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Inclusive Design Thinking

Exploring the obstacles and opportunities for individuals and companies to incorporate inclusive design.

ESRA KAHRAMAN

KTH ROYAL INSTITUTE OF TECHNOLOGY
SCHOOL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

English title

Inclusive Design Thinking: Exploring the obstacles and opportunities for individuals and companies to incorporate inclusive design

Swedish title

Inkluderande designtänkande: Utforskning av hinder och möjligheter för individer och företag för integrering av inkluderande design

Author

Esra Kahraman, esrak.kahraman@gmail.com

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Supervisor: Jarmo Laaksolahti, KTH, School of Electrical Engineering and Computer Science, Department of Media Technology and Interaction Design.

Examiner: Kristina Höök, KTH, School of Electrical Engineering and Computer Science, Department of Media Technology and Interaction Design.

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ABSTRACT

Exclusion by design can be seen in every corner of our society, from inaccessible websites to buildings and it has a significant impact on people with disabilities. As designers and people who have a hand in shaping our environment, having a more holistic view of the target groups when designing for available and new technologies is essential, something that is currently missing. Not only to combat design exclusion but also to challenge and improve current and future products. Related research shows that there are ways to challenge design exclusion but the question of why more inclusive design practices are still not in place remains. This study aims to answer the question: What are the obstacles keeping designers from making more inclusive design choices and what opportunities are there? What are the internal and external factors and how can they be tackled?

The methods chosen to answer these questions were primarily qualitative in forms of interviews, field study, and a workshop. The results from the interviews and empathy-building activities done in the workshop highlighted common obstacles the designers felt in their workplace, both on a personal and corporate level.

SAMMANFATTNING

Uteslutning på grund av design kan ses i alla hörn i samhället, från otillgängliga hemsidor till byggnader och det har en signifikant påverkan på människor med funktionsnedsättningar. Som designers och människor som har en roll i att forma vår omgivning behöver vi ha en holistisk vy av vår målgrupp när vi designar för befintlig men även ny teknologi. Något som för närvarande saknas. Inte bara för att bekämpa uteslutning av design men även för att utmana och förbättra nuvarande och framtida produkter. Relaterad forskning visar att det finns sätt att utmana uteslutning av design men frågan om varför fler 'inclusive' design åtgärder inte tar plats återstår. Syftet med denna studie är att besvara frågan: vad är det för hinder som står i designerns väg från att ta mer 'inclusive' design val och vad för möjligheter finns det? Vad är dom interna och externa faktorerna och hur kan dessa tacklas?

Metoderna som användes för undersökningen av dessa frågor var intervjuer, en fältstudie och workshop. Resultatet från intervjuerna och workshopen framhävde designers gemensamma hinder i arbetsplatsen, på individ och- företagsnivå.

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Esra Kahraman
KTH Royal Institute of Technology EECS
Stockholm, Sweden
esrak.kahraman@gmail.com

ABSTRACT

Exclusion by design can be seen in every corner of our society, from inaccessible websites to buildings and it has a significant impact on people with disabilities. As designers and people who have a hand in shaping our environment, having a more holistic view of the target groups when designing for available and new technologies is essential, something that is currently missing. Not only to combat design exclusion but also to challenge and improve current and future products. Related research shows that there are ways to challenge design exclusion but the question of why more inclusive design practices are still not in place remains. This study aims to answer the question: What are the obstacles keeping designers from making more inclusive design choices and what opportunities are there? What are the internal and external factors and how can they be tackled?

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1 INTRODUCTION

Technology is a big part of our daily lives and what it means to be social in this day and age. However, today many people with disabilities are excluded from society and participation because of bad design. "People belonging to the part of the target population at risk of being excluded from the design outcome are often also excluded from the design process" [32], writes Johansson. This exclusion can be seen on a bigger scale where people with disabilities experience social exclusion [11] for instance by being thought of as 'out of the norm' and designed for in an entirely separate category and in some cases, not thought of at all. What can be done to overcome this? First, we need to understand the barriers we face.

Almost a fifth of the population has some kind of disability [60] and as the world population is aging so is the number of age-related disabilities, adding to the number of people with disabilities in the world [52, 46]. A survey to investigate "Swedes with disabilities and the Internet" [2] shows that 15% of the people with disabilities find it hard to use the internet because of the design. Furthermore, 40% felt a sense of exclusion in digital society to some extent, partly because of the incompatibility with assistive technology [2]. Some argue that there needs to be a shift from assistive technology (AT) to accessible technology [23], meaning, technology that can be used without the need for AT because it can lead to exclusion [2]. In part, because people with cognitive impairments do not make use of AT but accesses digital information as intended [18] which only strengthens the argument for an all-inclusive approach.

There is a long way to go for companies in regards to accessibility. The myths about accessible design being too expensive or time-consuming [32] are often mentioned in corporate settings which can lead to not starting to think about or practice it at all. This study aims to explore user experience (UX) professionals working at a Swedish multinational company manufacturing home appliances, understanding of accessibility, universal and inclusive design through interviews and workshops. More importantly, the aim is to identify the barriers, both internal and external, to make more accessible products and understand how to get there.

Research Question

Exploring from the perspective of industry designer professionals, both experts, and non-experts within the field of accessibility: what are the obstacles and opportunities for individuals and companies to incorporate inclusive design?

2 BACKGROUND

This section begins by introducing accessibility, universal and inclusive design. Thereafter, the regulations that are in place and the current social landscape. Lastly, different methodologies within UX, the role of empathy and empathy-building activities.

Accessibility, inclusive and universal design

As presented by the International Organization for Standardization (ISO 26800), accessibility is defined as the "Extent to which products, systems, services, environments, and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use" [30]. This definition can be interpreted in two different ways [5], one with a focus on disabilities and one without. Some big organizations even have their own set of guidelines with a focus on disabilities like the World Wide Web Consortium that created the Web Accessibility Initiative (WAI) [57] and has the Web Content Accessibility Guideline (WCAG) [58].

Universal design [53] was coined by Ronald L. Mace in 1985, an architect, activist, designer and educator [38]. According to Mace universal design is the concept where design fits all regardless of age, size, ability or otherwise [38]. It is defined as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design." [4] Accessibility is a condition for universal design but both of them have restrictions i.e. "widest range" and "extent possible", respectively. Although accessibility has a more comprehensive definition than universal design.

Inclusive Design is "The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible on a global basis, in a wide variety of situations and to the greatest extent possible without the need for special adaptation or specialized design." [33] A definition that has had a surge in recent years. Some use the definition in a general sense as a way to say to "just" include more people and not specifying whom, in line with one of the interpretations for accessibility, while others speficially mention marginalized communities and people.

Regulations and our society

To ensure that people are included in our society, there have been different legislature and "a political stance on this subject has already been made by important entities such as the United Nations, the European Commission, USA, Japan, China and many more". [46] Like the Americans with Disability Accessibility Act [8], Section 508 of the Rehabilitation Act [31], The Equality Act in the UK [24], and more recently the European Accessibility Act [19, 21]. In Sweden, we have the Discrimination laws that encompass accessibility and other regulations as well as (inter)national guidelines, like Webbtillgänglighetsdirektivet. In recent years the importance of Inclusive Design has been recognized. Big companies have generated new toolkits and guidelines, further developing and defining Inclusive Design. Companies like Microsoft, for example, defines it as a way of working, a methodology, and something "that enables and draws on the full range of human diversity" [41]. Essentially something that is a part of their design system. Apple has Accessibility as a part of its Human Interface Guidelines and IBM has it as an integral part of its IBM Design Thinking and IBM Design Language.

Despite the mentioned legislature, some scholars claim [10] that there is still a "digital divide" in our society. In the words of Gulliksen and Åhman [46], "The question is not so much about whether it is necessary to achieve accessibility, but more about how to achieve it". Kat Holmes, author of the book *Mismatch: How Inclusion Shapes Design*, points out that people who design different aspects and touch-points of our society decides who is included and who is excluded. [27] When people with impairments are faced with an inaccessible world, they are *dis-abled* mostly because of an inaccessible environment. Not because of their impairment. In this perspective disability can be seen as a social construct that appears when coming in contact with an inaccessible environment. Not something that identifies the person. Holmes asserts that the mismatches we have are essentially barriers that hold us back from interacting with the rest of the world and are the ultimate "building blocks of exclusion", all of which is a result of our designed world. It is either enabling or disabling. [32] Ableism is a part of that [22], "ableism is a form of discrimination based on the perception that being able-bodied is the normal human condition. It is superior to being disabled, which in contrast, is associated with ill health, incapacity, and dependence. These understandings are often unconscious and unexamined but have become institutionalized in the beliefs, language, and practices of non-disabled people." [40]

Methodologies, empathy, and empathy-building activities

Understanding users has been a fundamental part of the Human-Computer Interaction (HCI) discipline well before it was established [12, 35] which is why empathy is such an essential part of the UX discipline. Despite this, a lot of today's designs are inaccessible. Can an elevated level of empathy act as a bridge to designers to make more conscious choices? 'Empathy-building' is a way for designers to understand users better. [16, 61, 55].

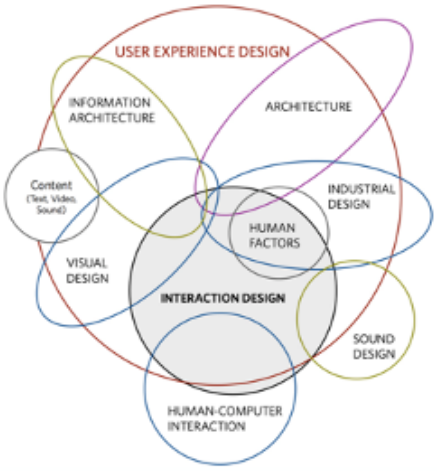

Figure 1: UX Disciplines [49]

Empathy a key part within the field of HCI and related fields such as user-centered design (UCD) and human-centered design (HCD). User Experience (UX) [45] is a term that has gained momentum in recent years, Hassenzahl argues that UX is a "truly extended and distinct perspective on the quality of interactive products" [26]. UX is an umbrella term (see figure 1) for many professions [49]. According to this definition, all of the non-experts involved in this thesis would be considered UX designers.

The Design Thinking methodology has also gained traction in recent years, a methodology based on a human-centered approach [51, 42] which has a variety of models and stages. The stages range from three to seven [1] and all of them include a stage of understanding their users, of empathy. IDEO's HCD process [29, 55], the Hasso-Plattner Institute of Design at Stanford [28] and the UK Design Councils Double Diamond model [15], each with three, five and four stages respectively where the first phase of each model include getting to know the user.

Wright and McCarthy in their paper *Empathy and Experience in HCI* [61], reviews different empathy-building activities like diary studies, art, role-playing, simulations and personas. This can also include other activities such as background research, interviews, and observations. [61, 6] Previous research shows that empathy can be used as a corrective for "the systematic marginalization and low representation of certain people" [3] by "transferring experiences of non-designers to designers in order to shape more inclusive futures". [3, 37, 56] Using empathy can be very powerful in regards to disabilities, especially with designers trying to understand "disabled non-designers" [3] by doing activities to build empathy such as observations [62, 44], empathy maps [54], but also by simulations. [25, 56] Disability simulations entail non-disabled people "trying on" different impairments for a certain amount of time by using low-vision goggles, gloves or other tools to do a task. [59, 39, 43, 47, 50, 20, 56] Some researchers [47] even suggests "using virtual reality to teach disability awareness".

3 METHOD

To understand what obstacles designers felt they were facing when wanting to include accessible practices in the work, various methods that built on each other, both qualitative and quantitative, were used. The upcoming sections are (1) Semi-structured interviews (2) Thematic analysis (3) Ethnographic study and (4) Inclusive design workshop.

Semi-structured interviews

To understand the behavior and attitudes towards the field of accessibility semi-structured interviews [14] were held with employees at the design department at one of the world's largest white appliance manufacturers in the world. Ten employees in total were interviewed and chosen specifically for their UX-related professional role. Getting a wide variety in roles to the greatest extent possible. The interviews lasted around 40 minutes in total, were conducted in person and divided into three themes: (1) Background (2) prior knowledge and experiences of accessibility and (3) obstacles and opportunities. Following these interviews, four experts within the field of accessibility were interviewed in the same manner but with additional questions about their motivations, misconceptions, and advice to other designers.

Thematic Analysis

The interviews were transcribed and thematically analyzed [7]. First by coding and then by categorizing the codes into themes and clusters. In the end, three clusters emerged from the interviews; challenges, advantages, and needs. Each cluster with its own themes. The desired outcome of the workshop was based on those themes, wanting to explore them.

Related and ethnographic research

The clusters and themes that emerged from the interviews presented multi-layered and complex barriers. One key barrier identified by the author was a lack of empathy. Simulations are one way to build empathy and the simulations focused on two impairments, visual and mobility. The empathy-building activities for the visual impairments were an inspiration from previous attempts [34, 13] in addition to advice from accessibility experts that had held similar workshops with simulations before.

While the activities for the mobility impairments were partly based on the previous experiences of experts, they were mainly based on an ethnographic study. Ethnographic studies are a combination of observation, interviews, and participation [36]. In preparation for the workshop, a person in a wheelchair was observed for an extensive time navigating through a kitchen, taking notes and photographs. Followed by contextual interviews, asking about the obstacles faced in their daily lives. All of this data was then used to collaboratively create the activities for the workshop.

Inclusive design workshop

The workshop was divided into three parts: introduction, simulation, and identifying obstacles and opportunities. Aiming to trigger understanding and empathy for people with disabilities and the diverse experiences of their customers as a way to lay the grounds for identifying barriers. Not to evaluate the company's products, or the workshop itself, but rather raising consciousness. To begin with, the 15 attendees were introduced to the topic and then divided into groups of three for the empathy-building activities where each group had different tasks. These were common tasks one would do in a kitchen, all the tasks were done in real kitchens and kitchen set-ups to be as close to real-life as possible (figure 2).

In each group, one of the participants did the task while the other two observed and took notes, rotating until everyone had done a task. Three of the groups boiled an egg while wearing glasses simulating cataract, tunnel vision and blind spots. The observers could jump in to help if asked. Meanwhile, the other two groups for the mobility impairment activities had different tasks for each participant. Group one rotated through three tasks; popping popcorn, filling and emptying a dishwasher while group two boiled an egg instead of popping popcorn. A debriefing followed right after the simulations discussing what had just happened, each group presenting their experiences to each other.

Affinity Diagram

Forming three new groups, the workshop concluded with identifying obstacles and opportunities. Each participant wrote down their answers to the question of what they felt were the obstacles with inclusive design, and how to overcome those. Then they presented them to each other within the group and as a group formed clusters with the written post-it notes, creating categories of their own. After forming the clusters each group collectively named them and gave them "headers" to describe the obstacle, with the opportunities underneath them (figure 6).

Figure 2: The top two figures is the simulation for sitting in a wheelchair and the bottom two visual impairments

Figure 3: Shows the different visual impairments being simulated during the workshop from the inside of the glasses.

4 RESULTS

The first section presents the results from the interviews while the second part presents the outcome of the workshop.

Semi-structured interviews

In the first part of the interview, participants were asked about their professional background and history. The second part of the interview asked questions about prior knowledge and experiences when it came to accessibility, past and potential future obstacles as well as what opportunities were needed to enable working with accessibility more in the future. Both on a personal and corporate level. Separately, experts within the field of accessibility were interviewed, not being asked about definitions but rather common misconceptions, why they felt that people should engage in inclusive practices and their thoughts on why it was not a priority in bigger companies. Ending with advice to designers on where they should start and what they needed to know before they did.

Background

Ten people in the design team (P1-P10) had work experience within the industry ranging from two years to over twenty years. All except one had a formal education, either within engineering, cognitive science or design. In total four accessibility experts were interviewed. Two in-person, one over Skype and one filled in a questionnaire. The last expert did not have the time for an in-person or over the phone interview and asked for a questionnaire instead.

Prior knowledge and experiences

All of the interviewees were familiar with the terms accessibility and inclusive design but only three of them (P6, P8,P9) had heard of universal design. When asked about their thoughts when hearing the term accessibility and how they would define it, six of the interviewees gave answers similar to the ISO standard. The same people had worked with a project within the field either during their education (P3, P4) or in a professional setting. There were mentions of both digital and physical aspects of accessibility but for both making sure that the products could be used by whoever needed to use it and that it ranged across sound, color, contrast, and physical touch points. That it should be multifaceted. While some defined it with examples of better user interfaces (P7), or simply as trying to reach something in the fridge (P2) others saw it as a human right (P8) and noted ethical and moral aspects such as social responsibility and a way of thinking rather than doing.

Interviewee	Gender	Occupation
P1	F	Fit Feel Finish (FFF) designer
P2	F	Junior FFF designer
P3	M	Visual and interaction designer
P4	M	Designer and developer
P5	M	Senior interaction designer
P6	F	Visual interface designer
P7	M	iOS developer
P8	M	Color Matt Finish (CMF) designer
P9	F	Usability researcher
P10	F	Product designer
Experts	Gender	Occupation
E1	M	Researcher
E2	M	Researcher
E3	F	Industrial designer
E4	F	Art director

Figure 4: Designers and experts interviewed.

Only one person (P1) mentioned the word inclusive when talking about accessibility. However, when asked the same question about inclusive design, all pointed out the similarities between the two with the distinction of inclusive design being more focused on inviting and not excluding people while accessibility was regarded to be focused on disabilities alone. The similarities include designing for a full variation of people with varying abilities. When defining inclusive design everyone had an easier time explaining it and along the lines of "Design for everyone. That it is inclusive. For every user group. It can be handicapped, different cultures.. that you do not shut anyone out" (P1). Disabilities were specifically mentioned as the group not excluded in this context, as products that should be inclusive for all.

P2 defined inclusive design as something that was for everyone and as a result, created a functional product. P5 and P8 saw it as a way of working and also gave an example to explain the distinction. P5 meant that accessibility was something done in special cases and inclusive design was a way of working from the start, giving the example of a building where people should enter and exit: "if it was inclusive design there would be no steps or anything for anyone to go through but if accessible then maybe a wheelchair ramp or elevator in the back of the building. Yes, it's accessible but it's not the primary way of entering the story.".

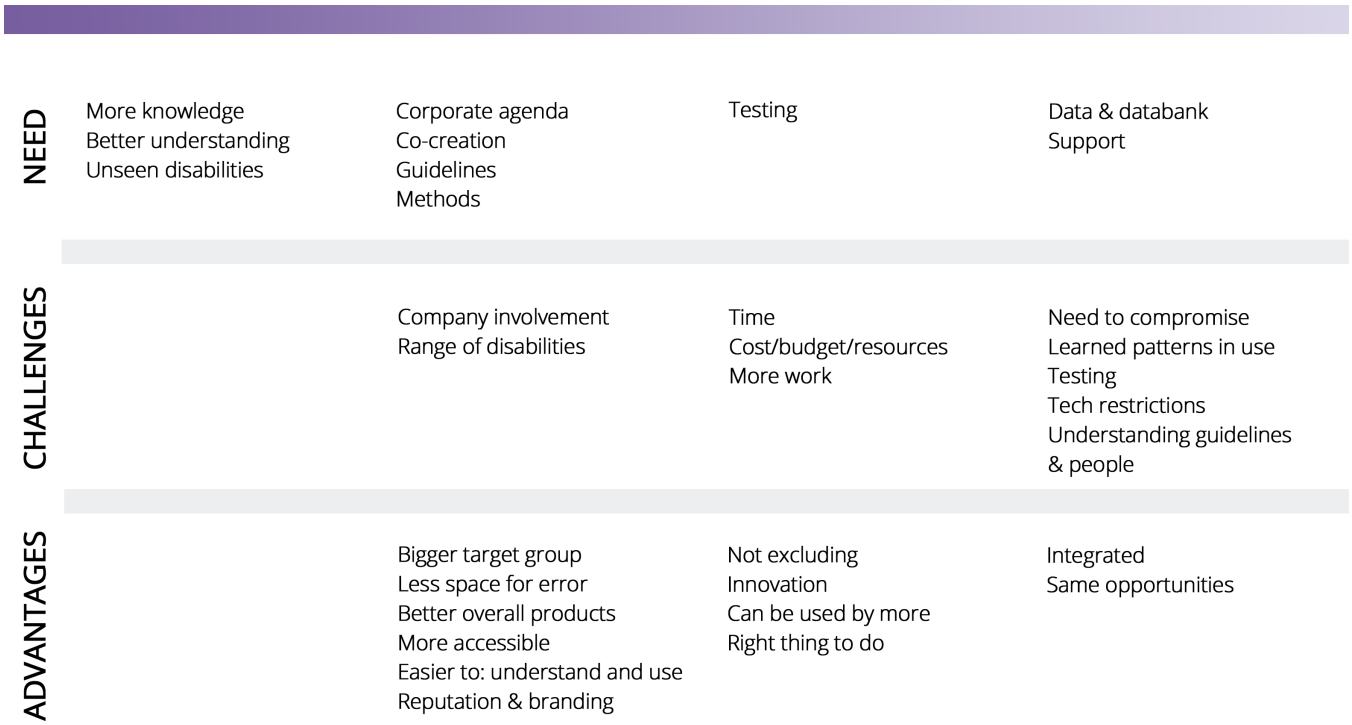

Figure 5: Themes identified from the interviews presented by their importance. From the level of most mentioned (left to right).

Lastly, when asked about universal design only three people had heard of it before. One interviewee felt that it was the same as inclusive design while the other two described it as "one size fits all" and that "everyone can use it". That it might be "universally accessible" but that it probably would not be the best experience.

From the designers interviewed (P1-P10) four (P1, P3, P5, P8) had prior experiences from working in smaller projects in university but only two of them in a professional setting. The senior interaction designer (P5) had done simulations before and the other interaction designer (P3) while trying to win a public contract (with no prior knowledge of the field).

Needs, challenges and advantages

Across the prior experiences, common themes when asked about the perceived difficulties were identified by thematic analysis and divided into three categories: challenges, needs and, advantages. Coded and accounted for depending on how many times they were mentioned, determined the importance of those statements (figure 5).

Needs

On the question of what needs to change two categories emerged: change on a personal and corporate level. On a corporate level, all stated that it needed to be a part of the corporate agenda/goal/objective/brief. This could be in the structure of the company itself, or as guidelines for people at different levels to use. Essentially that it had to be a priority for the company, creating spaces for designers and others, to give it proper time since they felt that was a huge factor as to why it was not included in their present work. Everyone (P1-P10) also shared, that they would like to know more about the areas either from the company by having conferences, lectures, simulations or workshops, *or* learning about them on their own.

The need for change from the top was a common thread throughout the interviews, changing the way they were currently working. On a personal level, P1-P10 wanted to understand the different disabilities better since they felt they did not know as much as they would like to. They wanted general information so they could incorporate it in their everyday work, but also a place to turn to for questions. That being said, having a diverse group that could test the products were one of the main barrier identified.

On the question of what was needed on a corporate and personal level, the experts mentioned that the business needed to be conscious of it. If an idea is not sellable inside the organization, it is not going to work. The change needs to come from the top, reflecting what the designers expressed during their interviews. On a personal level, they said it was about personal development and gaining knowledge. This could be achieved by interacting with people who have disabilities and realize that everyone has the same needs, regardless of their ability. In their advice to designers, the experts urged them to realize who the real users were and not make assumptions, to think broader and challenge themselves into including more people with disabilities by identifying the gaps you have and filling those with knowledge and new experiences.

Challenges
When asked about what they thought were some of the challenges, the most mentioned were the lack of company involvement on the topic and the range of disabilities that are out there, making it harder to create solutions fit for the wide variation. But also it being too time-consuming, compromising aesthetics, constant research, more costly and that it would be too specific where emerging themes. The most pressing needs, however, involved knowing what methods and guidelines to use, how to interpret them, co-creating with people who have different impairments and a need for changes to come from the top but also a way to test the products.

Advantages
On the other hand, they saw some advantages to focusing on making products more accessible which include; targeting more people, less exclusion, better products for everyone, it is the right thing to do, no one is left behind, products not bound to a specific group, find errors and problems otherwise forgotten or overlooked, better reputation, easier to use and that it drives innovation. Unlike the designers, the experts (E1-E4) felt that there were no disadvantages to accessible design, only advantages. Those being; being more conscious of others, easier to sell products and solutions, and more importantly, the product ends up being better for everyone. All of them agreed that we live in a society where people with disabilities are excluded and seen as something *other*. They argued that it starts on a societal level and that big corporations can have a part in changing the attitudes in our society. Misconceptions like 'it is more expensive and it takes more time' only adds to that exclusion, giving an out to not be more inclusive (E1-E4). Other misconceptions they have come across is that people with disabilities are the exception, not realizing that everyone has some kind of disability (to some extent) or will in their future.

Workshop
The workshop was divided into three parts; introduction, simulation and debrief *and* lastly identifying obstacles and opportunities. This subsection will present the results from the second and last part of the workshop.

Simulation and debrief
15 people participated in the workshop. One of the main obstacles identified in the interviews was the lack of understanding of the different impairments, lack of empathy. (see figure 3) The purpose of the simulation was to gain empathy by doing empathy-building activities. After doing the different simulation tasks, either using the goggles or sitting in the wheelchair, the groups of three discussed the following questions; What have you learned? How did it feel? What obstacles did you face? After the discussion or *debriefing* as it is called, they wrote down what they felt was important for every question to later on present to the whole group. Follow the simulation part of the workshop, the groups discussed the three questions above and then presented it to everyone in the workshop.

"What have you learned?" All of the groups mentioned that the main takeaway was how hard it was navigating through the kitchen. For the activities surrounding mobility impairments, the simple task of emptying the dishwasher or popping popcorn became difficult because the lack of reach and boiling an egg took more planning because you either could not see into the fridge properly or had to take more trips back and forth. "The environment is against you" was a phrase used in all groups. These groups also mentioned in their discussion how you have to settle for less because the goal shifts into just getting it done however possible and not necessarily the way you wanted. From a designer's view, in regards to their "own products", they discussed the importance of multisensorial input and not relying on just on sense like sight or sound, to open up the pathways and enable one thing being done in multiple ways.

On the question of "how it felt" the words that were used to describe the feelings during the simulation were: unfamiliar, not practical, risky, uncertain, clumsy, frustrated and bulky. Also a sense of having to settle because you could not do exactly what you wanted to but also a sense of exclusion and lack of freedom.

The *obstacles faced* question gave different answers depending on the activity. This question focused more on tangible answers. For the simulation of the visual impairments, where the task was to boil an egg, most of the obstacles mentioned were about the contrast on the appliances like the stove,

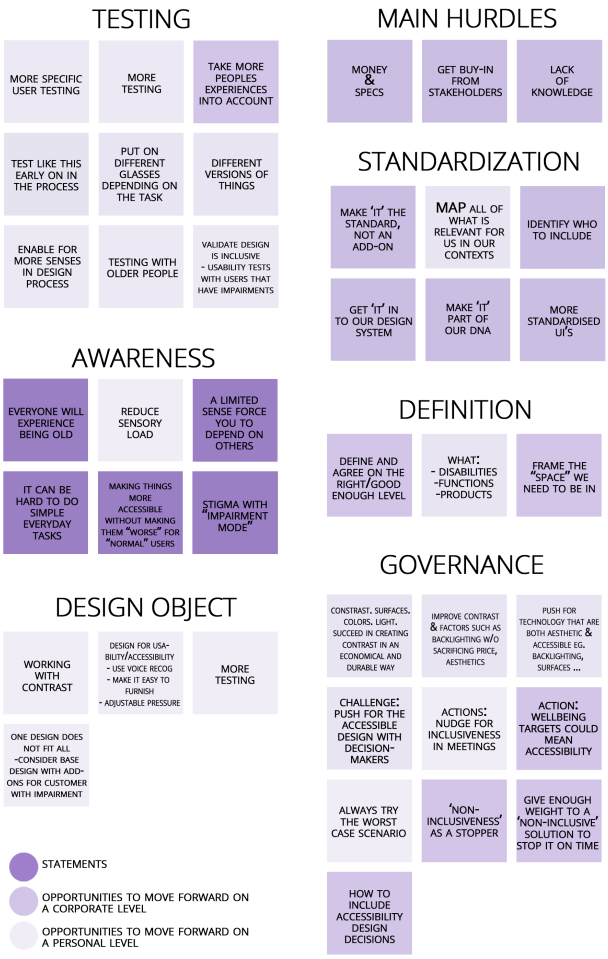

Figure 6: Barriers and solutions identified during workshop.

being too low and not being able to see the touch buttons. When trying to measure up the water in the pan it being hard to discern distances and measurements but also the stove not having tactile, visual or auditory clues. Those that did the simulation in wheelchairs mentioned the difficulty in reaching higher shelves, lack of visibility and choices, *and* difficulties in transporting stuff like plates from one place to another.

Identifying obstacles and opportunities

The last part of the workshop asked the same questions as the last part of the interviews. Here they were asked to have the difficulties from the simulation in mind, and individually write down on post-it notes the obstacles they could identify in their work environment, both on a personal and then corporate level. Followed by writing down opportunities to move forward.

It resulted in a group discussion on obstacles and how they felt they could overcome them: "With what you've learned and experienced today how would you transform your insights into your design and way of working to include a bigger and more inclusive user group?". With their obstacles and opportunities written down on post-it notes, the groups clustered the post-it notes and categorized them. (figure 6) All of the barriers identified in this stage of the workshop mirrored the ones mentioned in the interviews.

The main barriers identified were: testing, design object, governance, standardization, definition, main hurdles and, awareness (as seen in figure 6). However, as with the interviews, the opportunities seen moving forward to overcome those obstacles included changes both on a personal and corporate level. The opportunities identified on a personal level involved things the designers could do in their everyday work, what they called 'low hanging fruit' or low-level changes, like testing, working with contrast, looking up information about different disabilities and nudging others for more inclusiveness e.g. meetings but also testing as a way to understand the different disabilities was held of great importance across the board. The opportunities on a corporate level reflected bigger changes in the organization itself, high-level changes like making it a part of the company's DNA, framing the space and agreeing on standardizing.

5 DISCUSSION

The purpose of the study was to identify the obstacles and opportunities for individuals and companies to incorporate inclusive design. There is a need for further research on how to move forward, [48], one way is to have conversations with people in the field who are creating services and products. First by getting a basic understanding of designers' view and perception of accessibility, universal and inclusive design. How are they thinking about subjects such as accessibility and how can we change those perceptions for a more inclusive design thought process? Then by identifying the obstacles mentioned by the interviewees and workshop participants, to raise consciousness so that they could generate own ways and opportunities for moving forward. This research aims to give insight by exploring the views of different people within the field of UX and the obstacles they feel they are facing. The main takeaway from the interviews was the lack of insight and understanding. One way to raise awareness is empathy-building, hence the Inclusive Design Workshop, triggering designers to help identify obstacles and have a part in how to move forward.

The vocabulary used

The interviews show that vocabulary is important. While the designers had a general sense of the term accessibility, more so than universal design, inclusive design was more inviting and easy to make sense of. During the interviews, it showed that the perceived difficulty of accessibility was higher than inclusive design. People felt more intimidated by the term accessibility but more open to inclusive design. Accessibility was explained to be connected to what they considered to be 'extreme cases' correlating to small parts of the population (at the edge of the curve) and therefore not necessary to design for while words used to describe inclusive design had a more positive tone. Moving forward, perhaps inclusive design should be used instead.

Obstacles and opportunities

A wide range of obstacles, and opportunities, were identified during the workshop that mirrored the challenges and needs from the interviews. Overall, the main obstacles identified during the workshop and interviews, as a whole, included a lack of knowledge and understanding of disabilities (including guidelines, methods, definitions, and testing) and a lack of involvement from the company.

Personal level

On a *personal level*, having a better understanding and more knowledge were the most mentioned needs during the interviews and similarly, awareness and lack of knowledge were two of the main obstacles identified in the workshop. Suggesting that they might need the information brought to them in a different way. Other obstacles that focused more on personal level opportunities included testing, methods, and guidelines (interviews). Suggesting that more practical knowledge would be a great help in moving forward, both on a personal and corporate level. As designers, having some kind of guideline or standardization that could be followed was suggested. That being said, testing seemed to be where they all saw great opportunities as designers to work more inclusively. However, while not having a standard within the company posed as a great obstacle, making it a part of the design system, or company DNA, was proposed. Something they could individually push for in meetings and in their interactions with superiors.

One big obstacle observed by the author was the presence of fear, fear to make other people uncomfortable or being uncomfortable themselves and not wanting to offend anyone. Not knowing where to start for many of them was rooted in this issue and reflected in their desire to learn more. The empathy-building activities opened up a dialogue and softened that fear but it could be pushed even further.

Corporate level

While testing, design object and governance relied more heavily on opportunities on a personal level, the main hurdles, standardization, and definition saw more opportunities on a *corporate level*. Implying that the designers felt big changes needed to come from the top, something the experts mentioned during their interviews as well. During the designer interviews, when asked about opportunities to move forward on a personal level things like "looking up information" or "testing with older people or people with disabilities" were the extent of suggestions. Other changes like the way the designers were working were directly connected to the company and its structure or way of working. That it was the company itself that had to make space for them to work more inclusively. This can be seen in the obstacles that emerged from the workshop as well. Change from the top is a clear need from the designers' side, weaving it into the company DNA itself to enable an all-inclusive approach. One opportunity the designers identified in the workshop was to get buy-in from stakeholders and one way to do that could be to highlight the profitability. Managers, and others, are not ignorant or uninterested but the stark or perhaps harsh reality is that as long as there is not any money to be made it will not be made a priority.

Summary

The workshop seemed to help with elevating the lack of understanding that was found in the interviews, and it produced opportunities for the designers moving forward. Things like working with contrast, holistic testing, learning about the different disabilities on your own and pushing for accessible design. Be that as it may, there was also some resistance. It partly stemmed from the disbelief of the company making those changes but also in the designers themselves. That it would be harder to design for so many different disabilities, leading to unwanted compromises. Despite the different legislature that is out there, the results have shown that there are opportunities for improvement and that a combination of change on both a personal and corporate level needs to happen moving forward.

Misconceptions and reflections

This method suggests that the combination of information, empathy-building, and discussion can be used as a way to raise awareness and identify obstacles as a first step. The empathy-building part of the workshop was only a tool to lead to an internal discussion on how to move forward. That being said, this is not enough but should be combined with actually including people with disabilities in every step of the process.

The uncertainty of not understanding people, that mental block of not being able to comprehend different impairments or “getting in the mindset", that they mentioned, is taken away in this approach and opens up a dialogue that can be continued. Having them be a part of the design process as a whole and not making assumptions.It mirrors the conclusions by Johansson [32] that people with different disabilities should be included in every stage of the process.

One aim of the workshop was to challenge the misconception of people with disabilities being a separate group, of being ’other’. Realizing that everyone would have or already had some type of disability. After giving a simple example during the introduction of the workshop of how holding a baby could be considered being a temporary impairment because of the lack of mobility, the workshop participants realised that designing for that person would also benefit someone with a broken arm or missing a limb.

Methodology critique

There are strong arguments against simulations of impairments with the goal of “empathy as an achievement” [3]. Scholars [52, 43, 50] urge for more interactions with disabled people instead. That it excludes disabled people even more because it does not give an accurate picture of how it is or how it feels to have a certain disability and are strongly against it as they feel it can the opposite effect. Instead “reproducing negative stereotypes” [3] scaring people to be more inclusive because they might feel that it is too hard, not realizing that people who have had their impairments for a long time have ways of coping that someone who uses a wheelchair or goggles for a very short time will not understand. [43] As with empathy, there is a risk that the desire for inclusion "in digital society" can create a power dynamic in which the disabled become passive. Johansson instead argues that if we "design for participation, inclusion will follow".

It could be argued that by doing this you are going against the very thing that you are trying to achieve, to be more inclusive by not having people with disabilities in the room. Something I would agree with if this was the only step taken. However, in a situation like this where companies need to identify the barriers to even *think* about working more inclusively, this could be a part of the first steps in a longer process. Perhaps in trying to be more with or active participation. Other oppositions to empathy mean that it can "reify existing power differentials between designer and non-designer, disabled and non-disabled person" [3] but the same researchers also argue that while empathy activities have their imperfections, it can help those who design to raise awareness. However, that instead of trying to ’be like’, there should be efforts to ’be with’ instead [17].

Before the workshop even began, the author knowingly chose tasks with the intent of them not being too hard to scare people away or feel so negative that it would have the opposite effect. While Bennett and Roshner argue that empathy-building activities can do more harm than good [3] Burgstahler and Doe [9] argue that well-designed simulations can “reduce potential negative consequences” and offer suggestions for maximizing the positive outcomes. By (1) stating the objectives clearly (2) “ensure voluntary participation” (3) show how people with disabilities cope with challenges (4) consulting and involve people with disabilities (5) “support positive attitude change” and lastly but perhaps most important (6) “debrief thoroughly and reflectively acknowledge discomfort”. All of which was done in the simulation to maximize the positive outcomes except for involving someone with a disability in the workshop. This could be done in the future. When the workshop then began, before the simulation, we acknowledged that the experience that was about to be had would not be identical or perhaps even near what someone with those impairments in real life would have. The purpose was to gain a better understanding and have them go away with a different mindset, something that all of them did, in hopes of it helping when identifying both internal and external barriers. They had a whole session after the empathy activities to air out any discomfort or whatever they felt and as an opportunity to open up a dialogue.

Limitations and future work

One limitation during the study was only having access to the design department at the company. While the group had varied professions across the UX spectrum, having people from entirely different fields would perhaps have given different results. Workshops in the future could involve people from more varied fields. During the workshop, I was the only facilitator and since the participants were divided into different groups I could only go on what they wrote down during the simulation and also during the smaller group discussions. This has probably resulted in that I have not gotten all the data but only what they felt was most important. Another limit was the time for the workshop, it only being three hours did not allow for a more thorough understanding of the different impairments and disabilities during the introduction to the topic which would have been beneficial and given an even deeper understanding of the simulated impairments.

Future work can include several steps. Working on the workshop itself as a method to educate people. Perhaps even more importantly, educating designers and spreading a vision, a way of thinking rather than just working. Reflecting what P8 said in his interview, a mindset and not methods. Raising consciousness and awareness that will last and not be

bound to a place but rather the person. Since the workshop is something that is done once and reaches a certain amount of people, finding an alternative way to achieve the same goal like crowd-design and gaining a deeper understanding of customization for all in technology could be an option. By companies accepting the people society has excluded we can hopefully start to change the conversations and the environments we are in.

6 CONCLUSION

This exploratory study aims with the help of qualitative methods, to identify obstacles and opportunities in the workplace. Both on a personal but also corporate level. The findings show that although designers feel there are certain things they can do on their own like having a diverse test group and learn more about disabilities, the company needs to make accessibility a priority. The inclusive design workshop can act as a step in understanding different impairments and to help identify obstacles for designers, however, it cannot be the only step in the design process. There needs to be a continuous inclusion of people with varying disabilities, supported by those who are in the room designing but also making the decisions. This, in turn, will hopefully help to overcome social exclusion, by everyone doing their part.

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