att ta kontakt med Business X kring de här ärendena?

- Saknar du något ärende?

Kontakt:

Ta en minut och kika runt, tänk gärna högt!

Vem hade du hört av dig till om du vill:

- Berätta att ni har en ny portkod? Rätt: **SP**
- Skaffa en till fraktion? Rätt: **Säljare**
- Har frågor kring senaste fakturan? Rätt: **Kundtjänst**
- Berätta att ert senaste kärll var smutsigt? Rätt: **Kundtjänst**
- Bolla idéer kring hur ni kan optimera er lösning? Rätt: **Säljare**

Är det något som du tycker är oklart eller som saknas på den här sidan?

Schema:

Ta **en** minut och kika runt här på schemasidan, du kan testa att klicka och scrolla. Tänk gärna högt och berätta vad du ser och vad du tycker om det. (tex om det är något du tycker är bra/dåligt, något som saknas etc.)

Hur tolkar du de olika färgerna i schemat?

Är det givande att kunna se ditt schema över hämtningar?

- Hur hade du använt dig av det?

- Är det något du har saknat tidigare?

Vad tycker du om att man ser sina tidigare och kommande hämtningar både som lista och i en kalender?

Hade du varit intresserad av en sån här funktion där man kan se hur långt borta servicepersonalen är?

Är det något som du tycker är oklart eller som saknas på den här schemasidan?

Statistik:

Ta **två** minuter och kika runt här på statistiksidan, du kan testa att klicka och scrolla. Tänk gärna högt, tex om det är något du tycker är bra/dåligt, något som saknas etc.

Har ni behov av att kunna ta del av data och statistik gällande ert avfall?

- I vilka syften?

Vi visar enkla graferna, här kan man ta fram lite mer enkel statistik, eller så så kan man använda sig av den avancerade statistikfliken.

- Vilken typ av data använder ni?

Har ni några specifika miljömål kopplat till avfall på ert företag idag?

- JA. Hade ni varit intresserade av en tjänst där Business X guidar er till hur ni når dessa mål?
- NEJ. Hade ni varit intresserade av en tjänst där ni sätter upp ett mål tillsammans med Business X och där de guidar er till hur ni når dessa mål?

Är det något som du tycker är oklart eller som saknas på den här statistiksidan?

Mina sidor:

Ta **två** minuter och kika runt här på mina sidor, du kan testa att klicka och scrolla. Tänk gärna högt, tex om det är något du tycker är bra/dåligt, något som saknas etc.

Överst så kan du se dina fraktioner och kärll samt även de fraktioner som ni i dagsläget inte har. Det går även att läsa mer om de olika fraktionerna och se t ex vilken klimatnytta det ger att återvinna de specifika fraktionerna.

- Tycker du att det är givande att få se detta under mina sidor?
- I vilka syften hade du använt dig av den här funktionen?
 - Tror du att det hade hjälpt dig att lära dig mer om de fraktioner du inte har?

Tror du att du hade använt en sån här tidslinje och i vilka situationer isåfall?

- Tanken är att den ska fungera som en logg för att underlätta för framtiden, om ni byter kontaktperson eller får en ny säljare. Har du några tankar kring det?

Hur hade sådana här utmärkelser påverkat ditt användande av tjänsten?

- Hade det gjort dig mer engagerad i tjänsten ni köper av Business X?

På Business X:

På denna flik samlar vi en massa information som kan vara till nytta för dig; tex när Business X håller evenemang som frukostseminarier, nyheter om att de kanske erbjuder en ny fraktion eller artiklar om ämnen som hur de hanterar sekretess eller vad de gör med pantpengarna de får in.

Ta **en** minut och kika runt här, du kan testa att scrolla men det går inte att klicka någonstans här.

Vid vilka tillfällen hade du gått in på den här fliken?

- Vilken typ av innehåll tycker du hade varit givande att se här?

Är det något som du tycker är oklart eller som saknas på den här sidan?

Slutfrågor:

Scrolla runt lite på startsidan.

Baserat på allt du har sett nu, finns det något du hellre hade prioriterat på startsidan?

Är det något du inte har sett på kundportalen nu som du hade velat ha?

Hade du varit intresserad av att ha en kompletterande mobilapp till kundportalen och vad hade du velat kunna göra i en sån app isåfall?

E. Guide for Usability testing

Intro

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Inledande frågor

Hur ser din kontakt med Business X ut?

Hur ofta och i vilka ärenden?

Vad vet du om de olika tjänsterna som Business X erbjuder?

Vilka är de största fördelarna med Business X som gör att ni vill anlita dem?

Kan du lite kort berätta vilka typer av kärll och fraktioner ni har?

Test

Idag är det den 15 mars och enligt ditt avtal har du hämtning varje tisdag.

1. Ditt vanliga kärll med plast har blivit överfullt och du måste beställa en extra hämtning. Du vill att de ska hämta kärlet någon gång imorgon mellan 8 och 17, förutom mellan kl.12-13 för då har du lunch. Hur hade du gått tillväga?
 - a. Hur var den här uppgiften att utföra på en skala från 1-5? Där 1 = mycket svårt och 5 = mycket enkelt.
2. Du ser här att du kommer få en bekräftelse på mail men du vill gärna ha ett sms också. Hur hade du gjort för att ställa in det?
 - a. Hur var den här uppgiften att utföra på en skala från 1-5? Där 1 = mycket svårt och 5 = mycket enkelt.
3. Du är bortrest den 28/3 och är osäker på om det är hämtning den dagen. Hur hade du gått tillväga för att ta reda på det?
4. Du vill flytta denna hämtning av alla kärll till dagen efter kl.13. Hur hade du gått tillväga för att göra det?
 - a. Hur enkelt är schemat att förstå på en skala från 1= mycket svårt - 5= mycket enkelt?
5. Ditt företag har precis bytt adress till Drottninggatan 58. Kolla så att uppgiften är uppdaterad.
6. Du är intresserad av de olika frukostseminarierna som erbjuds och hade velat anmäla dig till ett. Hur hade du gått tillväga för att göra det?
 - a. Hur väl matchar rubriken innehållet på sidan? 1-5
7. I en tidigare uppgift beställde du en extra hämtning till imorgon. Dubbelkolla att det var en hämtning av plast du beställde och inget annat.

8. Hos Business X kan man få ut en klimatrappport med olika data om sitt avfall, sina utsläpp och besparingar. Ta upp den klimatrappporten.
 - a. Hur var den här uppgiften att utföra på en skala från 1-5? Där 1 = mycket svår och 5 = mycket enkelt.
9. Efter flytten har ni ändrat era sorteringslösningar och du känner att du vill få en överblick över vilka olika kärl ni har. Hur hade du gått tillväga för att göra det? (Följdfråga, läs upp kärnen och fraktionerna)
 - a. Hur enkel är den här funktionen att förstå på en skala från 1= mycket svår - 5= mycket enkel?
 - b. Hur logisk tycker du att placeringen av funktionen är? 1= Mycket ologisk, 5=Mycket logisk
10. Klicka in på Kontakt. Ta en minut och kika runt, tänk gärna högt! (Går att klicka på meddela information)

Vem hade du hört av dig till om du vill:

 1. Berätta att ni har en ny portkod? **SP**
 2. Skaffa en till fraktion? **Säljare**
 3. Har frågor kring senaste fakturan? **Kundtjänst**
 4. Berätta att ert senaste kärl var smutsigt? **Kundtjänst**
 5. Bolla idéer kring hur ni kan optimera er lösning? **Säljare**
11. Vilket av de tre senaste åren sorterade ni mest kartong?
12. Du minns inte när du senast hade kontakt med din säljare. Hur hade du gjort för att ta reda på det?
 - a. Hur logisk tycker du att placeringen av funktionen är? 1= Mycket ologisk, 5=Mycket logisk

Intervjufrågor

13. Klicka på startsidan.
 - a. Hur lätt var den här symbolen att förstå? 1= mycket svår, 5= mycket enkel
14. Klicka på artikeln om en ny fraktion. Scrolla runt lite och säg högt vad du tänker.
 - a. Om de inte märker så påpeka notisen. Sedan be dem klicka på den. Ge dem några sekunder att läsa och kolla.
 - b. Tror du att sådana här utmärkelser skulle påverka ditt användande av tjänsten?
15. Scrolla upp lite så kommer du till en grön ruta. Vad tänker du när du ser den här? (Vad är det för något, vad har den för syfte, intresserar den dig)
16. Be dem klicka på dela- och ladda ned-symbolen. Tänker du något annat om den här rutan nu?

F. List of functions and pages

Kontakt

- Presentera kundtjänst
- Presentera säljare
- formulär för extra hämtning/pausa osv (eventuellt att kundportalen guidar kunden till rätt kontaktväg - väljer anledning till kontakt "faktura" + underkategori och hamnar sen hos antingen säljare eller CM)
- Info om vem som ska kontaktas med vilka frågor
- Kunna boka en tid att bli uppringd av säljare

"På Business X"

Info om tjänsten

- vad händer med sekretessen (Sekretessdestrueringsintyg ska finnas på KP)
- hur funkar det med sorteringen (SP lägger alla säckar i samma kärll t ex)
- fossilfria transporter
- kunna zooma in på grejer, "visste du att"-puffar att om du sorterar pant hjälper du kvinnor i Indien. Om du börjar sortera plast kan du spara så här mycket

Info om uppkommande event/webinarier/utbildningar/lagändringar/nyheter

Statistik

- fraktioner
- vikt
- jämför med tidigare år
- jämför med koldioxidekvivalenter/hamburgare
- grafer/tabeller, kunna välja själv
- Ladda ned som jpeg eller excel
- Farligt avfall rapport ska finnas
- ett kort perspektiv och ett macroperspektiv, använda både i B2B syfte men också för de anställda
- Brännbartanalys

Mina sidor

- avtalet
- se gamla och kommande fakturor, arkivera (se info om antal hämtningar och datum)
- Visa vilka fraktioner kunden har nu och vilka som Business X kan erbjuda, berätta klimatnyttan, bilder på kärll de har för att få koll på vad de har (och kan få)
- Output: Adress, företagsnamn, företagsnummer
- Input: till SP och CM (Möjlighet att uppdatera kontaktinformation (namn, mail, tel) Får erbjuda att se introfilmen igen
- Ändra lösenord/inlogg
- Målmodul. Kunden tillsammans med Business X kan sätta upp en målmodul (sänka något, öka något) för att inspirera, motivera, knyta kunden till Business X
- Pushnotiser (mailbekräftelse efter hämtning etc)

Schema för hämtningar

- när hämtades senast
- när hämtas nästa
- vad hämtas
- shortcut för extra/avboka
- Följa i realtid vart din hämtning är

Startsida

- Blandad reklam med länkar till andra ställen på hemsidan (tex storstäd, glas vid sommaren, hämta julgran och artiklar/nyheter etc.)
- Shortcuts till beställa skyltar, brännbartanalys
- Beställa extra
- Demo

Inställningar

- Ställa in mailbekräftelser - bokad, genomförd hämtning, påminnelse om hämtning
- Tema, mörkt/ljust
- byt lösenord
- hantera användare
- språk

Övrigt:

Produkter och Tjänster

- sekretess
- kompost
- storstäd
- fraktioner/kärl
- brännbartanalys
- “Nu närmar det sig sommar, har ni tillräcklig lösning för glas? Vi har sett att i er bransch så brukar behovet öka under sommaren” “Har ni julgranar på kontoret?” - jobba med kunden proaktivt
- Möjlighet att beställa saker; skyltar, jordpåsar, (Jordpåsar – kommer finnas i formuläret för de som har kompostmaskin)

(Personligt)

- Presentation av ditt team - video eller bilder eller annat
- Kunden kan sätta egna mål för företaget
- Hjälpa Office Managern sprida budskapet på kontoret – visa på tv-skärm, skicka med i mail
- Kunna tipsa andra (får rabatt när den du tipsat om har signat)
- Tidslinjen + Potentiella framtida förslag (“Aktivitetslogg”)
 - gillar tidslinje eftersom de byter ofta personer, när man kommer överens om något är det bra att det finns dokumenterat i kundportalen. Kan marknadsföra olika aktiviteter väldigt bra, kan göra den väldigt specifik beroende på bransch och kundstorlek.
 - förslag “för ett år sedan beställde ni extra tömning av glas, vill ni göra det i år också?” eller samma med stor tömning klicka här för repeat order.
- Brännbart-analys (gå igenom och sortera upp avfallet)
 - Tips på hur du ska sortera korrekt
 - Grafer som visar din klimatnytta och hur mycket brännbart minskar om man sorterar rätt.

- ha en skärm i entrén med info om “så här mycket har fastigheten sparat in i CO2” “nästa hämtning kommer om 2 timmar”

- Mäta nöjdheten hur nöjd är du med senaste hämtning, med vår personal, hur nöjd är du med avtalet. 1-10 får mätpunkter kontinuerligt.

- Felsorteringsnotiser i systemet, ett sätt att jobba med kunden reaktivt. “ni har fått en bomkörning, vi bjuder på den första men tänk på de här sakerna”

- Förslag på förbättringar ur ett klimatperspektiv, lägg till det här etc. för att utöka användandet av Business X's tjänster.



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