Tailoring the User Experience

A Qualitative Study of Aesthetic and Practical Customization in an Access Control Prototype

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Abstract

Purpose: As a company develops a new access control interface for its diverse professional users, their focus has broadened from mostly functional requirements to ensuring a positive user experience. In this context, this research explores the research question: *How do aesthetic customization and practical customization influence the user experience of an access control user interface?* By comparing and contrasting how users value these two forms of customization, the study clarifies their individual contributions to the user experience.

Methods: Following preliminary research, qualitative research was conducted using a functional prototype of an access control interface with customization options. These customization options included both aesthetic changes (e.g., font size, background colour) and practical modifications (e.g., quick-filters, widget editing). Eighteen user tests and interviews were conducted where participants explored the prototype, completed scenarios representing frequent tasks and shared their experiences using the think-aloud method. The interviews were transcribed and analysed using a combination of inductive and deductive coding to identify key patterns.

Results: The findings indicate that aesthetic customization was appreciated, however seen as a nice-to-have rather than a need. Aesthetic customization options that were most appreciated by users were liked for functional benefits such as improving readability, highlighting the users' strong focus on usability. Practical customizations were seen as playing a critical role in improving usability, efficiency and optimizing workflows. Allowing users to personalize their information retrieval and task management reduced their cognitive load and improved the functionality of the interface.

Conclusion: While customization can enhance user experience, the study's results indicate that users most value practical features, such as quick-filters and widget editing, that directly support efficiency and task completion. These functionality-driven options had a tangible impact on workflow, whereas purely aesthetic adjustments were seen as secondary enhancements. Consequently, distinguishing between customization types and prioritizing those that enhance usability is essential for fostering higher satisfaction and overall acceptance of the interface.

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1. Introduction

User interfaces are the essential link between people and technology, allowing everyday technology users to interact with complex systems without requiring in-depth technical knowledge. While earlier interface designs primarily focused on usability, this is no longer sufficient due to the increasing emphasis on user experience (UX) (Hassenzahl & Tractinsky, 2006). Usability refers to how effectively and efficiently users can achieve their goals when interacting with a system. In contrast, UX extends beyond these practical concerns by also considering the emotional and interpretive aspects of the interaction (Hassan & Galal-Edeen, 2017). Consequently, a well-designed interface must not only be functional but also provide a positive overall experience. This broader perspective introduces additional challenges to the design process, as designers must consider the feelings, sensations, and sense-making that arise from the interaction (Sauer et al., 2020). To frame this study, the introduction first outlines the context and challenges, followed by a discussion of the preliminary research, which provided insights into user needs and helped refine the research focus by identifying key areas for further exploration.

While UX as a term already appeared in the 1990's, it was only in 2009 academic publications about the topics began to increase, gaining more significant growth in interest around 2018 and 2019 (Hassenzahl & Tractinsky, 2006; Yousof et al., 2021). Given the growing importance of UX in product development over the past decade, the present study was conducted at a company developing a new access control system, which regulates and monitors entry and exit permissions in secured facilities. Their original product, developed over 25 years ago, was primarily designed with usability in mind, rather than user experience. Initially, security managers were the primary users; however, over time their user base has shifted. Nowadays receptionists, amongst others, are important daily system users too. Unlike security managers, who focus on policy enforcement and long-term oversight, receptionists interact with the system in a more dynamic, time-sensitive manner, such as registering visitors, granting temporary access, or assisting employees who forgot their badges. An intuitive interface can make the difference between a quick and positive interaction and a frustrating wait, for example when a visitor arrives at the reception. Consequently, the overarching goal of this project was to update the access control product to enhance the user experience for their diverse operational users by creating a task-oriented, intuitive design. To achieve this, preliminary research was conducted to

explore the needs and priorities of receptionists, who are a key user group, and find which topics needed to be further explored. The insights from this preliminary research helped shape the design of the prototype and the study performed. The following section details the preliminary research and its findings after which the research focus of this study will be introduced.

1.1 Preliminary Research

To refine the interface for receptionists, it was crucial to first understand their daily workflows, challenges, needs, and priorities. This exploratory phase aimed to identify how the interface could better support their varied tasks while also discovering potential areas for further exploration.

Method

Five semi-structured interviews were conducted with receptionists: one at the company where this research was conducted and four at different locations within the University of Twente. Convenience and snowball sampling were used. This entailed visiting various receptions to ask whether they were willing to participate and following recommendations from previous participants to identify additional locations. The receptionists had varying levels of experience, ranging from a reception manager responsible for an entire location to students working part-time as receptionists.

At the start of each interview, participants were informed about the goal of the interview as well as the procedure, after which they were asked for their verbal consent. Once consent was granted, the participants were asked questions about their daily tasks, visitor management systems, the software programs they used, the learnability of these programs, and their enjoyment of using them (see Appendix A for the interview questions). Throughout each interview, detailed notes were taken. When the interview was completed, participants were thanked for their participation and given the opportunity to share any final questions or comments. Immediately after each interview, summaries of the key findings were written to ensure accuracy. These summaries were then compared to identify common themes.

Results

The tasks of the receptionists were highly varied ranging from answering questions in person, online, and on the phone, to managing physical and/or digital keys, acting as emergency response officers, overseeing the lending of tools, and more. Despite these diverse

responsibilities, all the receptionists highlighted they had a fulfilling working day when they were not only able to successfully complete their tasks but, more importantly, were able to create a positive experience for both visitors and employees. They strongly preferred working with simple and efficient systems that not only enhanced operational efficiency but also enabled meaningful human interactions.

A notable challenge identified in the interviews was the lack of alignment between the different systems the receptionists used and their actual needs. Many systems contained unnecessary fields or features that increased cognitive load and hindered efficiency. For instance, one receptionist showed a page to enter visitor data filled with fields that were not used as they were considered irrelevant or duplicative. These inefficiencies increased the time visitors waited and prevented the receptionists from interacting with visitors and providing a welcoming environment.

Another recurring theme was the perception of limited influence over the selection and implementation of systems. Receptionists often felt that decisions about tools and software were made at higher organizational levels. This lack of involvement led them to reflect little on the systems they used, as they felt that it would not change anything, and they just had to manage with the tools they were given.

Training and onboarding for the systems used by the receptionists varied in structure but often included a combination of brief shadowing sessions, written instructions and reliance on colleagues for support. While these methods were generally deemed sufficient, there was a clear preference for intuitive interfaces that required minimal training.

Key insights

Because of the limited influence over the systems used and lack of alignment, customization emerged as an area of interest during the interviews. Participants acknowledged that they would prefer a system they could tailor to their needs so that it would better suit their workflow. Being able to prioritize commonly used features was mentioned as an example of a customization option that would enhance not only usability but also contribute to a more positive user experience through increased feelings of control and reducing frustration.

These findings underscore the importance of designing systems that prioritize both operational efficiency and the ability to foster human connections. Addressing the challenge of cognitive overload, creating the opportunity for customization, and improving the involvement

of receptionists in the decision-making process could significantly enhance the user experience of these tools. By considering both the practical and experiential impacts of customization, designers can create systems that not only better align the system with users' needs and preferences but also reinforce a sense of control and competence. Based on these insights, the research focus was narrowed to user interface customization, exploring its role in enhancing the overall user experience.

1.2 Research focus

The findings from the preliminary research emphasized that users value efficiency and simplicity but also seek control over their workflows. These insights raised the question to what extent design decisions should be made for the users and where users should have control through customization.

This debate is visible in different design philosophies. For example, when looking at the two biggest smart phone brands, Apple and Samsung, where two distinct design philosophies can be seen, both resulting in high user satisfaction scores (Sun, 2024). Apple aims for simplicity, elegance, and functionality, creating detail focused high-value products where all decisions are made by designers. In contrast, Samsung is a clear example of a brand that uses customizability to allow users to tailor their devices to fit their needs and preferences, by for example editing layouts, icons, widgets and many more. They use customer insights and cater to the diverse needs of their users (Sun, 2024). This contrast shows that both designing one well thought out product and designing for customizability can be very successful design methods.

To better understand the influence of customization on the user experience, it is important to differentiate between customization that has an instrumental influence and customization that has a non-instrumental influence. In their research, Thüring and Mahlke (2007) differentiate between instrumental qualities, which influence pragmatic aspects such as usefulness and usability, and non-instrumental qualities, which influence hedonic features such as emotional perception. This framework provides a useful perspective for understanding different approaches to customization. Some customization options are primarily instrumental, aimed at improving functionality and efficiency, while others are primarily non-instrumental, designed to enhance visual appeal and subjective experience. Building on this distinction, this study categorized

customization into practical customization and aesthetic customization. Practical customization aligns with instrumental qualities, as it involves modifications that influence task performance, such as editing widgets and adding shortcuts. In contrast, aesthetic customization falls under non-instrumental qualities, focusing on visual elements, such as colour schemes and rounding of corners. Recognizing the distinction between instrumental and non-instrumental effects of customization allows for a more nuanced understanding of how the different forms of customization shape the user experience and therefor should be added to the interface. Understanding which customization options are most valuable to users is crucial. While offering many customization options can give the users control over their interface, it can also increase cognitive load, making it difficult for users to optimize the interface effectively. Therefore, finding the right balance between flexibility and simplicity is essential to ensuring that customization improves the user experience rather than complicating it.

Building on these insights, this study aims to answer the following research question: *How do aesthetic customization and practical customization influence the user experience of an access control user interface?* While the influence of customization on user experience is widely researched, customization is often treated as a singular concept, overlooking the distinction between different types of customization (Fung, 2008). Understanding the different effects aesthetic and practical customization can have, is crucial for designing effective interfaces. This study bridges that gap by examining how aesthetic and practical customization impact user experience differently providing a more nuanced perspective on customization in UX design. To explore this a customizable prototype with both practical and aesthetic customization options was developed and tested through in-depth interviews with operational users. Participants interacted with different customization features to assess their influence on user experience, focusing on aspects such as usability, learnability, personal preferences, efficiency and satisfaction. Before detailing the research methods, this thesis first establishes the theoretical context of customization in UX design, followed by an overview of the research methods and the resulting findings. Finally, the discussion highlights the implications of these findings and offers recommendations for future research and practical applications.

2. Theoretical Framework

This theoretical framework lays the foundation for examining how practical and aesthetic customization options shape user experiences. It explores the broader context of user experience (UX) design and Human Centred Design (HCD), highlights the distinction between personalization and customization, delves into the dual aspects of user interface (UI) customization, and discusses the balance between giving the users control and managing cognitive load.

2.1 User Experience Design

When exploring the impact of customization on the user experience of an interface, it is essential to first understand what user experience (UX) entails. The International Organization for Standardization (ISO) defines UX as the "totality of perceptions and responses of a person resulting from the use or anticipated us of a product, system or service, including navigation of the physical and virtual environment" (ISO, 2019, p. 3). This definition underscores the comprehensive nature of UX, which goes beyond preventing problems through design to actively creating positive experiences for users. Hassenzahl and Tractinsky (2006), emphasize this further in their comparative analysis of 28 research articles on user experience, concluding that UX is about "contributing to our quality of life by designing for pleasure rather than for absence of pain" (p. 95). In more recent research considers many UX dimensions such as sensory, emotion and engagement, with the most frequently used dimension being usability (Mortazavi et al., 2024). However, UX goes beyond the concept of usability, which focuses mainly on performance and satisfaction (Sauer et al., 2020). ISO defines usability as the "extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use" (ISO, 2017, p. 56). Distinguishing these concepts is crucial when evaluating how different types of customization can address both functional requirements and the broader emotional and experiential needs of users.

While there are different views on the relation between usability and UX, this research considers usability to be an essential part of user experience. Although some approaches focus primarily on non-instrumental attributes, referring to the needs that are not task-related, this study adopts a holistic view of UX that also includes the instrumental attributes, such as effectiveness and efficiency (Hassan & Galal-Edeen, 2017). Because of this perspective on UX,

which not only considers the subjective and emotional consequences of interacting with an interface, but also satisfaction and user behaviour, UX is seen as an extension of usability, and all usability components are included within UX (Sauer et al., 2020).

2.2 Human Centred Design

User experience design is achieved through a human-centred design process (Goel et al., 2022; Corrales-Paredes et al., 2023). The goal of a human centred design process is creating solutions that align with the needs and contexts of users and stakeholders (Göttgens & Oertelt-Prigione, 2021). A key part of this approach is holistically understanding the individuals and applying that knowledge in the design (Sanders et al., 2023). To gain this understanding, a human-centred design process keeps people at the forefront and aims to involve stakeholders at every stage of the design process (Zoltowski et al., 2012). However, user involvement and understanding are not the only design principle. According to Maguire (2001), three additional principles of human centred design are multi-disciplinary design teams, ensuring an optimal division of tasks between users and systems, and employing an iterative design process. These human-centred design principles inform the development phase. By actively involving operational users in semi-structured interviews and usability tests, the design can be refined to ensure it meets their real-world needs. This approach not only captures user feedback on interface functionality but also incorporates their emotional and contextual responses.

Many factors influence a user's experience. Not only do individuals experience the same product differently based on their unique preference and emotional states, but the context of use also plays a critical role. For example, the way a product is perceived can differ significantly depending on whether it is used voluntarily in a home environment or under mandatory conditions at work. A user's experience is therefore a combination of three factors: the user's internal state, the context of use, and the characteristics of the product (Hassenzahl & Tractinsky, 2006). While designers cannot directly control the user's internal state or the context of use, they can offer customization options that empower users to make adjustments to the interface themselves. By allowing users to tailor an interface to their specific tasks, emotional states, and work environments, customization makes the system more adaptable and relevant. Therefore, this research explores how interface customization can positively influence UX by providing users with tools, allowing them to adapt the system to their specific tasks and preferences.

2.3 Personalization and Customization

Besides using a one-size fits all solution, personalization or customization can be used to make the interface better fit the users. While some use the terms personalization and customization interchangeably, a clear distinction should be made. Customization is when the user is the one adjusting the product to their needs and wishes, while when the changes are made for the user by the system it is called personalization (Sundar & Marathe 2010, Zargham et al., 2022). While both personalization and customization result in a product tailored to the user, the main difference is who adapts the system to the user's needs. Sundar & Marathe (2010) argue that the main innovation of personalization is the focus on the person who does the adjusting, noting that although content has been tailored to users for a long time, users being able to do the tailoring themselves is relatively new.

Customization can not only influence the usability of a product, but also has a psychological benefit as it is shown to bring more pleasure into the use of an interface (Alves et al., 2024; Hui & See, 2015). Letting users adapt their own interface can increase their experienced sense of competence and autonomy which can contribute to a positive experience (Kim & Lee, 2019; Zargham et al, 2022). Competence and autonomy are also two of the three basic psychological needs mentioned in the self-determination theory. According to the self-determination theory, letting users feel in charge of their own actions and utilize their skills and abilities causes them to experience happiness and be intrinsically motivated (Kim & Lee, 2019; Magdalena & Gabriela, 2019). Customization is therefore not only about the final result, the ability to customize and the process of customizing also contribute to the overall experience.

2.4 Customization of User Interfaces

Offering customization is beneficial for both the developers and the users (Hui & See, 2015). For developers, it provides an opportunity to cater to a wider range of users by providing adaptable features without overwhelming all users with unnecessary functionalities. For users, it allows them to create an interface tailored to their specific needs and preferences, giving them a sense of control, rather than having to use a "one-size-fits-all" solution (Hui & See, 2015).

An important question to ask is why users choose to customize in the first place. A common challenge in customization is the underutilization of functionalities. Users are often not aware of the options a technology provides, or are unwilling to put in the additional effort to

personalize (Oulasvirta & Blom, 2007). Two important themes are therefore the visibility of customization options and the ease of use. Ease of use is a core principle of usability, ensuring that users can interact with a system efficiently and intuitively. When customization is not easy to use, users may avoid engaging with it altogether, Roy et al. (2024) highlight in their research. As the system needs to be designed for the end-user it is important that each parameter available for customization is understood by the users. This is especially important knowing that while self-efficacy is a positive result of customization, this also prevents them from requesting assistance with customizing, making ease of use even more important (Alves et al., 2024). Mackay (1991) found that lack of time and lack of knowledge are seen as the two biggest barriers to customization. Users often do not know how much time the customization process will take, especially when something goes wrong. Personalization will therefore mostly be done if they feel the benefits gained through customization will outweigh the time and effort they need to invest (Mackay, 1991). Building on these insights, Findlater and McGrenere (2010) suggests that while personalization can improve efficiency, it also poses challenges to feature discovery if users lack awareness of certain functionalities or do not recognise their value. Even when personalization could be beneficial, users may hesitate to invest the necessary effort if they do not clearly see the payoff. This echoes Mackay's emphasis on the perceived cost-benefit balance as important determinants of personalization use.

Since users typically lack the levels of expertise of designers, engineers and researchers, the amount of customization offered should be carefully considered. Excessive freedom can lead to poor design choices and confusion (Scott-Sharoni et al., 2021). As Scott-Sharoni et al. emphasize, "it is essential for any customization to not exceed the boundaries of the system" (2021, p. 157). Setting boundaries to the customization options ensures that users without the necessary expertise are protected from making detrimental adjustments or misusing the system. However, users' customization ability can differ per user group (Gu & Tayi, 2015). Therefore, it is crucial to find the right balance between giving the user freedom to make adjustments that benefit them and shielding them from potential issues.

Customization is often considered as a single concept with no distinctions made between different types of customizations. However, when examining personalization, Fung (2008) demonstrated that different types of personalization lead to different effects. By distinguishing between remembering, comprehension and association, their research found that comprehension-

and association-type personalization had a greater positive impact. Comprehension-based personalization interprets user behaviour by assigning meaning to their actions, while association-based personalization compares an individual's behaviour to others with similar patterns to predict wants. Both methods improve user commitment to a website more effectively than adjustments solely based on remembering user behaviour from previous visits. Similarly, when it comes to customization, it is likely that not all types of customizations contribute equally to the user experience. Based on the distinction Thüring and Mahlke (2007) make between instrumental and non-instrumental qualities, this research introduces the distinction between practical and aesthetic customization. Aesthetic customization focuses on surface-level changes such as themes, colours, or font size. In contrast, practical customization involves functional adaptions that tailor information visibility and workflows. Recognizing these differences allows a more precise examination how these different types of customizations shape the user experience.

2.5 Cognitive load

Besides protecting the user against potential issues through bad design, cognitive load is also important when considering the right amount of customization. Cognitive load theory has three main assumptions (Sweller et al., 1998). Firstly, that the working memory is limited. A person's working memory can only process a certain amount of information at a time, meaning that any additional information will not be processed. The second key assumption is that long-term memory is unlimited. When already being familiar with something, similar information has a reduced cognitive load in the future. The third key assumption is that efficiency matters. When unnecessary cognitive load is removed, the users can focus on the meaningful information improving their performance (Sweller et al., 1998). This limit to the human cognitive capacity is also true when talking about the amount of customization that should be offered. While users generally enjoy having choices, sometimes there is also too much choice.

According to Schwartz (2005), people often believe that to maximize welfare, freedom needs to be maximized, therefore choice should be maximized. However, while having some choice does lead to enjoyment, more choice can lead to paralysis rather than freedom. In their research, Iyengar and Lepper (2000) found that having too many choices leads to less motivation to choose. When comparing participants with 6 options to choose from with participants with 30 options to choose from, the participants in the limited choice contexts were more willing to

exercise their opportunity to choose. However, participants in the extensive context found the process to be more enjoyable, but also difficult and frustrating at the same time. Eventually, they were less satisfied with their choices. This shows that having many choices can be both enjoying and overwhelming simultaneously (Iyengar & Lepper, 2000). When considering providing choices in a user interface, it is important to consider that it not only gives the user freedom, but also the burden of making a decision (Fernandez, 2005). Therefore, carefully selecting which choices to provide and how many, can help optimize the positive effects and minimize the negative.

The number of choices that lead to overload can be different based on the context. Extensive choice can be experienced as more or less limited based on the experience of the chooser (Gu & Tayi, 2015; Iyengar & Lepper, 2000). Therefore when incorporating choices in the design it is important to know to what extent it brings joy to the users, and at which point there is a choice overload that might even lead to decision paralysis. The concept of choice overload becomes key in deciding how many customization-features to implement—and how to present them so that they remain accessible without being overwhelming.

The tension between offering freedom to the users to meet their individual needs and not overloading users with customization is important to consider, however it is also important to consider that customization can be used to reduce cognitive load. If customization can be used for filtering information through highlighting the relevant aspects and removing excess information it will in turn reduce the cognitive load for the users (Quiroga et al, 2004).

2.6 Summary

User experience extends traditional usability by focusing not only on usability but also on designing for enjoyment. In a human-centred design context, users' needs, emotional states, and the broader usage environment all influence how products are perceived. To tailor interfaces, personalization (system-driven) and customization (user-driven) can be implemented. Customization can enhance users' sense of control but is often underused due to limited awareness or difficulty in setup, highlighting the need for clear and easy-to-use options. Yet offering excessive choices could overwhelm users through cognitive overload and decision paralysis. Based on these theoretical insights, this study explores how both aesthetic (e.g., changing colors, fonts, backgrounds) and practical (e.g., adding quick filters, rearranging

widgets) customization options influence user experience. By comparing these two types of customizations, the research aims to clarify their different effects on user experience.

3. Methods

This study employed a qualitative user study, combining usability testing and semi-structured interviews to gain an in-depth understanding of user experience and motivations in access control interfaces. A qualitative approach was chosen because it allows for detailed insights into users' behaviours, preferences, and decision-making processes. A total of 18 usability tests were conducted with 19 everyday users, each session lasting on average 1.5 hours. These interviews consisted of two main phases. First, general usability testing, where users interacted with the interface and performed predefined tasks to experience its functionalities firsthand while using the thinking aloud method. This was followed by a semi-structured interview, allowing participants to reflect on their experiences and discuss their opinions on the customization features in more detail. This approach ensured that participants could first focus entirely on interacting with the system before engaging in a deeper discussion during the interview. Before this study was performed, ethical approval was obtained from the Ethical Committee of the Behavioural, Management and Social Sciences Faculty of the University of Twente.

3.1 Participants

The participants were selected using purposive sampling. While the preliminary research focused exclusively on receptionists, the main study expanded to include a broader group of operational users such as location managers, IT specialists and functional leads, to capture diverse perspectives. Therefore, inclusion criterion was that individuals be operational users of the current access control product, as they represent the primary audience for the new interface.

To find participants, the researcher reached out to clients of the company directly and through partner organizations. Additionally, a snowball sampling approach was used, where previous participants were asked to recommend others who met the study's criteria. This method helped expand the sample and ensured a diverse pool of participants with varied job roles.

The participants were between the ages of 33 and 64 and were based in different European countries such as Denmark, Germany, Belgium, and the Netherlands. The interviews

were conducted in either English or Dutch and took place primarily online, with three interviews conducted in person. All participants were regular users of the current access control systems ranging from 1 to 25 years of experience with an average of 10 years. Job roles varied from receptionist to security manager, providing a comprehensive understanding of the diverse needs and preferences of daily users. Participation was entirely voluntary, and no incentives were provided. See Table 1 for participant and interview information.

Table 1: Participant/interview information

Interview nr.	Participant nr.	Age range	Years experience	User type	Language in interview	In person or online
1	1	45-54	10	Expert	English	Online
2	2	55-64	25	Expert	Dutch	Online
3	3	45-54	12	Expert	Dutch	Online
4	4	55-64	14	Expert	English	Online
5	5	55-64	10	Expert	Dutch	Online
6	6	35-44	11	Expert	English	Online
7	7	55-64	14	Everyday	Dutch	In person
8	8	45-54	7	Expert	English	Online
9	9	45-54	14	Everyday	English	Online
10	10	35-44	1	Expert	English	Online
10	11	45-54	8	Expert	English	Online
11	12	55-64	8	Everyday	English	Online
12	13	55-64	5	Expert	Dutch	In person
13	14	35-44	8	Everyday	Dutch	In person
14	15	55-64	22	Expert	Dutch	Online
15	16	25-34	7	Expert	English	Online
16	17	55-64	5	Everyday	English	Online
17	18	35-44	2	Everyday	English	Online
18	19	35-44	7	Expert	Dutch	Online

Note: Participants 10 and 11 were interviewed in a joint session

3.2 Procedure

The interviews were semi-structured meaning an interview guide and list of questions was used, but there was freedom to go in depth on topics or explore new topics. See Appendix B for the full interview guide in both English and Dutch. At the start of each interview, participants were given a brief introduction to the process and asked to give their informed consent through a short questionnaire where the participants first reviewed the relevant study information

whereafter they gave their consent (Appendix C). Once consent was obtained, the audio and screen recording was started.

First demographic questions such as age, highest level of education and years of experience with the current access control product were asked. Following this, the participants were sent the link to the prototype and were instructed to share their screens. During this phase, participants were asked to independently explore the prototype while using the thinking aloud method, sharing all their thoughts and impressions.

Once participants completed their initial exploration, they received a brief explanation of the prototype's navigation options and filter functions. They were then asked to perform specific scenarios that mimicked common tasks performed by the users in their daily work as well as highlight different aspects of the prototype's functionality. These tasks included adding a new employee, replacing a forgotten access card, and exploring why someone doesn't have access to a certain space. After the exploration phase and scenarios were completed, the participants were asked questions about their general impression, user experience, navigation, efficiency, ability to perform the required tasks, and other related topic.

Next, the users moved on to the practical and aesthetic customization. The users were explained the different customization possibilities, such as changing the background colour and contrast for the aesthetic customization and editing widgets and adding quick filters to the today view for practical customization. The participants got some time to explore the different options after which follow-up questions were asked. Many of the prepared topics such as their opinions about the different customization options and which they would or would not use were often already discussed while the participants were personalizing and thinking aloud.

Lastly, participants were asked to fill out a final questionnaire, the user experience questionnaire, to gather supplemental data about their experience with the prototype (Appendix D). To conclude the interview, the participants were thanked for their participation, given the opportunity to share any final questions or comments and reminded to contact the researcher for any questions or if they wished to withdraw their participation.

3.3 Materials

The material used was one prototype (see Figure 1). This prototype was a user interface for an access control product similar to the access control product the participants already use. Within this prototype both the aesthetic customization and practical customization options were

provided. The practical customization options that were given included choosing quick filters to add to the today screen, determining which widgets to add to a today screen and the placement of them. These customization options allow the users to choose the amount and types of data to include in their overview screens. The aesthetic customization options that were given include background colour, font, font size, rounded vs. sharp corners, and level of contrast. After the first interview some small changes were made to the prototype, such as ensuring the unblocking action needed for one of the scenarios was possible. These improvements to the prototype allowed the participants to focus on testing the interface and their likes and dislikes without being distracted by mistakes.

3.4 Analysis

After each interview, a transcript was created. The initial transcript was generated using Microsoft Teams or Amberscript and was manually refined by the researcher. Additionally, relevant context, such as actions performed or what participants were pointing at when making certain comments, was added. Once finalized, the transcripts were coded in ATLAS.ti using a combination of inductive and deductive coding. Coding started with predefined themes from literature, such as usability and learnability (Hassan & Galal-Edeen, 2017; Mejtoft et al., 2019). During the analysis, new themes emerged through inductive coding, including additional customization and customization frequency. The codebook reliability was checked by reviewing and discussing one coded transcript with the company mentor, who was present during the interviews and had in-depth knowledge of the study and its context. Any discrepancies were addressed by refining or combining codes, ensuring overall consistency.

4. Results

The following section presents the findings from the interviews, categorized into three main themes: general user experience, aesthetic customization, and practical customization. The themes identified provide insights into user needs, preferences, and expectations, offering a foundation for improving the user experience of the interface.

4.1 General User Experience

The codes identified within the theme of general user experience included usability, navigation, learnability, and look and feel. To better capture specific user concerns, usability was further categorized into flexibility, simplicity & efficiency, and information accessibility, while learnability was divided into intuitiveness and other. These sub-codes help distinguish different aspects of how users interacted with the interface. Please refer to Table 2 for the coding scheme. Even though participants encountered various issues with the prototype, about a third expressed their desire to start working in this environment as soon as possible: "*Ik vind het fantastisch. Ik kan niet wachten*" [I think it's fantastic. I can't wait] (participant 5), and "*I think it's nice, this. And I'd like to work in it already*" (participant 9). When looking at the usability of the prototype, three sub-themes were identified; teams structure, simplicity and efficiency, and information accessibility.

Table 2: Coding scheme general user experience

Code	Sub-code	Definition	Examples
Usability	Flexibility	Statements about needing flexibility in interface	I think it would very also, be very hard to apply this in our company to give out team based accesses, because the entire company does not, um, act and work like that.
	Simplicity & efficiency	Perceptions about how straightforward and quick the system is to use	That's nice how quick that is to get to see as well, because yeah, currently we have to do multiple actions just to get this information.
	Information accessibility	Views on how easily users can find and understand information	There's more information that you can see very easily.
Navigation		Comments related to finding information or moving through the system	You can search here and you can go in here and search for all if you want to do that. I think that's easy to navigate in.
Learnability	Intuitiveness	Ease with which participants could understand and use the system	It's much more intuitive and I, I think I would learn it very fast.
	Other	Additional observations about the learning process	When you have been working with for just a short little while, it's pretty easy to find your way around because it sort of looks like something that you have seen before.
Look and feel		Opinions on the aesthetics of the interface	Het is alleen nog maar mooier en beter. En ja, ik vind het perfect. [It is only even more beautiful and better. And yes, I think it's perfect.]

A key difference in this prototype, compared to the system participants were used to, was the shift to team-based access rights, which introduced both structure and a need for flexibility. While participants were accustomed to assigning access rights directly to individuals, this was no longer possible in the prototype. Instead, access rights were assigned to teams and sub-teams, and individuals are added to those teams. Some participants were enthusiastic about this approach, as it aligned well with their organizational workflows and prevented outdated permissions when individuals switched roles or moved between teams. However, a few participants noted that their organizations do not work in teams in this way or that they often need to grant unique permissions to individuals, making the need to create an entire team for one person an unnecessary extra step. This highlights their need for flexibility to ensure the system matches their workflow. To make solutions that offer structure and simplicity, the results of the interviews showed there needs to be a possibility for exceptions. However, exceptions that are too easily granted could undermine the structure offered and reintroduce the issues the functionality tried to solve. This shows a crucial balance between clarity and adaptability, requiring the system to provide structure while remaining flexible enough to accommodate the varied situations users encounter.

A recurring theme throughout prototype testing was the high value users place on efficiency and simplicity, particularly when it came to information accessibility. As one participant mentioned, "*you can get information and it's one click and it's there. I like that. Very nice*" and "*the information is there instead of you having to keep hitting different buttons*" (participant 17). One feature that demonstrated this was the access check. This access check combined all possible reasons why a user might be denied access to a specific area, ranging from blocked credentials to offline doors, into one overview. Rather than searching multiple pages for the relevant information, the system gave users an overview of the data including actionable solutions. Participants appreciated the time saved and the reduced cognitive load. Participant 16 noted, "*That's really handy, how quick that is to get to see as well, currently we have to do multiple actions just to get this information*". Similarly, participant 4 highlighted the benefit of having recent events listed, stating, "*You include a couple of the last events for the person and for the door so that you don't have to click around in the event log and search manually*". The completeness of the overview was appreciated by the participants, with participant 6 emphasizing, "*What I love here is that you also include the door status in these considerations.*

Because it would not help if everything here is green, but the door is not online". Overall, this underlines the value of integrated overviews of data. By reducing the need to navigate between overviews searching for data, users can resolve issues more quickly making the interface more intuitive and satisfying to use.

Another feature designed to streamline user workflows involved combining processes, which was recognized by participants as effectively improving simplicity and efficiency. Since most organizations allow only one active access card per individual, older cards need to be deactivated whenever a new card is created. By integrating the action of creating a new card and blocking the old one into a single process, users had one fewer step to complete, and potential errors are reduced. Participants appreciated this efficiency but noted that the feature's clarity still needed improvement. Many users were not immediately aware that the processes were combined, so they were confused by the information they had to provide. Additionally, not all companies enforce a one-card policy, therefore they might not need the blocking process to be integrated into creating a new card. Therefore, the system should prompt or suggest blocking the existing card, rather than assuming it, again showing the importance of flexibility. Besides improvements, there were also requests for more functionalities that streamline processes such as temporary blocking for scenarios such as forgotten cards. Having the system automatically unblock cards and deactivate temporary cards could further streamline the process and reduce the user's cognitive load. By suggesting or automatically performing actions, the system not only makes the processes more efficient but also reduces the likelihood of human errors.

Besides these process improvements, participants frequently highlighted navigation as key reason the prototype felt intuitive and easy to learn. The unified search function allowed users to search across different data types, such as spaces, people, and doors, without first identifying the correct category, unlike the current system. One participant noted, *"It's really quite nice that you don't have to go digging into all the different levels. You can actually just type on the screen, it brings it up for you"* (participant 8). The pop-up structure and arrow navigation further helped users to seamlessly return to previous tasks and retrace their steps, "*instead of having to start from the beginning and go back through all the different ones that you have to press*" (participant 17). Additionally, direct information linking further simplified navigation. Users could click on a person's profile, see which teams that person belongs to, and open the team details, eliminating the need to memorize and manually search for the team's name in the

correct table. One participant described this as "*so much easier to use*" (participant 9), while another noted, "*You click on one, and then it's just another click, and you've got that information. It's all just one click away*" (participant 17). Beyond reducing cognitive load, these structures felt familiar, reflecting common browser-based workflows. As participant 1 explained, "*When you have been working with it for just a short little while, it's pretty easy to find your way around because it sort of looks like something that you have seen before.*" Many participants noted that they could work effectively in the prototype after a short time experiencing it. One participant who trains receptionists even joked, "*I'm gonna lose my job, hahaha. They're gonna go: 'this is so easy'*" (participant 17). Such universal design patterns allowed users to transfer knowledge from other systems, reducing the learning curve significantly.

The use of visual cues, such as icons, further supported the learnability by making the navigation more intuitive. Participant 12 mentioned: "*When you have the icons instead of just text it's intuitive. So I think, 'oh, that is where I have to look'*". Additionally, when being asked whether they were able to understand the icons, participant 12 mentioned: "*You're using quite universal icons*" stating it made them easy to understand. This use of visual guidance that users are already familiar with prevents the users from having to read the text, reducing cognitive load. However, participants also mentioned that only using icons could reduce clarity. Therefore combining icons with text ensure speed and simplicity without sacrificing understanding.

When participants first saw the prototype, many immediately noted its fresh and modern design, which stood in stark contrast to their current system. Participant 6 described it as a "*modern and fresh looking interface*", while participant 16 commented on the outdated appearance of their existing system: "*we use old systems, and you can tell it is so old*". While the aesthetic modernization was widely appreciated by the participants, some however also expressed concern about the lack of brand recognition, noting the absence of the companies' recognisable design elements: "*I would a little bit miss the corporate identity I'm used of [company name removed] at this moment, I don't see any orange*" (participant 6). Another participant noted that the interface's clean design did not immediately signal its function as an access control system, though this was not necessarily viewed as a drawback: "*Ik denk wel als mensen daarnaar kijken, dan denken ze 'oh is dit een access control system?' Misschien is dat ook wel het mooie ervan*" [I think that if people look at it, that they will think 'oh, is this an access control system?' Maybe that is also the beauty of it] (participant 3). The importance of the

visual design was further emphasized when participants compared it to their current system. As participant 16 explained: "*Some people, when they just look at something, it literally puts them off. But looking at this, it looks very fresh*" showing how design can shape overall user perception. The minimal and modern look of the prototype contributed to a positive first impression and increased participants' interest in working with the system.

After the usability test and interview were completed, participants filled out the User Experience Questionnaire Plus (UEQ+) (Schrepp & Tomaschewski, n.d.) to assess their perceptions of the prototype's attractiveness, perspicuity, usefulness, personalization, efficiency, novelty and value. They were also asked to rate the relevance of each of these categories. Overall, participant provided positive feedback, with all categories scoring approximately 6 on a 7-point Likert scale. This was also the case for the relevance of each of the categories. See appendix E for the average score per category.

Throughout the prototype testing, reoccurring themes were efficient workflows and the importance of information accessibility. Participants valued functions that provide structure and organization but also emphasized the need for flexibility to accommodate diverse use cases. Familiar icons and navigation patterns reduce the learning curve allowing users to transfer knowledge other systems.

4.2 Aesthetic customization

The findings regarding aesthetic customization examine how participants reacted to various features, how essential or optional they viewed them, how often they expected to adjust those settings, and which additional customization options they would like to see. Table 3 provides and overview of the codes, their descriptions, and example quotes. This section explores participants' perceptions and preferences, highlighting their practical implications and relevance to the interface design.

Table 3: coding scheme aesthetic customization

Code	Definition	Examples
Customization likes	Comments about liking aspects of the customization	I like it the round corners, colors and little, little bit softer to see it.
Customization dislikes	Comments about disliking aspects of the customization	Oh ja, oke, dit vind ik niet zo spannend. Dus deze (base rounding) hoeft voor mij niet zo. [Oh yeah, okay, I don't find this very exciting. So this (base rounding) isn't really necessary for me.]
Value aesthetic customization	Comments about if they would want this included in their interface	Some, some might expect it, but I really think that it's a, it's a need to have. Or, or nice to have, sorry, yeah.
Customization frequency	How often they would customize the interface	I would probably set it up once and then, then use it.
Additional aesthetic customization	What other types of aesthetic customization they would like to have	Maar als ik hier dit, als jullie dit doen, dan moet je ook zeggen, van nou, met de kleur doe ik gewoon hub, speel ik gewoon met wat voor kleur ik wil hebben. [But if you do this here, then you should also say, well, with the colour, I just go boom, and play around with whatever colour I want.]
Customization amount	Comments about how many different customization options are given	You know, I think that's actually enough really. Because you don't want to over complex it.

Participants generally responded positively to the aesthetic customization options, with comments such as "*Ja hier ben ik wel fan van*" [Yes, I'm a fan of this] (participant 3) and "*I think it's state-of-the-art. Users will love to have something that they can play on because this is what users typically do*" (participant 6). When asked about their dislikes, most participants had no significant complaints, though one mentioned that changing the base rounding felt unnecessary. The ease of use was frequently highlighted, with remarks such as: "*It's easy enough*" (participant 12) and "*It's one click, isn't it*" (participant 17).

While the participants appreciated the customization options, their opinions on its value were mixed. Some considered them optional, while others regarded it as an expected feature in modern software. For instance, participant 11 remarked, "*it's nice if it's there, and I would use it if it was, but I wouldn't feel very sorry if it wasn't*". In contrast, participant 2 stated it "*is wel gewoon van deze tijd*" [it's just of this time]. Similarly, participant 1 emphasized that "*the option is there when you're using different software so I think some might expect it.*" This demonstrates contrasting sentiments: while participants do not consider it essential, they still expect it to be there.

Some customization options initially seen as aesthetic customization options were valued by participants for their practical benefits. For instance, increasing the font size using the base font slider was seen as particularly useful: "*I do like the fact you get the font size larger as well. So especially in my advancing years, it gets harder to see*" (participant 8) and "*some people just don't know how to do it. It's such a simple thing but it's there, and they can move it to how big or how small they want it* (participant 17)". One participant emphasized the need for different background colours to distinguish between his test and work environments: "*Deze moeten jullie wel houden. Ik laat dit ook meteen zo. Ja dat is echt geweldig dat het kan. Nee, maar even serieus. Ik snap niet, andere klanten moeten dit toch ook hebben? Of testen die niet? Dan heb je twee omgevingen die zijn exact hetzelfde. Je ziet geen verschil. Nee, dit moet er wel in blijven met stip*" [You really need to keep this. I'll leave it like this too. Yes it is amazing that it is possible. No, but seriously. I don't understand, others should experience this as well? Or don't they test? Then you have two environments that are exactly the same. You see no difference. No, this absolutely has to stay] (participant 3). These practical benefits of the aesthetic customization options highlighted by the participants emphasize their view of the interface as a tool for their work. Functionality is most important to them, and if this can be increased through

a larger font size or using different colours, they would like to see this implemented in the new version. Other aesthetic customization options were seen as non-essential but welcome.

When looking at how frequently the participants would change the aesthetics of their interface, they stated they would like to make the interface their own and adapt it to their tastes but mostly would treat it as one-time setup task at the beginning. Only one participant mentioned they would change their background colour more regularly if they grew tired of the old one. The base font slider, however, was mentioned as a function that would be used more frequently, for example, when showing information to others or when switching between large and small screens. For example, participant 14 mentioned: "*The font slider is good for inclusivity. People with visual preferences can adjust it to suit their needs, making it a more user-friendly system*". Similarly, participant 17 mentioned: "*Font adjustments, like through a base slider, are really useful, particularly for laptops and smaller screens. It would simplify reading for many users.*" This raises the question whether the aesthetic customization options should be on the home screen. Since most of the functions are used infrequently, removing them from the main screen could enhance simplicity. However, participants also noted the convenience of immediate accessibility, and that they would not have to go looking for it. Especially concerning font size adjustments this was seen as a benefit.

If background colour customization is to be implemented, several participants expressed a preference for custom colours using a slider or colour picker over predefined packages. This would allow users to select their favourite colour or align the interface with their company branding. Other desired company style elements were images, brand fonts, and company logos. However, some participants noted that adding company branding would not add value since the interface is exclusively used internally, without external visibility. One participant mentioned it might help convince others in their company of the new product's value: *"...voor ons maakt het allemaal niet zoveel uit, alleen ja, onze afdeling communicatie, die is daar heel scherp op*" [for us it doesn't matter that much, but our communication department is really strict about this] (participant 5). Besides the suggestion to let the user choose their own colours, adding a dark mode was a frequently requested feature as it is "easier on the eyes" (participant 12).

Besides additional features such as company branding and a dark mode, the overall amount of aesthetic customization was deemed sufficient. For example, participant 17 stated, "*I think that's actually enough really. Because you don't want to over complex it.*" While

participants appreciated the simplicity of the aesthetic options, they also valued the attention to details such as the ability to adjust the roundness of the corners: *"I like how it makes everything look a bit softer and modern. It's a nice detail"* (participant 11), *"The level of detail here, it shows thoughtfulness. You can adjust these small things, and it makes a difference for how the interface feels"* (participant 6), and *"These details like the rounded edges add a bit of style without overdoing it."* (participant 12). These design elements were recognized as enhancing the appeal of the interface in a subtle but significant way.

Based on participant feedback, the font slider and a dark mode were identified as the most important aesthetic customization features to include. While the ability to differentiate environments using background colours was appreciated, users preferred more colour options via a colour picker rather than predefined packages. Features like base rounding and contrast adjustment were appreciated for their attention to detail but deemed least critical. While participants appreciated aesthetic customization, they emphasized practicality and functionality as priorities for a good experience using the new interface.

4.3 Practical customization

Similar to the aesthetic customization options, the practical customization options were also coded into likes, value, amount, frequency, and additional practical customization. See Table 4 for an overview of these codes, including descriptions and example quotes.

Table 4: coding scheme practical customization

Code	Definition	Examples
Customization likes	Any comments about liking parts of the customization	Good idea that that you can move it around or yeah.
Value practical customization	Comments about if they would want this included in their interface	Ja dus perfect dit. Ja daar creëer je eigenlijk je eigen dashboard. [Yes, so perfect this. Yes, there you actually create your own dashboard.]
Customization frequency	How often they would customize the interface	Normally you set it once and maybe change it... then it's all set.
Additional practical customization	What other types of aesthetic customization they would like to have	It could be nice if you could, if you could sort of design your own widgets. So you could put in the data that you are needing, so sort of just choosing from a list. You know what I mean?

Unlike aesthetic customization, participants found practical customization significantly more valuable, often considering it essential. Comments included: "*Ja als dit erin zou kunnen blijven, ja dat zou geweldig zijn*" [Yes if this element could stay, that would be amazing] (participant 3), "*the way you see this… fantastic*" (participant 6) and "*Ja nee perfect dat, dat is… dat ziet er heel goed uit, ja. Dat is echt wel… toegevoegde waarde heeft dat*" [Yes no that's perfect, that's… that looks really good, yes. That is really…. it has added value] (participant 5). One participant even requested practical customization options before being shown them: *Pretty cool. Basically just giving me like part of what I've asked for*" (participant 16). This shows that these customization options are not just an enhancement but a key feature that users recognize as missing and necessary for improving their workflow.

Participants particularly valued the ability to create a personalized overview displaying relevant information through editing the widgets and quick filters. As participant 1 explained, "*it would help paying attention to what is important right now. If you set it up with the widgets and the filters that are important to you, then you just get the information in your head when you're*

logging in and you don't have to search for it". Similarly, participant 12 noted, "*That is a good thing because that I will definitely use it to see what's important for me*". A frequently mentioned issue with the current access control program was the lack of overview, where information is often difficult to find: "*In [product name removed], it's spread across multiple databases or tables . . . Here it's all pulled together*" (participant 4). Participants also emphasized the need for proactive system monitoring, needing a clear overview of how well their system is running and being presented with critical system information such as errors. They liked being able to create this kind of overview as result of the practical customization. For example participant 8 stated: "*I'd like to see the health status on the front because that way I can see straight away if someone says to me I've got an issue in one of the buildings, I'll be able to see straight away*", explaining that they did not want to have to look for information after they found out something was wrong but be presented with this kind information before issues arise. Many participants shared this sentiment of wanting to be able to easily view the system is working.

The participants appreciated the ability to edit the widgets directly on the page without navigating to a 'settings' menu. Some participants initially expected to edit the widget order directly on the page by dragging them, as this interaction pattern is commonly used on smartphones and other modern interfaces. However, when being explained this had to be done through the edit widgets screen, they preferred this method as it reduced the risk of accidental changes. Despite this, some participants initially found the process of reordering the widgets unclear initially and required guidance. Additionally, when changing the order of the widgets, participants often had to make multiple adjustments to achieve their desired layout. While the adjustments happened instantly, the pop-up to change the settings covered the widgets, making them less visible. Using more universal design patterns, for example the drag-and-drop used on smartphones, would simultaneously make editing the widgets more intuitive as well as giving users a better overview of the changes they are making.

Regarding quick filters, participants appreciated being able to set frequently used filters at the top of the page and were particularly enthusiastic about adding this information to the today page. They remarked how they could save the filters used frequently in the quick filters and that it was easy to click the quick filter and retrieve the wanted information. They found being able to add these quick filters to the today page the most valuable part. As participant 2

noted, "*Ja dus perfect dit. Ja daar creëer je eigenlijk je eigen dashboard*" [Yes, so this is perfect. Yes, you actually create your own dashboard there]. Participant 12 similarly added "t*hat's a good thing because that I will definitely use to see what's important for me*". While the participants were enthusiastic about the functionality, there was some critique about the way it was implemented. Participant 9 for example mentioned wanting to be able to add them directly on the today page instead of marking them as favorite on the page with the table. Additionally, some participants asked what marking a quick filter as 'favorite' would do, showing this process is not intuitive. This means that it should either become more intuitive, or would require some introduction before use.

As with aesthetic customization, participants noted they would primarily set up the practical customization during initial use, with occasional adjustments as needed: "*Ja, ik denk dat zeg maar op een gegeven moment heb je hem staan voor 80% en dan komt er… misschien zie je, wacht even deze knop is ook nog handig dat ik die hier heb. Daar komt er eentje bij. En dan achteraf, deze controllers gebruik ik niet zo vaak*" [Yes, I think at a certain point you have it set up for 80% and then… maybe you realize, wait, this button would also be handy to have here. Then you add one more. And afterwards, you might think, these controllers I don't use that often] (participant 2). One participant highlighted a critical issue that needed to be solved if more customization is offered: "*it's great that you give the option to the user to individualize the system. And here it would be super important that it really keeps these settings. This is currently one of the main struggles with [product name removed], you can have it the way you want to look at it, but after a software update, this is all gone*" (participant 6). Retaining user settings after updates becomes even more important as customization options increase, to prevent users from having to redo their preferred configurations.

In addition to the practical customization offered in the prototype, participants suggested several additional customization options for the 'home' or 'today' page. When asked about their opinions about the amount of customization participants mentioned several additional customization options they would like to see such as making shortcuts to frequently used pages beyond the quick filters for specific information. This is a function currently included in their interface that they would like to keep. They also want to include links to the other sites used for security management. Some participants suggested it would be helpful to receive updates on key events since their last login, such as blocked users or offline controllers. One participant working

across multiple sites mentioned the need to filter data by location based on their work site for that day. Besides the additional customization wishes related to the home and today page, two other customization options were requested; the ability to fix or hide the navigation menu and the ability to reorder its items.

The placement of the widgets and quick filters was something the participants expressed diverse opinions on. Some wanted to have the option to add the quick filters on the home page for immediate access to critical information: "*If that was the front page for me, that would be great, because I would just look straight out there first in the morning. I'd be able to see what the issues are straight away*" (participant 8). Others preferred keeping the home page minimalistic with widgets on the 'today' page, as explained by participant 12: "*I like the idea of simplicity. So the home screen is clean and I can set up the today's screen the way I want and it's easy to click on it and then have it*". Generally, everyday users, such as receptionists, preferred separate pages with a clean home page, while expert users, such as security managers preferred more information on the home screen. One everyday user however mentioned wanting to have the calendar widget on the home screen. It was also mentioned that the home screen can be used as a standard screen you can always have visible without the people walking behind you seeing the important and potentially private information. This is especially important for users working in public spaces such as the reception, however, less important for users working in a more secure location such as security managers.

Participants found practical customization highly valuable, especially the ability it gave them to create a personalized overview through widgets and quick filters. This not only gave them the ability to create an at-a-glance overview, but also to quickly access critical data. Users emphasized the importance of intuitive editing and flexible layouts that accommodate different roles and work contexts. Ultimately, practical customization emerged as a key factor in enhancing both usability and efficiency, empowering users to tailor the interface to their evolving needs.

5. Discussion

This study aimed to explore the ways in which aesthetic and practical customization influence the user experience of an interface. This discussion presents the main findings of this

research and explores both the theoretical and the practical implications. Finally, the limitations and directions for future research are discussed.

5.1 Main findings

In conclusion, the findings highlight that user satisfaction and usability are primarily driven by a combination of simplicity, efficiency, and the ability to customize the interface to meet individual needs. When answering the research question -*How do aesthetic customization and practical customization influence the user experience of an access control user interface?*- the findings show that while both enhance user experience, practical customization plays a more critical role. Practical customization directly improves usability by streamlining workflows, making information more accessible, and allowing users to tailor the interface to their tasks. Aesthetic customization, on the other hand, was appreciated but seen as less essential, unless it served a functional purpose such as improving readability. This highlights the importance of prioritizing practical customization to improve usability while aesthetic customization can be implemented as an enhancement rather than a necessity.

The results underscored the critical role of simplicity, intuitiveness and flexibility in an interface design aligning with the theoretical concepts of user experience and cognitive load. Participants described their current system as overwhelming and intimidating, showing the importance of reducing the cognitive load. Participants greatly appreciated the efficiency of the prototype, as well as the accessibility of information, particularly compared to their current system, where finding information is often seen as difficult and requiring multiple steps. Because participants used the interface as tool for their work, they prioritized instrumental UX attributes, such as usability and efficiency, over non-instrumental attributes, considering them the most important. Features such as the search bar, integrated workflows, and clear navigation were therefor highly appreciated for reducing time spent on tasks and minimizing errors. This aligns with the work of Quiroga et al (2004), who highlighted the role of presenting relevant information quickly to reduce cognitive load. These pragmatic elements users kept highlighting showed the importance of usability for their user experience, with task efficiency and information availability being the two most important factors. Because of this improved functionality, participants expressed the wish for the new interface to be implemented as soon as possible.

Flexibility emerged as another crucial aspect in accommodating diverse workflows and organizational structures. While participants appreciated the guidance and structure provided by integrated workflows, they also emphasized the need for adaptable solutions that fit unique or complex scenarios. Hassenzahl & Tractinsky's (2006) argue that a good user experience is shaped by a combination of users' needs, system characteristics and contextual factors. Their work highlights the importance of designing systems that accommodate varying user needs and contexts. Consistent with this perspective, the findings of this study suggest that a system that balances structure with sufficient flexibility is essential for addressing users' diverse and evolving needs and contexts, ultimately leading to broader applicability and greater user satisfaction.

Customization played an essential role in the prototype's usability. Practical customization options, such as the quick filters and widgets, helped users create a personalized overview of critical data streamlining information retrieval and giving them a focus on relevant issues without unnecessary navigation. In line with self-determination theory (Kim & Lee, 2019), these kinds of adjustments fostered a feeling of autonomy and competence as it gave users control over their workflow. However, the process of editing widgets and setting quick filters require refinement to improve clarity and intuitiveness showing the importance of iterative design where the implementation of the function should be improved and tested again.

Aesthetic customization, while appreciated, was regarded a nice feature but not essential, unless they provided practical benefits such as improving readability or reduce eye strain, again emphasizing the focus on usability. This focus on usability supports the connection Hassenzahl et al. (2010) found between need fulfilment and affect, as when user needs are met (efficiency and usability), the experience is perceived positively. It also highlights the importance of usability in user experience (Hassan & Galal-Edeen, 2017). The font size adjustment and dark mode were highlighted as most important aesthetic personalization options for improving readability and reducing eye strain. The ability to choose background colours was mostly appreciated for its aesthetic appeal and the potential to make the interface fit their company branding, although these choices were seen as secondary to the task-oriented features. Other aesthetic customization options were recognized as paying attention to detail but being least important.

5.2 Theoretical implications

This study highlights several theoretical insights in understanding how customization influences usability. While prior research often treats customization holistically, overlooking how distinct types fulfil different user needs, this research highlights this conceptual gap and shows that practical and aesthetic customization are valued differently. In this study the distinction was made between practical and aesthetic customization which were valued vastly different by users. Users regarded practical customization as critical to the efficiency of the interface and therefor their experience. By contrast, aesthetic customization was appreciated but seen as optional. This resonates with studies emphasizing how need fulfilment drives positive experiences (Hassenzahl et al., 2010, Hassenzahl et al., 2015). Hence, recognizing the diverse roles of practical and aesthetic customization deepens our understanding of how customization can enhance user experiences.

While this study reaffirms that giving users the ability to adapt the interface fosters a sense of being in control and competence as Kim & Lee (2019) stated, this study also highlights the importance of usage context when evaluating usability. As in this case the interface was seen by the users as a tool used for their work, usability was seen as most important aspect influencing their experience. The control users gained over the interface was manly valued when it allowed them to improve task efficiency and usability, rather than edit the interface for visual reasons. This suggests that in a work setting, practical customization that enhance task efficiency may be more influential for meeting users' needs than purely aesthetic alterations. Future research could examine whether this emphasis on usability shifts in personal or leisure contexts and explore how different usage scenarios moderate the relationship between customization types and user experience.

Prior work on choice overload cautions that too many options can overwhelm users causing them to be less motivated to choose (Iyengar and Lepper, 2000). However, this might not necessarily be the case for customization, more specifically practical customization. Participants did not report feeling confused or overwhelmed by the customization that was offered and would like to add more customization options. While it may be that users simply did not reach their cognitive load limit, this could also indicate that the type of customization matters more than the number of options. In this study, practical customization lowered cognitive load by

giving users quick access to information relevant to them. As a result, even though more options and choices were given to users, their cognitive load decreased.

5.3 Practical implications

Besides the theoretical implications, this study also offers some practical insights for adding customization to new interfaces, specifically work-oriented interfaces. First, practical customization features can play a critical role in enhancing efficiency and user satisfaction. Features such as quick filters significantly improve data accessibility reducing cognitive load and enabling smoother workflows. Users consistently value intuitive navigation, integrated workflows, and practical customization options that allow them to access relevant information without unnecessary searching. The ability to evaluate system performance in one overview, rather than having to retrieve data from multiple pages, greatly enhances usability. While widgets were well received, their applicability depends on the variety of available options. For user groups with diverse roles and requirements, predicting the most useful widgets is challenging. Therefore, a wide range of widgets should be offered or alternative solutions that are more flexible to be adapted by the users and are more universally usable should be explored.

Striking a balance between structure and flexibility emerged as another critical consideration. Structured workflows help reduce errors and provide clarity. However, when they are overly rigid, they can hinder usability by failing to accommodate diverse organizational contexts and unique use cases. To address this, workflows should include options for exceptions to adapt to specific needs without compromising overall usability. However, care must be taken to ensure that exceptions are not too easily granted, as this could undermine the structure, and reintroduce the inefficiencies that the structured workflows aim to eliminate. The key is to provide flexibility within a structured framework, ensuring users can adapt processes when needed while maintaining consistency and usability.

While the aesthetic customization was considered least essential, users strongly preferred a modern interface. Incorporating aesthetic customization features, often found in new and modern interfaces, help combat the image of an interface being old and inefficient and emphasize the new interface as a state-of-the-art system. Especially given the ability to adjust the font size and dark mode are two important functions as these were seen as improving the enjoyment but also improved usability. Other additions should only be considered once core

usability requirements are fully met, ensuring that aesthetics enhance the functionality rather that distract.

Users shared a clear wish to be able to be presented with data that enables proactive decision making. Rather than responding to issues reactively, participants expressed a desire for systems to surface critical information allowing them to anticipate and address potential problems before greater issues arise. Proactive management and being warned by the system were seen as greatly improving the usability. This also reduces the cognitive burden on users, as they no longer need to search through logs or databases to identify and understand issues. By simplifying the process of monitoring system performance, the interface not only helps users save time, but would also improve the overall reliability of the system. These are therefore also important functionalities to further explore.

In conclusion, an effective access control interface must prioritize functions that improve usability. This can be done through integrating practical customization, and balancing structure with flexibility. This will create a user-centred system that is not only efficient and functional but also adaptable to the many different user types and environments. These elements, when being designed and tested in an iterative process involving the users and eventually being implemented, will result in a system that not only provides users with information but also actively supports and assists them in their tasks. By presenting actionable insights and enabling efficient workflows, the interface becomes a tool that help users address issues proactively and perform their responsibilities with greater ease and effectiveness.

5.4 Limitations and future research

While this study provides valuable insights, its limitations should also be considered. First, although the usability questionnaire was used to gather additional data about how participants valued several user experience aspects, and how well they thought these aspects were integrated into the prototype, the results were consistently positive, making it difficult to distinguish which aspects were most important to users. While the high ratings aligned with participants' interview feedback, the method used did not capture meaningful distinctions between categories. Instead of asking participants to evaluate the importance of each aspect on a 7-point Likert scale, a ranking-based approach might have provided deeper insights into users' priorities. For example, Burton

et all. (2022) suggest using Best-Worst Scaling (BWS) instead of a Likert scale, as asking respondents to identify the aspects they find most and least important provides a more precise understanding of which UX aspects users value most. Implementing such an approach in future research could help identify the most impactful UX factors.

Second, the prototype was tested with users of a similar but not identical system due to the limited availability of current users of the new platform. While these users matched the target audience, differences in workflows created a learning curve that may have influenced users' experience. For instance, in the scenario involving assigning access rights, many participants needed reminders that access rights were assigned to teams rather than individuals, which disrupted their workflow. This disruption caused them to be less focused on the features they were testing and influenced their perception of this feature. Researching the effect of adding customization options to an existing user interface rather than a new prototype would therefore be an important area to further explore. Such research would minimize distractions, allowing an isolated focus on the influence of newly added customization features and how users engage with them. Doing so would not only provide insights into how users perceive the value of customization in systems they are already familiar with and use, but also how these features affect usage patterns. For example, how they are incorporated into or disrupt current workflows. Additionally, because the users already have experience with the interface, their additional cognitive load is minimized, enabling them to more accurately judge the amount of customization needed.

Third, because only one design was tested for this study, it does not reflect the entirety of the design process. Since a human-centred design process involves multiple iterative rounds, it would be beneficial to examine whether incorporating user-requested customization changes improves their experience, as well as to identify new areas needing refinement in subsequent iterations. Particularly regarding practical customization, where additional options were requested, it would be worthwhile to explore what the right amount of customization is. A longitudinal study would therefore be an interesting follow-up.

Lastly, because this research focused on one product and its users, the findings represent a single customer segment and may not generalize to other interfaces, industries, or user groups. For example, the value of aesthetic and practical customization in interfaces used for enjoyment rather than in a professional environment could differ significantly. Other customization options,

in both aesthetic and practical categories specific to different applications, could also be valued differently. It would therefore be advisable to conduct similar research with other prototypes and user groups to determine whether customization is valued similarly or if preferences vary. By examining diverse usage contexts and user bases, patterns in customization preferences can be identified. This would provide a broader understanding of the influence of customization and its generalizability across different contexts.

6. Conclusion

This study explored how aesthetic and practical customization influence the user experience of an access control prototype. Through qualitative research involving in user test followed by semi-structured interviews with operational users, valuable insights into user needs, preferences, and expectations were obtained. Overall, participants appreciated the modern look and feel, clear navigation, integrated workflows, and information accessibility.

While the participants liked the customization options offered, they did not value all of them equally. Users viewed the interface as a tool for their work making the usability most important to them. For customization, this meant that while the participants liked the aesthetic customization options, they were seen as less important unless they also had a practical value, such as improved readability. In contrast, practical customization improved the efficiency and overall satisfaction significantly. Users valued the ability to create an overview of relevant data tailored to their needs, reducing cognitive load and time spent on searching for information. These findings indicate that while the aesthetic customizations are optional enhancements, practical customizations have a direct and meaningful impact on daily user experience. Therefore, designers should emphasize practical, flexible features that match everyday tasks, while offering aesthetic customization that does not only serve as decorative element but also enhance usability.

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Appendices

Appendix A – Questions Preliminary Interviews

University service desk

- Hoe ziet een typische werkdag er voor jou uit?
- Wat zijn de belangrijkste verantwoordelijkheden die je hebt?
- Hoeveel verschillende computerprogramma's heb je op een werkdag nodig?
- Hoe makkelijk zijn de systemen die jullie gebruiken om te leren? (binnen of buiten openingstijden)
- Ben je tevreden met die systemen, of zie je ruimte voor verbetering?
- Heb je voldoende training gekregen voor de systemen die je gebruikt en hoe gebeurde die training?
- Is learnability voor jullie belangrijk? (doorstroom?)
- Hoe vaak zijn er updates van jullie systemen, en horen daar trainingen/instructies bij of moet je zelf er achter komen wat er is verandert?
- Welke acties moet je het vaakst op een dag doen?
- Als iemand buiten gewone openingstijden toegang moet krijgen, wat wil je dan van die gene weten?
- Komen er ook mensen bij jou die een afspraak met iemand hebben?
    - Is dat van tevoren aangemeld bij jou?
    - Hoe laat jij de host weten dat de gast er is?
    - Wat wil je van die bezoekers weten?
- Wordt er bij gehouden hoe veel mensen er in het gebouw zijn?
- Zijn er dingen waarvoor mensen vaak bij jou komen die jij weer naar iemand anders moet doorzetten die je eigenlijk zelf zou willen kunnen doen?
- Zijn er acties die je graag zou willen automatiseren?
- Werk het systeem met sleutels goed?
- Denk je dat er naast de buitendeuren ook over gegaan wordt op pasjes?
- Wat zijn de grootste uitdagingen die je tegenkomt in je werk?
- Wanneer heb jij een voldaan gevoel als je naar huis gaat na een werkdag?/Wanneer heb jij nou echt een fijne werkdag gehad?

Company product Users

      General

- Can you describe what a typical day looks like for you?
- How many different programs do you use daily?

      Must haves vs. nice to haves

- Do you use [products]?
  - What are issues do you run into with the current dashboard?
  - Are there any actions that you have to do for which you have to switch to [product]?
  - What tasks do you have to switch to [product] for that you perform often?
  - What tasks does Dashboard not offer that cause you to use [product]?
- What are the actions most performed on a day-to-day basis? (spread throughout the day)
- How many authorization requests do you generally get?
- How often are you adding/changing/removing people in the security system?
- Which aspects of the UI ([products]) do you find most important?
- Are there any aspects of the current UI ([products]) that you don't use?
- In the current dashboard you can open doors, how many different doors do you typically have to open during a day? Are these mostly the same doors or different ones every time?

      Visitor management

- What do you want to know about new visitors and why?
- If new visitors sign in, does the host automatically get a notification or is that done manually?
- Which actions do you currently perform manually that you would prefer to be done automatically?
- How much do you use the visitor management system compared to the security access system daily?

      Learnability

- How long did it take till you felt like you understood the system you are currently using?

- How important is the learnability of a system? Does it need to be very intuitive or is a longer learning curve acceptable?
- Are there any aspects of the UI that you get because you learned it but it doesn't make sense to you?
- Are there any aspects you have to use so rarely that you keep forgetting how to use it?

Inspiration

- Do you have apps or websites that you are really passionate about/you really enjoy using?
- Do you have any dashboards/UI's that you enjoy using?
- Do you have any things you would like to see in a updated version?
- How comfortable are you with using AI?

Other

- Do you often need assistance from administrators etc. and for which tasks?
- Why do you need their assistance? Is this something you would prefer to be able to do yourself, why (not)?

Appendix B – Interview guides (NL/ENG)

English

Key Components	Script
Introduction • Thank you • Purpose • Confidentiality • Duration • Process • Questions • Informed consent • Short introduction of the prototype	First of all, I want to thank you for wanting to participate in our research. Today we will take a look at the new user interface after which I'll have some questions for you. This meeting will be recorded but deleted once the data is analyzed. Before we start, I will need to receive your informed consent so I will send you a link to a survey. Could you please read the information carefully and fill in this survey? *Send* [link to informed consent form] If you have any questions, please ask me. *Continue if informed consent is given* After this meeting I will send the filled in survey to you so you can later read back what this research was about. It also has my contact information and that of the ethics committee so if you have any questions or want to withdraw your participation after we have finished you can send me an e-mail. Then I will start the recording now. So, this prototype we're looking at today is really more about the workflow than the final look. Think of it as a sandbox where we can play around with different ways of doing things. We're focusing on how it works, not how it looks – the styling is still a work in progress What we learn from this will be super useful for both [product names removed]. But here's a heads up: since we built this prototype for [product name removed], there's one key difference in how it handles permissions. Instead of giving access to individual people, you assign rights to whole teams. Then you just add people to those teams. Oh, and you can even create sub-teams if you need to give extra permissions to a smaller group within a team. Does that make sense? Any questions before we dive in? This is all about your opinion so there is no right or wrong. Definitely don't be afraid to let us know if you don't like something.
Demographic questions	First, I have some demographic questions. If there are any questions you would prefer not to answer just let me know and we'll move on to the next one. • What is your age? • What is the highest level of education you obtained?

	• What is your job description? • How long have you been working with [product]? • How often do you use [product]?
Exploring • Play around with prototype • Thinking aloud	Now I will send you the link to the prototype so you can first explore it yourself, take your time for this. Later on I will give you some actions to do in the prototype but first just play around with it for a bit. To try to understand your thought process we would like you to think aloud. So, try to share all thoughts you have while exploring. Could you also please share your screen so we can see what you are looking at?
Scenarios	Next I'll guide you through some of the navigations so you can see some different ways of working. • Using the search bar, look up John Lopez • Also look up the Legal team • And the Stockholm office • Now also look up John Lopez through the navigation menu. • Open John Lopez and open the Legal team • Within this frame go to the Stockholm office. • Also look up the legal team in the navigation menu • Also look up the Stockholm office in the navigation menu. Next we'll do some filtering. If you go to the credentials page, you can use the metrics cards at the top to filter. • You can also add your own filter, can you filter on name? Okay let's move on to some usage cases so you can experience what it would be like to actually use this interface. • Your account needs to be added to the system. Can you add yourself to the system? • Can you add yourself to the security team. • Can you give yourself an access card? • Can you ensure the security team can access the boardroom? • Can you look up your account to check if you filled in all the information correctly? • Mia Williams wants to access the Boardroom in the afternoon however, her card doesn't work, can you find out why? • Robert Brown has forgotten his access card, can you solve this for him?
User Experience interview questions	**General impression** • What do you think about the user interface? • What do you think about this interface compared to what you normally use? • What do you think about the balance between functionality and simplicity in the design? • Did any aspect of the design stand out positively or negatively? **Usability and Intuitiveness**

	• How intuitive do you find the user interface? • How easy or difficult was it to understand how the interface works? • Did you feel you needed additional instructions to navigate the UI? (Where?) • Did you encounter any difficulties understanding what to do at any point? • How easy or difficult was it to find the tools or information you were looking for? **Visual Design and Layout** • What was your overall impression of the visual design of the interface? • How well did the labels match the information you found on the pages? Were they easy or difficult to understand? • Was there anything in the interface that felt unnecessary or irrelevant? **Efficiency and task performance** • What did you think of the efficiency of the interface compared to what you are used to using? • Did you find any features particularly helpful or valuable? • Are there any aspects of the interface that you think will make your work easier or more difficult? • What do you think about the time and effort it took you to complete the tasks? • How well did the interface meet your expectations for what it should offer? • Is there anything you would like to add about your experience using the interface?
Aesthetic customization	Okay, now I'll explain the aesthetic customization options this interface has after which you can explore the options for a bit and then customize it to your tastes. At the right top of the screen you'll see a paint pallet, if you click on this you'll get some different style packages. These packages have different background colors, fonts and level of contrast. Besides choosing a style package you can also edit these different aspects individually as well to make it your own personal style. So you can now try it out, please again share your thoughts while you are making the changes.

Practical customization	Okay great. Now there are also some practical customization options available. If you go to the today page, you can choose which widgets you want to see, as well as the information in some of the individual widgets. When we go to the home page, you can choose which quick actions you want to display there. (edit when Jeroen is finished with the prototype) So can you now adapt those pages to what you imagine would be most useful for your daily work?
Customization interview questions	Perfect, now we'll move on to the questions. **General perceptions of customization** • What do you think about the customization options? • What did you like about the aesthetic options? • And what about the functional options? • What type of data would you like to see as options for the practical customization? • How important is it for you to have these customization options? • What did you think about the amount of customization offered? • Are there any customization options that you felt were missing/ you which you could add? (That you might have seen in other products) • Which customization options do you value most? • Are there any aspects you would change to the customization options? **Ease of use of customization features** • How easy or difficult was it to customize the interface? • (IF they dislike) How would you prefer to see the customization options offered? **Usage and preference of customization** • Are there any customization options that you will definitely use/ not use? • Do you expect to adjust the customization settings after the initial setup? Why or why not? • Which factors influence your choice of specific customization options? (both for functional and aesthetic) **Impact of customization on usability** • How do these customization options influence the usability of the product for you? • How do you think the customization features affects your ability to complete tasks in the interface?

	• How do you expect the customization options to affect your efficiency using the user interface? **Impact of customization on user experience** • How do these customization options influence the overall value of the product for you? • How do these customization options influence the enjoyment of the product for you? • Did any of the customization options make the product more fitting to your wants and needs? If so, which ones and why? • Is there anything you would still like to add about the customization options? Jeroen, do you still have any questions?
User experience questionnaire	Okay, then you can stop sharing your screen. Lastly, I have a short questionnaire that I'd like you to fill out. This will help us with comparing different opinions and prioritize which aspects to focus on first in further development. Try make a quick and spontaneous decision about each evaluation. It is about your personal opinion so there are no right or wrong answers. [link to questionnaire]
Reflecting and debrief	Okay that was everything I wanted to know. Hope you got a good idea of what we are working on. We are at least very happy with your feedback as it really helps us with determining how to move forward. Do you still have any questions or comments? I want to remind you that you can e-mail me if you later have any further questions or would like to withdraw your participation. Thank you so much for your participation today!

Dutch

Key Components	Script
Introductie • Bedanken • Doel • Vertrouwelijk • Duur • Proces • Vragen • Geïnformeerde toestemming • Korte introductie van het prototype	Allereerst wil ik je bedanken voor je bereidheid om deel te nemen aan ons onderzoek. We zullen zo de nieuwe interface bekijken waarna ik een aantal vragen voor je heb. Deze sessie zal worden opgenomen, maar de opname wordt verwijderd zodra de gegevens zijn geanalyseerd. Voordat we beginnen heb ik je geïnformeerde toestemming nodig. Ik zal je hiervoor een link naar een korte enquête sturen. Zou je de informatie zorgvuldig kunnen doorlezen en de enquête invullen? Laat het me weten als je vragen hebt. *link sturen* [link to informed consent form] *Verder gaan wanneer geïnformeerde toestemming is gegeven* Ik zal de ingevulde enquête na deze sessie naar je toe sturen zodat je later kunt teruglezen waar dit onderzoek over ging en de contactgegevens hebt van mij en de ethische commissie van de Universiteit Twente. Dus als je na deze meeting toch nog je deelname wilt intrekken kan je mij een mail sturen. Dan zal ik nu de opname starten. Dus, het prototype waar we vandaag naar gaan kijken gaat meer om de manier van werken dat het uiterlijk. Je kunt het zien als een soort sandbox waarin we verschillende manieren van werken kunnen uitproberen. We richten ons nu vooral op hoe het werkt, niet hoe het er uit ziet, de styling is nog in ontwikkeling. Wat we hiervan leren kunnen we toepassen voor zowel [product names removed] Maar sinds dit prototype is ontworpen voor [product name removed] is er een groot verschil met hoe er met toegangsrechten om wordt gegaan. In plaats van dat een persoon zelf permissies krijgt, geef je die permissies aan een team. Dan hoef je alleen maar mensen toe te voegen aan dat team. Je kan ook sub-teams maken als een deel van een team extra rechten nodig heeft. Is dat duidelijk? Heb je nog vragen voordat we beginnen?
demografische vragen	Allereerst heb ik een paar demografische vragen. Als je een vraag liever niet wilt beantwoorden, laat het me dan weten, dan gaan we door naar de volgende. • Wat is je leeftijd?

	• What is het hoogste opleidingsniveau dat je hebt behaald? • Wat is je functieomschrijving? • Hoe lang werk je al met [product]? • Hoe vaak gebruik je [product]?
Exploreren • Het prototype uitproberen • Hardop nadenken	Oke, dan zal ik je de link naar het prototype sturen zodat je die eerst zelf kan verkennen. Neem hier gerust de tijd voor. Later geef ik je enkele acties om uit te voeren in het prototype, maar eerst kan je er een tijdje mee spelen. Om je denkwijze te begrijpen, wil ik je vragen om hardop te denken. Probeer al je gedachten te delen terwijl je verkent. Dit gaat om jouw mening dus er is geen goed of fout. Laat ons ook zeker weten als je iets niet bevalt. Zou je je scherm kunnen delen, zodat we kunnen zien waar je naar kijkt?
Scenarios	Nu zal ik je door enkele navigatiemogelijkheden leiden, zodat je verschillende manieren van werken kunt zien. Oke, laten we doorgaan met enkele gebruikssituaties, zodat je kunt ervaren hoe het is om deze interface daadwerkelijk te gebruiken? Nogmaals, deel je gedachten terwijl je de acties uitvoert. Eerst zullen we verschillende manieren gebruiken om naar informatie te navigeren. • Gebruik de zoekbalk om John Lopez op te zoeken. • Zoek ook het Juridische team op (Legal team). • En het kantoor in Stockholm. • Zoek nu ook John Lopez op via het navigatiemenu. • Open John Lopez en navigeer via zijn profiel naar het Juridische team. • En via het Juridische team naar het kantoor in Stockholm. • Zoek nu het Juridische team op in het navigatiemenu. • Zoek ook het kantoor in Stockholm op in het navigatiemenu. Laten we ook wat filters gebruiken. Als je naar de credentials pagina gaat kan je de knoppen boven de table gebruiken om te filteren.

	- Maar je kan ook andere filters toevoegen, kan je filteren op naam? Oké, laten we doorgaan met enkele gebrukscases, zodat je kunt ervaren hoe het zou zijn om deze interface daadwerkelijk te gebruiken. - Laten we nu iemand toevoegen aan het systeem. Kan je jezelf toevoegen? - Kan je jezelf aan het security team toevoegen? - Kan je jezelf een toegangspas geven? - Kan je ervoor zorgen dat het beveiligingsteam toegang heeft tot de bestuurskamer (Boardroom)? - Kan je nu jezelf opzoeken om te controleren of allen informatie correct is ingevuld? - Mia Williams wil 's middags gebruik maken van de bestuurskamer maar ze kan niet naar binnen, kan je er achter komen waarom? - Robert Brown is zijn toegangspas vergeten, kan je dit voor hem oplossen?
User Experience interview questions	**General impression** - Wat vind je van de gebruikersinterface? - Wat vind je van deze interface in vergelijking met wat je normaal gebruikt? - Wat vind je van de balans tussen functionaliteit en eenvoud in het ontwerp? - Viel er een aspect van het ontwerp positief of negatief op? **Gebruiksvriendelijkheid en intuïtiviteit** - Hoe intuïtief vind je de gebruikersinterface? - Hoe gemakkelijk of moeilijk was het om te begrijpen hoe de interface werkt? - Had je het gevoel dat je aanvullende instructies nodig had om door de gebruikersinterface te navigeren? (Waar?) - Ben je op enig moment tegen moeilijkheden aangelopen bij het begrijpen van wat je moest doen? - Hoe moeilijk of makkelijk was het om de tools of informatie te vinden die je zocht? **Visueel Ontwerp en Indeling**

	• Wat was je algemene indruk van het visuele ontwerp van de interface? • Hoe goed kwamen de labels overeen met de informatie die je op de pagina's vond? Waren ze gemakkelijk of moeilijk te begrijpen? • Was er iets in de interface dat overbodig of irrelevant aanvoelde? **Efficiëntie en Taakuitvoering** • Wat vond je van de efficiëntie van de interface in vergelijking met wat je gewend bent te gebruiken? • Vond je bepaalde functies bijzonder nuttig of waardevol? • Zijn er aspecten van de interface die je denkt dat je werk gemakkelijker of moeilijker zullen maken? • Wat vind je van de tijd en moeite die je hebt moeten investeren om de taken te voltooien? • In hoeverre voldeed de interface aan je verwachtingen voor wat deze zou moeten bieden? • Is er nog iets dat je wilt toevoegen over je ervaring met het gebruik van de interface?
Esthetische aanpassingen	Oké, nu zal ik de esthetische personalisatiemogelijkheden van deze interface uitleggen. Daarna kun je de opties even verkennen en het aanpassen aan jouw voorkeuren. Rechtsboven op het scherm zie je een verfpallet. Als je hierop klikt, krijg je verschillende stijlpakketten te zien. Naast het kiezen van een stijlpakket kun je ook deze verschillende aspecten individueel aanpassen om het een persoonlijke stijl te geven. Je kunt het nu proberen; deel alsjeblieft opnieuw je gedachten terwijl je de wijzigingen aanbrengt.
Praktische personalisatie	Oké, top. Er zijn ook praktische personalisatiemogelijkheden beschikbaar. Als je naar Today gaat, kun je kiezen welke widgets je wilt zien, evenals de volgorde van de widgets veranderen. Ook kan je informatie toe voegen aan deze pagina. De quick filters die je eerder hebt gebruikt kan je ook toevoegen aan deze pagina. Kun je nu die pagina's aanpassen aan wat jij het nuttigst zou vinden voor je dagelijkse werk?
Personalisatie interview vragen	Top, gaan we over op de vragen. **Algemene percepties van personalisatie** • Wat vind je van de personalisatiesmogelijkheden?

- Wat vond je van de esthetische opties?
- En wat vond je van de functionele opties?
- Welke gegevens zou je graag als opties voor functionele aanpassing willen zien?
- Hoe belangrijk is het voor jou om deze personalisatiemogelijkheden te hebben?
- Wat vond je van de hoeveelheid aanpassing die wordt aangeboden?
- Zijn er personalisatiemogelijkheden die je mist of die je zou willen toevoegen? (Die je misschien in andere producten hebt gezien)
- Welke personalisatiemogelijkheden waardeer je het meest?
- Zijn er aspecten van de personalisatiemogelijkheden die je zou willen veranderen?

Gebruiksvriendelijkheid van personalisatiefuncties
- Hoe gemakkelijk of moeilijk was het om de interface te personaliseren?
- (ALS ze het niet leuk vinden) Hoe zou je de personalisatie-opties liever aangeboden zien?

Gebruik en voorkeur van personalisatie
- Zijn er personalisatiemogelijkheden die je zeker zult gebruiken of juist niet zult gebruiken?
- Verwacht je de personalisatie-instellingen na de initiële configuratie aan te passen? Waarom wel of niet?
- Welke factoren beïnvloeden je keuze voor specifieke personalisatie-opties? (zowel voor functionele als esthetische)

Impact van personalisatie op gebruiksvriendelijkheid
- Hoe beïnvloeden deze personalisatiemogelijkheden de gebruiksvriendelijkheid van het product voor jou?
- Hoe denk je dat de personalisatiefuncties je vermogen beïnvloeden om taken in de interface uit te voeren?
- Hoe verwacht je dat de personalisatiemogelijkheden je efficiëntie bij het gebruik van de gebruikersinterface beïnvloeden?

Impact van personalisatie op de gebruikerservaring
- Hoe beïnvloeden deze personalisatiemogelijkheden de algehele waarde van het product voor jou?
- Hoe beïnvloeden deze personalisatiemogelijkheden het plezier dat je aan het product beleeft?

	• Hebben bepaalde personalisatiemogelijkheden het product beter afgestemd op jouw wensen en behoeften? Zo ja, welke en waarom? Dan waren dat de vragen vanuit mij, Jeroen heb jij nog vragen? Is er nog iets dat je zou willen toevoegen over de personalisatiemogelijkheden?
User experience questionnaire	Tenslotte heb ik een korte vragenlijst die ik je graag wil laten invullen. Dit zal ons helpen bij het vergelijken van verschillende meningen en te bepalen op welke aspecten we ons eerst moeten richten in de verdere ontwikkeling. Probeer bij elke beoordeling snelle en spontane beslissingen te nemen. Het gaat om jouw persoonlijke mening. [link to questionnaire]
Reflecteren en debriefing	Oke, dat was alles wat we vandaag wilde bespreken. Ik hoop dat je een goed beeld hebt gekregen van waar we op het moment mee bezig zijn. Ik ben in ieder geval erg blij met je feedback, omdat het ons echt helpt bij het bepalen van de volgende stappen. Heb jij nog vragen of opmerkingen? Als je later nog vragen hebt kan je me altijd mailen. Heel erg bedankt voor je deelname vandaag!

Appendix C – Informed Consent Form

Tailoring the User Experience

Research information

This research will study the effect of adding customization options in a user interface. This study explores the user experience of a new prototype and the kinds and amount of customization the users want to perform, if any. This with the end goal to design a user interface that fits the user their needs and wishes.

In this study you will be asked to explore and use a prototype while sharing your thoughts with the researcher throughout the entire process. This will be followed by an interview where you will be asked about your experience, thoughts and opinions. This will take around 90 minutes. Throughout this study your screen and audio will be recorded. The data will be stored online and anonymized by removing any names, job titles, and company names. After the completion of the research, the recordings will be deleted. The collected data will be used for this research and shared with the relevant team members working to enhance the security access products. This research has been approved by the BMS Ethics Committee and poses no risk to the participant.

Participation in this research is completely voluntary and participation can be withdrawn at any time. If you at any point choose to withdraw your participation, all your collected data will be removed.

Contact information for further information:

Marike van Niersen, marike.vanniersen@companyname.com

Contact Informaton for Questions about Your Rights as a Research Partcipant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities & Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-hss@utwente.nl

Please tick the appropriate boxes

	Yes	No
I have read and understood the study information or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	○	○
I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.	○	○
I understand that taking part in the study involves the recording of audio and computer screen throughout the study.	○	○
I understand that the information I provide will be used for further development of the user interface.	○	○
I understand that personal information collected about me that can identify me, such as name, occupation and company, will not be shared beyond the study team.	○	○

Your name

_____

Date

Appendix D – User Experience Questionnaire

Please complete the following questionnaire to assess the user-interface. The questionnaire contains opposing pairs of product properties. The grades between the opposites are indicated by circles. Check one of the circles to indicate your level of agreement with the individual terms.

Example:

unattractive ○ ● ○ ○ ○ ○ attractive

With this assessment, you state that you consider the product rather unattractive than attractive. Try to make a spontaneous decision! It is important not to think too long about the terms to reach a direct assessment. Please always check one answer, even if you are insecure about your assessment of one pair of terms or if you think that it does not fit the product. The opposing pairs are indicated in groups relating to one similar aspect. Under each group, you have the possibility to state the importance of the respective aspect for your overall impression of the product. There are no "right" or "wrong" answers. Your personal opinion is all that counts!

→

In my opinion, the product is generally

annoying ○ ○ ○ ○ ○ ○ ○ enjoyable
bad ○ ○ ○ ○ ○ ○ ○ good
unpleasant ○ ○ ○ ○ ○ ○ ○ pleasant
unfriendly ○ ○ ○ ○ ○ ○ ○ friendly

I consider the product property described by these terms as

Completely irrelevant ○ ○ ○ ○ ○ ○ ○ Very important

→

In my opinion, handling and using the product are

not understandable	○ ○ ○ ○ ○ ○ ○	understandable
difficult to learn	○ ○ ○ ○ ○ ○ ○	easy to learn
complicated	○ ○ ○ ○ ○ ○ ○	easy
confusing	○ ○ ○ ○ ○ ○ ○	clear

I consider the product
property described by
these terms as

Completely irrelevant   ○ ○ ○ ○ ○ ○ ○   Very important

→

I consider the possibility of using the product as

useless	○ ○ ○ ○ ○ ○ ○	useful
not helpful	○ ○ ○ ○ ○ ○ ○	helpful
not beneficial	○ ○ ○ ○ ○ ○ ○	beneficial
not rewarding	○ ○ ○ ○ ○ ○ ○	rewarding

I consider the product
property described by
these terms as

Completely irrelevant   ○ ○ ○ ○ ○ ○ ○   Very important

→

Regarding my personal requirements and preferences, the product is

not adjustable	O O O O O O O	adjustable
not changeable	O O O O O O O	changeable
inflexible	O O O O O O O	flexible
not extendable	O O O O O O O	extendable

I consider the product
property described by
these terms as

Completely irrelevant	O O O O O O O	Very important

→

To achieve my goals, I consider the product as

slow	O O O O O O O	fast
inefficient	O O O O O O O	efficient
impractical	O O O O O O O	practical
cluttered	O O O O O O O	organized

I consider the product
property described by
these terms as

Completely irrelevant	O O O O O O O	Very important

→

In my opinion, the idea behind the product and its design are

dull	○	○	○	○	○	○	○	creative
conventional	○	○	○	○	○	○	○	inventive
usual	○	○	○	○	○	○	○	leading edge
conservative	○	○	○	○	○	○	○	innovative

I consider the product
property described by
these terms as

Completely irrelevant ○ ○ ○ ○ ○ ○ ○ Very important

→

I generally consider the design of the product as

inferior	○	○	○	○	○	○	○	valuable
not presentable	○	○	○	○	○	○	○	presentable
tasteless	○	○	○	○	○	○	○	tasteful
not elegant	○	○	○	○	○	○	○	elegant

I consider the product
property described by
these terms as

Completely irrelevant ○ ○ ○ ○ ○ ○ ○ Very important

→

We thank you for your time spent taking this survey.
Your response has been recorded.

Appendix E – UEQ+ questionnaire scores

Average Scores per Category and the Relevance

Category	Score		Relevance	
	M	SD	M	SD
Attractiveness	6.29	0.76	6.10	0.83
Perspicuity	6.36	0.75	6.33	0.80
Usefulness	6.30	0.68	6.14	0.91
Personalization	5.93	0.73	6.38	0.86
Efficiency	6.38	0.71	6.33	0.91
Novelty	6.06	0.75	6.10	0.89
Value	6.29	0.72	5.90	0,89

Note: rated on a 7-point Likert scale

Appendix F – AI statement

During the preparation of this work the author used ChatGPT Enterprise edition to assist in identifying relevant quotes from the data, improving clarity and spelling. Word's spelling check was used for additional corrections, and Teams and Amberscript were used to transcribe interview recordings. After using these tools/services, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.