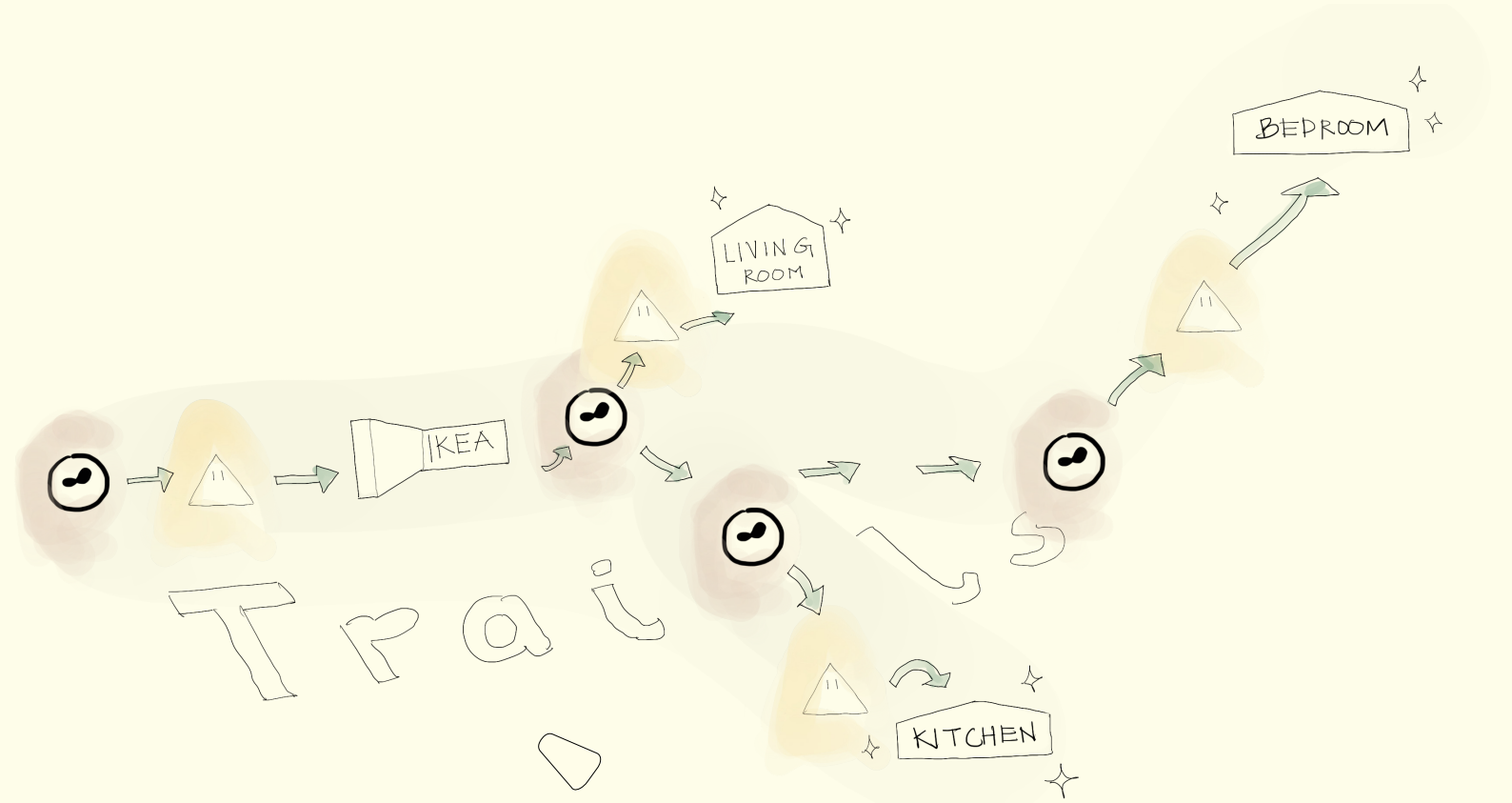

A New Trail of Inspiration at IKEA: A Service for People with Vision Disabilities

An Inclusive Design Thesis Book

by
Sandhya Ravichandran

A New Trail of Inspiration at IKEA: A Service for People with Vision Disabilities

Master Thesis | A New Trail of Inspiration at IKEA:
A Service for People with Vision Disabilities.

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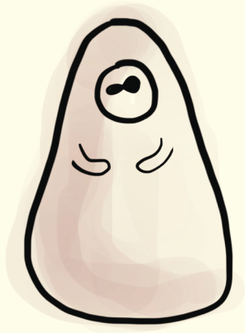
13th August | 2024

dedication

This thesis is partly dedicated to people with any form of vision disabilities across the globe, as they continue to bravely navigate a world that is designed for sighted people. Through this project, I found my own biasses being broken down as I recognised the privileged standing of non-disabled people in society. Before being a social and strategic designer, I am a human, with less-than ideal vision. Therefore, I can relate to how different the world feels when I take my glasses off. Though it was hard for me to initially comprehend this space, thanks to some wonderful people who face these disabilities themselves, I was lent incredible energy, support and guidance. Each one of them made me more aware, considerate and certain about my journey as an inclusive designer.

The other part of this thesis is dedicated to people with typical vision. Without the compassion and sensitivity these people harboured for individuals with disabilities, it would not have been possible to access such crucial resources, people, and organisations that contributed to the success of this project.

Thank you, sincerely.



acknowledgements

I beam when I say this but I had the ultimate academia-industry tag team. I did (strategically) seek out my mentors from TU Delft, but had little idea that their dynamic with my external mentor would be so rocking. I have also received immense support from close family and friends when I went through the ups and downs of this thesis which I must take a minute to mention because they were painful, but I got over (having to relocate during my last 2 weeks, injuring my back severly twice in 6 months, not being able to sit or sleep properly because of the injury, and unsuccessful job hunting as an international). As a social designer, I also want to extend earnest appreciation for the valuable interactions with people having vision disabilities. Lastly, I am thankful for the high interest colleagues at IKEA have shown over my work and the numerous chances they gave me to present my thesis at various occassions. So, here is a thick string of gratitude to everyone involved in this incredibly enjoyable journey of mine.

Firstly, my chair Rebecca- she was poise and helped keep my emotions in equilibrium through her sometimes terse yet fantastically on point feedback. Thank you, Rebecca.

Secondly, my mentor Eric- he was my go-to for anything process-related, evidence-oriented and super descriptive. In the times I did get nervous to cross new waters, Eric was right there, lifting my spirits. Thank you, Eric.

Thirdly, my mentor Larissa- she was admirably kind and patient. She was involved in my thesis almost on a daily basis, it feels like. A strong ally that shed light on how I could be a more inclusive and considerate designer through the little things I say and do. Thank you, Larissa.

Fourth, my dearest friends Ashish and Nupura- both of them stuck by me like stone when I was injured. It's a different issue the injury is still unresolved, but their words of encouragement and their actions saved me from getting irreparably hurt. Thank you, Ashish, Nupura.

Fifth, my caring yet mildly anxious parents- both of them would keep asking how the project was progressing, and made sure to ask if I was doing okay outside of that. That led me to doing in fact lots of things outside of my thesis including learning Dutch, a tough language I can now converse in. Thank you, amma, appa.

Sixth, my sister and her boyfriend- they were the ones who initially shared with me the importance of grounding the thesis in reality, and strategically working it up both a personal and organisational ladder. Thank you Divyaa, Karthik.

Lastly, but importantly, the enthusiastic group for and with whom I developed this beautiful thesis- they are indeed striving for a more inclusive standing and I hope this project did justice to them in some way. Thank you, dear participants.

a summary

In an era where digitalisation has revolutionised people's lives, it is vital to make this transition accessible to everybody, or at least to the many, so that more people may benefit from it. The European Accessibility Act of 2025 (Forum, 2020) is a key stimulus for this, as it mandates organisations to be more inclusive of individuals with disabilities. The retail business is no exception, and as **one of the world's leading retailers, IKEA has stepped up its efforts to address accessibility issues. People with vision disabilities who rely heavily on screen readers, are among its initial customer segments.** However, this group is relevant for more reasons than one as revealed by this thesis, the most important of them being- shopping at IKEA is a very visual experience, making it inaccessible to navigate for individuals with any sort of vision disabilities.

The project narrows its focus to IKEA stores, where visual elements combine with the physical obstacles of navigating a giant indoor maze for customers with vision disabilities. At the store, these customers interact with various stakeholders like store co-workers, digital co-workers, and other customers. **This project thus takes a strategic approach by considering the larger whole that the problem is part of.** Through numerous touchpoints with stakeholders, it was revealed that navigation is not a problem specific to IKEA, but is common to other large retailers. What makes IKEA unique however, is that customers visit not only to buy products but also to gather inspiration for their homes and larger life experiences. Thus, IKEA's 1:1 showroom space becomes a crucial component to allow customers to imagine their dream homes come alive. Unfortunately, this part of the showroom is exclusionary due to its emphasis on visual components. As a result, this thesis reframes the problem: **how might we make inspiration at IKEA more accessible for customers with vision disabilities?**

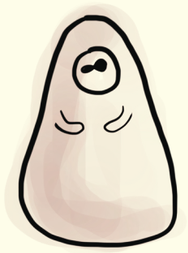
Despite having a more defined focus, stakeholder group, and problem scope, designing was not easy. To be understandable and successful, design relies greatly on visual skills. **However, planning for and working with persons with vision problems required adapting typically visual processes to a non-visual context.** This is how the intended intervention, Trails, came to be. It is a service in which sighted customers leave trails of curated home and product inspiration for customers with sight disabilities. The 'curation' highlights the most popular or preferred products and home inspiration based on customer reviews and ratings. An audio layer brings Trails to life and guides customers through specific parts of the showroom while advising them on how best to touch and experience the products in those parts, combining audio and tactile communication for people with vision disabilities.

After being developed and tested with customers at the context of use- an IKEA store, the desirability and feasibility of the intervention had been established, but its viability remained to be checked. Therefore, discussions with various IKEA teams and blind testing with non-disabled customers took place to ground the intervention further and understand its profitability for a wider audience. **Though creating an accessible digital solution would remove barriers for customers with vision disabilities, if their environment remained unwelcoming and hostile, they would still feel devalued and excluded. Ultimately, this project evolved from enhancing accessibility to fostering inclusion at IKEA.**

contents

‘how to’ read this book.

main characters



customer with vision disability

IKEA co-worker

customer with typical vision

Occullor esciatque nobit doluptasit aut debis.”

strong phrases and takeaways

important notes or quick pointers

Um incipsande voluptatur sum quo estibusdae abor aut labor aut as volorem poribust, offic te sequod minum ame vid et explit hilitis aute elenimp oremporum

limitations

Although there are region-specific guidelines on AD and how to develop the right descriptions, since this project is not being tested publicly and is rather small-scale, those guidelines have not been taken into consideration.

notes from author

Invendus. Ut posam, sperspicae voluptatur min cus, nat es accae. Faciae volorum late peritaestem iunt ut minvell accatia sperio torestotae velitis isit a vendaep udigenis a sed ut ut qui nobit quam, quunt re volo temporeperes estibus

recap of each section for skim reading

an inclusive glossary

these terms are here to help!

a

acuity
a keenness of sensory perception, as of hearing or perceptiveness of mind (Kotagal, 1995).

b

blindness
a lack of vision. It may also refer to a loss of vision that cannot be corrected with glasses or contact lenses (Blindness and Vision Loss: MedlinePlus Medical Encyclopedia, n.d.).

(avoid: the blind)

c

co-worker
an employee of IKEA, regardless of designation, positioning or location.

customer
an existing or potentially interested consumer of IKEA goods and services.

i

inspiration
the process of being mentally stimulated to do or feel something, especially to do something creative (Oxford Languages and Google - English | Oxford Languages, n.d.).

n

non-disabled
not affected with a disability : not disabled (Nondisabled Definition & Meaning - Merriam-Webster, n.d.).

t

typical/ 20-20 vision
a term used to express visual acuity (the clarity or sharpness of vision) measured at a distance of 20 feet (Visual Acuity | AOA, n.d.).

(avoid: regular, normal vision)

v

vision disability
a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses or medication. can be due to disease, trauma, or congenital or degenerative conditions (Vision Disability: Types and Information | Disabled World, n.d.).

(avoid: visually challenged, visually impaired)

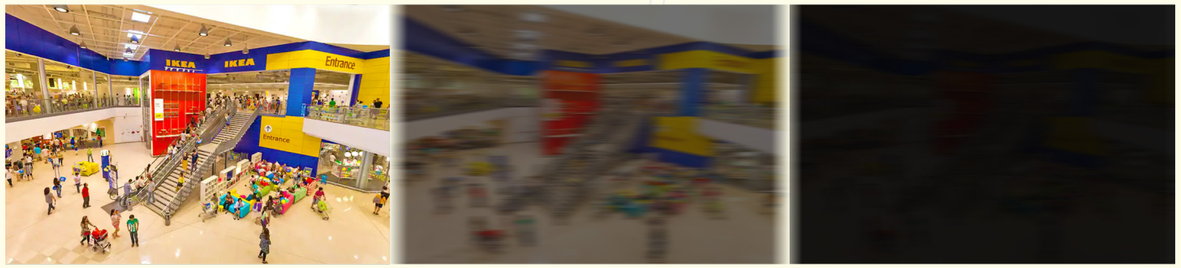
if you are someone with typical vision, why don't you imagine

You are off to IKEA and it's a typical Dutch day- bad weather but you brave the journey, anticipating the treasures you'll find there. Once inside, you go up the large staircase from the front, and the scent of Swedish cuisine and the store's vibrant lights welcome you. Today, you are on a mission for the perfect sofa, navigating through the maze of options. There is way too much, but you know exactly what's in front of you, so its quite clear. However, you want some advice. Now the staff is busy, but you find all your answers at a self-service kiosk, because you know what you are looking for. Finally after what seems like forever but was only a couple hours, you reward yourself with succulent Swedish meatballs, easily grabbing an open table even in the jam-packed restaurant, because of course, you spotted it quite swiftly. A satisfying end to a day of inspiration and shopping.

Now, let's shift the scene. Years, months or even weeks later, your vision starts to fade. That once-clear path to IKEA is now obscured. The stairs, the signs, the sea of sofas, the restaurant, all become a real maze. Consider this: what if you never saw any of it because you were born blind? The staircase, the signs, the helpful staff in yellow and blue- unseen.

I asked you to imagine but you visualised it just now, didnt you?

In this photo essay, as you move from left to right, you can see the spectrum of vision and disability. Its not all black and white, is it?



Typical Vision | Total Blindness

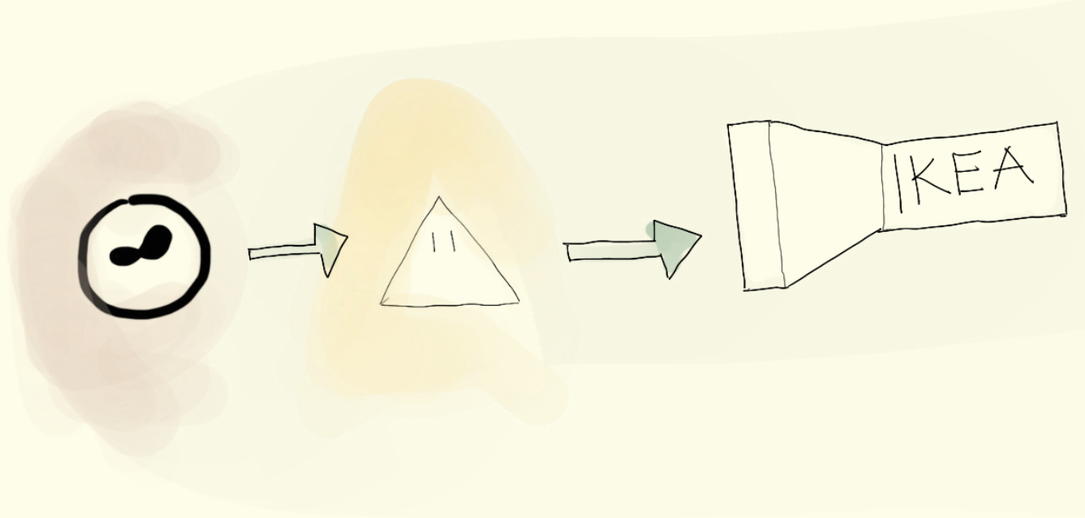
Typical Vision | Achromatopsia

Typical Vision | Peripheral Vision Loss

Typical Vision | Glaucoma

Fig 1. Typical vision and vision disability are indeed two parts of the same spectrum (Perkins School for The Blind, 2024).

Blind and non-blind is a false binary social construct.”



1 introduction

glossary
introduction
literature

a bit of background

Retail giant IKEA is more than just a one-stop home shopping destination for people all around the world. It also provides its customers with a unique shop offering known as the ‘IKEA Experience’ (BusinessBar, 2021). This is a brilliant strategy in which buyers are subtly but deliberately steered through a maze of places that mimic the liveability of their ideal homes, ultimately exciting and incentivizing them to buy more. This could explain why individuals spend so many hours at IKEA, being exposed to a wide selection of the brand’s products. The fact that this experience is visually supplied abundantly while also being aesthetically beautiful makes it worthwhile, despite the long distance for many. However, what happens when someone is unable to experience this visually heavy retail? Shopping at IKEA then might become more exhausting than enjoyable.

In the transition towards a more inclusive future and better compliance with the strict European Accessibility Act (EAA) (Forum, 2020), IKEA has been researching on how to make its shopping experience more accessible for individuals with disabilities (IKEA, 2023) both online and in-store, through more accessible digital solutions. Since the screen reader is one such digital tool that is important for people with vision disabilities, the organisation decided to foray deeper into this group. Beyond good intentions, however, lies the fact that the disposable income of people with disabilities provides a great investment market. In the USA alone, this income is around $490 billion (Yin et al., 2018). Added to all these factors was the increasingly mentioned and overwhelming nature of the visual element in their stores, which made this a crucial domain to tackle.

problem overview

The background revealed a little about how the IKEA Experience as it existed, was not completely accessible to people with vision disabilities, thus limiting their full exposure to shopping there. The organisation’s ongoing research identified certain key pain points of this group to be navigational difficulty, high assistance needs and the inability to access predominantly visual information in the stores (IKEA, 2023). With a personal interest in inclusive societal transitions and IKEA’s commitment to accessibility, I aim to design an intervention that could aid individuals with vision disabilities in their store experience, ultimately making it more pleasurable for them. Consequently, this could lead to better purchasing habits of such a group and could turn profitable for IKEA. Besides, the learnings from designing for people with disabilities can be used to improve the experience for all people (Donovan, 2020).

project scope

This thesis aims to view the problem through a holistic lens, i.e. understanding that people with vision disabilities do not go in isolation when they visit IKEA. Ergo, acknowledging the need to address the concerns of the others involved in this shopping experience. Thus, the project considers the interests of multiple stakeholders from the storefront, corporate and customer segments of the IKEA ecosystem. However, the project is also cautious of the value tensions that may arise amongst these 3 groups and seeks to embrace them instead of trying to solve the problem for everyone involved. In order to tackle this complexity however, a system of multiple social, strategic and creative layers was proposed.

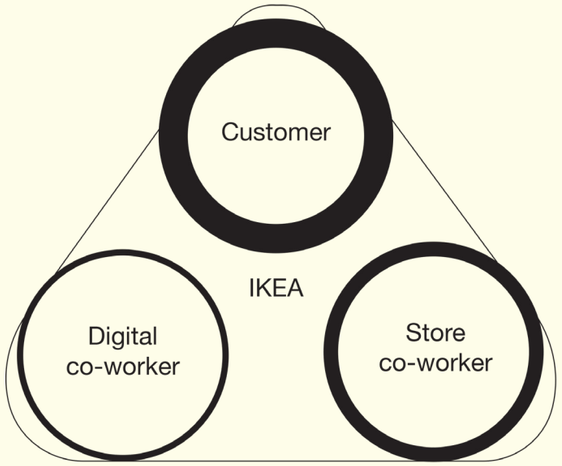


Fig 2. The 3 key stakeholders in this project.

Though the designed intervention is going to be aimed at customers with visual disabilities, its application will directly/indirectly influence the roles played by IKEA stakeholders both in the store and digitally.

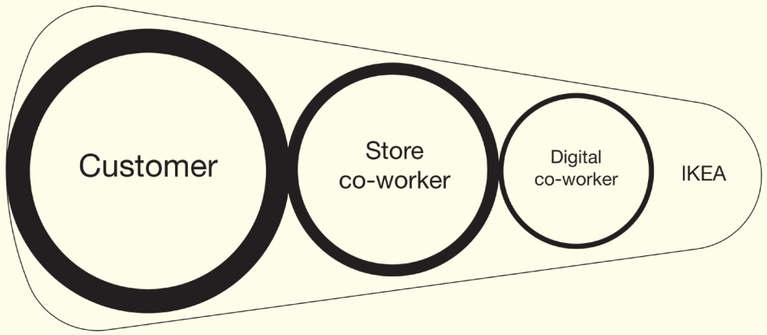
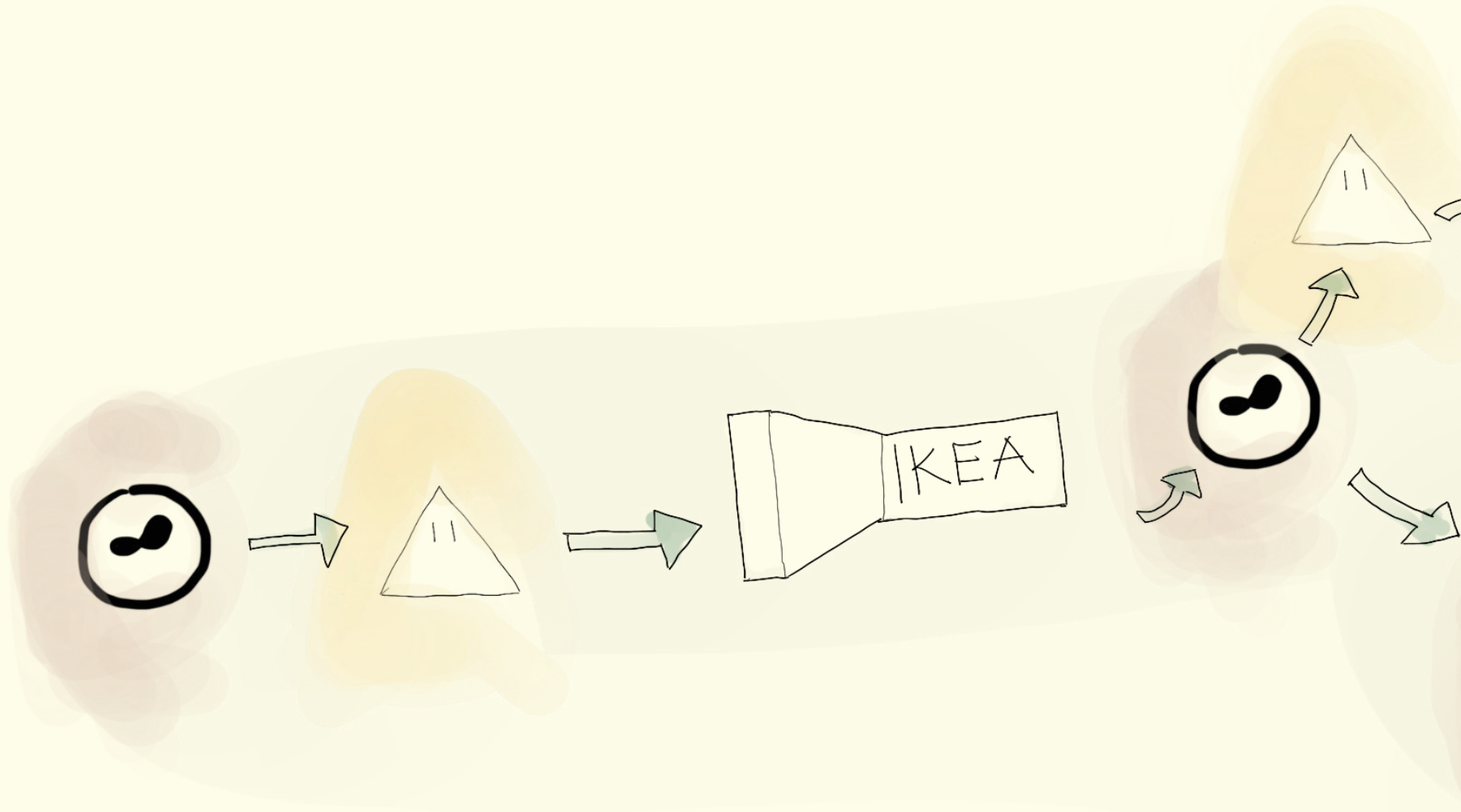


Fig 3. Stakeholder involvement.

notes from author

This part sets the stage for the thesis by describing the issue IKEA has been working on, the stakeholders it has been investigating, why it is so relevant right now, and which components of it are being addressed in this project. It also provides a quick outline of the issue at hand and why it is special to IKEA as a retail powerhouse. It also understands that there is more than one stakeholder engaged. As a result, it explores the project's strategic response to this somewhat difficult issue. This brief review is followed by more extensive results from the literature, which help to establish the design intervention in empirical data.


IKEA

2 literature

accessibility and IKEA: their story

IKEA has the goal of transforming into a completely circular and ‘inclusive IKEA’ by 2030 (IKEA Social Entrepreneurship, 2024). This coupled with the organisation’s constant commitment to get in compliance with the EAA (Forum, 2020), makes it recognise people with disabilities as a crucial part of both its business and its societal impact. The EAA mandates that digital products and services that are vital to people with disabilities be made accessible to them (Forum, 2020). This was a key point for IKEA’s digital accessibility journey. Though it began with a focus on understanding how people with vision disabilities interacted with various digital products online (eg: screen reader), it soon ballooned into understanding more about the people themselves and learning from their rich experiences to design better.

This explains why the focus of this project was directed specifically towards designing accessible shopping experiences for customers with disabilities at IKEA.

intro: people with vision disabilities

When people hear of vision disabilities, they think ‘blindness’, a world shrouded in darkness. Many also believe that blindness is a hard-line condition that they could never relate to because it is an extreme condition. Vision disabilities are far more diverse than the encapsulation of a single word. These disabilities could range from different types of low vision to total blindness to congenital blindness and even legal blindness (Kolarik et al., 2014; Lockley et al., 2015; Meaidi et al., 2014; Ricciardi et al., 2009; What Do Blind People See? Facts and Research, n.d.). Thus, while some people are completely blind, some have limited vision which prevents them from seeing the peripheries, or certain spots in their line of sight. They are also far more common a condition than believed to be. About a billion of the global population is affected by vision disabilities (Brunes et al., 2021). In general, vision disabilities limit access to information, engagement with the surroundings as well as direction and movement (Brunes et al., 2021). Furthermore, people who are affected with acquired vision disabilities cope and live differently than those with congenital vision disabilities (Choi et al., 2019). Consequently, the ability to read signage, product information, and many times, even navigating through places is restricted for this group (Council of Canada, 2022). Research showed that people with disabilities in general have a harder time using digital applications (Disabilities When Using Apps | Appt, n.d.). In the Netherlands, the context of this project, an approximate 222,000 people with vision disabilities struggle to use digital products or apps (Disabilities When Using Apps | Appt, n.d.).

In the Netherlands, a whopping 222,000 people with vision disabilities struggle to use digital products!”

This paragraph aims to bring awareness about the lives of people with vision disabilities in society. It does so not only by pulling hard numbers but also by highlighting the different experiences these disabilities have on affected individuals. Overall, it strives to drive home the fact that people with vision disabilities are not an extreme case, but are in fact quite commonplace, making them more relevant to address as a target audience for IKEA and this project.

customers and IKEA: problem areas

From here on, people with vision disabilities will be referred to as ‘customers’ since they would be the potential/ ultimate buyers at IKEA. The company’s ongoing research involved a plethora of store visits and interviews with customers. Insights revealed that though IKEA was quoted to be a “fun” and “exciting” place to be, most customers would have preferred it if they could move about freely without

having to constantly ask for assistance or draw attention.

problem area 1

Unsurprisingly, navigating the store was one of the first problem areas that puts-off a lot of the ‘fun’ for customers (IKEA, 2023). However, it is interesting to mention here that navigation is not a problem specific to IKEA, but in fact is a common pitfall of large retailers when it came to serving people with vision disabilities (Rand, n.d.).

problem area 2

A second problem area was the mismatch between what customers needed and how co-workers were equipped to support them (IKEA, 2023). Many times, the right questions were not asked, and other times, there wasn’t enough staff to help.

This substantiates the need to recognise store co-workers as important stakeholders who interact with customers in this project.”

problem area 3

Third, customers also remarked on the possibly daunting nature of the store partly since there is an overload of light and soundscapes (IKEA, 2023). Coupled with the excessive product choice offered with less-than ideal product descriptions, customers also take more time to read descriptions as they cannot ‘quickly glance’ over a vast number of aisles. Thus, they are dependent on their companions or co-workers in the store once again for access to such information.

problem area 4

A final fourth issue arises from not being able to translate their product findings from IKEA’s online website or app to the actual store (IKEA, 2024).

The above piece underlines the struggles and complexities people with vision disabilities grapple with when they visit an IKEA store, based on literature and organisational research. It sets the bar for delving deeper into these issues as the project proceeds.

Designing for disability inclusion makes life better for the many- people, organisations and businesses.”

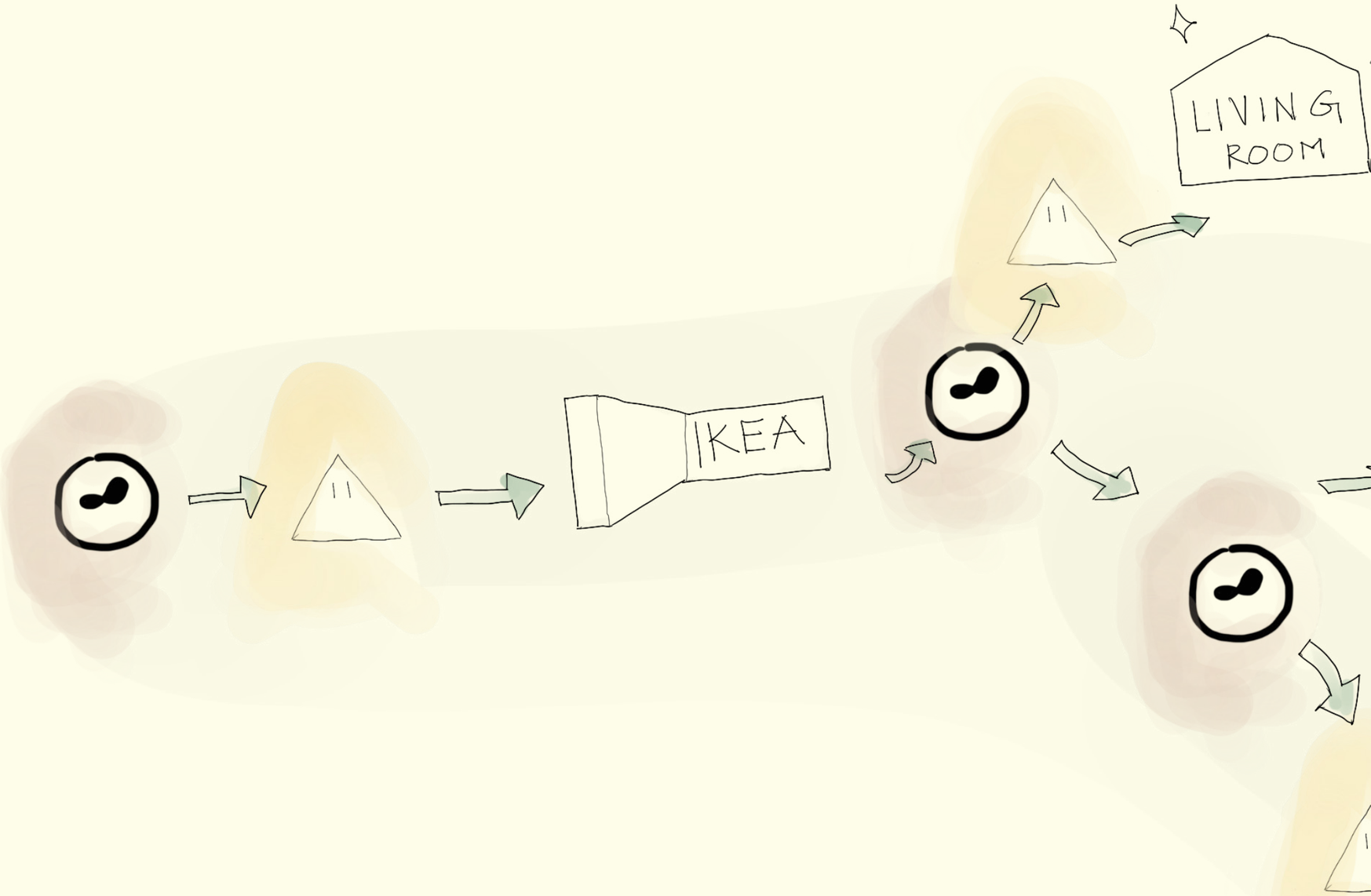
This bit stresses on the importance and benefits of ‘designing for the many’ by pointing out the monetary and larger social gains of including people with disabilities as customers of the retail industry.

a bit of universal design

Universal design, or inclusive design is the practise of designing products, services and systems that can be used by people across all demographics to the largest extent possible (Yu et al., 2015). One of its important guidelines is market accessibility. Particularly in retail where lighting, physical space and staff interactions are inevitable touchpoints for people, making this experience accessible can bring a considerably large ROI to businesses (Yin et al., 2018). Disability or not, retail design provides individuals with the agency to feel competent enough to make choices and independent enough to follow through with them. Additionally, people with vision disabilities have well-defined but unique requirements when compared to people with other disabilities (Menzel Baker et al., 2002). Thus, understanding the challenges faced by such individuals can present the retail industry with opportunities to design for that delicate balance between independent functioning and dependence (Yu et al., 2015) , a greater good for more people. This is a driver of motivation not only for me, but also for the reader of this story to recognise the power they hold to make inclusion the norm, not the rule.

notes from author

The literature review ties together many components of the project, people, and organisation. It begins with IKEA's adventure with accessibility, which was motivated by both social responsibility and the need to comply with a robust legal framework that may have serious consequences if not addressed. It then goes on to tell more about the lives and experiences of the target population with visual problems, allowing readers to sympathise with and better understand them. Once the understanding has been formed, the review focusses on the numerous issues that this group faces at IKEA, leaving room for more probing and growth in the thesis. Finally, it emphasises the social and economic benefits of designing and incorporating a larger audience within IKEA, providing a compelling rationale to address those complicated issues. The following portion of this tale will provide techniques to navigate the total intricacy of this argument.


LIVING ROOM
IKEA

3 adaptive layering

a way to navigate complexity

literature

layering
(layers- 1,2,3)

RtD

why layering?

One of the goals of this thesis was to embrace diverse stakeholders, experiences and methods by breaking down their intricacies into simpler, logical takeaways, while keeping inclusion at the forefront. Hence, the following is a proposal of a multi-layered system that comprises of social, strategic, and creative domains that could help achieve this goal.

a quick recap

IKEA is doing research and field studies to understand the experiences of customers with vision disabilities when they visit an IKEA store with the aim of making their shopping experiences more accessible.

but, these customers do not exist in silos.

layer 1: multiple stakeholders

Acknowledging multiple stakeholders, entities, and their values

hence, their experiences at IKEA should be relatable to others.

layer 2: analogies

Using the power of analogies to help others relate better

and the approach to design must be adaptive to others.

layer 3: more-than-human design

Using a more-than-human approach that considers other factors surrounding the human (customer)

but first, these 'others' must understand one another.

layer 4: co-design

Co-design as a means to make involved stakeholders understanding of one another

and then, ideas can work better with some validation from them.

layer 5: experience prototype

Conducting a validation of the ideas and concepts at the context of use with affected stakeholders

but not without, the core IKEA values in place.

layer 6: value alignment

Aligning and adhering the project to IKEA's organisational values

This thesis aligns with four of eight IKEA values namely: Togetherness- since the project considers multiple stakeholders and their opinions, Different with a Meaning- since the project takes a different, inclusive approach rather than solely targeting an end customer, Caring for People and Planet- by making the shopping experience more accessible to a wider range of people, and Leading by Example- if it works well, the designed intervention could be piloted to set IKEA apart from its competitors in the transition to inclusion in retail.

peeling open the layers

layer 1: multiple stakeholders

Acknowledging multiple stakeholders, entities, and their values.

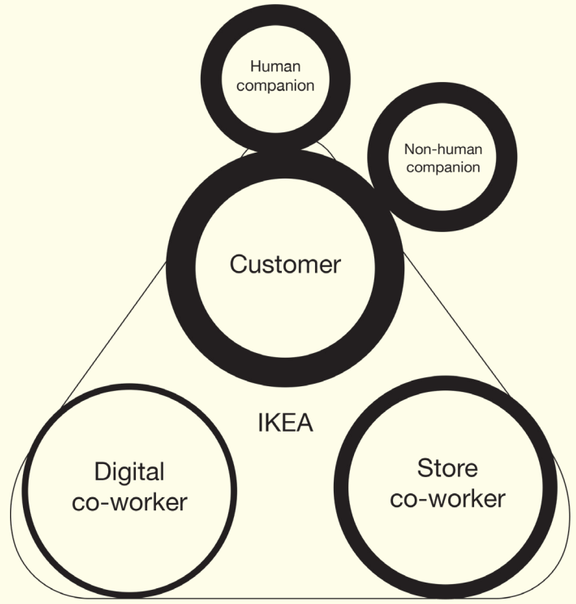


Fig 4: Consideration of key stakeholders and their entities directly/ indirectly.

There are always other stakeholders and values in place even if it involves designing for/with a particular group. In this case, there are firstly the customer themselves, along with their human and non-human companions. These customers interact with co-workers at the store who guide them. And digital co-workers at IKEA find ways to make the interactions of both customers and co-workers in-store seamless and accessible. In essence, there is a whole ecosystem that makes up IKEA. This kind of broad involvement at an early-stage aids in comprehending how the designed intervention might be perceived by the various stakeholders and where the value tensions might be the highest.

Using the power of analogies to help others relate better

about analogies

Analogies can be used to describe a foreign target notion by detecting parallels in structure and relationships between it and a more known source (or analogue, anchor, base, and vehicle) (Chou & Shu, 2015).The potential possessed by analogies to make abstract concepts familiar by rooting them in real-world situations is as demonstrated by Duit (Duit, 1991) and Clement (Clement, 1993) not only provides cues for visualisations but also inspiration for students to relate remote topics to possible, pleasurable thoughts (Chou & Shu, 2015).

analogies that can specifically relate to the IKEA experience.

IKEA's store experience can be mildly confounding to an audience that might not have visited or be fully aware of its working. To comprehend the unique problems faced by customers with vision disabilities within the store, it helps to first get an inkling of how the store itself functions. This layer thus relates to existing and well-documented topics to try and explain the less-documented topic of 'how an IKEA store works'. Owing to its well-curated product displays and its exhibitionist showroom design, IKEA can be compared to a museum. The array of products and resources coupled with a partial self-service model can also be likened to a public library.

two scenarios

the usage of a scenario along with an analogy strengthens that analogy itself.

Although the concerns of customers seem to be many in number, they seem to be experienced mostly in two specific scenarios within the store. These scenarios are concrete narratives about product or technology usage and usually have the capacity to bridge knowledge between various stakeholders (Anggreeni & van der Voort, 2009). These led to developing initial problem statements.

scenario 1: "Finding a product at an IKEA store is like finding a single book in a large public library, its just too hard to know where it is located."

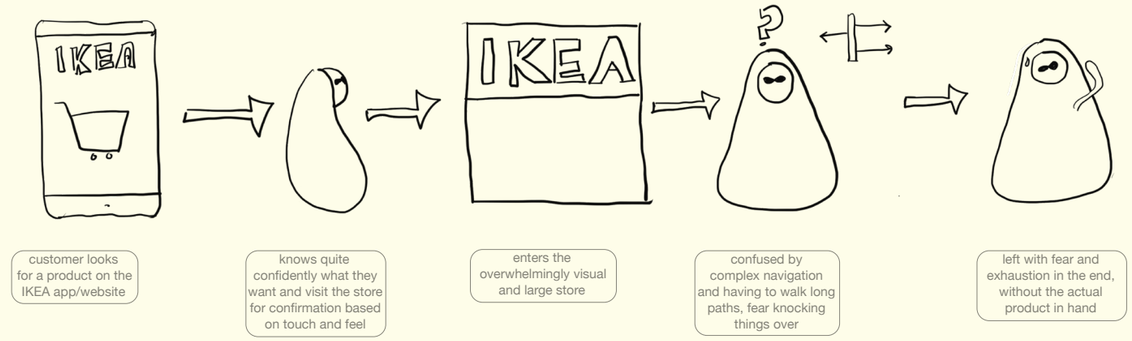


Fig 5: Scenario 1

This is a navigation-specific issue since the product on the IKEA website or app is not easily available to customers when they arrive at the shop. Customers are fatigued and upset because they cannot locate the product that was intended and sought.

relation between IKEA and a public library

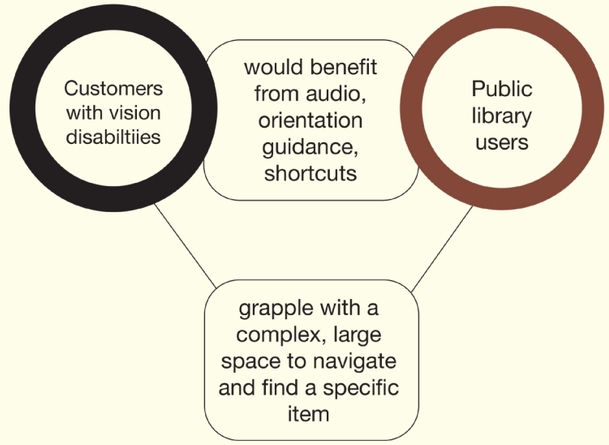


Fig 6: Analogy 1

problem statement 1: Cross-channel experience is not translated well when a customer first searches for a product online and then visits the store.

scenario 2: "Visiting an IKEA store for home inspiration is like visiting a museum, there's way too much to discover and no place to start."

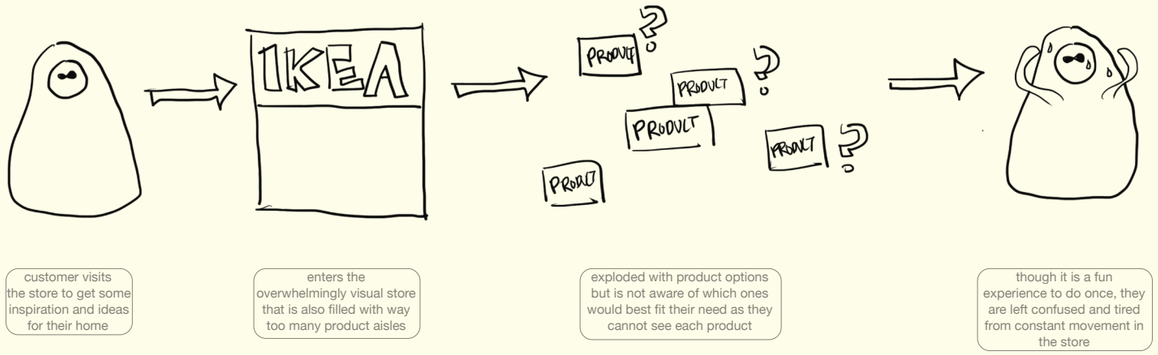


Fig 7: Scenario 2

This is an inspiration-specific issue and is important to underline because most people go to IKEA for inspiration and home planning. However, the inspiration available in the stores as they exist is highly visual, and thus not accessible by customers with vision disabilities, leaving them confused, indecisive and once again, dependent on others around them.

relation between IKEA and a museum

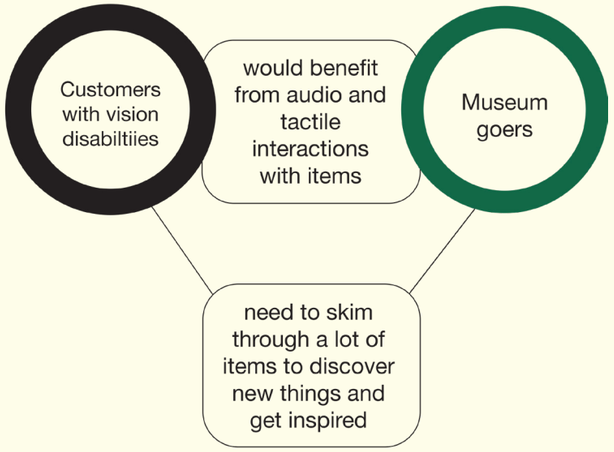


Fig 8: Analogy 2

problem statement 2: Home inspiration and planning are not accessible to customers because there is an overwhelming visual variety at the store with no way to filter.

layer 3: more-than-human design

Using a more-than-human approach that considers other factors surrounding the human (customer)

People with vision disabilities do not visit an IKEA store alone (IKEA, 2024). Given the spectrum of their disability and the many physical elements they need to manoeuvre, there is a need for a companion. Many times, it turns out that their companion is not necessarily human. A lot of their faithful guides are 'non-human' or 'more-than-human' agents like guide dogs, guiding sticks, guiding AI, or a combination of human and more-than-human agents (Ravichandran, 2024b). These individuals thus trust these agents enough to be guided by them. This can also be seen in a 'more-than-human' perspective to design where we acknowledge that we are indeed part of a larger ecosystem and cannot function in isolation. This approach to design is a decisive choice made in this project not because it is better, but because an extremely human-centred approach at its core has threatened the diversity and inclusion of our society in the past (Deep Dive into More-than-Human Design – This Is the Deep Dive Repository, n.d.). The approach hinges on respecting but also knowingly lending support from more-than-human agents around us, allowing us to rethink the power dynamics we have as humans. Ultimately, this perspective is also a more sustainable and systemic way (Chancel, 2022; Cotsaftis et al., 2023; More-Than-Human: Design After Human-Centricity | by Ollie Cotsaftis | Medium, n.d.) of caring for both people and the planet, one of the core values IKEA swears by.

A more-than-human approach to design is a more sustainable way of caring for people and planet."

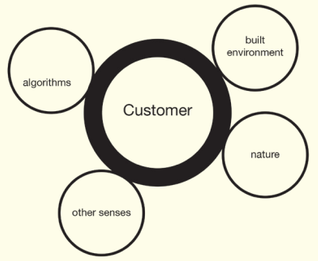
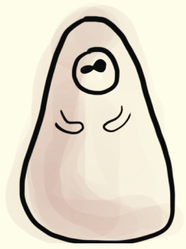
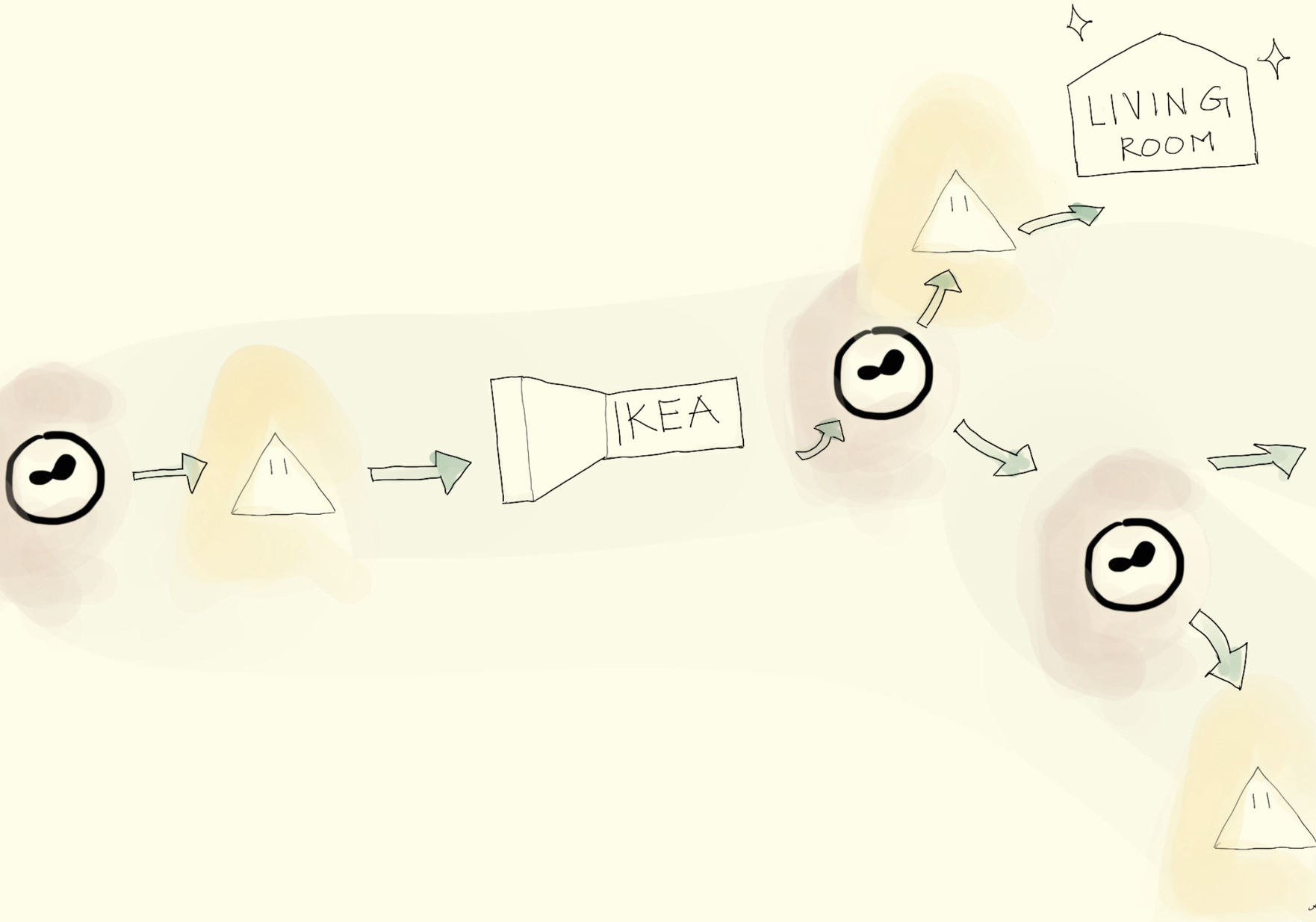


Fig 9. More-than-human agents surrounding customers with vision disabilities.

notes from author

Adaptation and flexibility are central to the thesis, and the section above presents a layered system that integrates this adaptability through design processes, strategies, and interactions. The first layer offers a new perspective on the target audience (customers with vision disabilities) through the lens of this project. The second highlights the need of making the target group's challenges at IKEA accessible and therefore relatable to a larger audience. With various stakeholders, entities, and their values to consider, as well as a complex set of problems to design for, the third layer emphasizes the importance of a design approach that extends beyond a single stakeholder, i.e. a more-than-human approach to design. However, for these varied stakeholders to engage and collaborate on their beliefs and concerns, they require a coalition. The next section discusses how research can lead to a path.

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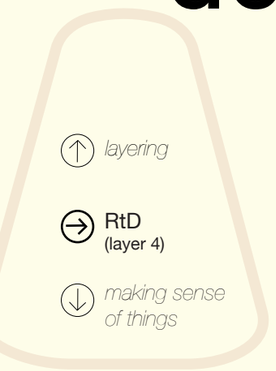
IKEA

4 research through design (rtd)



Design and research are inextricably linked: Doing design is doing research."
(Stappers & Giaccardi, 2017)

why rtd?

The thesis addresses an issue that takes into deliberation diverse stakeholders, multiple processes, and a giant organisation. This led to rethinking the roles traditionally played by design in such complex situations and broadening the horizons between research and design. Research through Design (RtD) is an exploration-driven methodology where knowledge is derived from diving into design and other discipline-related activities (Sleeswijk Visser, 2018).

RtD provided the author a versatility of roles in this project as a connector between stakeholders, a facilitator of stakeholder participation and an initiator of ideas that can be implemented (Sleeswijk Visser, 2018).

layer 4: co-design

Co-design as a means to make involved stakeholders understanding of one another

about co-design

Since a project like this is under the influence of different stakeholders, almost every process is de-facto, a collaborative one (Manzini, 2014). Collaborative or cooperative design approaches change how and what we research (Sanders & Stappers, 2008).

Co-design is a mindset of moving from designing for people to designing with them."

Co-design involves actively creating and experimenting alongside individuals who will utilize, frequent, or live in the space of a final product (Brown, 2023). It recognizes these individuals as experts in their respective areas, capable of contributing insightful knowledge. Although co-design usually follows desk research and more 1-1 research like interviews, an adaption was made to this usual method to fit this special context. This is because jumping into the fuzzy front end with stakeholders early on revealed not only their rich personal experiences, but also the challenges that arose from their interactions with one another. This provided an opportunity to design in quick cycles with a higher chance of validating ideas more than once. Naturally, co-design works better in the context of use. Thus, the motion to have a joint co-design session with the 3 key stakeholders (customers, store and digital co-workers) as participants in an IKEA store was realised in the form of a workshop. In this workshop, the author played the role of a facilitator who guided and encouraged participants to share their knowledge and expertise, rather than play a designer who might bias the session with their personal ideas.

co-design as an inclusive experiment

Design is a domain that garners a lot of strength from being visually powerful. However, field experiments with customers and research (IKEA, 2023) have established that the overly visual cues in IKEA are what hinder accessibility and ultimately, the fulfilling satisfaction of such experiences for customers with vision disabilities. Studies on designing with such a niche group are not too well documented, and therefore, the uniqueness of co-design becomes relevant. This method has several dynamics that set it apart from conventional participatory design practises.

Co-design implies empathy, constructive criticism and techniques that greatly vary from most ‘designer-only’ processes (Smeenk et al., 2019) . Working alongside people with a disability also requires flexibility and sensitivity that co-design provides. Many standard design tools used for co-design are in fact, visual tools (Magnusson et al., 2017) that make it hard to elicit feedback from the group in question. Since these customers preferred and were also adept in verbal communication, the workshop was designed to encourage verbal inputs from them (Brewer, 2018). Though this has been mentioned as a limitation in some studies (Brewer, 2018), it presented a chance to ensure that all participants played on a level field. One interesting form of verbal communication was a scenario-based textual narrative that was used to create a dialogue between a sighted individual and an individual with a vision disability (Metatla et al., 2015). Further, their experiences were made more sensorially accessible by providing a material library filled with tactile and textured materials during the workshop, more on that later. Lastly, taking into consideration the needs of both groups of people, with and without disability, assistive prompts accompanied participants throughout the workshop. These were accommodated in different formats namely large-visual print (for people with low-vision), audio (for people with blindness) and tactile formats (for everyone) to enable each individual with the will and ability to participate.

the workshop: as a facilitator

Co-design workshop structure

The workshop took place at a busy IKEA store in the Netherlands. It lasted a total of 3 hours and comprised of 3 sections with good breaks in between. The workshop involved a total of 8 participants who were a diverse mix of customers with vision disabilities, co-workers from the store and digital co-workers from IKEA.

Workshop section I: Empathy Building through Lived Experiences

Often, it is quite challenging for people from different backgrounds to have a harmonious dialogue (Yuan & Dong, 2014), more so if it involves people with different needs. Opening the workshop with this specific section was hence vital for the 3 stakeholder groups not only to understand each other’s experiences, but also empathise with them. This was also chosen as a means to foster respectful dialogue and create a supportive participatory environment for everyone (Mattelmäki & Taideteollinen korkeakoulu., 2006). It began with participants sharing their lived experiences at the context in question: an IKEA store. Lived experiences are powerful true stories narrated by people from different points of views. It lasted 45 minutes and everyone took turns to add a moment of joy or frustration to their experience at IKEA. This gave them a better understanding of what the other might have been through and in some cases even relate to them. Each section was bolstered with prompts that acted as scaffolding for those who wanted or needed them.

Prompt 1: “A memorable shopping/working experience at IKEA for me was...”
Prompt 2: “A challenge I encountered one time was..”
Prompt 3: “A moment of connection with a co-worker or customer was…”

Workshop section II: Roleplaying Scenarios

After the first section, participants grew more familiar with one another, and the wall between them seemed to be breaking down slowly. Naturally, each lived experience was unique and adding that last bit of emotion made it even richer, allowing participants to comprehend each other beyond the lives of ‘customer’ and ‘co-worker’. This was a good time to ease them into the context and the problem scope in more detail. However, the participants were a mix of people with and without disabilities, so a level playing field had to be ensured when they dove deeper.

Discussing just how hard it is for everyone at IKEA during their own experiences surfaced underlying tensions between customer and co-worker."

Scenario Based Design (SBD) is one such way to ensure everyone is able to participate in some way or another (Tunc et al., 2023). Role Playing Games (RPG) are yet another way to facilitate team work (Garneli & Chorianopoulos, 2021). Together, they are a strong duo that can help make sense of real-life situations by getting participants to indeed 'act' them out, similar to rehearsing for a play before actually performing. Since this project is grounded in the present-day situation of accessiblity at an IKEA store, the scenarios that were played out were 'actual practise' scenarios, one of the 6 scenario types proposed by Anggreeni and van der Voort (Anggreeni, 2010). This section lasted 45 minutes again, during which the participants were divided into two diverse teams of 4 (1 digital co-worker, 1 store co-worker, 2 customers), and were presented with one unique scenario each from the two mentioned previously. This process shed light on the various roles played by the co-workers at the store, and the kind of interactions customers have with co-workers during the two specific scenarios. A key goal of this section was to identify any challenge and opportunity areas within both scenarios for all three stakeholder groups. Again, prompts were constantly around to aid anyone who needed them.

Prompt 1: "What would the customer want to do? Would they ask a store worker? Talk to their companion? Use a device?"

Prompt 2: "What would the store worker want to do? Would they want to offer help at the information kiosks or would they want to offer help on the shop floor?"

Prompt 3: "What kind of interactions would the customer and store worker want to have in this situation?"

Workshop section III: Brainstorming and Defining Ideas

Two-thirds down, participants were now more than comfortable with each other, so much so that they got chatty and had to be brought back to the clock. Having a well-rounded understanding of the problem scope backed by their personal affirmations in the form of experiences,

Involving people with vision disabilities in the design process then required adapting visual tools to meet their unique demands."

participants were eager to jump into generating possible solutions. The final section thus involved coming up with ideas and recommendations based on the challenges and opportunities identified in the scenarios. This was carried out within the same teams and lasted for a total of 60 minutes. It had two parts to it: the first part was brainstorming, or simply hurling out any ideas that came to mind relating to each scenario. The second part was prototyping where participants could choose to narrow down and define a couple of ideas in slightly more detail. Though the teams were diverse, each team comprised of customers with vision disabilities and for them to freely participate in such sessions, any or a combination of non-visual modes including auditory, tactile, and haptic had to be included. However, communicating design concepts that utilise various modalities is tricky (Metatla et al., 2015). Involving people with vision disabilities in the design process then required adapting visual tools to meet their unique demands. The first component of brainstorming was a verbal session, where participants would share ideas within their teams without inhibitions. An audio recorder and a note taker from each team would also record all ideas. The second component of prototyping was made low-fidelity (lo-fi) such that the artefacts created simply needed to capture the essence of the idea, and not other visual cues. Additionally, the tactile library of materials provided for this very stage was handy to create accessible versions of their ideas. The lo-fi nature of this component thus gave a lot of freedom to participants who could choose between audio recorders, tactile materials, large prints, and lastly visual materials, allowing each participant to pick a method fitting their abilities.

reflecting on the workshop

Good intentions are not enough as a designer- an anecdote.

It is better to bear a non-extraction mindset that focuses on peoples' strengths and what they like doing rather than what you would like them to do for you."

The experimental co-design was more successful than initially imagined. Participants mentioned feeling comfortable with the numerous techniques at their disposal. However, a pitfall was the location of the workshop itself. Owing to being in a busy IKEA store in the popular morning hours, there was a lot of background noise that overwhelmed participants with vision disabilities, since they primarily relied on hearing and sound to make sense of the workshop happenings. Conducting the workshop in the problem context thus did not yield that desired effect and made it notably distracting for participants. In adjunct, despite the consideration of accessible participatory processes at various stages of the workshop, the unfamiliarity to such processes once again made participants distracted, and at some points, mildly confounded, maybe even disinterested. This was a sound realisation of how as a designer, good intentions don't always lead down the right path.

workshop insights

More anecdotes: Emotions, Pains, Truths

One of the strongest insights from this workshop were the blunt yet simple truths quoted by participants themselves. What initially started off as a respectful and rather mildly uptight conference from both sides (customers and co-workers), soon turned into a raw, open ground for honest experiences, both positive and negative.

1 An annoyed customer reveals how people with vision disabilities cannot afford to be impulsive shoppers so easily.

"I hate to always have to be prepared because the world is not prepared for me."

Quoted by a completely blind participant, the above strikes a chord not simply because it came from someone who is directly experiencing a disability, but because it reveals the amount of preparation and effort these customers must put in for most things a lot of us take for granted, for instance, a random visit to IKEA. This quote underlines that customers with vision disabilities cannot afford to be impulsive shoppers.

2 A customer talks about their general fear of large public spaces, of which IKEA is a part.

"Its not just overwhelming noise, it's also very disorientating to have this really large open space without having any way to, like, to connect with where you are and where you need to go."

This statement from a participant who is almost blind depicts the fear and stress induced by crowded public spaces like IKEA which are not just sensorially overloaded but also navigationally challenging for people with vision disabilities.

3 A store co-worker shares their plight and side of the story.

"Overwhelmed with our daily routine talking. I'm going to hear the same question every day, 5000 times a day."

From the tone of this quote from a participant who is a store co-worker, it can be noted that the reality can be frustrating from both ends. Co-workers are also humans who get vexed and have to constantly be patient while assisting all customers, not just those with disabilities, and are thus overwhelmed and fatigued themselves in the process.

4 A concerned co-worker talks about the lack of awareness and sensitisation, and the importance of it there of.

"It's like what you don't experience, of course, you don't believe. That's what a lot of people think, I think."

The quote gives an indication of how other co-workers in the store perceive the experiences of people with vision disabilities. Not everybody seems to empathise; some are not aware of the difficulties faced by these customers

because they have not personally experienced them, and that lack of understanding affects the way they assist these customers.

However, despite these differences in opinion and diverse roles, the end goals of customers, store and digital co-workers seemed to align interestingly.

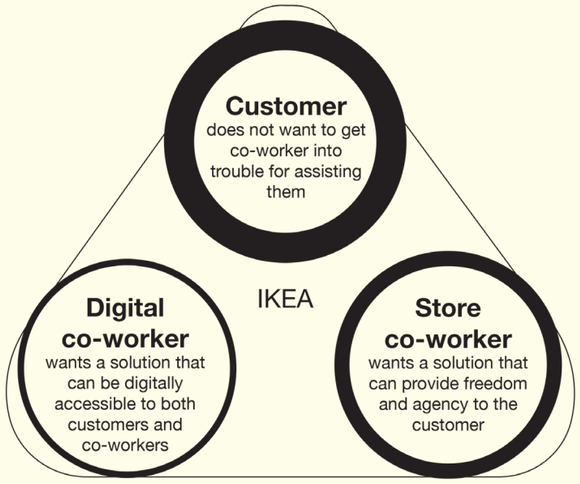


Fig 10. Co-design saw different stakeholders aligning to the same goal.

a new type of persona: composite persona

The stories of customer and co-worker above seek to explain the variations in their IKEA experience largely owing to their lived experiences, but also due to their own traits. Thus, it became imperative to grasp a concise yet coherent description of the stakeholder groups to be able to easily empathise and design with them. That's where the humble persona came in. Designing for specific groups with their personas in mind also allowed better immersion into their needs (Salminen et al., 2022). Data from co-design was nit-picked to build personas that characterised the behaviours, needs and wishes of the stakeholder groups. Though personas make it easy for people to empathise better with a target group, they fall into the limitation of revealing single-person descriptions while representing an entire group. However, one of the key learnings from co-design was that customers with vision disabilities had differing experiences at IKEA, based on the degree of their disability. Thus, it was prime to acknowledge these nuances. The same was applicable for store co-workers. While it is their job to help customers, they had contrasting ways of approaching assistance. Hence, a hybrid version justifies this discrepancy. Called a 'composite persona', this was a way to retain the commonalities that circumscribe a group of people while also highlighting the contrasts that set them so uniquely apart.

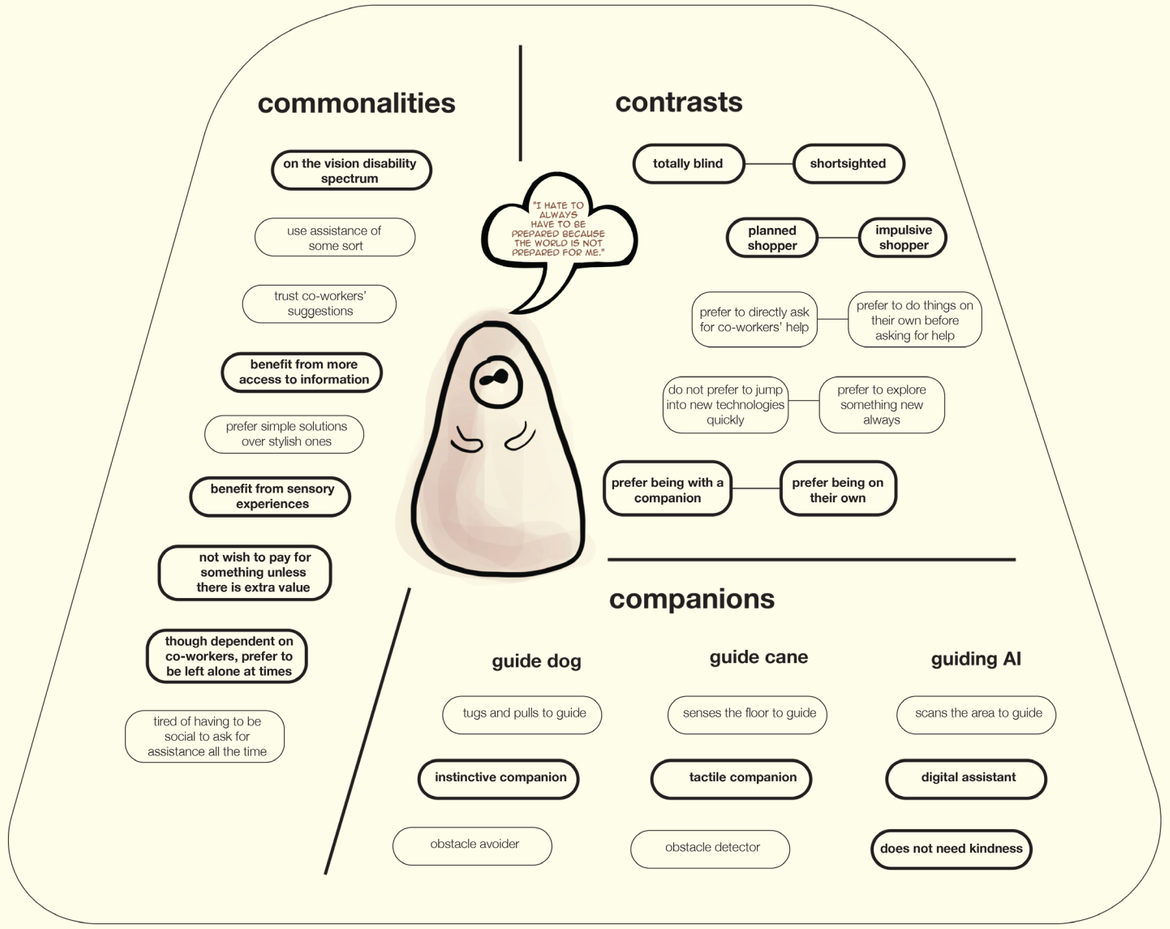


Fig 11. Composite persona of a customer.

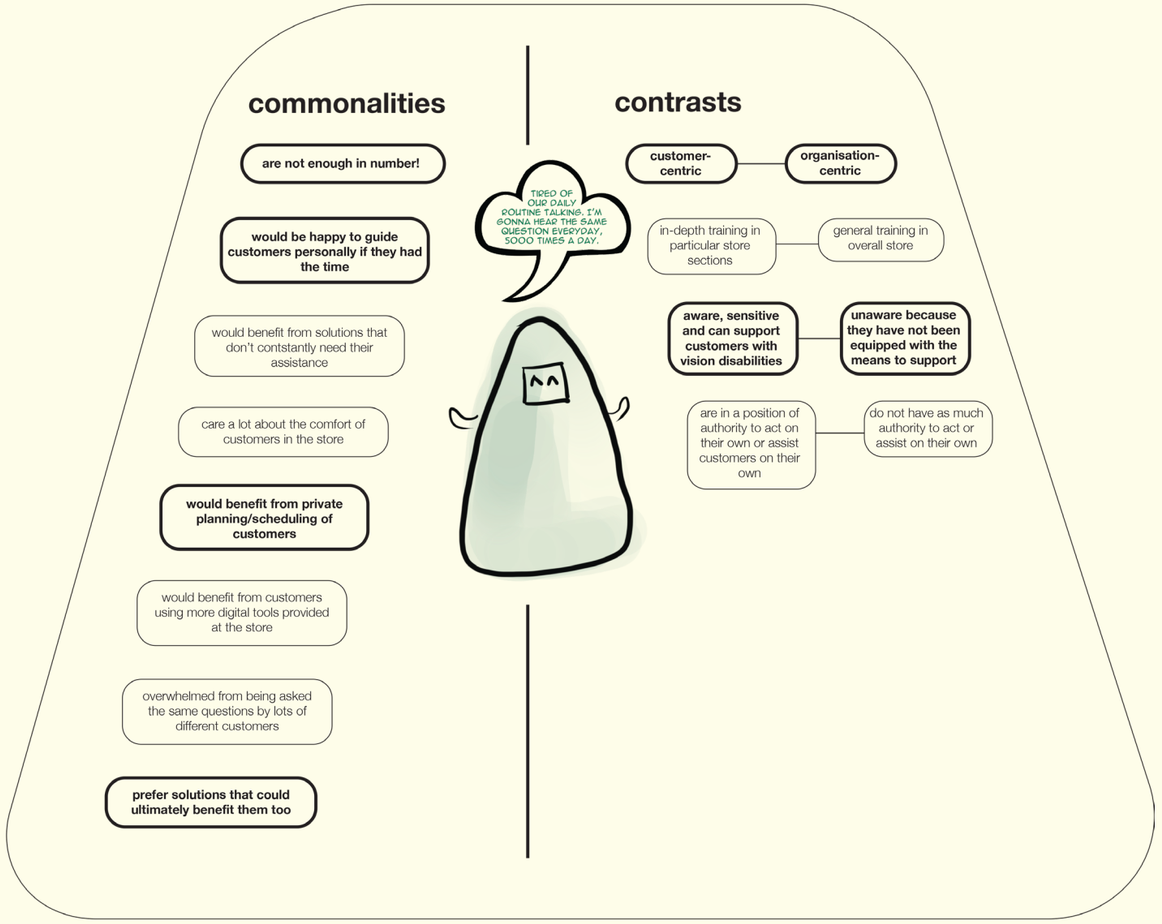


Fig 12. Composite persona of a store co-worker.

the emergence of design directions (DD)

Despite the varying traits, desires and needs of the stakeholders, the intent for a better shopping experience at IKEA through more inclusive forms of design and technology favored both customer and co-worker. As a result, three design directions surfaced from brainstorming with in teams with the two scenarios. Calling them 'directions' instead of concepts at this early-stage hints at the abstract nature of the possible future concepts of which only a few guiding elements are known right now.

Design direction I — Designing for accessible movement with a sensory navigation system

Design direction II — Designing for shopping assistance with a 'more-than-human' companion

Design direction III — Designing for orientation with an accessible store tour

These design directions pointed to some rather hidden yet agreed upon truths surrounding people with vision disabilities. Moreover, it helped comprehend what accessibility really means to them in the realm of digital interventions.

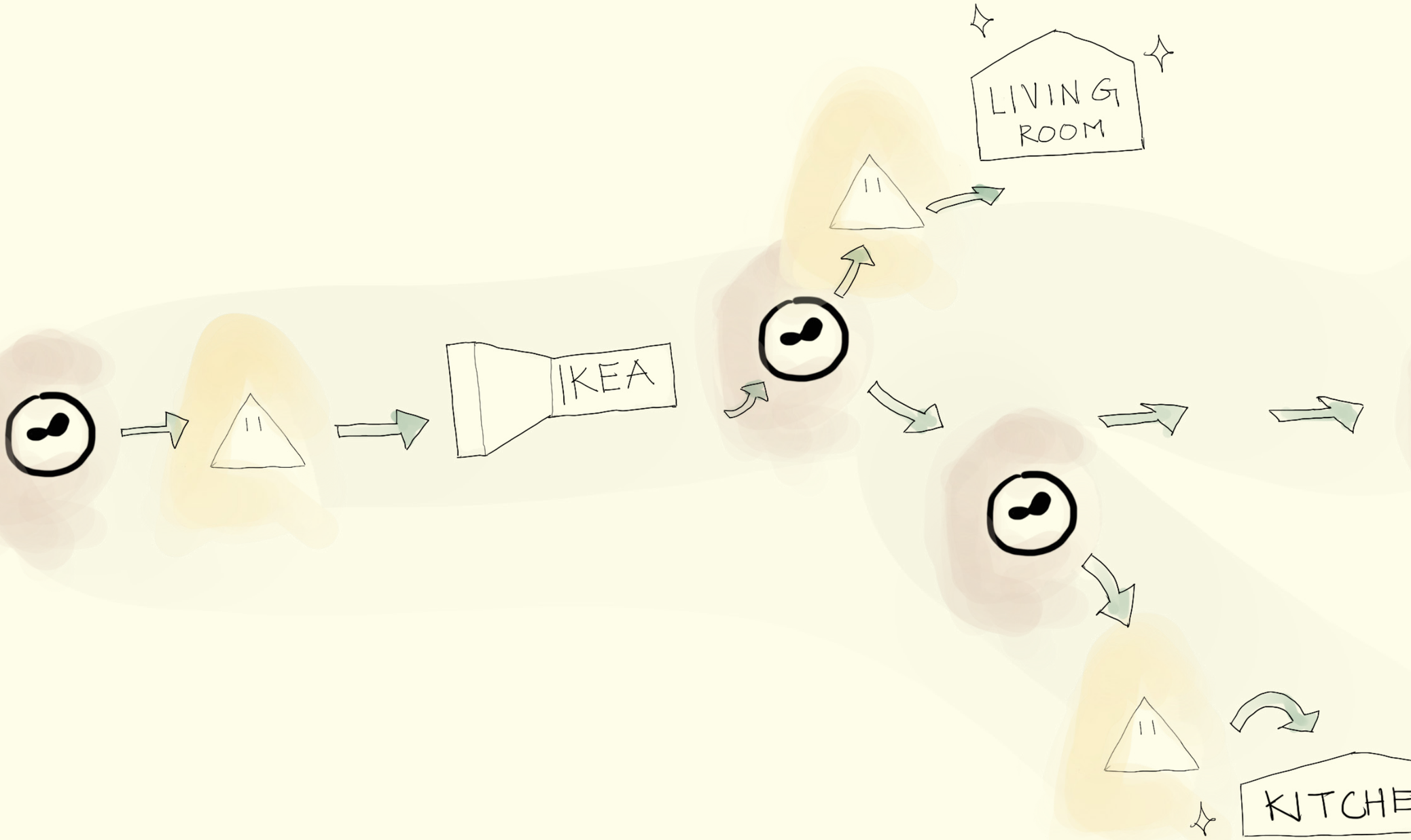
reflecting personally

The adaptive co-design workshop was an incredible experiment to learn from. It was a short but intensive journey that grew from scepticism to belief while trying out completely new things. Since the idea of a non-visual co-design session is still quite fresh, some things worked marvellously but some just didn't. The audio-based nature of the workshop and the usage of more-than-visual prompts throughout it seemed to delight everyone, we even had a team with a prototype! On the flipside, the audio component seemed to be taking a toll on participants' energy levels because of how much they had to think and speak. This, coupled with focused methods of prototyping and roleplaying with people who have never done it before and had to do it verbally, created noticeable amounts of confusion, crosstalk and distraction. However, the workshop was not the only thing that needed adaptation. Making sense of and translating its insights, mostly a chunk of large audio recordings without much visuals was not easy and was rather dry.

This was enlivened by analysing an important element that remained latent until it was identified: the participants' emotions. This component brought new insights on how the designed intervention could target specific feelings of the participants and add intangible value to their experience at the store by emotionally stimulating them. Lastly, it was also confounding to make sense of the design directions that were born out of co-design, but more of that in the next section.

notes from author

This section demonstrates how to learn more about the main stakeholders and their experiences at IKEA by engaging with them early-on in the process. The co-design workshop described above was a highly refined approach to co-creation that was tailored particularly to the project's non-visual setting. Despite being on the fuzzy front end, co-design was able to develop some key insights into the challenges and opportunities, and accessibility and inclusion. A significant outcome of this session was the creation of a composite persona-a concise technique for describing diverse stakeholders in a way that allows people to empathise with and create with them more effectively in the future. Finally, the workshop was filled with strong experiences and quotations from stakeholders, which they sought to put to use by eagerly developing design directions. In the next section, as a move towards designing more knowledgeably and inclusively, the findings from research and co-design will be cohesively broken down and made sense of.


LIVING ROOM
IKEA
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5 making sense of things

RtD

making sense of things

designing with inspiration

after co-design

Following the process of co-design, two things happened- the first was the rather obvious emergence of design directions. The second was the discovery and formulation of design principles that are specific to the problem space and have a crucial influence on the intervention space. This part of the story is about making sense of all that has been learnt, experimented, and reviewed so far.

1 from design direction to design concept

The development of three different pathways to design hinted at features, mechanisms and elements that make up potential concepts. However, to make sense of the overwhelming amount of information that was born out of this process, affinity mapping was deployed. Again, although this process was inspired by the Affinity Research Approach (ARA) of Kawakita Jiro (Otieno, 2023), it was adapted to fit this context. Like the name suggests, the map helped identify underlying patterns of similarities among the three design directions, revealing the most important criteria for developing concepts.

Affinity mapping

In the affinity map (right), patterns of connection between the 3 design directions have been depicted through lines. Though the directions emerged to unique problems of customers, they did share common elements, highlighted by the bold elipses in the bottom of the map.

Fig 13. Affinity mapping of three design directions revealed patterns.

Selection matrix

A selection matrix was developed to further distil these criteria into 3 categories- ‘Must Have’, ‘Nice to Have’ and ‘Should not Have’ where each category was provided a weight (from 1-3) based on which it was rated. The idea behind taking such a technical approach was to filter out the non-negotiable criteria sheerly by quantitative preference for them, as analysed from co-design data. However, to truly resonate with people, concepts need an emotional component. Indeed, that explains the presence of the fourth category- ‘Provide a feeling of’ in the figure below. This category adds an intangible but inextricable

Comparing the design directions with existing solutions at IKEA helped to understand why, how and in what extra ways the new design intervention would benefit stakeholders.

component of emotion to potential concepts that can give people with vision disabilities a reason to connect with them on more levels than one. With the criteria from affinity mapping now sorted into four distinct categories with weights, the new design matrix was ready to be compared to solutions that already existed at IKEA. This comparison was imperative to understand in what ways and how the new intervention would benefit the stakeholders. Most importantly, it would substantiate why it was needed in the first place.

Design Heuristics/Criteria

	Must Have											
	Customer								IKEA			
	Information Access	Choosing Ability	Hap/Tactile Component	Audio Component	Guiding Component	Extra Value	Simplicity	Free/ Low Cost	Official Involvement	Digital Component	Scalability	Cost-Efficiency
Weight (1-3, 3 is highest)	3	3	1	3	2	2	2	3	3	3	2	2
Idea/Intervention												
Existing *(IKEA app, Private Planner, Digital Screens, Self-Design Kiosks, Help Desks)*	✓	✗	✗	✓	✓	✓	✗	✓	✓	✓	✓	✓
Sensory navigation system	✓✓	✓	✓	✓	✓	✓✓	✗	✓	✓	✓	✗	?
Intelligent companion	✓✓✓	✓✓✓	✗	✓✓	✓✓	✓✓✓	?	?	✗	✓	✓	?
Store tour experience	✓✓✓	✓✓	✓	✓	✓✓	✓✓✓	?	✓	✓	✓	✓	?

	Nice to Have (+1)						Should not Have (-)					Provide a Feeling of (+2)							
	Customer					IKEA	Customer			IKEA		Customer							
	Tactile Floor	Assistance in advance	Other Sensory Exp	Personalised Service	Separate Timeslot	Extension of current serv	QR Codes	Scanning/ Aiming	Sensory Overload	Only Physical	AR/VR/High-tech	Agency	Inspiration	Clarity	Orientation	Awareness	Excitement	Calmness	Impulsiveness
Weight (1-3, 3 is highest)	3	2	1	2	2	2	2	3	3	2	3	3	3		3	3	3	3	
Idea/Intervention																			
Existing *(IKEA app, Private Planner, Digital Screens, Self-Design Kiosks, Help Desks)*	✗	✓	✗	✓	✓	NA	✓	✓	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗
Sensory navigation system	✓	✗	✓	✗	✗	✗	✗	✗	✓	✗	✗	✓	✗	✗	✓	✓	✗	✓	✗
Intelligent companion	✗	✗	✓	✓	✗	✓	✗	✗	✓	✗	✗	✓	✗	✗	✓	✗	✓	✗	✓
Store tour experience	✗	✗	✗	✓	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✓	✗	✗

Symbol	Legend	Weight
✓	Criteria is present and is same as in existing solution	current wt
✗	Criteria is absent and is same as in existing solution	0
✓✓	Criteria is better than that in existing solution	1 extra wt
✓✓✓	Criteria is much better than that in existing solution	2 extra wt

Idea ranking based on heuristics/criteria and weights

Idea/Intervention	Weight Summary													
Existing *(IKEA app, Private Planner, Digital Screens, Self-Design Kiosks, Help Desks)*	3	0	0	3	2	2	?	?	3	3	2	?	0	3
Sensory navigation system	4	3	1	3	2	3	?	?	3	3	0	?	4	0
Intelligent companion	5	5	0	4	3	4	?	?	0	3	2	?	0	0
Store tour experience	5	4	1	3	3	4	?	?	3	3	3	?	0	0

Idea/Intervention	Weight Summary (cont.)																	Total
Existing *(IKEA app, Private Planner, Digital Screens, Self-Design Kiosks, Help Desks)*	0	3	3	NA	-2	-2	0	0	0	0	0	0	0	5	5	0	0	33
Sensory navigation system	2	0	0	0	0	0	-3	0	0	5	0	0	5	5	0	5	0	45
Intelligent companion	2	3	0	3	0	0	-3	0	0	5	0	0	5	0	5	0	5	51
Store tour experience	0	2	1	3	0	0	0	0	0	0	5	5	5	5	5	0	0	60

Fig 14. (Above) Selection matrix of design criteria with categories and weights. (Below) Rating different criteria and calculating how well they score.

Not surprisingly, the highest scoring potential concept was the highest weighted combination of design criteria. These criteria paved the way for developing ‘features’ that the concept would embody eventually. Below is the combination of the highest rated features for the new intervention when compared to IKEA’s existing digital solutions.

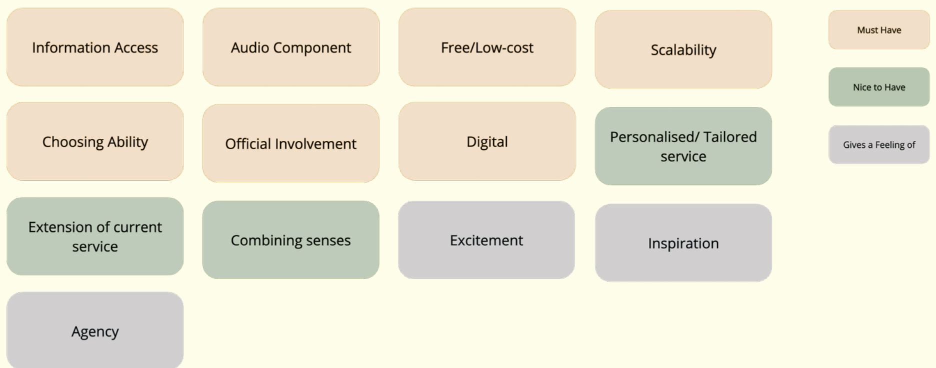


Fig 15. The winning combination of features aims to provide a new feeling of agency and inspiration to customers with vision disabilities.

positioning and title of thesis

> **What if inclusion for IKEA meant that its hallmark features were made accessible to a wider range of people?”**

Throughout the first phase of this project which involved understanding, empathising and designing together with the relevant stakeholders i.e. customers and co-workers, one realisation stood out- though navigation was mentioned to be among the most common issues that adversely affects customers with vision disabilities, it is not an IKEA-specific problem. Some of the biggest retailers in the world are also faced with making their store navigation more accessible to people with disabilities in general. Coupled with this, the selection matrix exercise revealed the winning combination of features that when put together, can provide a feeling of inspiration and agency to customers. Thus, designing only with the intent of making navigation accessible could result in an intervention that is not unique to IKEA, but is in fact more broadly applicable to all kinds of public spaces. One of IKEA’s biggest selling points is the 1:1 liveable showroom space (Showroom, Market Hall, Self-Serve, Full-Serve - What Are Eac - IKEA United Kingdom, n.d.) talked about at the beginning of this story. In a sad reality, this dynamic visual space ceases to be accessible to customers without typical vision as it exists and is not able to fully wow and inspire them. What if inclusion for IKEA meant that its hallmarks were accessible to a wider range of people? What if this went beyond customers with vision disabilities and eventually became a brand identity for IKEA as your inclusive neighbourhood home furnishing store? These thoughts instilled a sense of clarity and paved way for a thesis strongly positioned on specifically making the IKEA showroom a more accessible and hence inclusive hallmark of the retailer.

but, design fixation.

Now with a clear stance and a hopeful direction, it was time to get cracking on a plethora of concept iterations. However, the ideas from the co-design and selection matrix kept creeping in, until they were met with the inevitable doom of design fixation. To overcome this fixation, divergent thinking was necessary, thus a technique termed SCAMPER was utilised (Özyaprak, 2016). SCAMPER served as a checklist (Annemiek van Boeijen et al., 2013) that was added to the design directions and features that emerged from the two above mentioned processes. With this checklist, new ideas were born on top of, along with or in place of existing ones to maximise the diversity.

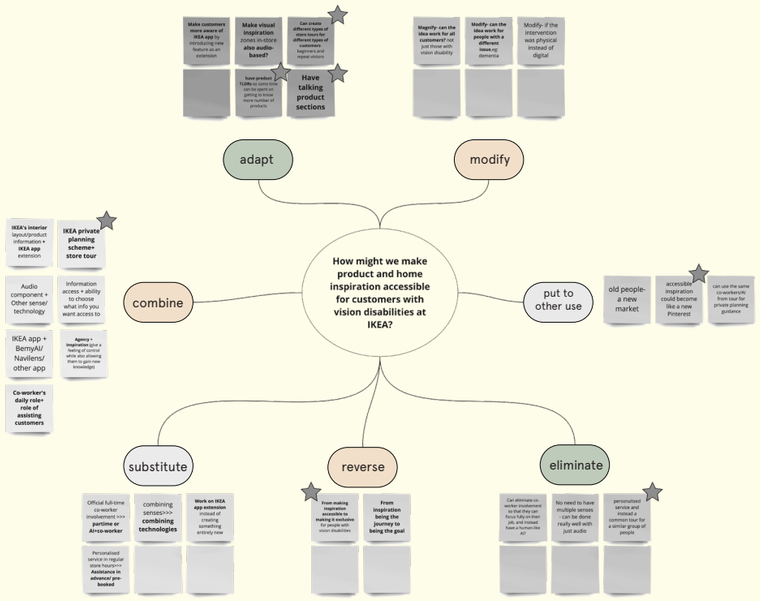


Fig 16. SCAMPER technique applied to the winning combination of features derived from the selection matrix exercise.

2 from assumption to evidence

While patterns were being drawn and novel ideas were being brainstormed, thoughts and biases were being broken and replaced by hard, cold facts. A couple sections above saw the first occurrence of the term ‘agreed upon truths’. These are principles or ‘stable patterns in life’ that are grounded in evidence (Hekkert & Van Dijk, 2011). They can be used to comprehend the various phenomena (physical, social, biological or even psychological (Hekkert & Van Dijk, 2011)) around certain topics, in this case, people with vision disabilities. These principles also govern the ways in which designing for such a group can be approached. Previously assumptions, now facts, below are a cluster of design principles that circulate around people with vision disabilities.

Fig 17. Design principles or rules of thumb that emerged from co-design.

Explanation of each term in ICSAMH- the heuristic developed specifically for this project context.

Rooted in factuality, these principles now provided a rich base to develop strategies or prompts that could explain the various characteristics the design concept could embody (Leahy et al., 2019). Also known as ‘heuristics’, this series of prompts could be likened to SCAMPER, but specific to the context of this project. Introducing ICSAMH, a heuristic devised for an intervention that keeps customers with vision disabilities at its core. **Information**, because whatever the designed outcome, it must provide access to more information to these customers. The design must provide **Choice**, because assistance is a switch that customers can turn off if they don’t want it. **Simplicity** and intuitiveness are crucial for these customers because they rely on intuition a lot to find their working around things. The presence of an **algorithmic** element would

add efficiency to the process since algorithms don't need the kind of considerations humans do. Of course, the solution must be of **minimal cost** because these customers don't want to pay for bare necessities that everyone else has access to. However, since customers still value human sensitivity and advice, a **human** component could provide that extra connection.

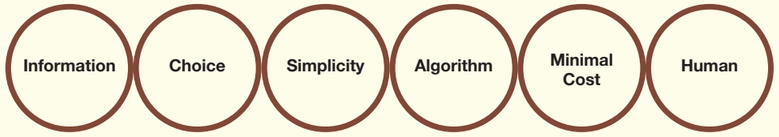


Fig 18. ICSAMH, a checklist like SCAMPER was developed specifically from the analysis and insights of this project so far.

from 1 to 2- concept meets evidence

On the one hand, new intervention ideas were springing up from the SCAMPER technique. On the other, ICSAMH, a context-specific heuristic language was being developed to bolster these ideas with important characteristics and attributes. Thus, when ICSAMH was applied to ideas from SCAMPER, four concepts that were suitably fitted to this problem context emerged.

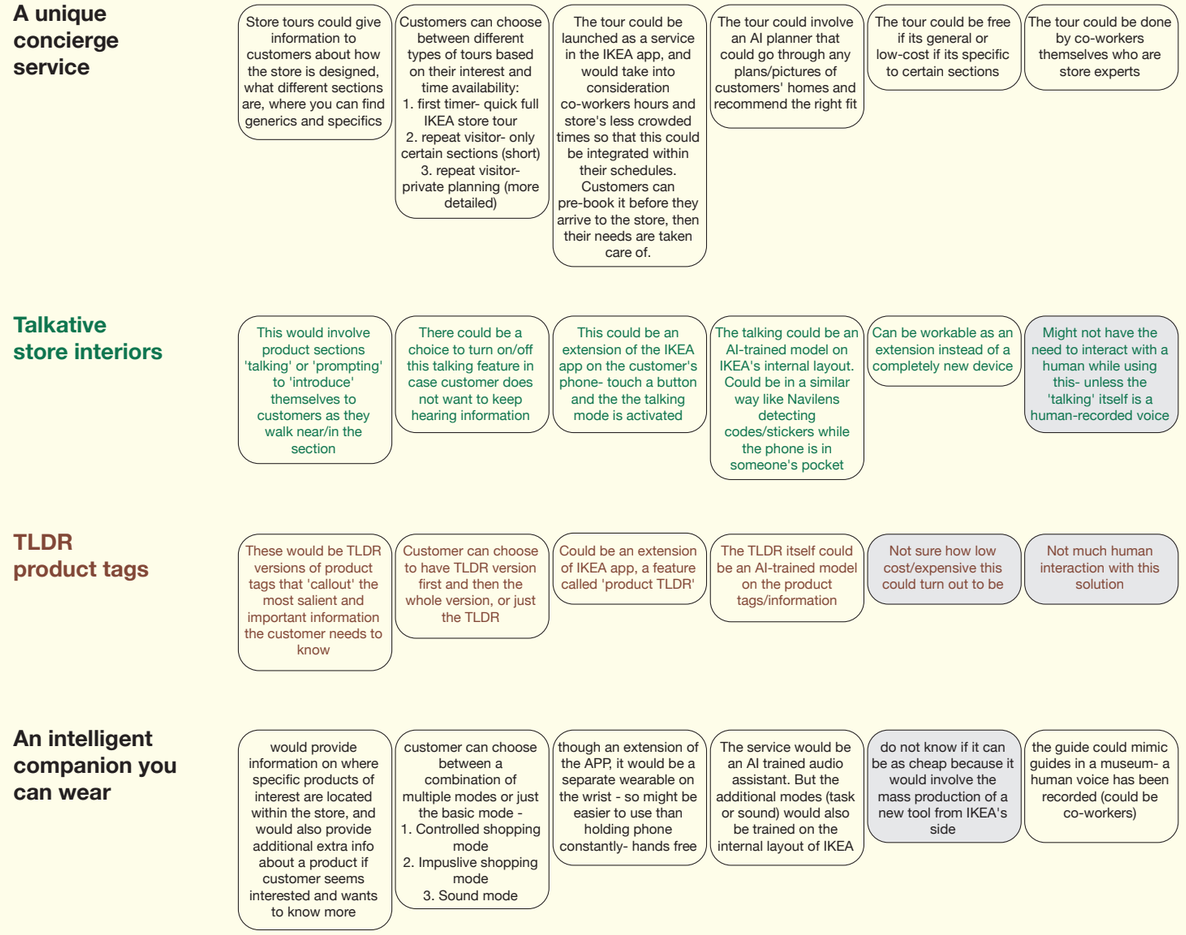
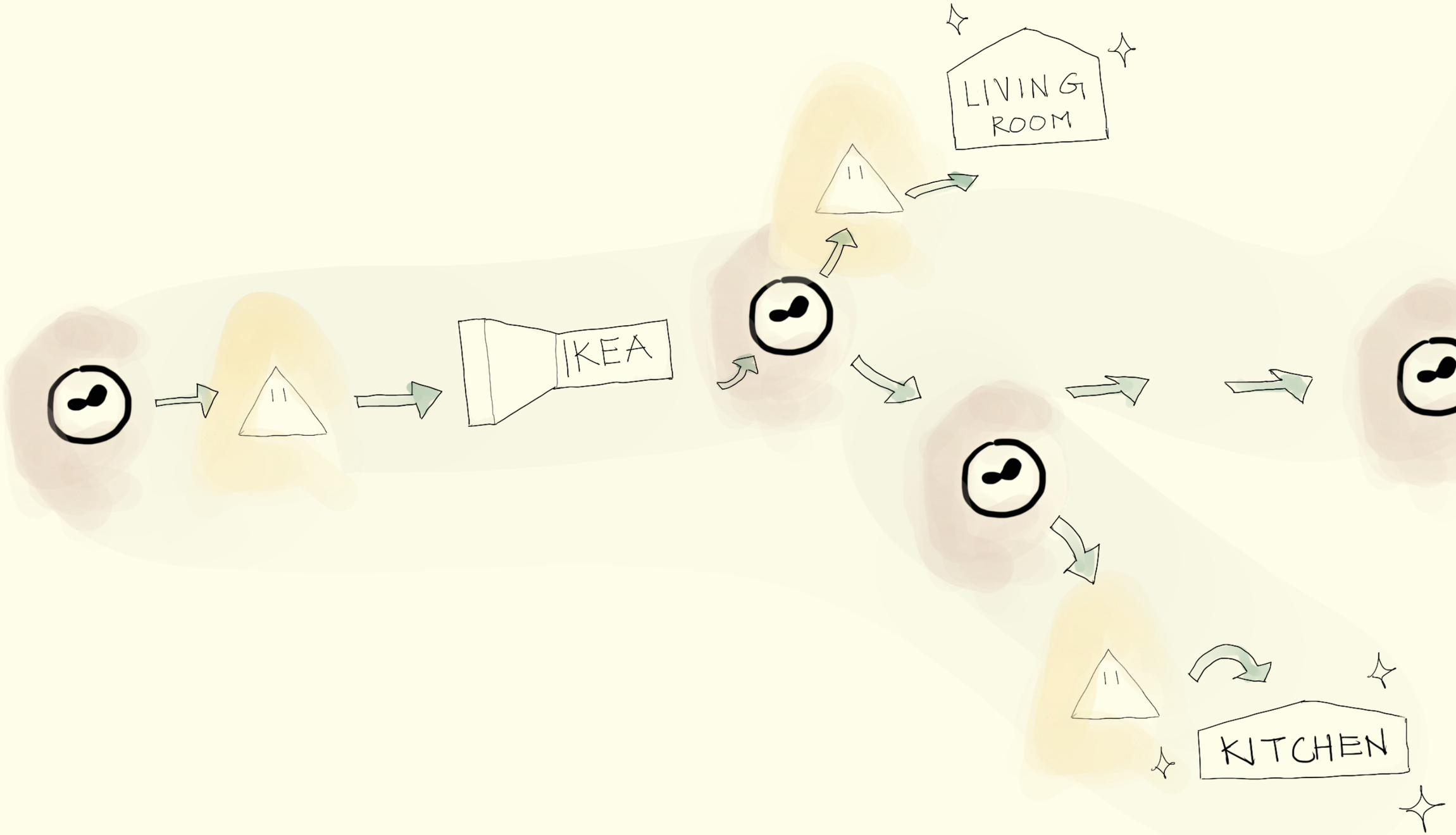


Fig 19. Concepts that were a result of a crossover between design concept and project-specific design principles.

notes from author

With the important revelation that IKEA's characteristic function of inspiring customers through its showroom area is inaccessible to those with vision disabilities, this section narrows down on the thesis positioning. It converts abstract research and co-design findings into practical design elements like principles, heuristics, and a selection matrix. Each of these elements helps to evaluate, reiterate, and reframe the design directions from the preceding section into more solid design concepts. With more concrete concepts emerging, the following section delves further.


LIVING ROOM
IKEA
KITCHEN

6.1 designing with inspiration

Several animals in nature communicate and gather information using highly unique non-visual signals, particularly those with limited vision."

Despite the meticulous permutations, combinations, and experimentation with new processes, techniques, and methods so far, the concepts that resulted seemed rather lacklustre, and felt somewhat distant from the actual stakeholders in question. Strangely, though they were four in number, they seemed quite indiscernible when it came to how each of them could be implemented or work. Perhaps the technical nature of the previous steps took out some of the sweetness of an organic design flow, resulting in concepts that were more hooked to specific technologies and mechanisms than the essence of the ideas themselves. A small break in nature sparked new inspiration and a renewed sense of designing more humanely.

biomimicry: a pathway to novel concepts

What do many species in nature and people with vision disabilities have in common? They both employ additional senses and respond to external environmental stimuli to communicate and exchange information. Animals are part of a more inclusive species where combinations of auditory, chemical, optical, and behavioural clues are all part of their signalling towards communication (Eliason, 2018). The natural ecosystem in which plants and animals depend on one another for these signals to plan their next steps can be compared to the man-made ecosystem that explains the internal dependencies of an IKEA store. In this context, though the prime figures are customers with vision disabilities, the store is not devoid of other customers themselves, along with co-workers both from the storefront and the office with a mesh of technologies and senses. The needed inspiration for design thus came unsurprisingly from nature. Commonly termed biomimicry, this is an interdisciplinary technique that transfers principles or mechanisms as occurred and observed in nature to solve design problems (Ilieva et al., 2022). Not only does this technique transfer mechanisms, but it also leads to interventions that are novel.

Why biomimicry: A success story that inspired one of the most common products used today.

Biomimicry is not alien to design and has proven to be successful through past and present with one of the most common products of all time, the airplane, being first modelled after the avian flight mechanism in birds (Ilieva et al., 2022). For this project however, biomimicry was used to find new ways to make inspiration accessible to customers with vision disabilities while humanising and making these ways understandable. Communication, gathering information and navigation were the primary sources of data garnered from nature. Some forms of biomimicry that developed further into concepts are included in the selection below.

Fig 20. Ideas that stemmed from biomimicry had more diversity to develop rather than be tethered to a single mechanism/ technology.

reframing the narrative

With a more divergent brainstorm due to biomimicry now, it was also imperative to go back to the earlier narrative and reframe parts of it to be relevant to the latest set of ideas. Observing the intricacies of nature during this time led to more subtle connection with it, one that was certainly emotional. What if the designed intervention too could make people feel that way when they used it? The first element to be modified was then thus the ICSAMH framework, to integrate new findings into the existing checklist, making it richer as a design guide. In addition, since the design intervention would be a part of IKEA's digital accessibility journey, the modified checklist was also compared with one of the thumb rules for good digital design, the ten UX heuristics (Simplified: Jakob Nielsen's 10 Usability Heuristics | by Meghna Basak | Bootcamp, n.d.). Almost half the number of heuristics from the list seemed to associate well with the new framework, showing promise of being a good baseline to evaluate the now developing concepts.

Comparing the existing ICSAMH checklist to the UX checklist was important to ground the project in the digital design sphere.

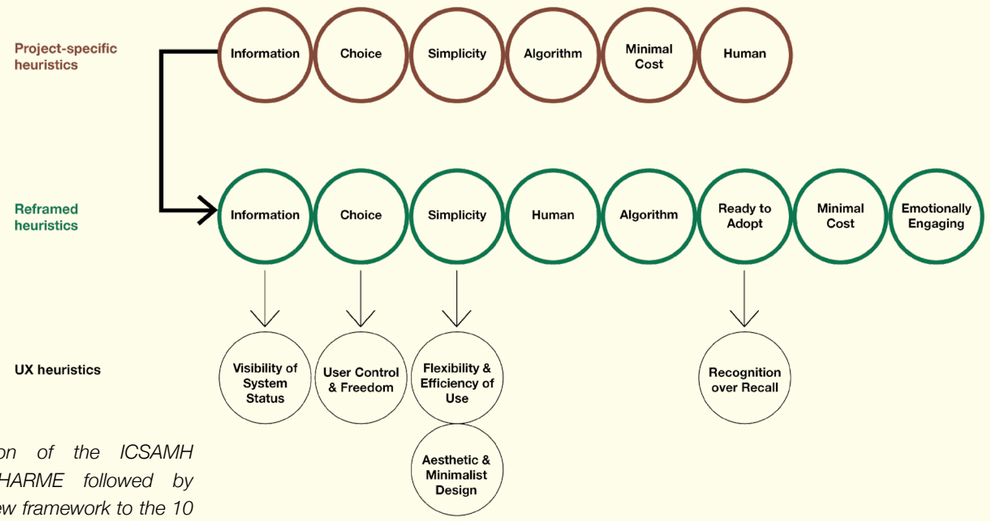


Fig 21. Modification of the ICSAMH framework to ICSHARME followed by comparison of the new framework to the 10 UX heuristics.

With a surge of ideas and a stronger base, understanding what could make a customer's journey in IKEA meaningful was of high value at this stage (Liedtka, 2018). 'How Might We' (HMW) questions enable a reframing and opening up of the problem statement within a context, resulting in quick, targeted, and imaginative brainstorming sessions (What Is How Might We (HMW)? — Updated 2024 | IxDF, 2016). HMW served as the link between defining the problem and ideating for it. There were two different HMWs both of which were directed towards the common goal of making inspiration at IKEA inclusive to customers with vision disabilities.

How Might We (HMW) questions and their relevance in developing stronger research questions.

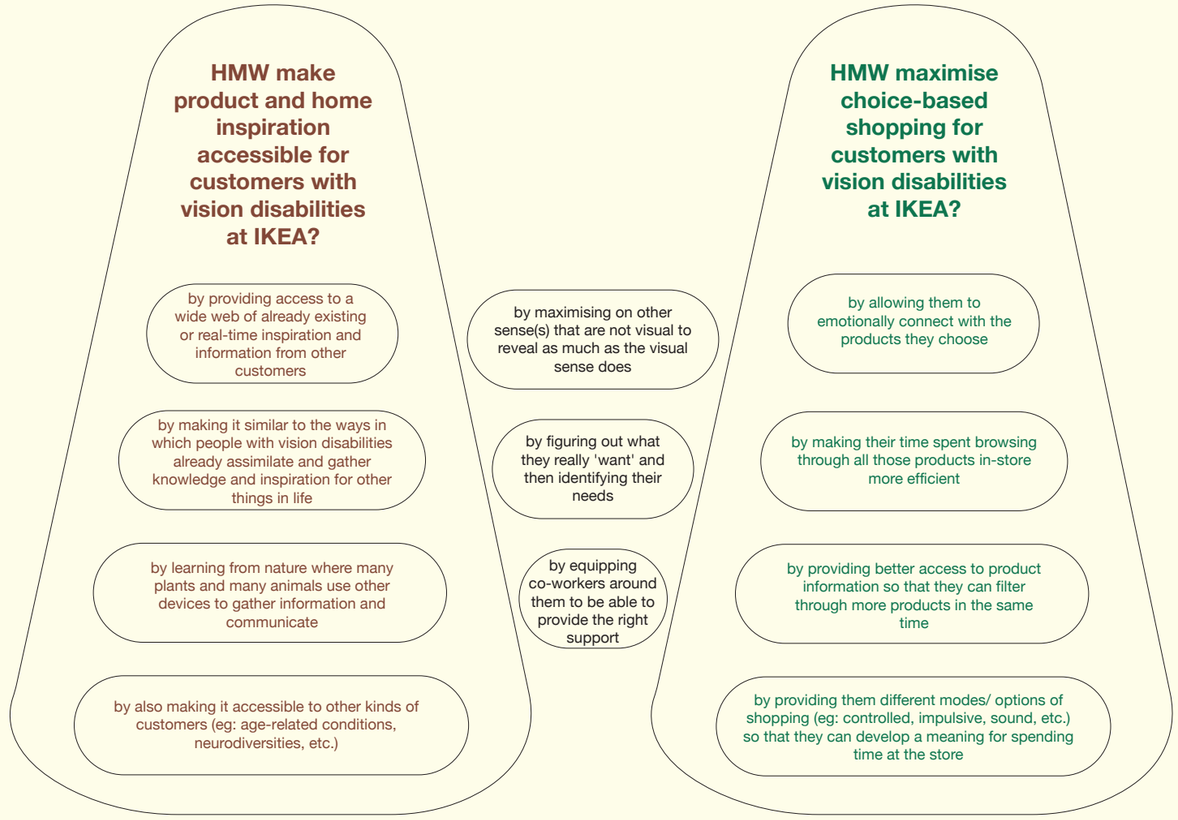
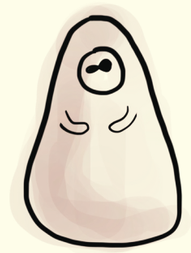


Fig 22. Framing HMWs helped in viewing the same subject through different angles. The blurbs in the middle are common to both questions.

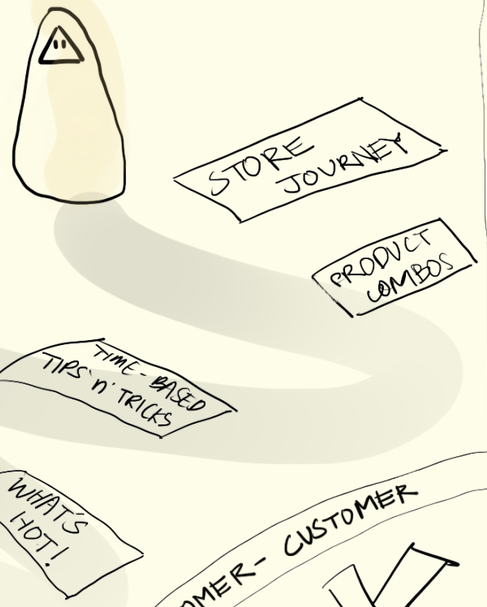
The five new concept directions each have a more-than-human focus.”

Connecting back to the metaphor of ‘IKEA as an ecosystem’, these five elements below depict five distinct concept directions, each containing features that provide the fluidity to be combined, modified, substituted, or broken down. Moreover, each concept was rooted in at least one other human or non-human factor (sound, touch, haptic, algorithm, human) that would play a vital role in the final concept’s functioning and implementation. It is noteworthy that good inclusive design is not limited to catering to specific groups, but in fact, is applicable to the widest possible audience. Thus, these concept directions have also been thought out with considerations that could prove useful for a larger customer base outside of people with disabilities.



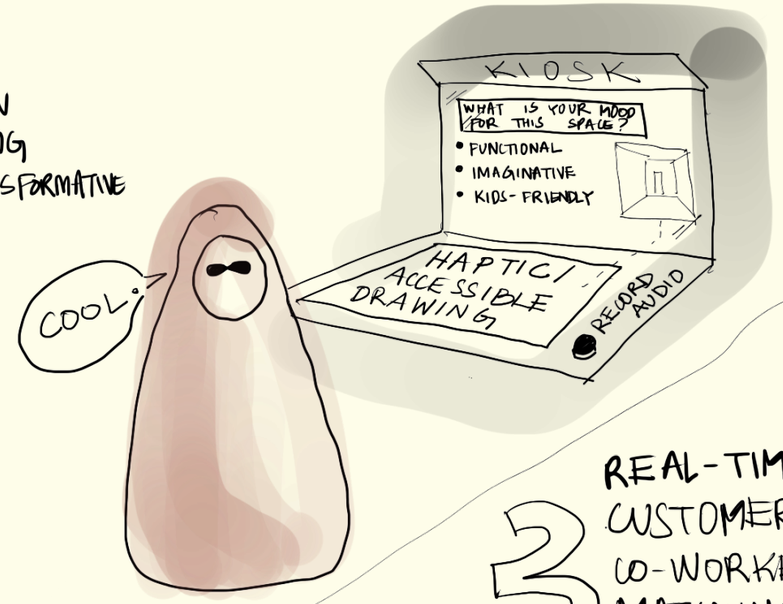
1

SIGHTED PEOPLE CAN LEAVE TRAILS OF INFORMATION / INSPIRATION BEHIND FOR PPL WITH VISION DISABILITIES



2

CUSTOMERS CAN INPUT INFORMATION ABOUT THEIR EXISTING HOMES TO GET TRANSFORMATIVE OUTPUTS.

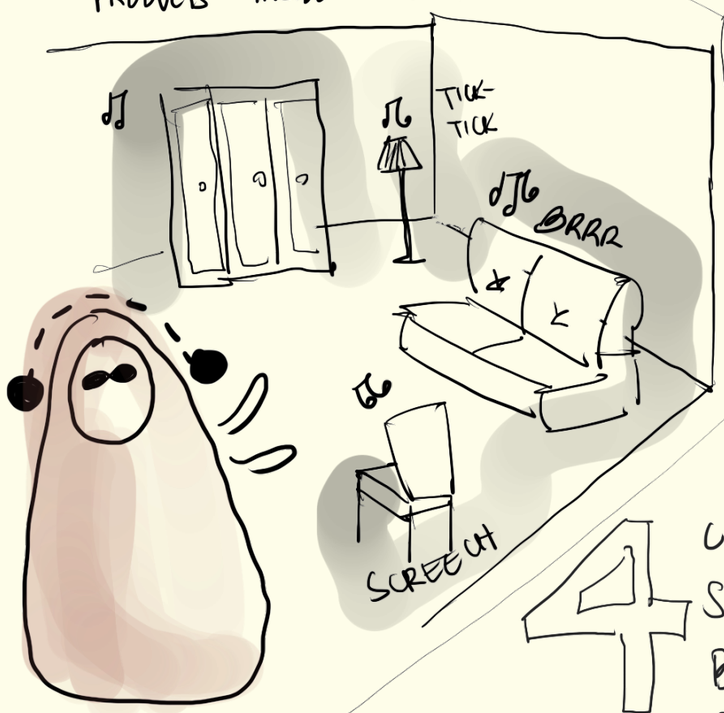


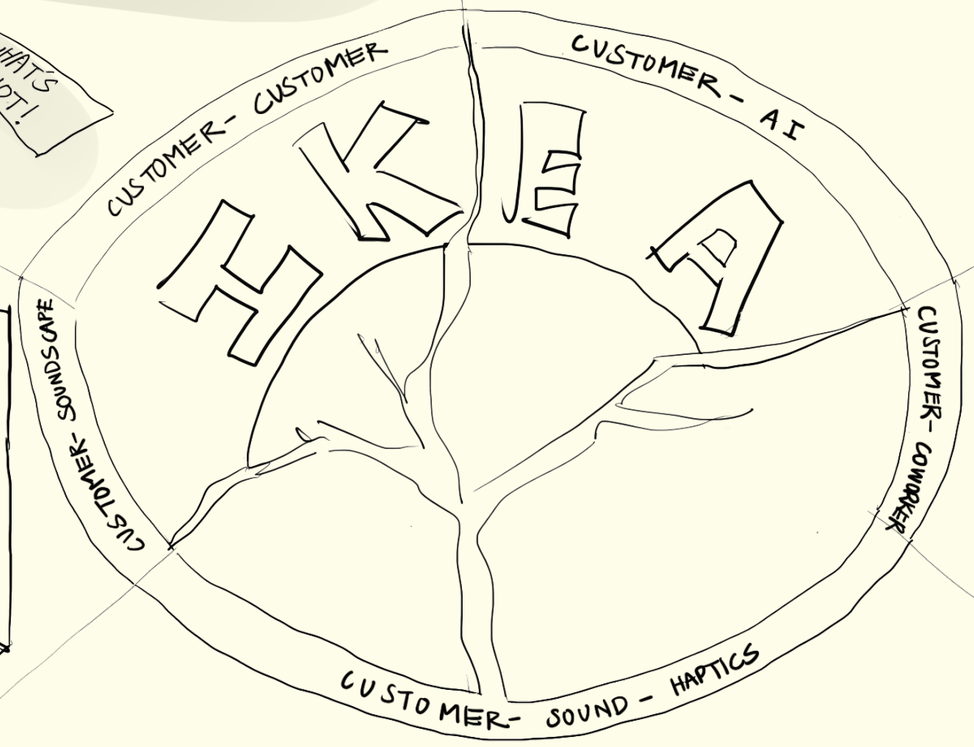
3

REAL-TIME CUSTOMER-CO-WORKER MATCHING

5

CUSTOMERS CAN MAKE USE OF MUSICAL-SOUND CUES TO IDENTIFY LIVABLE SHOWROOMS AND PRODUCTS INSIDE THEM





4

CUSTOMERS RECEIVE SPECIFIC PRODUCT INFO - BY EMITTING & RECEIVING SOUND SIGNALS

AREA-SPECIFIC SECTIONS

PRODUCT-SPECIFIC SECTIONS

WHAT'S YOUR BUDGET?

DISCOUNTED PRODUCTS

1 Trails: Sighted customers share trails of information and inspiration with customers having sight/vision disabilities.

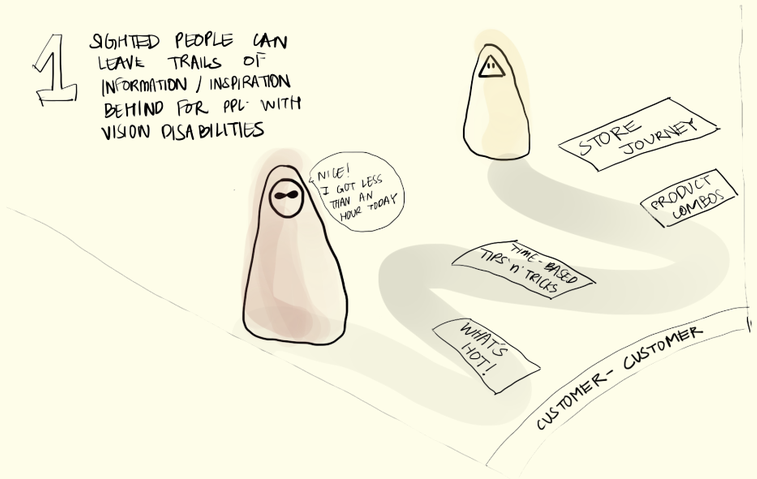


Fig 24. Concept 1- Trails.

Several times it has been stated in this story so far, yet it is not stressed enough that customers with vision disabilities are lost and confounded when met with the overwhelmingly visual language the IKEA showroom presents them. If they wanted to seek inspiration amidst all this, starting from scratch was not so easy. What if they had a platform to jump off of? Inspired by the pheromone trails that ants leave for each other so that they can seek food or shelter (Sumner, 2024), this experiential concept revolved around customers with vision disabilities experiencing shopping at IKEA via 'pathways' of filtered or curated inspiration brought to them by other customers. These 'other customers' would be provided incentives to do so, so that their actions get rewarded beyond the recognition of goodwill. Designed to be a hybrid service, Trails would have a digital app element and a physical in-store experience. The curated inspiration would be accessible to customers through a special audio layer as they moved through the Trail. From a specific store journey to a time/budget-based tour to a method to

Trails can give customers a curated platform of inspiration to jump onto, without having to start from scratch."

provide customers the best way to make use of their time at IKEA, Trails meant several things and was not clearly narrowed down to a single element yet. However, the involvement of the different stakeholders was quite clear from the beginning. Being a customer-centric concept, the two key stakeholders engaged in the background and foreground respectively were customers with sight and those with sight/vision disabilities. But none of this without the organisation IKEA itself setting the foundation for this concept to work. Below is a simple diagram explaining how Trails could seemingly work.

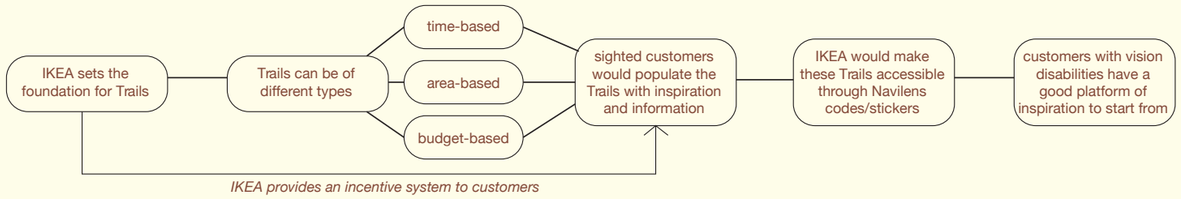


Fig 25. How Trails would work.

relevant existing solutions: IKEA app

Studying a digital solution with a few features in common to the proposed concept helped comprehend what current components worked for IKEA and how accessible they were in aiding its customers. The solution in context was the IKEA app, launched to make finding home inspiration and furnishing easier for customers wherever they were (IKEA Apps - IKEA, n.d.). Some existing features of this app that could be taken into consideration while designing Trails were namely product descriptions, product reviews and star-based ratings, bestseller mentions, and product stock availability. However, it is noteworthy to mention once again that none of these are available in any format outside of the visual. This understanding thus provides challenge and opportunity spaces to further develop this concept without having to necessarily re-invent the wheel, so that it can be more inclusive using existing resources.

how this could work for a wider audience: a thought

Trails could enable not only customers with the disability in question but also other customers to have better shopping experiences that fit both their time and pockets. This concept can hence make visiting an IKEA store more exciting while removing all the clutter of the products through the specific curated pathways themselves. Further, Trails could lead to an unconscious movement of 'IKEA influencers' who could take to social media and make the store's internal happenings more public, drawing more interest and hence visitor count to the stores themselves.

2 Metamorphosis Kiosks: Transformative and accessible home planning for customers with vision disabilities.

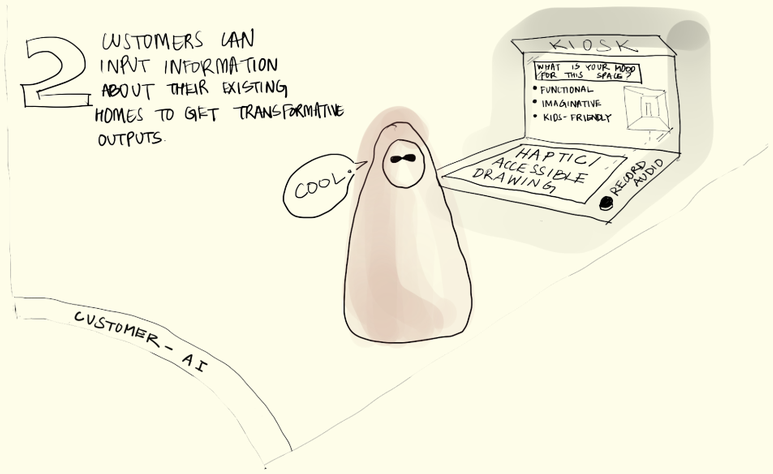


Fig 26. Concept 2- Metamorphosis Kiosks.

IKEA stores have been reshaped with the UPPTÄCKA self-service kiosks, which were designed to provide customers more variety of choice and the ability to shop on their own (How IKEA UPPTÄCKA Self-Service Kiosks Are Transforming the Customer Experience | Ingka Group, n.d.). Similar to this successful kiosk, the stores are loaded with several other digital tools to assist customers with home planning and shopping. Despite this, none of these tools are able to assist customers who are unable to access visual information. Insert the Metamorphosis Kiosk, an intelligent one-off accessibility booth that would allow customers to input information regarding their home to get transformative outputs on the design, planning and styling of it. Like the name indicates, it is inspired by the transformation of a caterpillar into a butterfly where certain parts of its body are reformed into wings, legs and other parts (Butterfly Metamorphosis | American Museum Of Natural History, n.d.).

The kiosk would stimulate interaction between a customer and an artificial intelligence (AI), specifically addressing the issue of home planning and allowing customers to directly upload pictures of their homes (visual), speak into the kiosk's mic (verbal), or draw on a digital screen on the kiosk (tactile), depending on their comfort levels. Once the kiosk would receive the input, it would start a conversation back with the customers to understand their needs and interests for their home better. With the two-way interaction and a collaborative filtering of similar answers it received in the past, the kiosk would generate customer-specific output via audio on planning, designing and styling ideas for their home. Some of the features the descriptions would cater to include the budget, lifestyle (adult, child, elderly, etc.) and moods (functional, aesthetic, etc.) of the customers themselves.

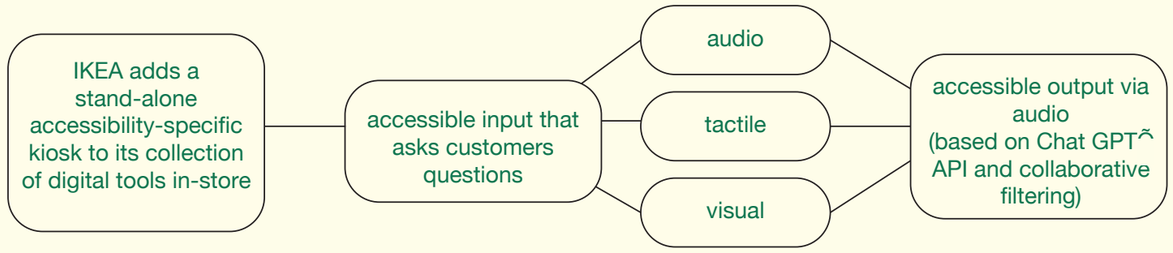


Fig 27. How Metamorphosis Kiosks would work.

The kiosk has the ability to not only strengthen IKEA's accessibility, but also urge competitors to do the same."

relevant existing solutions: IKEA Kreativ

Kreativ was launched as an additional app to the main IKEA app series to allow customers to envision, design and plan empty spaces from different angles, and more specifically, in 3D (Inspired Design for Living Spaces, in the App or Web - IKEA Kreativ, n.d.). Kreativ has been successful in gaining interest from customers with motor disabilities since they did not have to go to the store each time and could now design from the ease of their homes. At its base, it provides two different options for customers to get started with their designs: designed rooms and empty rooms. Further, customers have the choice to add 3D models of products into their spaces, and go beyond to even play around with furniture planner tools like the PAX planner to the same spaces (Inspired Design for Living Spaces, in the App or Web - IKEA Kreativ, n.d.). As it stands, it allows customers to experience customisable designs only by letting them 'view' their spaces, and not any other accessible means. However, the array of features and flexibility it provides customers is good for consideration.

how this could work for a wider audience: a thought

The metamorphosis kiosk could cater to many different audiences, not just those with vision disabilities. For instance, its tactile digital surface can be used by young people or adults who prefer a hands-on approach to design, regardless of their visual ability. The mood-based audio outputs could lead to tailored experiences that suit the needs or desires of all customers. The verbal mode of input could prove useful for people who are struggle with expressing their thoughts in ways other than verbal communication. The transformative output from the AI could bring out the hidden, latent needs of customers, surfacing ideas they might not have considered before. Lastly, the presence of accessibility-friendly kiosks in a retailer as large as IKEA would send strong messages about the organisation's commitment to inclusion, urging competitors to do the same.

3 C&C Network: A real-time customer and co-worker matching system.

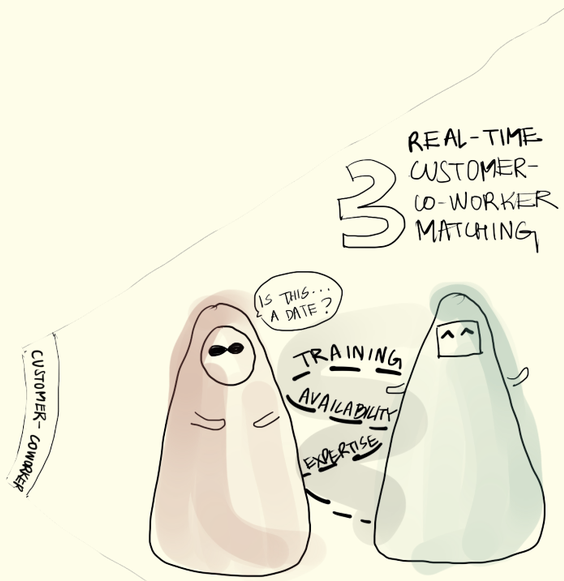


Fig 28. Concept 3- C&C Network.

In addition to IKEA's own research, a study on supermarket stores in the UK indicated that the main barriers faced by customers with different disabilities seemed to be a crowd of other customers, products being out of reach, and not knowing product locations if store layouts changed

Comparing general problems faced by customers with disabilities in supermarkets to the ones faced by customers with vision disabilities at IKEA.

(Vogelmann & Bird, 2021). Asking for help in such situations is something people with disabilities, including those with vision disabilities struggle with since it puts both them and the store co-workers in an awkward position. One of the key findings that prevents customers with vision disabilities from having access to product inspiration in the IKEA showroom is the lack of coherent assistance in the stores. This stems from the lack of awareness non-disabled people in general have regarding disabilities, in knowing how to support people with specific disabilities. This problem was also discussed by store co-workers themselves during co-design. Coupled with this lack of knowledge also lies the fact that there are not enough co-workers on the showroom floor to assist customers if they came for an unplanned visit (Ravichandran, 2024a).

The C&C Network, would focus on bridging those gaps between customer and co-worker through a matching system. It can be likened to dating but in real-time, without the prior planning and conversation phase and directly skipping to the first date to discover a pleasant surprise in

Co-workers in the store can enlist in disability awareness training as part of the network.

the store. Through this service, co-workers could enlist to receive accessibility awareness training so that they not only understand the social model of the disability, but also learn the right ways to assist customers subsequently. The training would be offered in different levels of detail and after a co-worker has undergone a level, they could sign up for the matching through a digital platform. Acknowledging that although co-workers are eager to help customers, they have limited time outside their main jobs, this platform provides a way for co-workers to input both their level of training and their time availabilities. Thus, when a customer makes an impromptu store visit, they could choose to avail this service and be matched with a co-worker on the spot based on filters like- product interests, showroom areas, time availability, etc.

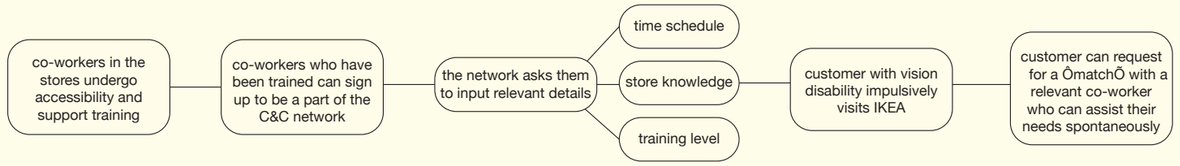


Fig 29. How C&C Network would work.

relevant existing solutions: IKEA Planning and Consultation

The C&C Network can give a sense of spontaneity to customers as they are tired of constantly planning ahead of time for things in life."

With IKEA's existing personal planning services, customers can book appointments online and seek advice and design checks for several different products either for free or a small fee. The associated fee could be waived if the customer purchases the design after, else it goes into a consultation fee. Currently, these services are available for planning, organising, or designing wardrobes, storage systems, kitchens and bathrooms (Need Personal Home Furnishing Advice? We're Here for You with Planning & Consultation- IKEA, n.d.). However, they always require the customer to plan in advance. The C&C Network on the other hand is aimed at giving spontaneity and impulsiveness to customers with vision disabilities who are tired of constantly planning ahead of time for things in their life (Ravichandran, 2024a).

how this could work for a wider audience: a thought

This service could extend to other kinds of customers, for example those with old age, neurodiversity or other disabilities that make it harder for them to skim through the entire store unassisted. The service could also be developed with a strategic revenue model where customers with disabilities themselves don't pay for it but other customers who wish to avail it pay a small fee, thus opening it up to a wider mass while ensuring the time and effort of the co-workers does not go undervalued.

4 Store echolocation: a filtered communication companion that uses sound signals to aid customers in shopping.

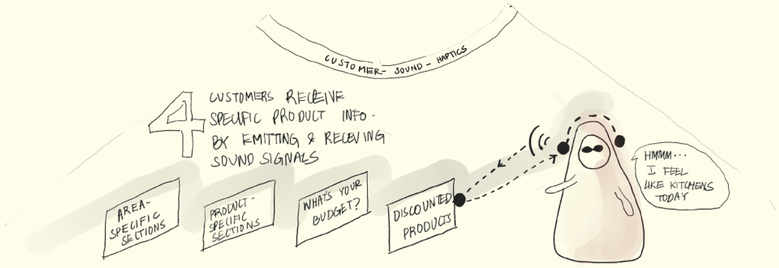


Fig 30. Concept 4- Store Echolocation.

Since customers are overwhelmed with the product choice, a non-human, shopping companion can be useful to have."

Echolocation is the primary mode of communication among bats, animals that hunt and live in darkness. This is a phenomenon where bats emit short pulses of sound at ultrasonic frequencies that cannot be heard by anyone but them, and extract information from the echoes that return (Ghose et al., 2006). In simpler words, this concept derives its title from having customers 'send' and 'receive' sound signals that bounce off specific products within the showroom, giving back information only relevant to those specific products, instead of the entire range. Since customers are overwhelmed with the variety and choice of products and related inspiration, there is a need to filter out relevant information. However, different customers have different needs, desires and reasons to visit the store. Thus, a customisable shopping companion could be useful to have here.

With this concept, customers would collect a wearable at the service desk, an audio-based AI, that would offer room for customisation through certain sorting modes. Some of these criteria would be- an option to set a shopping budget, set a particular area of the showroom, filter items on sale or discount, etc. Once a mode is chosen, they could put on the wearable and walk through the store. The wearable would emit unique sounds for each mode (click for mode 1, snap for mode 2, etc.) that can only be picked up by the products within that mode's field of access. Upon picking up signals from products within a particular mode, the wearable would send back a sound signal which would relay the direction, name or specifications of the products to the customer.

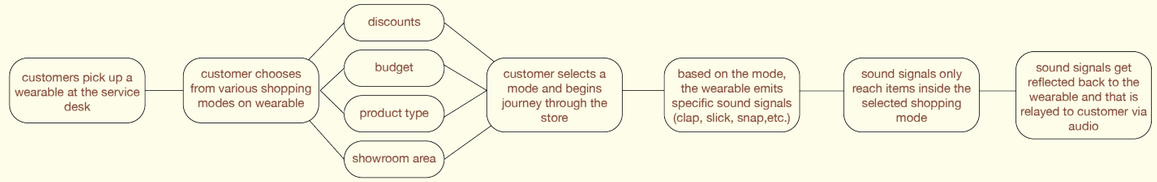


Fig 31. How Store Echolocation would work.

how this could work for a wider audience: a thought

Like the previous concept, this one too could be applicable to a wider range of customers, especially neurodiverse people who do not wish to spend too much time at the store due its over-stimulating nature. This concept would also help customers be more independent in their shopping journeys and depend less on co-workers since they are short-staffed and call on them less frequently.

5 Symphony at IKEA: Customers use sound-based landmarks to identify and move through different parts of the showroom.

Fig 32. Concept 5- Symphony at IKEA.

This symphony juxtaposes sound memory with music compositions to provide customers unique sound landmarks for different parts of the showroom."

This symphony was inspired by how birds in nature use acoustic signals to communicate over long distances (Kumar, n.d.). What makes their sound language unique however is that different species of birds use different songs to reach their acquaintances, thus becoming labels of orientation towards their own kind. Birdsong communication is famous however not only among birds but also elsewhere in the world, indeed as an assistive technology for people with vision disabilities. Specifically in Japan, numerous bird sounds and jingles are used to provide people a sense of orientation in the extremely busy and complex train stations (Assistive Technology: Birdsong in Japanese Train Stations | by Amanda Yee | Medium, n.d.). These sounds are not just assistive, but also alleviate tensions created by the sensory overload at the stations (Assistive Technology: Birdsong in Japanese Train Stations | by Amanda Yee | Medium, n.d.).

Orientation is crucial for customers with vision disabilities when they visit IKEA since they cannot depend on their sight to determine which part of the showroom they might be in or where to go from a particular point. Through this concept, as customers move through the different sections of the main showroom, they have the option to listen to specific sound cues at each section. They would then hear a unique symphony that is composed of furniture sounds. Depending on the type of space, the symphony's tone would vary, creating thus an energetic tone for the living room, a more relaxing tone for the bedroom and the singular tone of water for the bathroom. These are sounds are not special, but are in fact of furniture or products being used or moved in various parts of homes, making them identifiable to customers regardless of their disability. Playing on relatable sound memory and composition, this concept would provide not only a sense of orientation, but also one of identification.

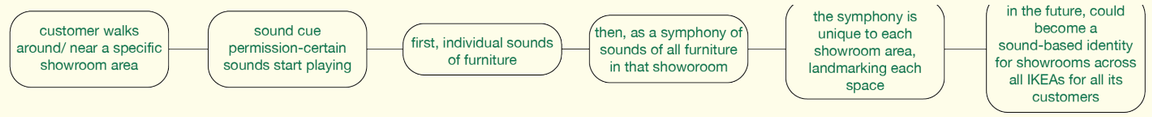


Fig 33. How Symphony at IKEA would work.

how this could work for a wider audience: a thought

Creating an aural layer of de-clutter and calmness in the store can alleviate not just the stress of the customers in question but also that of other customers, increasing their productivity and willingness to stay in the store for longer durations. These sounds would not only help with orientation but would also be able to help in navigation from one section of the showroom to another. Additionally, standardising this symphony as a layer of orientation across different IKEA stores could possibly result in a new development of a sound-based identity for its showroom for customers from all over.

selecting and evaluating the right concept

With the five concepts at hand, there was the looming question of which one would be the best pick. Surely, it could not be done on a whim. So, a timeline-based approach was used to evaluate which concept would be the most useful to the stakeholders in question, plausible to execute within the timeframe of the project, grounded enough to be more realistic than hypothetical for the organisation, yet innovative and the most fun to experiment and implement, for mostly, well, the author. Informed by the learnings of the past, the experiments and conversations of the present, and the forecasting of the future (thanks, Eric), the five concepts were brutally subjected to this timeline till only one emerged on top. See below the timeline in context.

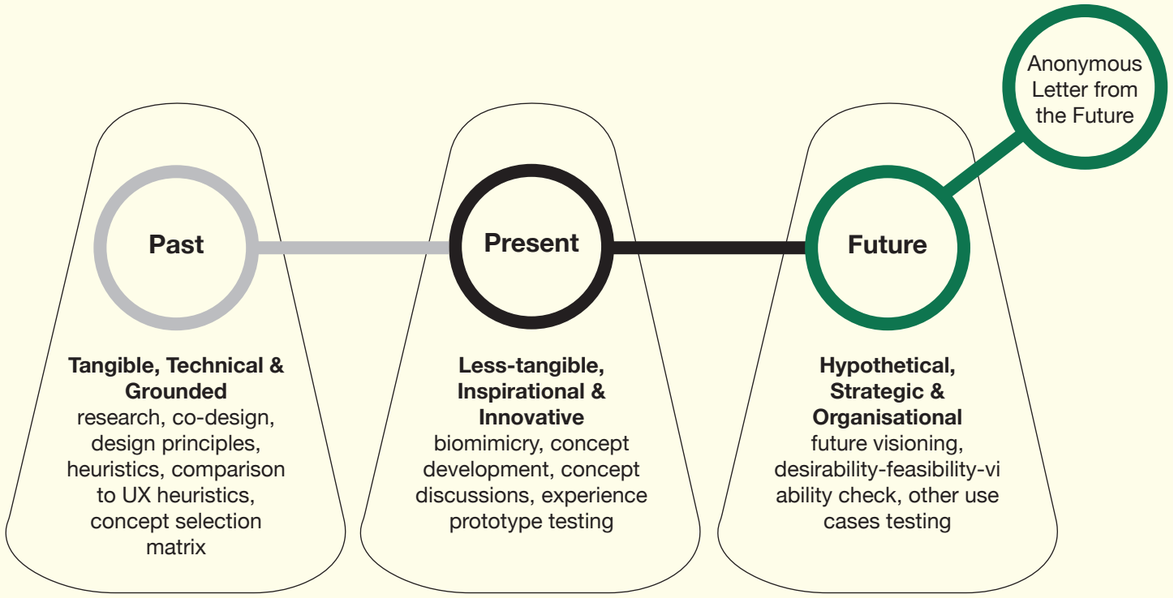
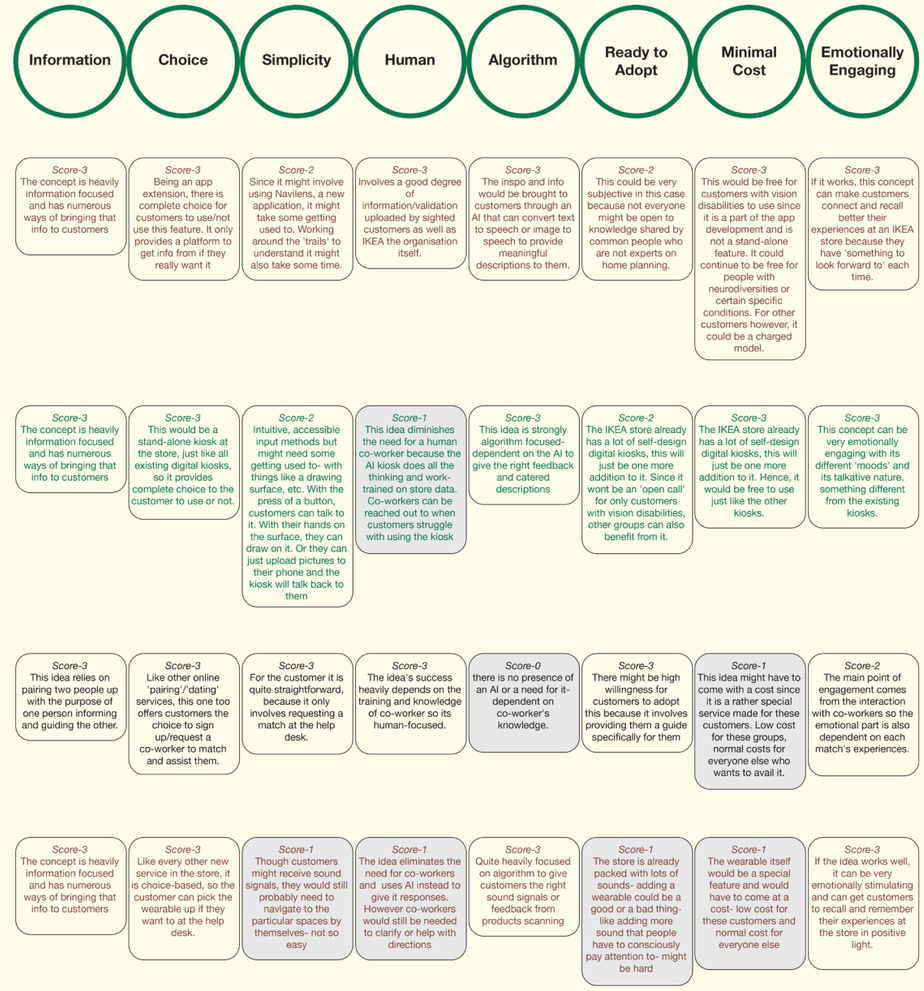


Fig 34. A timeline-based approach to evaluate and select the right concept.

the past.

Reflecting on what was done in the first phase traced back to the feedback drawn from the co-design session and the development of the new problem-specific design checklist (ICSHARME). Since actions in the past were quite technical, the evaluation following it was also a technical approach. Thus, being informed by the past meant weighing each concept against the others with respect to the checklist. Below is the depiction of each concept direction being tested with all heuristics from the checklist. The legend on the left indicates what scoring criteria was given to this evaluation.



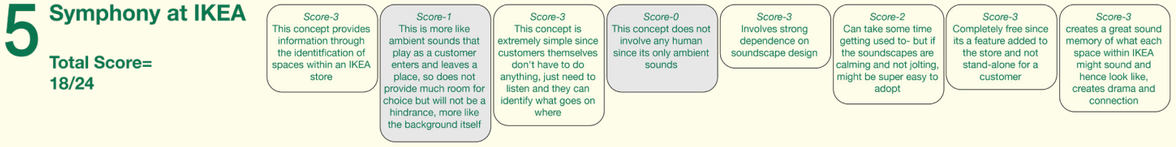


Fig 35. Comparing the five concepts to the ICSHARME checklist and giving them weighted scores once again.

Comparing each concept to every heuristic or feature in the ICSHARME checklist gave a broader idea of not only how strongly rooted certain features were in a concept but also how emotionally engaging they might be for customers. Though it can be observed from this rating that the highest rated concept (22/24) and the lowest rated concept (16/24) did not to have extremely contrasting scores, the concept that placed last did not seem easy to adopt, cheap or simple to execute, making it more of a challenge with the given time and resource availability of the project.

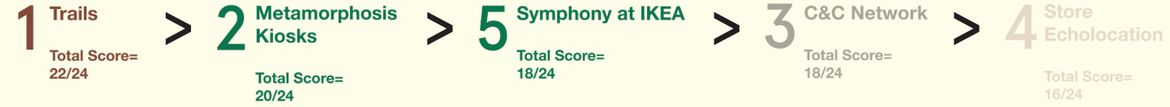


Fig 36. Ranking concepts purely in order of their scores.

Technical ways of ranking concepts can turn out to be one-dimensional, since evaluation is based on a single threshold of factors without considering any external stimuli that could further influence them.

While concept 1 scored the highest, concept 2 was not far behind. Though concept 5 and 3 scored equal, concept 3 involved a changed in the store order and internal dynamics of IKEA, which made it harder to implement, something that will be discussed further in the next section.

the present.

This present is backed by richer arguments and provides a more nuanced, qualitative evaluation. By now, the project had evolved from its first stages into something more intricate, weaving in the needs, desires and criticisms of the stakeholders who would be influenced by the concept. Thus, this stage involved immersive one-on-one concept discussions with the stakeholders themselves, namely customers with vision disabilities and an IKEA co-worker. These discussions served as open grounds for criticism but also honest feedback from people who would be interested to try out the real intervention.

The concepts were discussed orally with three vision accessibility experts through the format of a no-expectation blurb. These experts also happened to be fathers, husbands, companions, and customers of IKEA themselves, allowing them to provide feedback through both lenses- an expert, and a customer's lens. The main aim of these verbal sessions was to understand if they excited or stimulated customers to want them in some way. In short, this was a desirability check. These concepts were also subsequently discussed with an IKEA digital co-worker to understand the feasibility of these concepts for the organisation itself.

Fig 37. Concept discussion notes from customers and a co-worker.

Only concepts 1,2 and 5 were chosen to go forward in the next and last evaluation stage.

Once again, as seen from the discussion notes above, concepts 1, 2 and 5 were mentioned by both customers and co-workers, co-inciding with their occurrence as the highest scored concepts in the first (the past) stage of evaluation. With two out of three (desirability, feasibility) lenses of innovation (Three Lenses of Innovation — Isaac Jeffries, n.d.) addressed through the first and second stages of evaluation, concepts 3 and 4 were safely eliminated and only three went into the future stage.

the future.

Future visioning provides a long-term direction and motivation for developing the concept into a workable solution for IKEA."

Imagine a future, few years from now where one of the three concepts from above was successfully implemented and running in an IKEA store. Since the concept would have to ideally work for the organisation, future visioning was used to express a desired future or serve as a reference point to convince and motivate stakeholders towards the goal (Annemiek van Boeijen et al., 2013). In the future, this provides a long-term direction for developing and innovating the concept into a workable solution. In the present, several actions, resources, and stakeholders would have had to be involved. Working the way backwards or backcasting from the desired future would thus shed clarity on how it connects to the present (Backcasting in Design | by Aga Szóstek | UX Collective, n.d.). In this last stage, with the desirability and feasibility of the concept established, its viability and capacity to be implemented needed to be evaluated.

This last stage was crucial to hypothetically evaluate the viability and the concept's capacity to be implemented.

Since three concepts were to be evaluated, a roadmap was developed for each one with a unique future vision and backcasting. The visioning was cast across three horizons on a hypothetical timeline over the next few years (2030), with an arrow in reverse indicating the backcasting to present day (2024). These roadmaps are read from right to left beginning with reading and understanding the future vision first, and then the resources and actions needed to achieve it. Since the vision was casted far into the future, a HMW question attempts to tackle that vision in the present.

concept 1: Trails, an imagined future

This concept integrates accessibility into the core of IKEA's model in a way that it would be able to consider its customers' experiences to be as valuable as its own.

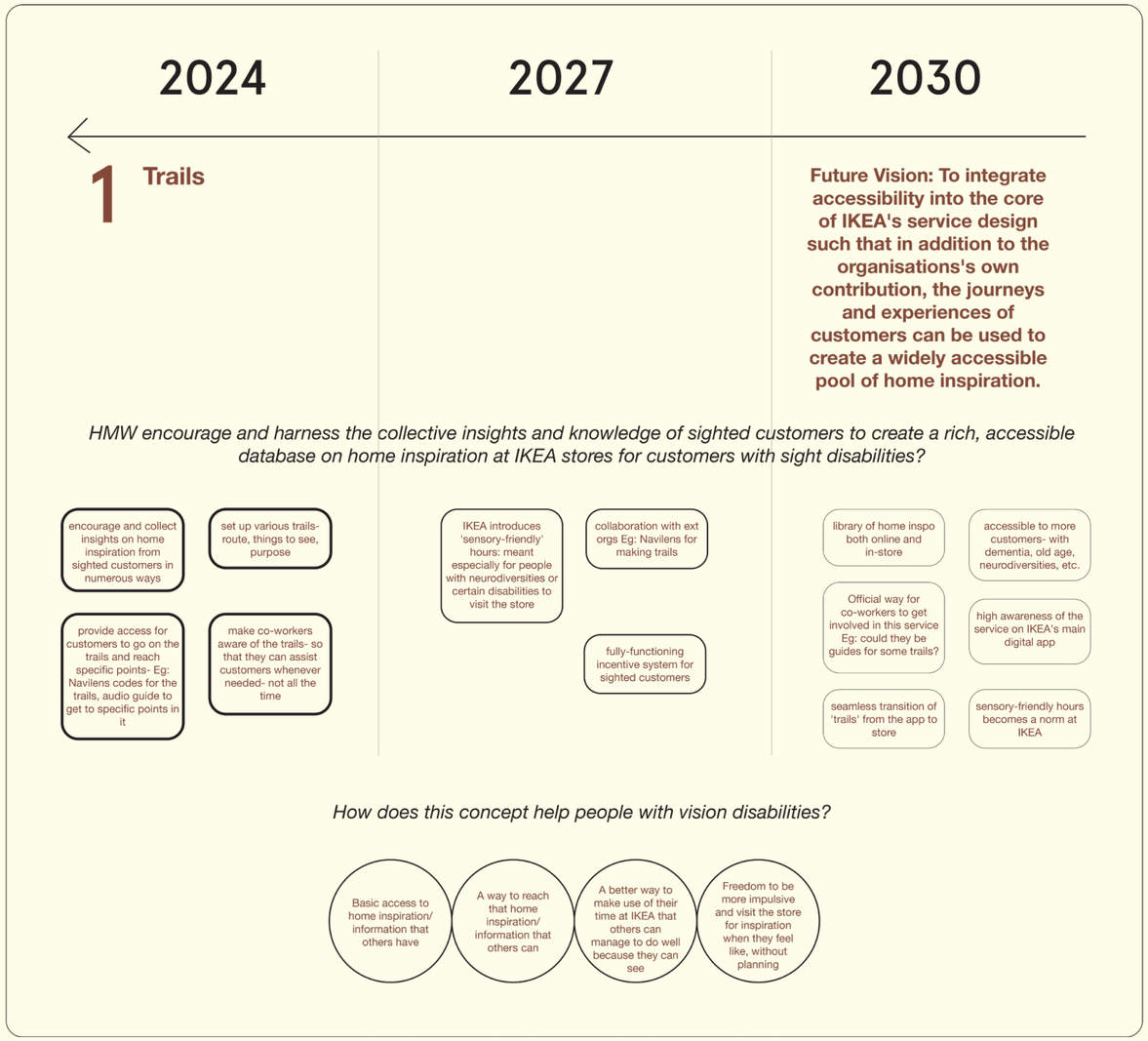


Fig 38. Future visioning and backcasting for Trails.

As seen from the roadmap above, this concept may require external collaborations, incentive systems, and interesting ways to motivate customers to share their own inspiration with others, without allowing the generation of too much user generated content (UGC) in the future. However, it may not need a completely new technology or a radical change in store dynamics to work. It could use existing resources like the IKEA app and adapt features from it to design a richer, inclusive experience in-store. Another driving factor as shown from IKEA's own research was that most customers regardless of ability, came specifically to the showroom section to get a hands-on experience and feel for the products and spaces. Thus, this concept's experiential feature may provide a new way to experience the same showroom. However, the audio layer may create a sensory overload for all customers around if it is not carefully designed to be customer-specific.

concept 2: Metamorphosis Kiosks, an imagined future

This concept redefines the ways in which customers (regardless of disability) would perceive home planning and interact with digital tools in the store.

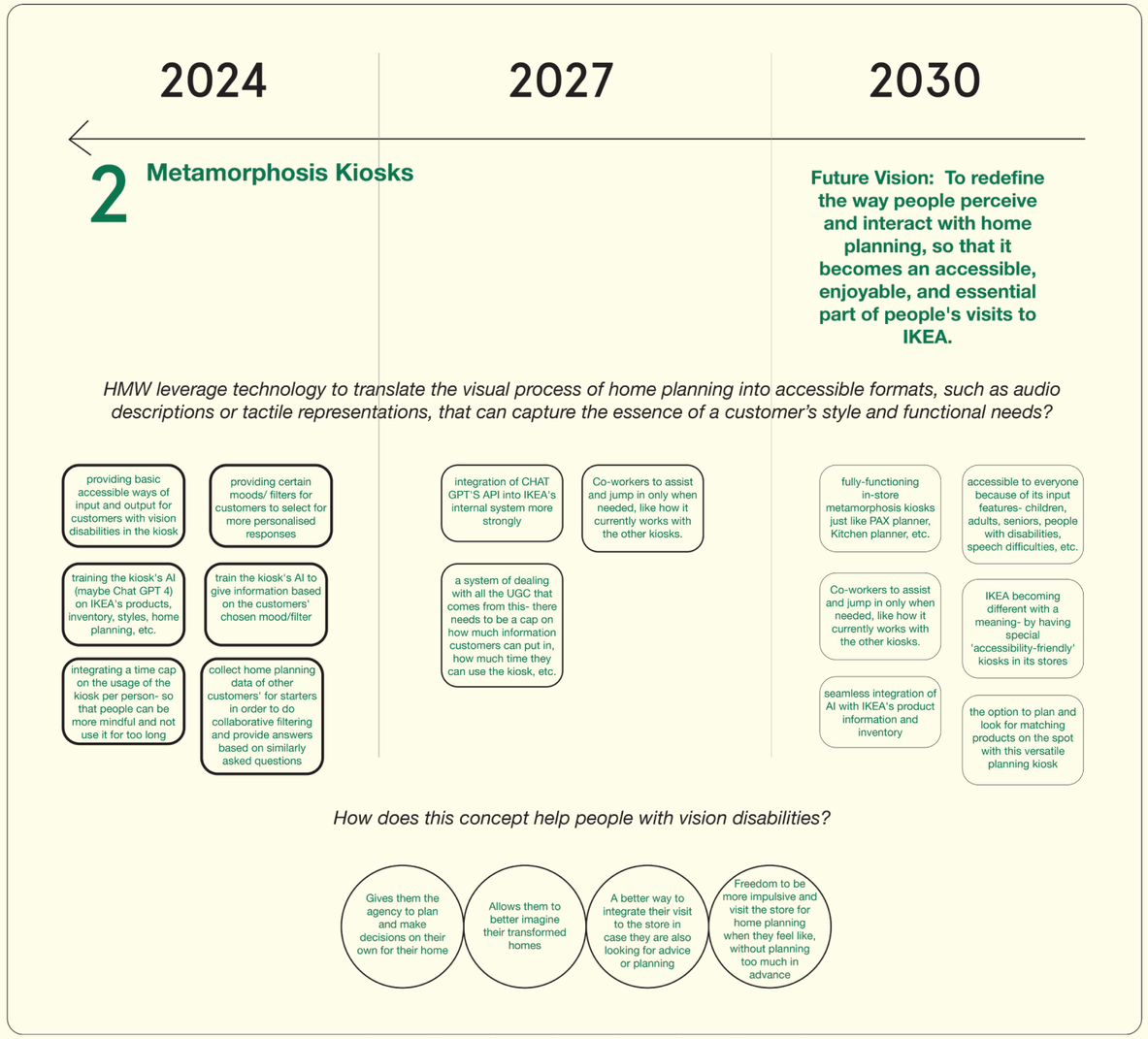


Fig 39. Future visioning and backcasting for Metamorphosis Kiosks.

This concept may be quite heavily dependent on technology and AI to be successful and at present, the cost of such resources might outweigh other things. While discussing this further with a digital co-worker at this stage, it was

found that home planning is a rather complex process that does not involve a single visit to the store and the usage of a digital planner. While the kiosk may thus serve as an idea generator in the initial planning phase, it might not be able to help customers all the way. Plus, though existing digital tools serve as helpful aids to customers, they are not a driver to visit the store itself. As stated in concept 1, customers visit stores to touch and experience products, so there might be the possibility of the kiosk itself not being used so much to aid them. Lastly, though the kiosk is designed to be more accessible, learning how to interact and adapt to it would also require some time from customers. As it existed, the concept needed more exploration and a better understanding of home planning and how customers went about it.

concept 3: Symphony at IKEA, an imagined future

This concept hinges on generating a sound-based identity for the IKEA showroom that customers with or without disability could orient themselves with, wherever they might be in the store.

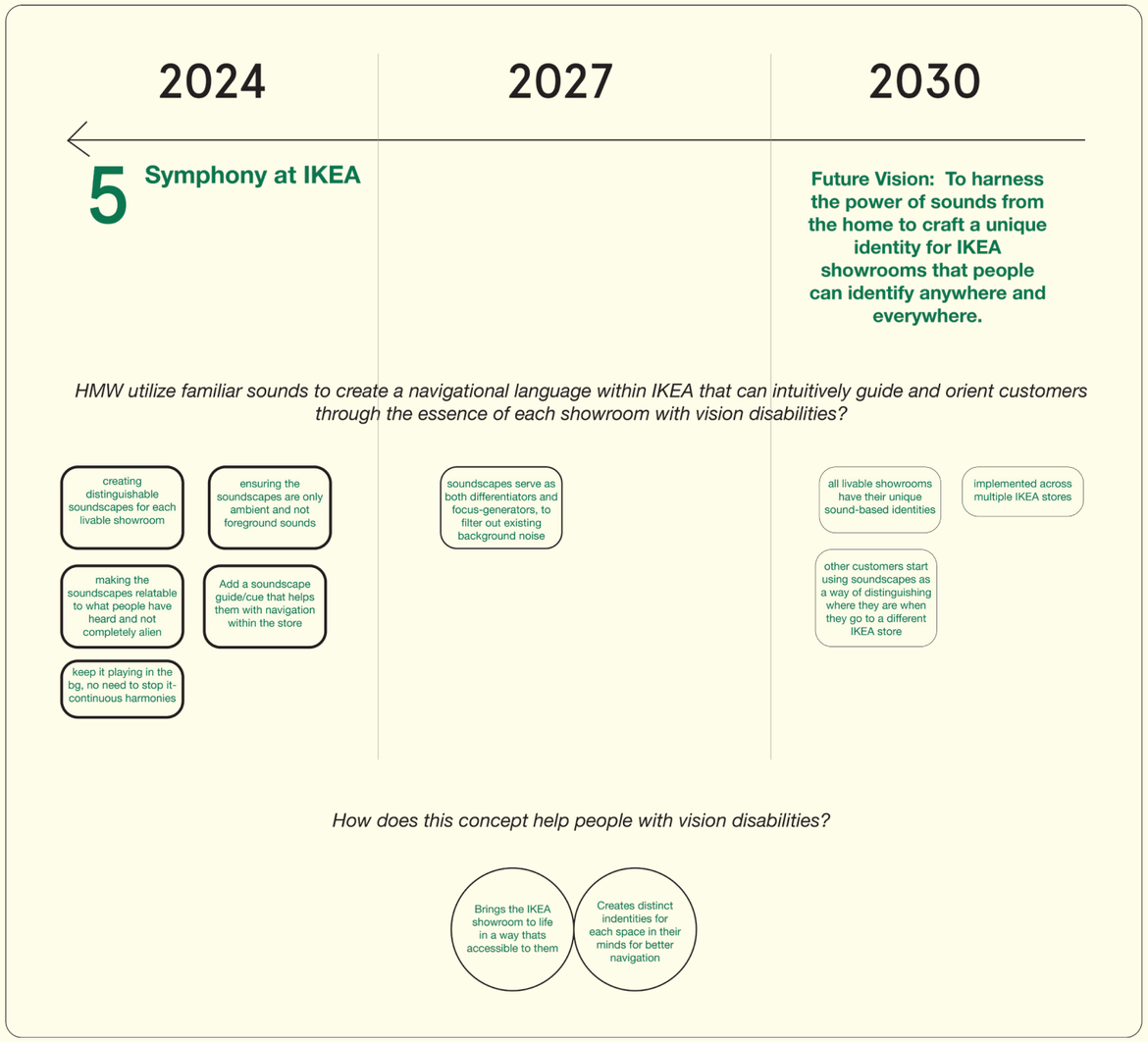


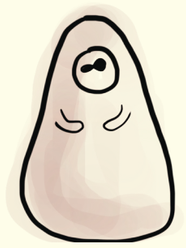
Fig 40. Future visioning and backcasting for Symphony at IKEA.

While having non-visual landmarks within the showroom could prove useful for all customers regardless of their abilities, a big chunk of this concept might depend on soundscape design itself, yet another new technology and

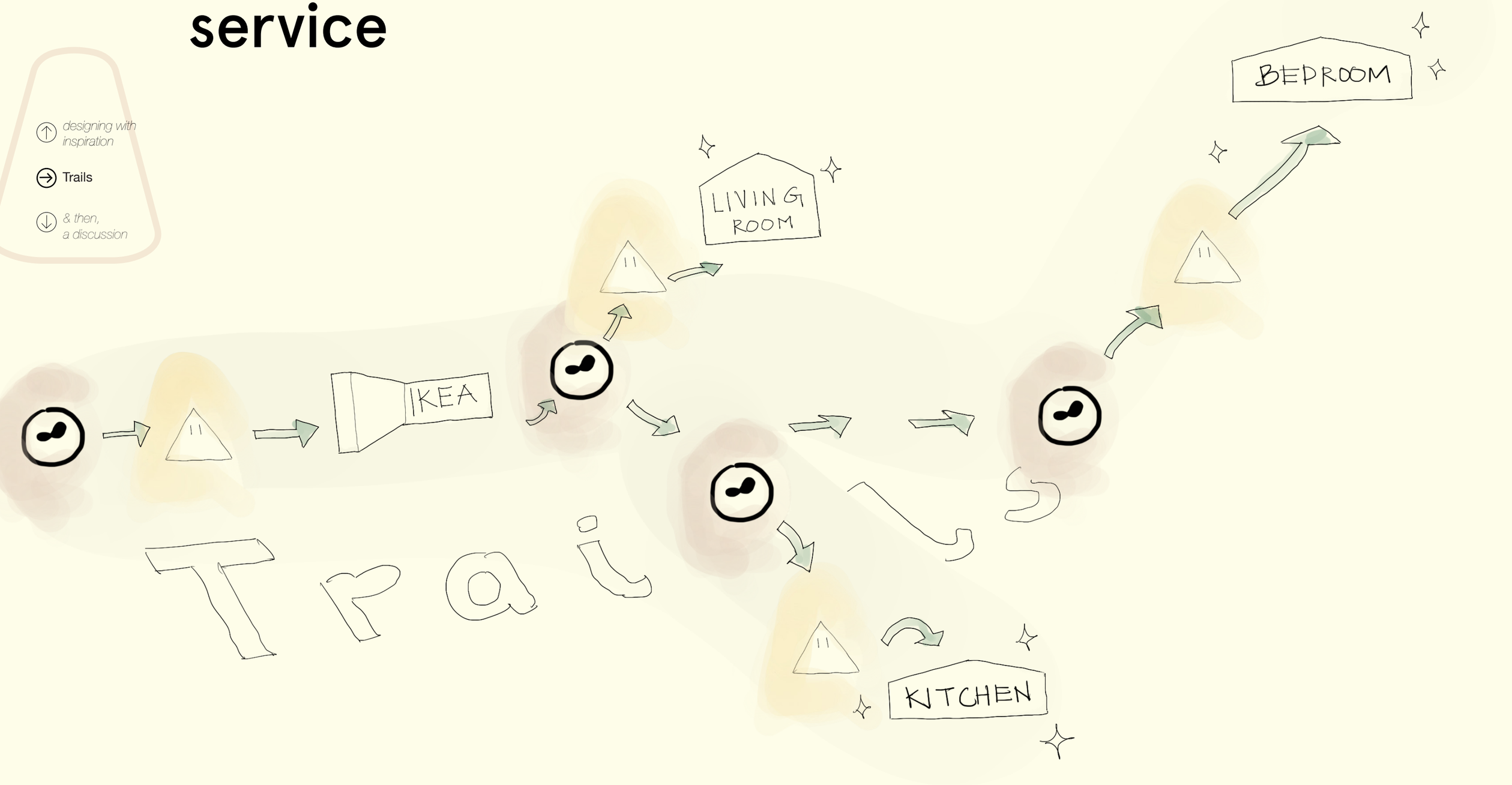
cost that is currently not a part of IKEA's store experience. One of IKEA's core values, cost-consciousness hinges on making more from less (Our Culture and Values – IKEA Global, n.d.), which was hard in this case since there weren't existing resources to start with. Finally, this intervention headed more towards the design of physical elements (eg: sound cues) in stores, something that was out of scope for this project.

the takeaway from evaluation

Future visioning and backcasting helped map out each concept's strategic goal for the future while also highlighting important resources or actions that were not viable or aligning with the organisation's own internal values. Concepts 2 and 5 were both technology-focused and would require additional costs from the organisation and time for customers to get used to them. With the main purpose of visiting an IKEA store being the desire to touch and experience products, concept 1, Trails, seemed the most optimal for customers and IKEA and the most exciting, for the author.



6.2 Trails: an experiential service



The ~~right~~ optimal concept: Trails, is an experiential service for customers with vision disabilities.”

Trails gives customers important information prior to the in-store experience to help them decide if they actually want to use the service or not.

what is a Trail?

A ‘Trail’ referred to a defined and consolidated path within the main showroom space. This path was designed with selective home inspiration and was made accessible to customers with vision disabilities via an audio layer. This inspiration would be curated in a diversity of product formats, all of which could be experienced through audio. Envisioned as a service, Trails was proposed to be “launched” as an extension of the existing IKEA app. Being hybrid, a part of the service was digital (the app) and the trail itself was a physical in-store experience. Much like a hiking trail where hikers need relevant information given to them upfront (Molokáč et al., 2022), Trails also provided customers with certain details that would make the difference between choosing to use the service or not. Thus, at the start of the service, Trails gives out first-hand information about the character of the journey, the time an average customer would take to complete it, the part of the showroom it would cover, and the assurance that it would not be a one-way path but can be traversed as many times as the customer desired. This introductory information was developed keeping in mind the copious amounts of time these customers spend typically at IKEA owing to a lack of non-visual clarity or ease of access to products they desired.

types of Trails

Since a single trail would only cover a part of the showroom, a variety would enable customers to cover it fully, trail after trail. Four types of Trails were decided upon, each spanning a specific area on its own, together spanning the entire showroom. The first of the four Trails would be the ‘I like to eat/cook Trail’ and it would cover the kitchen and dining sections of the showroom. The

Trail I- ‘I like to eat/cook’

Trail II- ‘I work to live’

Trail III- ‘I have kids’

Trail IV- ‘I just want to be outdoors’

Since many customers struggle to recall IKEA product names, Trails were purposely given direct names.”

second one would be the ‘I work to live Trail’, which would cover the living, bed, study and bathroom sections, the third would be the ‘I have kids Trail’ and would cover the kids section and lastly, the fourth Trail would be the ‘I just want to be outdoors Trail’ which would cover the garden, outdoor and patio sections of the showroom. The naming for these Trails was done to keep it quirky like IKEA’s current system yet easily comprehensible. IKEA is famous for having a product naming system based on famous Swedish words like islands, towns, and even certain species of plants (Äpplarö, Kattrup and Ullvide: This Is What the Crazy Names of IKEA Products Mean, n.d.). These names however make it harder for customers to recall their products. A branding study indicated that names had clearer advantages if they were simple to understand, pronounce or spell (Round & Roper, 2012). Keeping these cues in mind, to make each trail easily recognisable and recallable in the future by customers, the names given to them would quite directly hint at which parts of the showroom they would span.

audio description (AD): an accessible aid

Continuing from above, Trails used audio as an accessibility feature to bring the rich curated experience in a non-visual way to customers. Audio features can provide crucial information that could affect how customers engage with items; (Muhsin et al., 2024; Stanton & Spence, 2020) in this case, products or spaces in the showroom. Audio-based solutions are a type of vision substitution-based interventions. Garnering input from the surroundings of the human, they detect and extract information from visual codes, tags, images, stickers, etc., and translate that back to the human via auditory feedback (Khan & Khusro, 2021; Sivan & Darsan, 2016). Audio descriptions (AD) are not new to the market and have been imperative

in making other kinds of public experiences accessible to people with vision disabilities. Museums (an early analogy for IKEA) make a great example since they employ AD to make their experiences more inclusive and engaging (Hutchinson & Eardley, 2020).

What is so special about the audio description in Trails? Read on.

The AD designed for Trails was unique in the sense that it not only informed customers about the existence of select product offerings, but also provided advice on how they could best touch and experience them. With the lack of a strong visual layer, the combination of auditory and tactile layers aimed to create a highly immersive journey, making these customers relish the very experience they previously could not. Additionally, IKEA's research pointed out that most customers liked to visit stores to touch and experience things and hence re-imagine their own homes. Research on customers with vision disabilities in museums also pointed out how significant the addition of the 'touch' factor was when combined with AD (Hutchinson & Eardley, 2020). The information that went into the AD for Trails attempted to keep the balance between objectivity and interpretation, a concern worldwide regarding the design of ADs (Hutchinson & Eardley, 2020).

Although there are region-specific guidelines on AD and how to develop the right descriptions, since this project is not being tested publicly and is rather small-scale, those guidelines have not been taken into consideration.

Navilens: an external accessibility partner

After understanding how AD worked, it was time to determine what audio-based digital tool would be best applicable for this concept, since IKEA did not have any such existing resource. Co-design and concept discussions with customers and digital co-workers had surfaced the benefits of an audio-based guiding app Navilens, which was designed especially for people with vision disabilities. Navilens had 2 key components to it- the app itself, and coloured 'codes', that while similar in appearance to a QR code, were vastly better when it came to actual scanning.

Why Navilens?
- 12x scanning distance compared to QR
- Readability in all light conditions
- Wider detection angle
- Guiding background noise while scanning
- High contrast and bright colours in app
- Adopted by super famous companies

Some of the features that made them more effective than the standard QR code included a 12x scanning distance, quick readability, wider detection angle, readability in all light conditions and one of the most important features for people in this group- readability even with unfocused scanning (NaviLens EMPOWERING the Visually Impaired, n.d.). The access to these codes themselves was done via the app when people scanned the area with the app's camera and detected a code. The necessary contextualised information would follow right after code detection. The audio would also guide a person towards the direction and placement of the code. The app's interface was a simple combination of shapes, high contrasts and bright colours, making it easy for people with low vision to use (NaviLens EMPOWERING the Visually Impaired, n.d.).
Further, the success of this application was bolstered by a pilot project by Coca-Cola UK where the coloured codes were placed on the cola packaging, enabling people with vision disabilities to easily access the content on it (NaviLens EMPOWERING the Visually Impaired, n.d.). Additionally, it has been used in other public spaces like major transport stations (Amsterdam Central Station, New York Metro, Barcelona Public Transport System) as well as in museums (Archaelogical Museum of Murcia) (NaviLens EMPOWERING the Visually Impaired, n.d.). However, the biggest convincing factor was that these 'codes' could be requested for personal use and the information inside of them could be customised, by, yes, the author! These points made a strong argument to go ahead with Navilens as the provider of the AD in Trails.

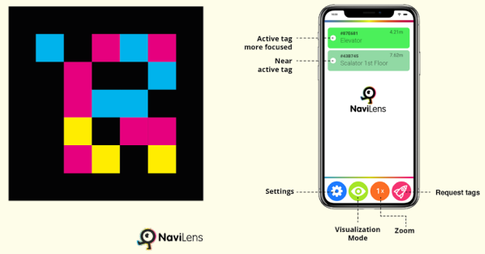


Fig 41. Navilens- coloured code (left), app interface (right) (NaviLens EMPOWERING the Visually Impaired, n.d.).

customer and the ghost of another customer

IKEA Family, a loyalty club that costs nothing to be a part of, offers a plethora of benefits in response to customer interest on the company's latest offerings. From personalised home ideas to exclusive discounts to free coffee/tea, to even members-only workshops (How IKEA Family Strengthens Customer Bonds | by Adom Parker | Medium, n.d.), the club seems to have covered it all. That is because customers of IKEA take great interest and are willing to go the extra mile if it meant better home inspiration, offers, suggestions, ideas, anything that upvotes their home. Referring back to the 'IKEA experience' mentioned in the introduction of this story, in stores too, customers spend hours strolling through the showroom, soaking in and cataloguing all the visual inspiration. So much so that an IKEA fanbase extended this interest outside of the organisation in an online community called IKEA Hackers, a place for anyone to get inspired through hacks, upcycling, or DIY home projects (IKEA Hackers - Clever Ideas and Hacks for Your IKEA Furniture, n.d.). Though all these modes of inspiration above were typically visual, this type of customer behaviour revealed an unspoken acceptance and maybe even a desire for user generated content (UGC). Much like the potential acceptance for UGC, is the growing acceptance for ratings and reviews (R&Rs) that allow customers to exchange feedback on their independent choices, experiences and opinions (Kutabish et al., 2023). This is because both ways allow customers to transparently observe other customers and hence gain social experience and knowledge by engaging in these forums (Kutabish et al., 2023).

Customers like to transparently observe other customers and gain social experience and knowledge in retail forums. Trails taps into this attribute."

This explains why Trails, a service for customers with vision disabilities, was focused on bringing in curated home and product inspiration as vouched for by customers

with sight. A big factor to be considered for this to work was trust. Thus came a bold hypothesis- If despite their disability, customers could access and hence understand the ideas, criticisms and experiences of other customers who visited the store, they might be able to trust their recommendations better. This had to be further tested through a prototype with the customers in question themselves to be proven right or wrong.

incentives for other customers

Encouraging customers to share their inspiration, feedback and experiences on products required a driver stronger than the accolade of goodwill, it needed an incentive system. In true IKEA fashion, this was the iconic digital allen key reward (IKEA Introduces Reward Keys from IKEA Family - IKEA, n.d.). Currently given to IKEA Family members when they make purchases or interactions, these were IKEA vouchers masked in gamified keys which provided discounts on delivery, products or restaurant offerings (IKEA Introduces Reward Keys from IKEA Family - IKEA, n.d.). Thus, the incentive system for Trails would stem from the organisation's existing one, providing customers who were interested in sharing information with digital rewards. In this project, the exactness of the incentive system and how each voucher would work has not been delved into, but the overall working would remain similar to how customers of IKEA Family currently receive these vouchers.

designing the information in each Trail

If a variety of inspiration, feedback and experiences was to be shared by customers, it could result in a confrontation with too much information. This could also occur in multiple formats like image, text, voice, etc. There would thus be a necessity to streamline this variety and make

The need for good information design is crucial for Trails to be comprehensible and effortless for the customer.

and make the complex information simple and accessible in a single format. If customers with vision disabilities were to further retain that information after a trail, it must be filtered from the larger set, with a focus only on what would be relevant to them and enable them to recall things (dos Santos et al., 2023).

For each Trail, streamlined information would be converted from text to speech, seamlessly then allowing customers to receive it via audio.”

Information design would also improve decision-making for customers since they would be able to discern their interest in a product based on particular information (Information Design | UXtweak, n.d.). Careful information design was pivotal to organise, write and present the home inspiration via audio to customers to pique their interests and not further overwhelm them. Additionally, this form of design could enhance the accessibility of information by considering diverse customer abilities and learning styles. Though the two common paths of information design were mentioned to be infographics and data visualisation (dos Santos et al., 2023), both relied on the visual acuity of an individual, making it irrelevant to this project’s scope. Since the main output of information in Trails would be via audio, the input of information would be text. Hence, for each curation on a trail, a streamlined piece of information would be converted from text to speech, seamlessly then allowing customers to receive it via audio.

features of Trails

Understanding and delving into new terms and entities involved in this concept like AD, Navilens, incentive systems and information design were fundamental to explaining how the concept would work. Within a curated pathway of filtered information, each Trail had three features or channels of inspiration that would be available in audio form for customers. These features were developed based on a number of influences- initial discreet observations at the store, discussions with accessibility experts who were also customers, and certain IKEA campaigns.

For the sake of this project, only one out of the four trails mentioned above was detailed, prototyped and tested with customers. That was the ‘I like to eat/cook Trail’, covering the kitchen and dining sections of the showroom. The three features thus contain information on products specific to this part of the showroom. Although there was no prior UGC from customers specific to the products curated in this trail, product reviews from IKEA’s main website were used as a demo. Following the analysis, search and interpretation of customer reviews on specific products within the kitchen and dining sections, audio descriptions were generated for designing the prototype.

feature I: trending products

This feature highlighted only the most popular products as reviewed, recommended or vouched for by other customers who purchased or experienced them at the showroom. Below is a sample collection of customer reviews of some of the trendsetter products in this section. Naturally, like in any review system, certain products had a greater number of reviews than others, and depending on the customer satisfaction levels, products were eliminated or considered for the prototyping phase.

GLITTRAN Kitchen Mixer Tap

“Great tap. Good height and clearance. Good looking. Very happy.”

“Some brass taps from other stores, the brass comes off in the first few months of use. This one is going strong and shows no wear and tear, also no fingerprints on it- yay!”

“Excellent tap. Height improves usability of sink. Finish doesn’t show watermarks. Very happy - going to buy another one for the laundry.”

KONCIS Garlic Press

"Tried different garlic presses, but this one is the best in price range so far. Although emptying the sieve is difficult, but not insurmountable. In the long term, the layer does come loose and that is a downside! After all, if you are not careful, it ends up in the food."

"Does what it's supposed to do for a great price. It took some time to figure out how to fit the press in, but after that it's perfect."

"Handy that the "sieve" can be removed. This makes it easy to clean."

RASKOG Trolley

"Easy to assemble and lightweight."

"very practical nice design for my painting supplies"

In the meantime, there are already several Råskog somewhere in the house. I use two as alternative desk drawers full of notebooks, pens, etc. Another one for paint and brushes, drawing and painting supplies. I imagine that they can come in handy in all kinds of situations and spaces.

Fig 42. Examples of customer reviews filtered specifically to products in the kitchen and dining sections. (GLITTRAN Kitchen Mixer Tap, Chrome-Plated - IKEA, n.d.; KONCIS Garlic Press, Stainless Steel - IKEA, n.d.; Trolley, RÅSKOG, Black, 35x45x78 Cm - IKEA, n.d.)

The reviews above revealed something intangible- customers not only reviewed products for their functionality, but also expressed their general emotions during or after the usage of those products. Knowing how another customer felt went beyond knowing how well a product worked, and could instil a stronger feeling of trust in the minds of customers receiving the corresponding product inspiration. On top of that, customers tended to mention the stage of life they were in when they purchased a product, giving the listener a better way to connect with or relate to them.

feature II: popular product pairing

The second feature brought together popular combinations of products that might not necessarily belong to the same product range. Since it involved combining products from different categories, there were no existing customer reviews catered to this feature. Thus, after selecting few popular products within the kitchen and dining sections based on individual product reviews, they were analysed to see which ones could be a good match together. Post analysis, their reviews were combined, and a single, cohesive audio description was generated for each pairing.

! Since this mode of information did not exist yet, the combination of products that were selected along with their corresponding audios were influenced by the author's own biases and might not necessarily be combinations all customers would vouch for.

For customers, `events on a budget' could motivate them to experience IKEA as more than a retail store, as a place where special moments are also taken care of."

feature III: events on a budget

Events on a budget provided inspiration through curated event packages, making it the Trails feature that went beyond products and inspired customers for the special moments in their lives. The IKEA 'Back to College' campaign, featuring starter boxes for students like the kitchen, bathroom, bedroom and study essentials, served as a good reference for this feature (Dorm Essentials - IKEA, n.d.). These starter boxes were essentially a variety of products found in the same box to be used within the same space. Events on a budget was developed on a similar note but was curated such that the products in the same box would work well for specific events and occasions, for example, a mid-summer Swedish picnic, or a movie night for the kids. On top of this, adding a price point would likely have a positive influence over the customer's purchasing behaviour (Zhao et al., 2021). Research states that satisfied customers believe that the value of the product must match its price (Zhao et al., 2021). IKEA products are known to be pocket-friendly, and the 'budget' part of this feature would bolster that for customers. With special moments and a price cap, this feature strategically aimed to touch the economic, emotional, and social attributes of customers who shared inspiration, indicating that they visited IKEA not only for

daily home inspiration, but also for affordable inspiration on their special days. For customers with vision disabilities, this could motivate them to experience IKEA as more than a retail store; a place where they could create new connections with home furnishing.

how Trails works: a comic

With the relevant know-hows out of the way, it is finally time to understand how this service would work! As mentioned previously, this is a hybrid service and would have a backend and a frontend. While the backend referred to the activities, resources and stakeholders involved behind the scenes, the front referred to the in-store experience itself. Below is a comic sketch that depicts the journey of a customer with a vision disability and their companion, as they use this new service for the first time.

BACK: IKEA APP (for all customer data) + IMAGE → AUDIO GENERATOR
+ NAVILENS CODES (INPUT)

FRONT: NAVILENS APP + NAVILENS CODES (OUTPUT)

CUSTOMERS WITH VISION DISABILITIES

IKEA

- → FOUNDATION
- → TYPES OF TRAILS
- → BUSINESS MODEL
- → TRAIL PATH

TRAILS

SIGHTED CUSTOMERS

IKEA

THIS LAMPSHADE IS TO DIE FOR! ONLY 19! BUYING IT.
+105 ♥500

I BOUGHT THE LAMPSHADE & THE RED DRAWER TOGETHER
+200 ♥220

1

IKEA

SERVICE DESK
CHOOSE YOUR TRAILS HERE

YES, I DO LIKE TO EAT.

1) 'I LIKE TO EAT/COOK' TRAIL
2) 'I WORK TO LIVE' TRAIL
3) 'I HAVE KIDS' TRAIL
4) 'I JUST WANT TO BE OUTDOORS' TRAIL

2

YOU MAY BEGIN THE TRAIL

KITCHEN & DINING ROOMS

3

SCAN THE CODE

SWEET, IT TELLS ME THE TIME

4

NAVILENS

TURN LEFT

AUDIO

WELCOME TO THE 'I LIKE TO EAT/COOK' TRAIL. IT WILL TAKE YOU 1 HR TO DO

ROOMS

5

WOW THAT 2-TIER SET THAT'S HOT!

TRENDING PRODUCT

6

SHOULD WE BUY THE CUTLERY SET THAT MATCHES THE STOVE TOP?

POPULAR PAIRING

NO.

POPULAR PAIRING

7

BIRTHDAY BAKE PARTY UNDER 7$

OUTDOOR BBQ UNDER 9$

NO. YOU'VE BOUGHT ENOUGH FOR A YEAR.

SHOULD WE...

BASK

Conducting a validation of Trails at the context of use with affected stakeholders

you are still here

making sense of things

Trails (layer 5)

& then, a discussion

prototyping Trails

To assess if the designed intervention would contribute to making customers' experiences more accessible and hence richer at IKEA, prototyping was vital. While doing this in an isolated environment might have captured the essence of the idea, it would have been devoid of all the complexities and barriers the store actually poses to these customers. Thus, experience prototyping, a contextual way to not only test experiences but also convince stakeholders involved, was employed towards the final stages of this project. This type of prototyping typically involves grounding the service prototype in the context of use (Annemiek van Boeijen et al., 2013), i.e. an IKEA store. This would allow an honest observation of how a customer would explore and interact with Trails, as they would if the service existed. The focus of this kind of prototype was not on the tangible qualities of the service itself, but on the experiential qualities that materialised from it. The prototype was thus quite raw and low fidelity, using made-up props for the product features and even a little bit of 'pretend' technology.

Navilens as a prop

To create a realistic atmosphere of the prototype with audio in the store, Navilens codes were needed. Luckily, these accessible codes were also available for personal usage, so they were downloaded and printed in large sizes.

! Since these codes were available only for personal use, they could only be scanned and accessed through the smartphones of the individual who got those codes; in this case, that was the author. Thus, for participants to experience the audio, they had to use the author's phone, which was not as customisable or handy for them.

Personal codes were provided by the company for people with vision disabilities to edit the information that would be delivered to them via audio for labelling or recalling items around them. In a similar manner, after printing the codes out and downloading the Navilens app, the author used the 'Annotation' icon to write and edit the relevant product information inside each code.

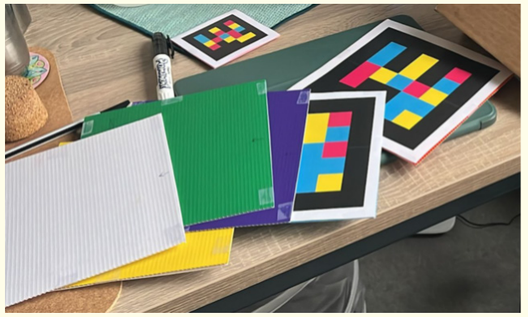


Fig 44. Low fidelity props- Navilens codes printed and stuck to card paper (above) and a cardboard box resembling a product package (below).

context and participants

The experience took place over a span of two days at the same busy IKEA store the co-design workshop took place in. Being the context of the problem, the store would present customers with challenges relating to navigation and accessibility that they would encounter had the service already existed, thus allowing them to experience it with realistic expectations.

Involving the same people from the initial phase in the final phase acknowledges them as constant stakeholders with irreplaceable knowledge."

There were three participants who went through this experience. They were the same individuals from the initial co-design session. From the four models of user involvement in design (Zhang & Dong, 2016), this method of involving participants from the start leaned more towards participatory design. In co-creation, the participants first shared their lived experiences, knowledge and delved into using that to come up with early design solutions. What they left behind was rich feedback that was then considered throughout the multiple loops of design iteration, resulting in the creation of Trails. Now, the same participants showed their interest in experiencing the results of our interactions.

Thus, by continuously involving them during various stages in the design process, this project acknowledged customers as constant stakeholders and experts of their own fields, with irreplaceable experience and insights.

experience prototype

You will now be able to experience Trails as participants did in the store, but on paper, and visually, not via audio. This specific Trail contains Navilens codes embedded with audio descriptions relating to products and home inspiration in the IKEA showroom. To make your typical visual experience more exciting, snippets of the products have been added so that you may understand that stimulating feel of touching them as you listen to stories about them, even if you unfortunately can't do so yourself right now.

In this report, only selected product inspiration has been detailed out as part of the experience prototype. Refer to Appendix B for the entire Trail's collection.

1 "Welcome to the 'I like to eat/ cook' Trail.

This audio guide will lead you through our top kitchen and dining selections, perfect for everyday and special moments. The average person spends about 30 minutes, but feel free to explore at your own pace. Start whenever you're ready!

2 "Trending product spotted. You must be near the GLITTRAN kitchen mixer tap...

You must be near the Glittran kitchen mixer tap. Customers have praised its easy assembly and the satisfying solidity it adds to the kitchen space.

Run your hands through the body of the tap and you'll find that its height and clearance from the counter provide a practical advantage, making it easier to fill pots without the clangs and splashes. Push the lever to the left and right, its smooth operation ensures a seamless transition from cold to hot, with a reassuring sturdiness that speaks to its quality. Notably, its bronze finish is celebrated for its tactile smoothness and the way it resists fingerprints, maintaining a clean feel even after repeated use.

Can you feel what we are talking about? The water flow from the tap is gentle yet steady. We are working on making those sounds available in the next trail. The tap's design ensures that watermarks don't spoil its surface, leaving the tap feeling perpetually fresh and new.

This mixer tap has not only proven its worth in the kitchen but has also inspired customers to extend its utility to other areas like the laundry room, indicating its versatile appeal. A trending choice indeed for its reliable functionality and sensory-friendly design.

3 “Here is a Popular Product Pairing. You are standing in front of a family dining...

You are standing in front of a family dining furniture combo. **If you’ve felt something cold and metal, it is the Geneson chair:** an adult chair which is a beacon of sturdiness. You might also have felt how compact it is, allowing free movement easily around it.

Next to it, the wooden finish is the Agam kids chair: a marvel of growth, evolving with your child from a secure highchair to an independent seat. The seat surface needs barely any maintenance, and its firmness provides a comforting embrace to the child who sits on it.

Completing this trio, **the main table you might have felt in the centre, Lisabo, offers smooth, rounded contours for a safe, welcoming touch.** Assembling it is child’s play, customers say. Once again, its slender form ensures easy passage around it.

This set is a celebration of family life, offering a sensory-rich experience that’s inclusive and considerate, ensuring a sense of belonging for all.

4 “Events on a Budget is an exciting feature of Trails that...Home Pizza Party in just 39.99.

‘Events on a budget’ is another exciting feature of trails that brings you unique IKEA product packages curated for a variety of special events with loved ones, without having you worry about splurging. We currently offer one curated event package, perfect for both adults and children.

Home Pizza Party in just 39.99!
Host a raving Pizza Party at home with IKEA’s package, all in a small budget of 39.99 euros. Explore this box with a set of 6 handpicked products. **Feel the Koncis garlic press crush cloves with ease, its simple mechanics ensuring no garlic is wasted.** Measure ingredients precisely with the Vardagen measuring cup, its user-friendly design perfect for small quantities. **The Gubbrora spatula is a tactile joy, scraping and stirring sauces without a scratch, and it cleans effortlessly.** Grind spices to perfection with the Intressant Spice Mill, its smooth operation and even spread enhancing every bite. The Hemmabak pizza tin promises a crisp crust, its size ideal for sharing. **Lastly, the Aptitlig bamboo chopping board offers a sturdy, natural surface for prep work.**

Now then, enjoy your party!

5 “Nicely done! You have completed...See you on our next Trail.

Nicely done, you have completed the ‘I like to eat or cook’ trail!

If you’d like to be updated on the whole range of products and events on this trail, you can find it in the Trails section of the IKEA app. And if you would like to leave your own Trails behind for other customers, you can choose to upload your insights in the same location on the app, it will guide you.

Fig 45. Accessible Navilens codes (left) and audio descriptions (right) for select Trail curations.

reviews, recommendations, reflections

The individual Trails experience lasted about 20-30 minutes following which there were one-on-one reflection sessions with each participant.

reviews

- Participants were used to certain ways of navigating through environments in their daily lives. Thus, the common navigational instructions that were given via the audio experience did not add much value since it was hard for them to adapt to something new on the spot.

- The severity of their disability shaped the participants’ journey through the Trail; one participant who was almost blind and a little hard of hearing was cautious to not touch the products, while another who was short-sighted seemed to have no qualms in touching, interacting and even giving product-related feedback on the fly.

- Participants used gestures and a bit of acting to possibly imagine how the products would fit into their own lives. As

As the audio came in, some participants pretended like they were using the products in their own kitchen.

- Participants made affirmatory sounds whenever they correlated an audio to the product or product package. From simple hums, to nods, to speech, participants confirmed their understanding of the AD by reacting both to themselves and to the author, signalling that we could move forward to the next part of the Trail.

- Participants were able to recall some relevant product information once they finished the Trail. Though it is not fully clear if that information was enough for them to describe a product to a co-worker, the ADs played an important role in engaging with the participants' memories.

- Participants were okay with compromising a human voice for an AI in the audio if it meant that the information would be quick, efficient and not requiring any of their attention. With the Navilens in-built AI voices, participants could change the speed of the voice, the accent and exactly what kind of information they wanted to hear, without having to keep asking a human.

recommendations

While observations led to rich insights on customer behaviour, speaking to them right after the Trail put a spotlight on how the experience prototype and different aspects of the concept could be better in the future. It is good to mention here that though Navilens was perceived by the author only as a substitute external application, the participants did not seem to view it that way. They viewed the Trail which included both the usage of Navilens, and the design of the information as a whole experience. Thus, the recommendations below were divided into these two pockets for the sake of clarity. Besides, the recommendations pertaining to Navilens would serve as critical feedback for the company to develop more accessible solutions in the future.

- **recommendations: information and experience design**

Recommendations Type I

In general, participants felt that although the information was useful and helped them immerse into the store's offerings, it took quite some energy and was a lot to assimilate for the first time. Additionally, the experience prototype was curated to reveal sets of the same features one after the other, for example, the first three audios were on 'trending products', the second two were 'popular product pairings' and the last one was 'events on a budget'. Having similar information back-to-back made customers feel like they couldn't distinguish much between the features themselves. All three participants thus preferred a randomised order of product features so that the Trail could remain surprising and interesting. Below are some of their key recommendations for this part of the Trail.

Fig 46. Recommendations on the information and experience design of Trails.

Moving away from the general experience, customers also provided rich and important feature-specific recommendations for Trails.

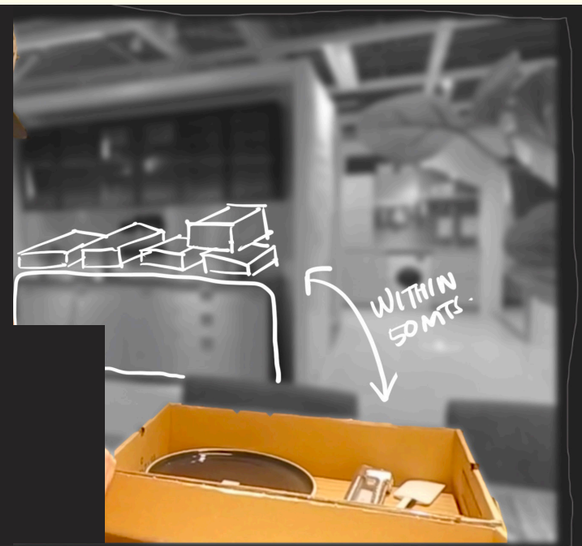
TRENDING PRODUCT

"I think it would be useful if the information and audio were designed to tell us about the most important characteristics of the product. For example, in a trolley, mobility is key for me. I would have liked to hear more about the wheels, how many there are, what surfaces they can move on, you get it."

Sensitive data has been blackened.

POPULAR PRODUCT PAIRING

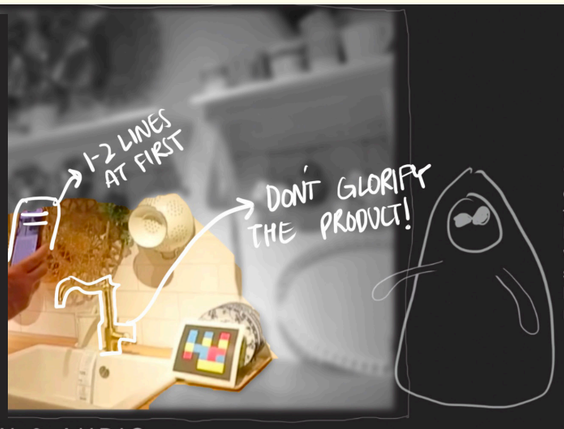
"It might be good to know a sort of colour scheme for the different products so that even if we might not be able to see too well, we can imagine if those products will work well together as a unity. I know for sure red and orange won't be good together!"



EVENTS ON A BUDGET

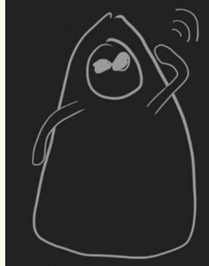
"Suppose I touch and experience all the products in the event package and decide to buy it, I'd like the curated package to be in the showroom vicinity, so that I don't have to go down all the way to the markethall searching for each and every one of these products!"

Fig 47. Recommendations on specific features and the tone of audio.



TONE OF INFORMATION & AUDIO

"Well firstly, I'd like the option to listen to a one or two-liner on the product before I choose to proceed with listening to the entire story. If I don't like what I hear, I can simply skip and move on."



"Would I like a human voice, you ask? Ofcourse I would. But if having a sh*** AI voice means I could get better and faster informtaion without having to constantly talk to someone, I'd take that any day."

"Ok no offense, but the audio right now sounds a bit like a commercial. Its like someone has a maniacal voice telling you how great everything is. That is not really the vibe of IKEA, I think. Maybe I'd like to also hear what's not so great about the products."

recommendations: Navilens

One of the biggest concerns with this app was the sensitivity of its codes and the audio that followed. Though the scanning distance and range with Navilens are significantly higher than with a typical QR code, this also became a potential shortcoming. As participants moved around the store, while they held the phone out to detect the next code in the sequence, many times the app would detect any nearby code, and disturb participants with unrequested audio. As stated previously, participants also faced some barriers navigating through different parts of the Trail. That was partly because the information in the Trail was not designed to give directional guidance, since the assumption was that the Navilens app already had an in-built guiding feature. Lastly, though Navilens did provide audio in 34 languages, the basic language on a person's phone would be set to their phone language. Since it was the author's phone the participants had to use, that default language was set to English, something not all of them were equally comfortable in. Below are the main criticisms and comments, some of which are addressed to Navilens, the company.

Fig 48. Recommendations on Navilens.

reflections

Candid participant reflections revealed the need for something like Trails at IKEA.

"I usually cannot initiate shopping myself so its very nice now to know that I can use these codes to be more independent- I don't need anyone to show me around as much."

"When I have Trails, I will have more reason to go to IKEA on my own. Of course, its very cosy to have someone with you, but sometimes you want to be independent, I think this can help. It gives you a little bit more to go on your own."

Independence, freedom, agency, these were some of the words that kept surfacing during the reflections with participants. Trails, as they quoted, might be the push button to visit the IKEA store on their own in the future.

"For me, Trails was a nice challenge."

The overall sentiment at the end of the Trail was that it was a nice and exciting challenge. It was well-liked and there was a positive inclination to do it again, but maybe let's take a break first, was the thought that crossed participants' minds. For Trails to work, the above feedback highlighted the importance of making the experience enjoyable yet physically doable on an average day.

"Yes, the audio works but my memory is a more tactile memory now because of it, and wherever tactile memory clashed with the information, I was like, no."

The relation between the audio and touching the product was not very coherent at all points, it seemed. Participants

desired some level of objectivity instead of a completely customer-centric story. This was yet another limitation stemming not only from personal bias since the information was designed by the author alone, but also from the subjective nature of the customer reviews.

"It feels like somebody has a maniacal smile and is telling you how great everything is, a little bit. It doesn't really feel like IKEA."

An important criticism was that a lot of the audio sounded more like a commercial advertisement, and less like the calm, subtle, non-pushy vibe of IKEA. This made participants at some points feel like Trails was just another sales strategy, and since they perceived it to be much more, the audio was clashing with their opinions. Indeed, thisresulted due to a lack of in-depth knowledge on how such product descriptions must be designed to be coherent with the brand's image.

"We are short-sighted but we are not loony or childish, so when people design things that provide information in an especially slow and childish manner, that's horrible! In that case, this is better."

As a participant pointed out from one of their previous frustrating experiences, several solutions that exist for people with disabilities seem to single them out in the name of 'inclusion'. Trails however was designed to accommodate the needs and feelings of a wider range of people, not just customers with vision disabilities. The audio description made sure of that. This was a positive sign that the participant felt like they were on a level playing field.

"I find a good corelation between the result of the co-design workshop and this session. You've been listening very well since the last time, that's why I am working with you and that makes me really happy."

Participants appreciated their involvement from the beginning and their ideas and feedback being taken seriously. They also acknowledged the difficulty of taking feedback from niche groups and implementing them. Thus, despite the rawness and low fidelity of the whole experience, the meaning it derived from people who would use it was invaluable.

an anonymous letter from the future

After reading the anonymous letter from the future below, you might understand how this service could be positioned with IKEA's future customers and within the organisation itself. Regardless of disability, Trails can be a new way to access IKEA's visual showrooms for customers. Furthermore, the concept of customers leaving trails of inspiration for other customers seemed to create a less authoritative feeling than when it came from the large organisation itself.

In 2030, Trails is successfully in the market. An anonymous customer has written this note to express their gratitude and the impact this service has had on their lives, and teleported it all the way to present day, 2024.

"Hi IKEA,

Thank you for creating Trails, the hybrid platform for blind people like me and others with vision disabilities. It has changed the way I shop. Before Trails, I relied on family, friends, or my partner to accompany me. The world is evidently designed for sighted people, so I picked my battles. Visiting an IKEA store was not one of them. It's not just the noise; it's also overwhelmingly large and has way too much variety for me to skim through products, even if I spent 3-4 hours each visit.

That's when a friend in the blind community mentioned your newest feature. Initially, I was skeptical, thinking it was just another technology to learn and wondering about the cost. But my partner Foxi coaxed me, and soon I was awkwardly asking about this Trails thingy at IKEA.

The store assistant explained the different types of trails and which sections of the showroom each one covered. I started to feel a bit excited, not gonna lie. The trails had funny names, and I picked the "I like to eat" trail, which covered the kitchen and dining sections. They said I just needed the Navilens app, which I already used daily. Each trail had Navilens codes that acted as audio and navigational guides. The assistant brought us to a pont in the store and said we could begin our trail.

As I opened my camera and searched for the first Navilens code, a 'beep' followed, and the first audio gave us a welcome intro, explaining the trail and its duration. I loved knowing I would spend around an hour on this. As the first code ended, I was asked to scan for more codes. A quick 'beep' later, the audio explained how a product to my right was trending with 300 positive reviews. With my partner's help, I located, touched, and related the audio to the actual texture and feel of the product, and and decided to pop it in my basket. It was a copper cutlery set!

Moving along the trails, my partner and I discovered other trending products and popular pairs in the kitchen and dining sections. I didn't add anything else to the basket, but at the end of the trail, the last audio revealed fun events on a budget, like products for an outdoor BBQ or a birthday party, all under 99 euros! Man, IKEA was seriously getting fun. I began to understand that since people like me can't access every product, we can at least access the most popular ones and get extra inspiration while knowing how much time to spend.

After the Trail, we moved to the billing area and thanked an assistant on our way out. It was a bit tiring and there was a lot to assimilate for a first-timer, but I think I can get used to this because I only spent an hour and a half doing all of it! It's funny because I was so reluctant at first, but now I go to IKEA just to try new Trails. I know you update them every six months or so, which is cool. Funny story: my friend Crow, who has good vision, tried Trails out of FOMO and ended up liking it so much he subscribed to the your newsletter! I later found out that the curated inspiration in Trails was shared by other customers who liked and purchased these products. Knowing that others preferred and bought the same products as me, and shared their thoughts on how to use them at home, provided some surety that these products were the real deal. It's also just goodwill to help others out if you can, man. I like this idea and I will do so myself if needed! I just wish the Trails would change more frequently because I don't want to wait for new information, and I'm really enjoying going to IKEA more often now.

Best, Rhino"

reflections, but personal

Everything said and done, the author's thorough immersion in those weeks to build and watch the prototype come to life was incredibly fun! Talking to participants who were customers themselves was also very insightful. However, there were countable times when the author erred and said or asked for information that might have biasedly impacted the prototype itself. It wasn't exactly roses, designing for a group that the author could not immediately relate to.

"so here are some brutally honest reflections on the author and the Trails they designed."

very happy
satisfied
its okay, its fine
dissatisfied

Fig 49. Self-reflection, an honest yet not-so-shiny process.

Trails: desirable, feasible, viable or not?

Trails was considered desirable by customers with vision disabilities.

Up until this stage, designing, testing, feedback, and reflecting on Trails with customers showed actual proof of desirability from them. Some of their quotes from earlier sections revealed positive indications not only towards their preference, but also their need for a service like Trails. Though reported to be 'slightly challenging', it was deemed an appropriate start to provide them independence and control, inspiring shopping at IKEA through a new lens.

Trails seemed to be the most feasible out of the 5 concept directions for the organisation, IKEA.

Trails was also chosen as the 'optimal' concept not because it was the best of the five directions, but mainly because it could use a lot of existing resources at IKEA without having to start from scratch. Additionally, in alignment with the some of the organisation's core values (Our Culture and Values – IKEA Global, n.d.), Trails proved to be more cost-conscious and brought different stakeholders together, when compared to the other directions. As a result, Trails depicted signs of being feasible for the organisation, adhering to its core ways of working.

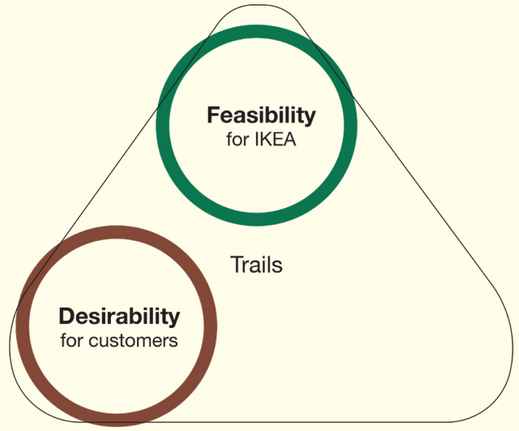


Fig 50. Establishing desirability and feasibility of Trails.

However, Trails needed to establish itself as a service with a profitable model, one that could benefit both the organisation that would develop the service, and its customers who would use it. With two of the three golden elements for successful innovations considered (Orton, 2017), the third and the hardest was yet to be addressed.

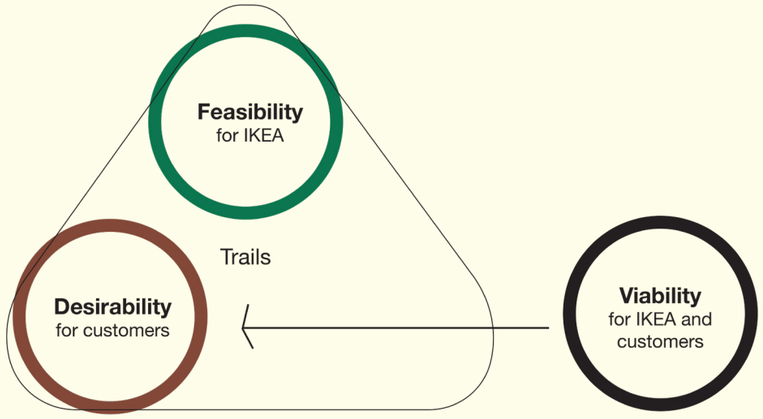


Fig 51. Viability, the third and the hardest component, had to be addressed.

Viability addressal was done in two ways:

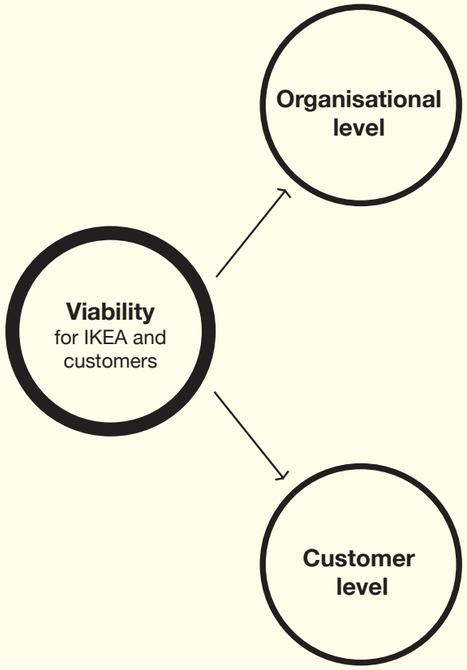


Fig 52. Two ways viability was addressed in this project.

organisation level: discussion with other IKEA teams

To understand if this service could realistically be implemented, talking to people familiar with the context was vital. This would eventually help not only understand how much of the service might be workable, but also close in on other resources, research, or internal developments that could be used to make the implementation case stronger.

Over a week, Trails and the motivation behind it was presented and discussed with co-workers across various teams within IKEA, namely Strategy, Experience and UX Design and Research, since the service sat on the intersection of all three domains. The experience of sharing and garnering such spontaneous feedback was a first, and thus, a tad intimidating. However, listening to the affirmatory responses from co-workers bolstered the courage and knowledge with which I continued to share about the project. Since the service had different domains to it, the gathered output was divided into the same categories for ease of understanding. Below is a diagrammatic representation of the feedback.

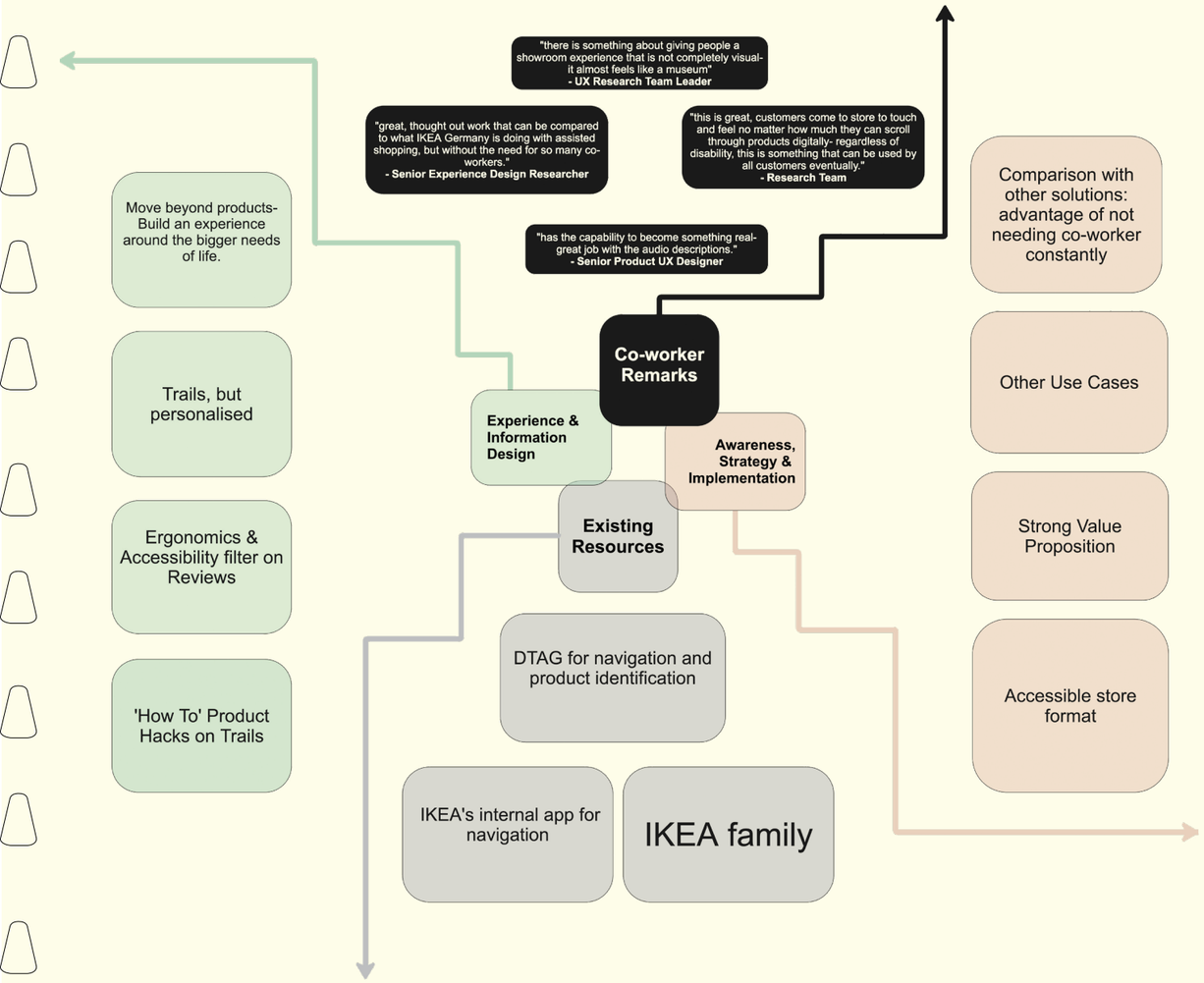


Fig 53. Discussions with IKEA experts and co-workers.

feedback on information and experience design

- Home inspiration beyond IKEA products- Co-workers mentioned the impact Trails could have on customers' shopping if it did not cater to product-driven inspiration alone, but instead catered to the bigger needs of life. For example, a Trail for parents on 'having a new baby', or one for students on 'having the first college experience' or for adults in general on 'buying a new apartment', could prove to be not only interesting but also a more experience-driven way of curating inspiration for customers based on their actual life needs.

- Personalising Trails- IKEA offers a wide variety of customisation in its furniture and customers feel more connected to their products because of it. Introducing that feature within Trails would then provide customers more reason to use and connect with this service too. As an example, Trails could provide customers the option to add their shopping list during their visit. Each Trail could then comprise of 80% of curated home inspiration, and the remaining 20% could be inspiration specific to products within the customers' shopping list, giving them not only generic but also personalised information on their choices.

- *"Trails has the capability to become something real- great job with the audio descriptions."*

Senior IKEA designer on the design of the information and the usage of audio descriptions.

feedback on existing resources at IKEA

- IKEA's internal digital application

Cannot be publicly disclosed.

- DTAGs for the many- Digital product tags are alternatives to the typical physical product tag (PTAG) that have been designed keeping accessibility guidelines in mind. The tags cater to people with diverse abilities by providing a digital experience of reading the paper tag. The tags themselves provide some basic product information and have an embedded QR or Navilens code to further assist customers in case they want to know more. Since they function similar to the PTAG and can be seamlessly placed around product aisles without intrusion, they could be scanned to provide audio to customers with vision disabilities, relating to specific products in a Trail. These have already been implemented in certain IKEA stores in Denmark and Belgium, showing promise for the context of the Netherlands too.

- IKEA Family- This is a loyalty club comprised of members who are not only loyal to the brand's products, but also its internal events and happenings, like workshops, discussion sessions, etc (IKEA Introduces Reward Keys from IKEA Family - IKEA, n.d.). Since it has a genuinely interested and active customer following, the club could provide a good starting point for customers who might be interested to share their inspirations for the curation of Trails. Furthermore, IKEA Family also has an incentive system in place (IKEA Introduces Reward Keys from IKEA Family - IKEA, n.d.) which could be deployed to encourage more of the club's members to share good home inspiration.

- *"This is great, customers come to the store to touch and feel no matter how much they can scroll through products digitally- regardless of disability, this is something that can be used by all customers eventually."*

Comment by members of one of IKEA's research teams.

feedback on awareness, strategy and implementation of Trails

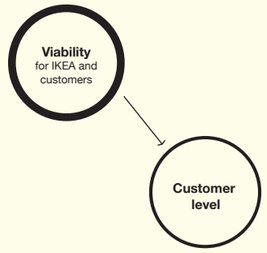
- Wider Use Cases- This was a crucial point to touch upon if Trails was to be successfully implemented and usable for the many. Discussions revealed that certain other groups of IKEA customers might also benefit from a curated service like this. People with children in particular, do not wish to spend too much time surfing through all products in the store because of the distractions from their kids and shopping in an already noisy store. People who are elderly would also avail from shorter pathways of shopping compared to their usual experience of going through the entire store.

- Wider Store Formats- This project focused on a typical IKEA store; a large blue box generally located in the middle of nowhere. For many people in the world, this type of store is not accessible. IKEA's own research revealed how customers with vision disabilities struggle to commute and manage their time when it came to these stores. In these large flagship stores, Trails was introduced as a move towards making customers' time spent more efficient. However, IKEA has plans of moving beyond these blue boxes. With the advent of the IKEA 'city' stores, smaller format stores near the centres of the city, people can more easily reach and gain access to IKEA. Being smaller in size than the typical store, these stores would also have lesser variety of products on display. Thus, customers might be able to really touch and experience most products before buying them. Now, if a curated audio service like Trails could be implemented in this scenario, it could see a high usage rate not only by customers with vision disabilities but also by other customers who simply want to experience more with less.

- *"There is something about giving people a showroom experience that is not completely visual- it almost feels like a museum."*

IKEA UX research team leader on Trails for a wider audience.

customer level: what 'others' think of Trails



While discussions on an organisational level offered clarity to evaluate, assess and eventually widen the target audience of Trails, it was imperative to have conversations with some of this new audience to understand their nuanced opinions on the service. Thus, a blind testing of the service purely in verbal form was done with participants (people without vision disabilities) to understand their thoughts. To keep it real, Trails was presented to them as though it were a regular service launched newly at IKEA,

without mentioning that it was designed for a specific customer group with accessibility features in mind. Below are strong quotes and arguments from customers.

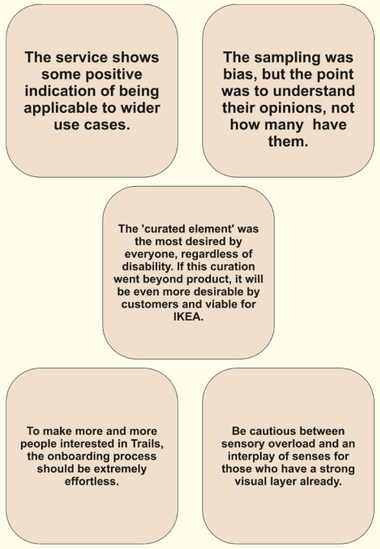


Fig 54. Blind testing with customers without vision disabilities.

What customers seemed to like most, disability or not, was the curated aspect of Trails.

"Being at IKEA is like being in a silence if there is nothing visual. So, if there was another sensory layer, that would be interesting, kind of like a museum."

Indeed, the number of times 'museum' was mentioned could not be kept track of. This was interesting to hear towards the end of this project since it connects back to the initial analogy of IKEA being a 'museum'. When people thought of a museum, it suddenly became a space accessible to everyone, not just a certain group of people. They even drew parallels between the curated audio of a museum and the curated audio of Trails.

Experiencing IKEA products through touch allows people to connect and identify with the products better, as told by customers themselves time and again.

"I don't like touching stuff but if there was a curation going on telling me to feel the fancy wood with my own hands, that sounds kinda cool. Like it allows me to connect with the product more."

The onboarding process for using Trails should be super easy.

"It also depends on how I'm made aware of this. Is it going to be advertised when I enter the store? How I get onto it should be pretty quick and easy."

People do not want to take too much effort to get used to 'yet another service'. How, where and in what ways Trails would reach IKEA's customers would be crucial to gauge how many of them would use it.

Trails could become part of customers' regular store experiences.

"I might even use it every time I go because then I will exactly want to go to a specific part. Like, no one wants to go through the whole of IKEA except maybe the first-ever IKEA visit."

One participant could see themselves using Trails quite regularly if it meant they could cover certain parts of the showroom and not have to do the round of the entire store. This is synonymous to the feedback that came from discussions with IKEA Teams when they identified other applicable use cases for Trails. In essence, people would benefit from not having to skim through the whole IKEA store each time.

Trails should be cautious of not becoming a sensory stimulant that overloads customers and instead could play on the values the additional auditory layer brings.

"But I can already see everything the product has to offer, so I don't know if the auditory feedback might be like overwhelming, or if it might actually be, nice?"

Not everyone is happy about a service like this, especially those who look for specific products on a need basis. To them, it comes across as another IKEA marketing strategy.

"Personally, I would say no because I'm not a fan of IKEA. I have a need and I will look for that object online. To me, its quite upsetting to go through the whole showroom, I know it is a marketing thing."

Disability or not, shopping at IKEA can be overwhelming for any customer.

"I've recently been thinking of moving and setting up my home from scratch and then when I went to IKEA, I really felt like I was in a blackhole."

This quote resonates strongly with the initially identified pain point of customers with vision disabilities being faced with too much visual variety and not enough clarity to distil out the products they desire. Only, in this context, a customer expressed having faced the same problem, despite having typical vision, indicating that the store indeed overwhelms customers in other ways, and needs some filtering.

Trails was thought of as a good 'starting point' for inspiration.

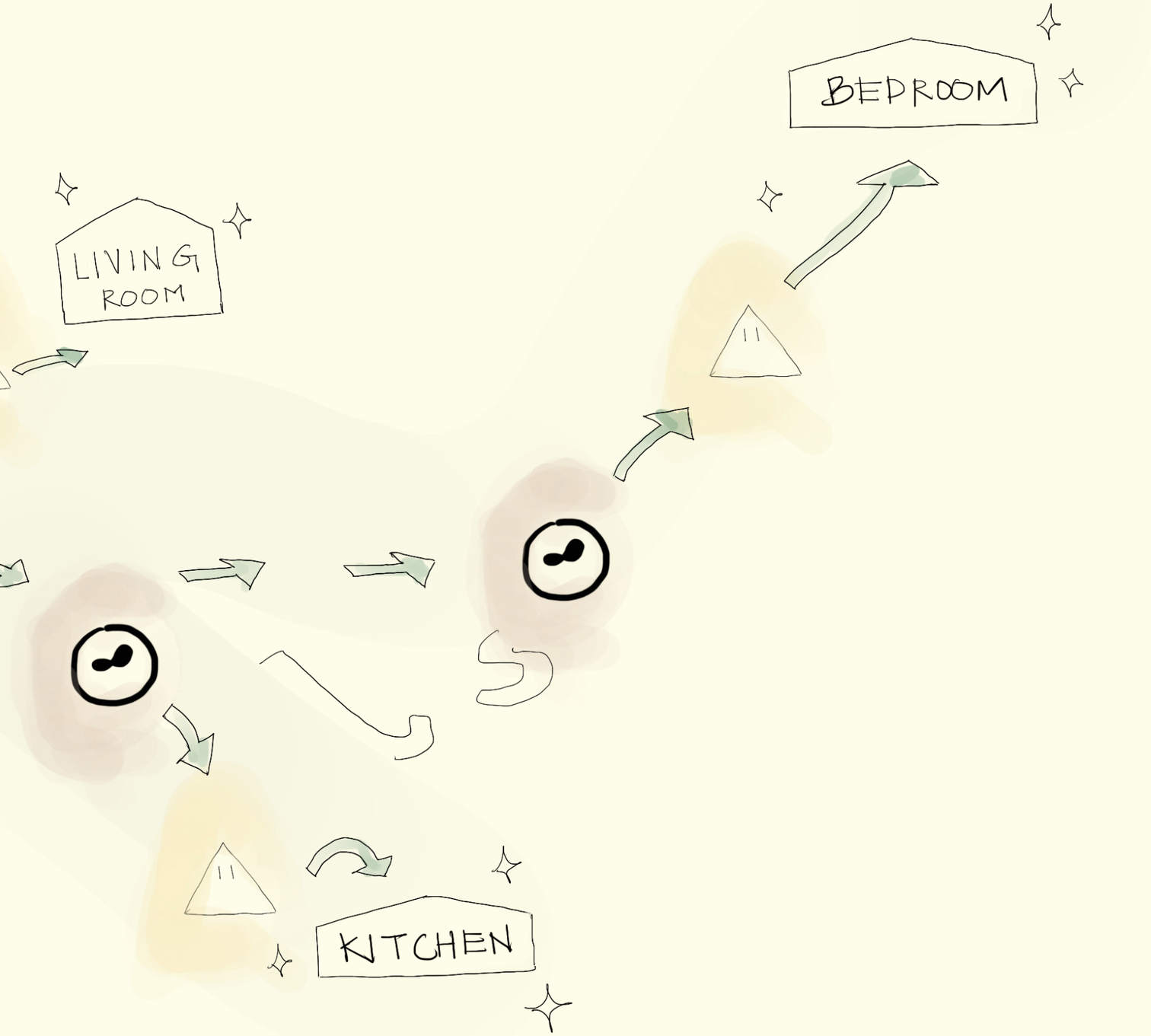
"We really need some kind of starting point that is also based on peoples' experiences. People take a product and give their own meaning to it, and that is always super inspiring. Kind of like Pinterest."

The need for a baseline or a starting point at IKEA was a comment that showed the necessity of such a service for everyone.

At the end of the blind tests, when it was revealed to these participants that Trails was designed as a service for people with vision disabilities, a lot of 'Ohs' and 'oh that makes sense' were heard. Some were excited with the prospect of Trails being made available to them too, some were not personally interested but knew others in their family who would be, while some others were more concerned about the sensory and information overload, naturally. Overall, the two processes both on an organisational and peoples' level grounded Trails and the process until now further in reality. Though complete viability was not able to be checked, a lot of replaceable, modifiable, combinable, and new elements were identified within IKEA's existing ecosystem. In adjunct, the raw feedback and criticism from conversations with non-disabled participants bolstered the workability and usability of Trails.

notes from author

This is the largest of the nine parts to this narrative, and with good cause. From pitching rather lifeless design directions to using biomimicry as an inspiration catcher to developing five unique non-visual concepts to evaluating and selecting the most optimal one, this section is replete with diagrams, sketches, and doodles that express the rationale, function, and emotion at every step. The chosen concept (Trails- a service that allows sighted customers to share home inspiration with customers with sight disabilities), along with all its ancillary aspects and features, has been explained in depth. Trails was then evaluated in the context of usage, using an experience prototype at an IKEA store, eliciting a wide range of favourable and critical comments. Finally, after some self-reflection and criticism, this section concludes with the golden desirability-feasibility-viability check to ground the thesis in further reality, with viability being critically discussed and tested with other IKEA teams and non-disabled customers. Moving on, the following part presents some intriguing findings, both for IKEA and for the field of inclusive design.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7 & then, a discussion.

Customers were unwittingly giving feedback not only on the curated Trail but also on the design of the products in it. What if IKEA's design and development teams got a hold of this gold?"

a new meaning to inclusive design

When participants were sharing their thoughts and opinions during the experience prototype, they were also inadvertently critiquing the design of the very IKEA products that were a silent part of the same experience. Though a lot of this went undetected in the main footage of the experience video, playing it several times and discussing it with my supervisors (thanks, Rebecca), revealed the subtle yet sure feedback on products themselves. For example, one participant mentioned about how they might have liked it if the GLITTRAN kitchen tap's lever moved in the opposite direction than it did currently, so that it could be easily touched and accessed without hitting the tap's body. For starters, this was great feedback on a product feature coming from a customer with slightly diverse needs. Imagine if ten, no twenty other customers were to give such feedback unknowingly or knowingly. Imagine if this feedback was somehow able to reach the design, development and other internal teams working on products. It could give IKEA a new way to design products to be more inclusive for a wider range of people.

This project aimed to achieve a renewed sense of inclusion at IKEA, one where customers' experiences and journeys would be valued just as much as that of the organisation's. Because it is not about just designing inclusive shopping experiences for customers; it is about integrating all that customer experience back into IKEA's own design.

Reading out quotes of people who have said some fantastic things about their perception of inclusion provides an idea of how much of that is incorporated in the designed intervention, Trails.

In this dramatic piece, the author has taken the liberty to quote some people with interesting views on inclusion.

"Inspiration does not come from catalogues alone; it comes from people who use the products in those catalogues."

"Inclusion is about making all kinds of people love their home, which is what IKEA does, at an affordable price."

"Inclusion is also about studying fringe users to really understand if there are extremities. In this case, it was people with vision disabilities."

The design of Trails really hinged on an important assumption.

a strong(er) value proposition

While the thesis was aimed at making IKEA's hallmark showroom more inclusive for a wider audience, it was also hinged on the assumption that since IKEA customers primarily visited the store to touch and feel products before they bought them, they would be interested in a service that allowed them to touch and experience specific curated items. This assumption was naturally tested with customers with and without disabilities through the design of the experience prototype. Despite criticisms, the largely optimistic responses from both types of customers reinforced the assumption made above. This was due to the frequent comparison of Trails to a good museum experience. And it so happens that with museums, many times people don't just go in with an agenda, but instead with an open mind to discover something new.

All this tied back to the main research question of making inspiration and discovering new products inclusive for a

broader audience. Thus, with the launch of Trails, IKEA could certainly see a higher footfall of people who might visit the store not only to touch and buy products, but also to simply experience and discover new things related to home inspiration. Coupled with the addition of the 'trust factor' customers have in product reviews and ratings left by other customers, Trails could bring in a stronger value proposition to IKEA. One that is pivoted on bringing diverse groups of customers to essentially visit and experience an IKEA store, without the immediate intent of getting them to buy IKEA products. As word about Trails spreads in the future, a higher visitor count could mean a better revenue model for the stores themselves.

A higher visitor count to IKEA could mean a better revenue model for the stores themselves.

how to design inclusively: a friendly guide

This piece is dedicated to IKEA, the retail behemoth that is bracing itself and working towards becoming a more integrated, circular, and ultimately, a more inclusive IKEA. The following pointers were distilled from the learnings, interactions and takeaways across various stages of this project with diverse stakeholders and only serve as an informal yet honest guide to consider while designing for the many.

general guidelines

1. Whether designing for a single stakeholder or a group of stakeholders, as a ground rule, it can be considered that there will always be other stakeholders affected, influenced, or involved in IKEA's complex ecosystem.

Additionally, each stakeholder would come bearing values unique to them, and when their values don't align, tensions are bound to arise. It would help to embrace those tensions while focusing on the stakeholder whose values need the most attention at that point, rather than try and solve things for everybody involved.

2. Inclusive design needs a genuine mindset of moving from designing 'for' people to designing 'with' them.

As quoted by one customer, "it's always a must to involve those who face the problems themselves, and if not in the beginning, better in the middle than in the end." In a large customer-centric organisation like IKEA, this could mean involving all kinds of customers; from the middle to the fringe, in the organisations' grounding, research, design, development and testing processes. This could involve but would not be limited to those with children, with disability, with neurodiversity, and the elderly. Participatory design methods like co-design, context mapping, personas, scenarios, and roleplaying could prove useful in going beyond understanding the customer as an end user, and actively including them as a co-stakeholder in the process.

Learnings from inclusive design are transferable and are not mutually exclusive to a specific context."

3. Regardless of the stakeholder, inclusive design has something in it for everyone.

In the context of this project, the specific stakeholders of interest were customers with vision disabilities at IKEA stores. However, many of the insights derived from this context can still be applied to other stakeholders. Elderly customers for instance in the same context, also struggle to manoeuvre through the entire store during each visit, much like customers with vision disabilities. Thus, learnings from inclusive design can be transferable and are not mutually exclusive to a particular scenario.

project-specific guidelines

1. Break down personal biases before you are knee-deep; smile when they are being broken down.

If you wish to break down biasses surrounding persons with disabilities, just ask.”

As someone who does not have a distinct vision disability, it was quite the struggle to initially have a conversation with people from this group without restlessly wanting to ask about the numerous stereotypes around their disabilities. In such a scenario, the guiding comment would be- just ask. Which is why, the report began with an immersive scenario that revealed a core personal finding - disability is not an extreme, black or white, life or death condition! Thus, when personal interactions with this group of people grew, the author’s biases and stereotypes slowly died. Often, people with disabilities are used to being fired with questions and comments about their life and condition, so they would rather appreciate if they were asked straight to their faces. If speaking up is daunting however, keeping a neutral composure while being a good listener could help in recognising the internal biases being broken down as more of the conversation unravels.

2. Designing for people with vision disabilities needs a highly adaptive mindset since design speaks a largely visual language. While this could prove challenging, it could equip IKEA designers and researchers with the vast ability to transform core design methods or philosophies to better suit niche audiences or contexts.

For this project, a lot of research was done on the non-visual ways of communicating and practising design. Incorporating this understanding into traditionally visual design tools opened new opportunities for expressing and connecting with the stakeholders. An example was the co-design workshop, a typically visual interaction involving post-its, lots of colours and boards. It was transformed into a non-visual session where emphasis was placed on verbal, auditory and haptic communication, elements these stakeholders were more comfortable with.

The essence of inclusion indeed lies in not singling out groups of people.”

3. Good inclusive design is better invisible than visible.

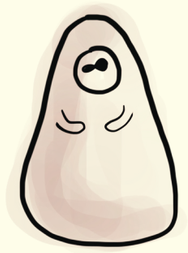
Specific to this thesis, while the design intervention was developed keeping in mind a corner of IKEA’s customers who face vision disabilities, it is not a concept that screams ‘for visually disabled’. This was bolstered by the blind tests that were done with customers without disabilities as they imagined the designed service to be ‘just another regular service.’ That is because the essence of inclusion as discovered through this project might indeed lie in bringing a wider number of people access to the same things, and not in singling out specific groups of people. Additionally, loud solutions that work for smaller groups do not align well with IKEA’s values of ‘doing good for the people and planet’ and its ‘cost-consciousness’. Thus, if the stores could open their doors through subtle modifications that are better inclined towards universal design in retail, they could garner not only greater footfall, but also better relationships with more of their customers.

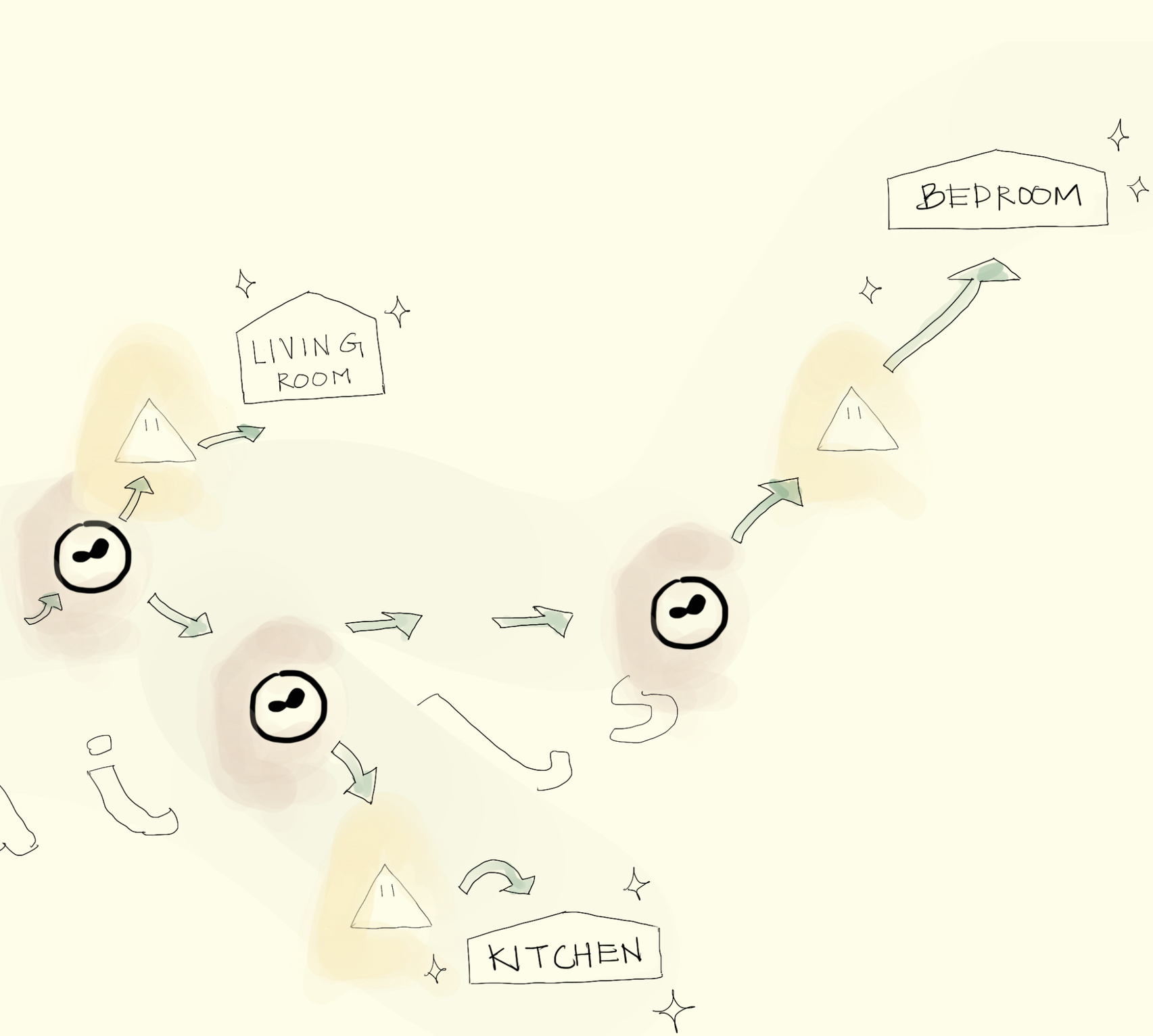
4. There is enormous value in extending ‘inclusion’ at IKEA beyond shopping experiences and letting it seep into several other facets of the organisation’s working and offering.

People with vision disabilities, owing to their adeptness for experiencing and expressing their thoughts through other senses (e.g. sound and touch), can be valuable contributors of feedback for IKEA. The continuous observation and interaction with these stakeholders helped in comprehending the various strategies and approaches the organisation could mobilise to gather earnest customer feedback not only on its shopping experience, but also on other verticals of its functioning like- the product and furniture design, logistics and assembly, digital data collection, and much more.

notes from author

The discussion focusses on three crucial points. It begins by bringing fresh meaning to inclusive design in this context, as discovered throughout the thesis, and demonstrates how inclusion is a two-way street from which both IKEA and its customers can win. Second, it describes how Trails may provide a better value proposition to the operation of IKEA stores, eventually moving beyond customer purchases and into their life experiences. Finally, the discussion concludes with a friendly guide on 'how-to' design inclusively, which includes both generic and project-specific recommendations. The last section of this story will discuss the project's repercussions, both overt and concealed.

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8 finally, the implications.

beyond accessibility, towards inclusion.

It's in the title of the team the author was a part of. Indeed, what began as a project to break down barriers and increase access to the in-store shopping experience for customers with vision disabilities evolved into a mission to include more of IKEA's customers so that they, too, could have a better shopping experience through this service. At this early point, the transition from accessibility to inclusion appears to be difficult since it would require the engagement of more resources, teams, organisational authority, and public sensitisation. However, it is not impossible, and this endeavour has generated significant hope, which is supported by some evidence. At the start of this undertaking, there was an almost urgent want to do 'something' for those who were unable to enjoy the beautiful shopping IKEA had to offer since everything was so visual. If the research had continued in the same direction, it may have resulted in an accessible intervention to help persons with visual difficulties use and navigate the store's offerings. This is accessibility. However, it was critical to evaluate the setting in which this intervention will be implemented. To recognise and treat these stakeholders as equal IKEA customers, the culture and atmosphere surrounding the intervention must be fair, safe, and friendly. This is inclusion. Understanding and incorporating these additional issues through interactions with other IKEA teams, as well as grasping the perspectives of persons without disabilities, served as the foundation for an inclusive movement. As a first implication thus, the path from accessibility to inclusion was a logical extension of this idea.

As a first implication, the path from accessiblity to inclusion was a logical continuum of this thesis."

influence on stakeholders

The three primary stakeholders were identified at the beginning of the project. Though the intervention, Trails, was designed for people with vision problems, it does not exclude other stakeholders. When compared to a current IKEA accessibility service in which shop co-workers can physically help such customers (Accessibility Service - IKEA, n.d.), Trails has the potential to eliminate the requirement for an already overburdened co-worker, giving them more time on the clock. Furthermore, the hybrid nature of the service, which compels consumers to share their ideas on the IKEA app, would bring more attention to the app's existence, usage, and capabilities, which would be extremely beneficial to the individuals behind all this- digital co-workers. IKEA, as the greatest stakeholder, might benefit greatly if it elected to collect customer feedback throughout their shopping experiences and incorporate it into its internal operations. As a result, a second implication of this thesis is that the proposed intervention has an impact on all involved stakeholders, either directly or indirectly, and to varied degrees of positive.

A second implication is that Trails has an impact on all involved stakeholders, directly or indirectly."

contribution to diverse fields

Contribution to the field of design methodologies and processes.

This project involved equal parts research and design. Furthermore, most of the study was not desk research but rather field work or research through design (rtd), in which new things were found through discrete observations, subtle interactions, and overt gatherings of design processes, methodologies, and people. It provides a

variety of approaches for adapting standard research methodologies to accommodate uncertainties and new circumstances, making them more familiar. Importantly, it demonstrates how both research and design are not limited by their traditional visual character but may be eccentrically non-visual while remaining straightforward to understand.

Contribution towards recognising people with disabilities.

The study also provided a humanitarian method to recognise the diverse distinctions individuals with disabilities live with, rather than cage them under a single roof through the design of composite personas.

Contribution to the field of inclusive research.

In the realm of research, this gives a nuanced perspective on participants and their perspectives in inclusive investigations. In specialised research scenarios like this, the project demonstrates the need for including participants from the outset to enable adequate time for the researcher to become sensitive and empathic to others' experiences that they cannot comprehend.

Contribution to IKEA.

For IKEA, the initiative focusses on the retailer's distinctiveness rather than its more generic qualities, creating an intervention that is tailored to the organization's intricacies and not easily replicated by rivals.

Contribution to vast field of inclusive design.

Finally, it contributes another page to the extensive library of inclusive design--a method for designing honestly, critically, and without excessive selfishness.

limitations of the project

Due to the difficulty of acquiring access to a specialist and sensitive target group, contacts, and involvements with them were limited and infrequent. Thus, with every opportunity for engagement, the project had to immediately adjust and, in some cases, pivot away from its original direction to optimise the efficiency of the time spent, resulting in some low-fidelity and quite raw work outputs. Due to the same reason, the experience prototype could not be repeated or evaluated further, despite receiving crucial comments. Furthermore, the prototype was not evaluated in the presence of store co-workers who are an important part of the store experience, and therefore, any input or criticism from them is absent. Furthermore, while incorporating the same participants from the project's beginning phase in its final one was intended to be beneficial, it did result in sampling and feedback bias at some points. Finally, the project was unable to go further into the business model or other monetary features required for the service to be successfully implemented within IKEA.

the end? not really.

This is not a conclusion to the thesis, but rather an end summary to this particular narrative. Trails has been praised and criticised, and rightfully so, since there is room for salvaging its greatest components, as well as insights gleaned from conversations with IKEA teams to produce versions 2.0, 3.0, and beyond. Furthermore, interactions with a variety of designers and researchers indicated how useful this may be as a starting point for the accessibility and inclusion journey within IKEA stores. In adjunct, the need to comply with the rigorous EAA might create a compelling motivation for IKEA to establish countless new design sprints and exercises to swiftly test developing concepts with the full participation of its various consumers.

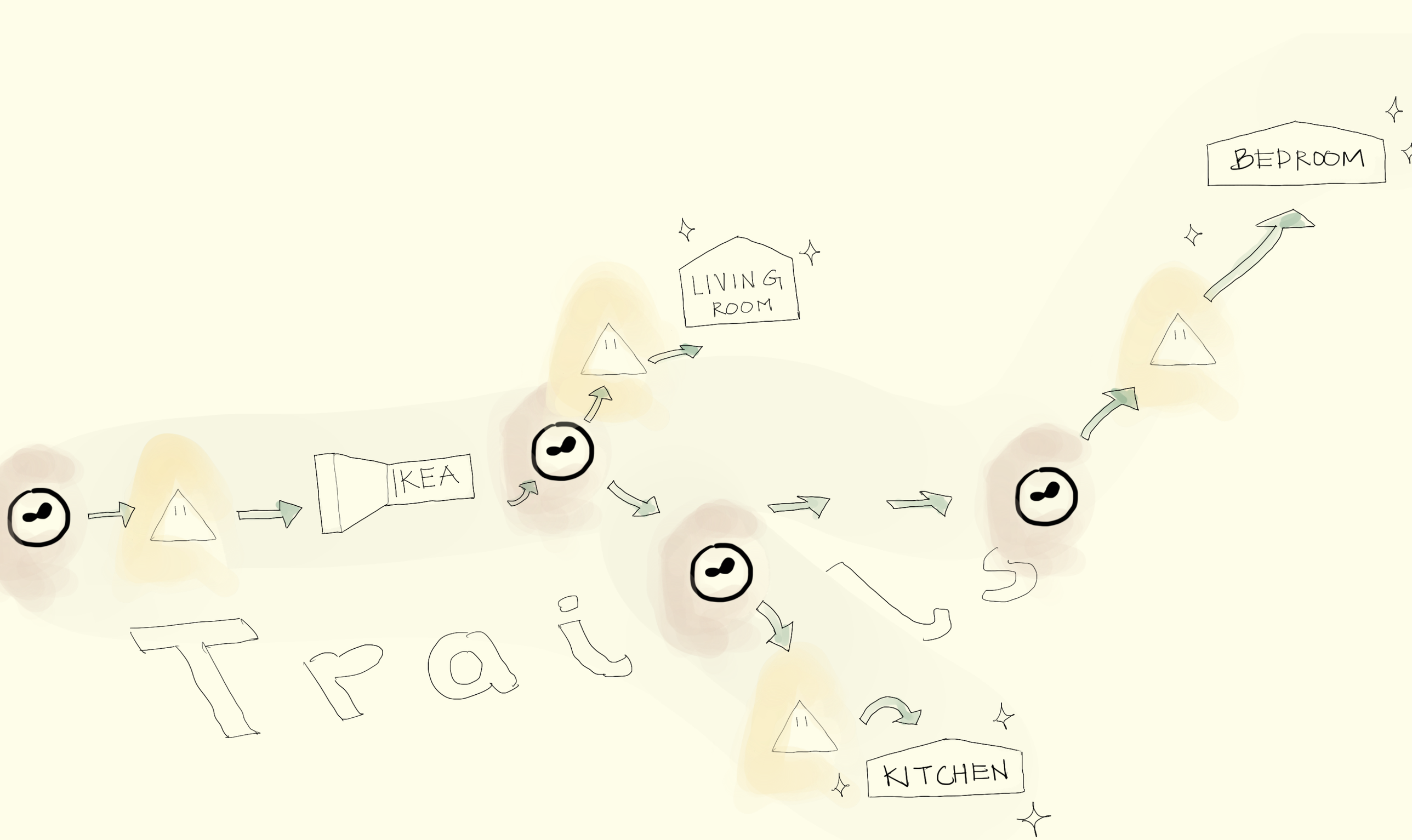
Although a part of the author is deeply immersed in this project, the interest, sensitivity, and urgency of looking

Although a part of the author is deeply immersed in this project, the interest, sensitivity, and urgency of looking beyond products and accessibility to encourage inclusive usage scenarios and environments at IKEA rises, eager to be shared.

Thus, this project is only a beginning in the author's arduous journey of designing and building better products for socially underrepresented groups of people. It gently instills both the fear of being a part of an increasingly exclusive world and the joy of breaking down that exclusivity by allowing more people in.

notes from author

An overarching summary to this lengthy but incredibly motivating thesis highlights the implications and repercussions it produced through the way. From accessibility to inclusion, the thesis recognizes the need to stir towards building better environments for a wider audience to feel included at IKEA, beyond making its products and shopping experiences inclusive. This section also links back to the project's strategic consideration of stakeholders within the IKEA ecosystem and elucidates how the service directly or indirectly influences all of them, despite having been specifically designed for one. Additionally, the contributions to various fields have been discussed, but not without the project's candid limitations. Lastly, it takes a positive tone as the author takes a bow for now but is resilient to forge on this path of making inclusion the norm in a scarily exclusive society.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9 references

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1. Anggreeni, I. (2010). MAKING USE OF SCENARIOS SUPPORTING SCENARIO USE IN PRODUCT DESIGN.
2. Anggreeni, I., & van der Voort, M. C. (2009). Bringing Scenario-Based Product Design into Practice. Design Principles and Practices: An International Journal—Annual Review, 3(2), 339–354. https://doi.org/10.18848/1833-1874/CGP/V03I02/37633
3. Annemiek van Boeijen, Jaap Daalhuizen, Jelle Zijlstra, & Roos van der Schoor. (2013). Delft Design Guide: Design strategies and methods: Vol. R. http://ocw.tudelft.nl
4. Äpplarö, Kattrup and Ullvide: this is what the crazy names of IKEA products mean. (n.d.). Retrieved 7 July 2024, from https://www.businessinsider.nl/ikea-product-naming-system-meaning-2017-10?international=true&r=US
5. Assistive Technology: Birdsong in Japanese Train Stations | by Amanda Yee | Medium. (n.d.). Retrieved 5 July 2024, from https://medium.com/@amandayeee/assistive-technology-birdsong-in-japanese-train-stations-2b5d4e9926a2

b

6. Backcasting in design | by Aga Szóstek | UX Collective. (n.d.). Retrieved 6 July 2024, from https://uxdesign.cc/backcasting-in-design-10b5e53e863f
7. Blindness and vision loss: MedlinePlus Medical Encyclopedia. (n.d.). Retrieved 2 August 2024, from https://medlineplus.gov/ency/article/003040.htm
8. Brewer, R. N. (2018). Facilitating discussion and shared meaning: Rethinking co-design sessions with people with vision impairments. PervasiveHealth: Pervasive Computing Technologies for Healthcare. https://doi.org/10.1145/3240925.3240981
9. Brown, A. (2023, August 8). Co-design, what is it and why is it on the rise? — NEW DOORS. https://www.newdoors.com.au/how-we-think/co-design-what-is-it-and-why-is-it-on-the-rise
10. Brunes, A., Hansen, M. B., & Heir, T. (2021). General self-efficacy in individuals with visual impairment compared with the general population. PLOS ONE, 16(7), e0254043. https://doi.org/10.1371/JOURNAL.PONE.0254043
11. BusinessBar. (2021, September). The IKEA Experience – Not just another furniture store!
12. Butterfly Metamorphosis | American Museum Of Natural History. (n.d.). Retrieved 5 July 2024, from https://www.amnh.org/exhibitions/butterflies/metamorphosis

c

13. Chancel, L. (2022). Global carbon inequality over 1990–2019. Nature Sustainability, 5(11), 931–938. https://doi.org/10.1038/S41893-022-00955-Z
14. Choi, S. U., Chun, Y. S., Lee, J. K., Kim, J. T., Jeong, J. H., & Moon, N. J. (2019). Comparison of vision-related quality of life and mental health between congenital and acquired low-vision patients. Eye (Basingstoke), 33(10), 1540–1546. https://doi.org/10.1038/s41433-019-0439-6
15. Chou, A., & Shu, L. H. (2015). Using analogies to explain versus inspire concepts. AI EDAM, 29(2), 135–146. https://doi.org/10.1017/S0890060415000025
16. Clement, J. (1993). Using bridging analogies and anchoring intuitions to deal with students' preconceptions in physics. Journal of Research in Science Teaching, 30(10), 1241–1257. https://doi.org/10.1002/TEA.3660301007
17. Cotsaftis, O., Williams, N., Chyon, G., Sadar, J., Va Pesaran, D. M., Wines, S., & Naarden, S. (2023). Designing conditions for coexistence. Design Studies, 87. https://doi.org/10.1016/J.DESTUD.2023.101199
18. Council of Canada, R. (2022). Accessibility Amid a Changing Retail Landscape About Retail Council of Canada.

d

19. Deep Dive into More-than-Human Design – This is the Deep Dive repository. (n.d.). Retrieved 30 May 2024, from https://studiolab.ide.tudelft.nl/studiolab/deepdive/deep-dive-into-more-than-human-design/
20. Disabilities when using apps | Appt. (n.d.). Retrieved 9 July 2024, from https://appt.org/en/articles/disabilities
21. Donovan, R. (2020). Design Delight from Disability 2020 Annual Report: The Global Economics of Disability RETURN ON DISABILITY.
22. Dorm essentials - IKEA. (n.d.). Retrieved 7 July 2024, from https://www.ikea.com/us/en/campaigns/starting-college/dorm-essentials-pubc2e494a0
23. dos Santos, C. P., Neves, M., & Bozzi, C. (2023). Resources and Skills for Information Design Practice. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 14030 LNCS, 110–122. https://doi.org/10.1007/978-3-031-35699-5_9/FIGURES/1
24. Duit, R. (1991). On the role of analogies and metaphors in learning science. Science Education, 75(6), 649–672. https://doi.org/10.1002/sce.3730750606

f

25. Forum, E. D. (2020). European Accessibility Act Toolkit for transposition.

g

26. Garneli, V., & Chorianopoulos, K. (2021). Employing Social Interactions of Multiplayer Role-Playing Games in a Serious Game: The Case of maSters of AIR (SAIR). Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 13134 LNCS, 220–229. https://doi.org/10.1007/978-3-030-92182-8_21/FIGURES/4
27. Ghose, K., Horiuchi, T. K., Krishnaprasad, P. S., & Moss, C. F. (2006). Echolocating Bats Use a Nearly Time-Optimal Strategy to Intercept Prey. PLOS Biology, 4(5), e108. https://doi.org/10.1371/JOURNAL.PBIO.0040108
28. GLITTRAN kitchen mixer tap, chrome-plated - IKEA. (n.d.). Retrieved 31 July 2024, from https://www.ikea.com/gb/en/p/glittran-kitchen-mixer-tap-chrome-plated-70222620/

h

29. Hekkert, P. P. M., & Van Dijk, M. B. (2011). Vision in design: A guidebook for innovators. BIS Publishers.
30. How IKEA Family Strengthens Customer Bonds | by Adom Parker | Medium. (n.d.). Retrieved 6 July 2024, from https://medium.com/@loyaltyconsulting0400/how-ikea-family-strengthens-customer-bonds-29849bff56ad
31. How IKEA UPPTÄCKA self-service kiosks are transforming the customer experience | Ingka Group. (n.d.). Retrieved 5 July 2024, from https://www.ingka.com/newsroom/how-ikea-upptacka-self-service-kiosks-are-transforming-the-customer-experience/
32. Hutchinson, R. S., & Eardley, A. F. (2020). The Accessible Museum: Towards an Understanding of International Audio Description Practices in Museums. Journal of Visual Impairment and Blindness, 114(6), 475–487. https://doi.org/10.1177/0145482X20971958

i

33. IKEA. (2023). India Baseline Study.
34. IKEA. (2024). US and EU Baseline Study- Executive Summary.
35. IKEA apps - IKEA. (n.d.). Retrieved 5 July 2024, from https://www.ikea.com/nl/en/customer-service/mobile-apps/
36. IKEA Hackers - Clever ideas and hacks for your IKEA Furniture. (n.d.). Retrieved 6 July 2024, from https://ikeahackers.net/
37. IKEA introduces reward keys from IKEA Family - IKEA. (n.d.). Retrieved 6 July 2024, from https://www.ikea.com/au/en/newsroom/corporate-news/ikea-introduces-reward-keys-from-ikea-family-pub032c06a0
38. IKEA Social Entrepreneurship. (2024). Creating a more inclusive world for persons with disabilities. https://www.ikeasocialentrepreneurship.org/en/news/creating-a-more-inclusive-world-for-persons-with-disabilities
39. Ilieva, L., Ursano, I., Traista, L., Hoffmann, B., & Dahy, H. (2022). Biomimicry as a Sustainable Design Methodology—Introducing the 'Biomimicry for Sustainability' Framework. Biomimetics, 7(2). https://doi.org/10.3390/biomimetics7020037
40. Information Design | UXtweak. (n.d.). Retrieved 7 July 2024, from https://www.uxtweak.com/ux-glossary/information-design/
41. Inspired design for living spaces, in the app or web - IKEA Kreativ. (n.d.). Retrieved 5 July 2024, from https://www.ikea.com/nl/nl/home-design/

k

42. Khan, A., & Khusro, S. (2021). An insight into smartphone-based assistive solutions for visually impaired and blind people: issues, challenges and opportunities. Universal Access in the Information Society, 20(2), 265–298. https://doi.org/10.1007/S10209-020-00733-8/TABLES/15
43. Kolarik, A. J., Cirstea, S., Pardhan, S., & Moore, B. C. J. (2014). A summary of research investigating echolocation abilities of blind and sighted humans. Hearing Research, 310, 60–68. https://doi.org/10.1016/J.HEARES.2014.01.010
44. KONCIS garlic press, stainless steel - IKEA. (n.d.). Retrieved 31 July 2024, from https://www.ikea.com/nl/en/p/koncis-garlic-press-stainless-steel-00089163/
45. Kotagal, U. R. (1995). Reply to: Acuity versus acuteness of illness. The Journal of Pediatrics, 127(2), 331. https://doi.org/10.1016/s0022-3476(95)70325-x
46. Kumar, A. (n.d.). Acoustic Communication in Birds Differences in Songs and Calls, their Production and Biological Significance.
47. Kutabish, S., Soares, A. M., & Casais, B. (2023). The Influence of Online Ratings and Reviews in Consumer Buying Behavior: A Systematic Literature Review. Lecture Notes in Business Information Processing, 485 LNBIP, 113–136. https://doi.org/10.1007/978-3-031-42788-6_8/FIGURES/5

l

48. Leahy, K., Daly, S. R., Murray, J. K., McKilligan, S., & Seifert, C. M. (2019). Transforming early concepts with Design Heuristics. International Journal of Technology and Design Education, 29(4), 759–779. https://doi.org/10.1007/S10798-018-9473-0/FIGURES/5
49. Liedtka, J. (2018). Why Design Thinking Works. Harvard Business Review. https://hbr.org/2018/09/why-design-thinking-works
50. Lockley, S. W., Dressman, M. A., Licamele, L., Xiao, C., Fisher, D. M., Flynn-Evans, E. E., Hull, J. T., Torres, R., Lavedan, C., & Polymeropoulos, M. H. (2015). Tasimelteon for non-24-hour sleep-wake disorder in totally blind people (SET and RESET): Two multicentre, randomised, double-masked, placebo-controlled phase 3 trials. The Lancet, 386(10005), 1754–1764. https://doi.

m

51. Magnusson, C., Hedvall, P. O., & Caltenco, H. (2017). Co-designing together with persons with visual impairments. Mobility of Visually Impaired People: Fundamentals and ICT Assistive Technologies, 411–434. https://doi.org/10.1007/978-3-319-54446-5_14/FIGURES/7
52. Manzini, E. (2014). Design em um mundo conectado e em transformação. Strategic Design Research Journal, 7(2). https://doi.org/10.4013/sdrj.2014.72.06
53. Mattelmäki, T., & Taideteollinen korkeakoulu. (2006). Design probes. University of Art and Design.
54. Meaidi, A., Jennum, P., Ptito, M., & Kupers, R. (2014). The sensory construction of dreams and nightmare frequency in congenitally blind and late blind individuals. Sleep Medicine, 15(5), 586–595. https://doi.org/10.1016/J.SLEEP.2013.12.008
55. Menzel Baker, S., Stephens, D. L., & Hill, R. P. (2002). How can retailers enhance accessibility: giving consumers with visual impairments a voice in the marketplace. In Journal of Retailing and Consumer Services (Vol. 9).
56. Metatla, O., Bryan-Kinns, N., Stockman, T., & Martin, F. (2015). Designing with and for people living with visual impairments: audio-tactile mock-ups, audio diaries and participatory prototyping. CoDesign, 11(1), 35–48. https://doi.org/10.1080/15710882.2015.1007877
57. Molokáč , M., Hlaváč ová, J., Tometzová, D., & Liptáková, E. (2022). The Preference Analysis for Hikers' Choice of Hiking Trail. Sustainability 2022, Vol. 14, Page 6795, 14(11), 6795. https://doi.org/10.3390/SU14116795
58. More-Than-Human: Design After Human-Centricity | by Ollie Cotsaftis | Medium. (n.d.). Retrieved 30 May 2024, from https://futureensemble.medium.com/more-than-human-design-after-human-centricity-ba320a099f05
59. Muhsin, Z. J., Qahwaji, R., Ghanchi, F., & Al-Taee, M. (2024). Review of substitutive assistive tools and technologies for people with visual impairments: recent advancements and prospects. Journal on Multimodal User Interfaces, 18(1), 135–156. https://doi.org/10.1007/S12193-023-00427-4/FIGURES/5

n

60. NaviLens EMPOWERING the visually impaired. (n.d.). Retrieved 6 July 2024, from https://www.navilens.com/en/
61. Need personal home furnishing advice? We're here for you with Planning & Consultation- IKEA. (n.d.). Retrieved 5 July 2024, from https://www.ikea.com/nl/en/customer-service/services/planning-consultation/
62. Nondisabled Definition & Meaning - Merriam-Webster. (n.d.). Retrieved 2 August 2024, from https://www.merriam-webster.com/dictionary/nondisabled

o

63. Orton, K. (2017). Desirability, Feasibility, Viability: The Sweet Spot for Innovation | by Kristann Orton | Innovation Sweet Spot | Medium. Innovation Sweet Spot. https://medium.com/innovation-sweet-spot/desirability-feasibility-viability-the-sweet-spot-for-innovation-d7946de2183c
64. Otieno, M. A. (2023). Affinity Research Approach. 21–28. https://doi.org/10.1007/978-3-031-04394-9_4
65. Our culture and values – IKEA Global. (n.d.). Retrieved 6 July 2024, from https://www.ikea.com/global/en/our-business/how-we-work/ikea-culture-and-values/
66. Oxford Languages and Google - English | Oxford Languages. (n.d.). Retrieved 2 August 2024, from https://languages.oup.com/google-dictionary-en/
67. Özyaprak, M. (2016). The effectiveness of SCAMPER technique on creative thinking skills. Journal for the Education of Gifted Young Scientists, 4(1), 31–40. https://doi.org/10.17478/JEGYS.2016116348

p

68. Perkins School For The Blind. (2024). What blindness really looks like – Perkins School for the Blind. https://www.perkins.org/what-blindness-really-looks-like/

r

69. Rand, D. (n.d.). Disability inclusion in retail: Shopping experiences for everybody. Retrieved 30 May 2024, from https://www.the-future-of-commerce.com/2023/11/30/disability-inclusion-in-retail/
70. Ravichandran, S. (2024a). Co-Design Workshop.
71. Ravichandran, S. (2024b). Co-designing inclusively with people with vision disabilities.
72. Ricciardi, E., Bonino, D., Sani, L., Vecchi, T., Guazzelli, M., Haxby, J. V., Fadiga, L., & Pietrini, P. (2009). Do we really need vision? How blind people 'see' the actions of others. Journal of Neuroscience, 29(31), 9719–9724. https://doi.org/10.1523/JNEUROSCI.0274-09.2009
73. Round, D. J. G., & Roper, S. (2012). Exploring consumer brand name equity: Gaining insight through the investigation of response to name change. European Journal of Marketing, 46(7), 938–951. https://doi.org/10.1108/03090561211230115

S

74. Salminen, J., Wenyun Guan, K., Jung, S. G., & Jansen, B. (2022, April 29). Use Cases for Design Personas: A Systematic Review and New Frontiers. Conference on Human Factors in Computing Systems - Proceedings. https://doi.org/10.1145/3491102.3517589
75. Sanders, E., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. International Journal of CoCreation in Design and the Arts, 4, 5–18.

76. Showroom, Market Hall, Self-serve, Full-serve - what are eac - IKEA United kingdom. (n.d.). Retrieved 9 July 2024, from https://www.ikea.com/kr/en/customer-service/knowledge/articles/d3eb2256-f316-4c85-8cd2-6b48g05683c6.html
77. Simplified: Jakob Nielsen's 10 usability heuristics | by Meghna Basak | Bootcamp. (n.d.). Retrieved 6 June 2024, from https://bootcamp.uxdesign.cc/simplified-jakob-nielsens-10-usability-heuristics-36a860c2ac9c
78. Sivan, S., & Darsan, G. (2016). Computer vision based assistive technology for blind and visually impaired people. ACM International Conference Proceeding Series, 06-08-July-2016. https://doi.org/10.1145/2967878.2967923
79. Sleeswijk Visser, F. (2018, June 28). Structuring Roles in Research Through Design Collaboration. https://doi.org/10.21606/drs.2018.297
80. Smeenk, W., Sturm, J., & Eggen, B. (2019). A Comparison of Existing Frameworks Leading to an Empathic Formation Compass for Co-design. International Journal of Design. https://www.ijdesign.org/index.php/IJDesign/article/view/3406
81. Stanton, T. R., & Spence, C. (2020). The Influence of Auditory Cues on Bodily and Movement Perception. Frontiers in Psychology, 10, 507848. https://doi.org/10.3389/FPSYG.2019.03001/BIBTEX
82. Stappers, P. J., & Giaccardi, E. (2017). Research through Design. The Encyclopedia of Human-Computer Interaction, The Interaction Design Foundation, 2, 1–94.
83. Sumner, S. (2024). The comings and goings of ants: how are social skills shaped in an ever-changing world? Nature, 628(8007), 262–263. https://doi.org/10.1038/D41586-024-01000-Z

t

84. Three Lenses of Innovation — Isaac Jeffries. (n.d.). Retrieved 5 July 2024, from https://isaacjeffries.com/blog/2016/3/9/three-lenses-of-innovation
85. Trolley, RÅSKOG, black, 35x45x78 cm - IKEA. (n.d.). Retrieved 31 July 2024, from https://www.ikea.com/nl/en/p/raskog-trolley-black-90333976/
86. Tunc, S., Nijboer, F., Ludden, G., Velsen, L. van, & Tabak, M. (2023). Scenario-based Co-design with Older Adults: A Design Case on Decreasing Loneliness. International Journal of Design, 17(2), 99–113. https://doi.org/10.57698/v17i2.06

V

87. Vision Disability: Types and Information | Disabled World. (n.d.). Retrieved 2 August 2024, from https://www.disabled-world.com/disability/types/vision/
88. Visual Acuity | AOA. (n.d.). Retrieved 2 August 2024, from https://www.aoa.org/healthy-eyes/vision-and-vision-correction/visual-acuity?sso=y
89. Vogelmann, E., & Bird, D. (2021). Supermarkets, the pandemic and the future for disabled customers.

W

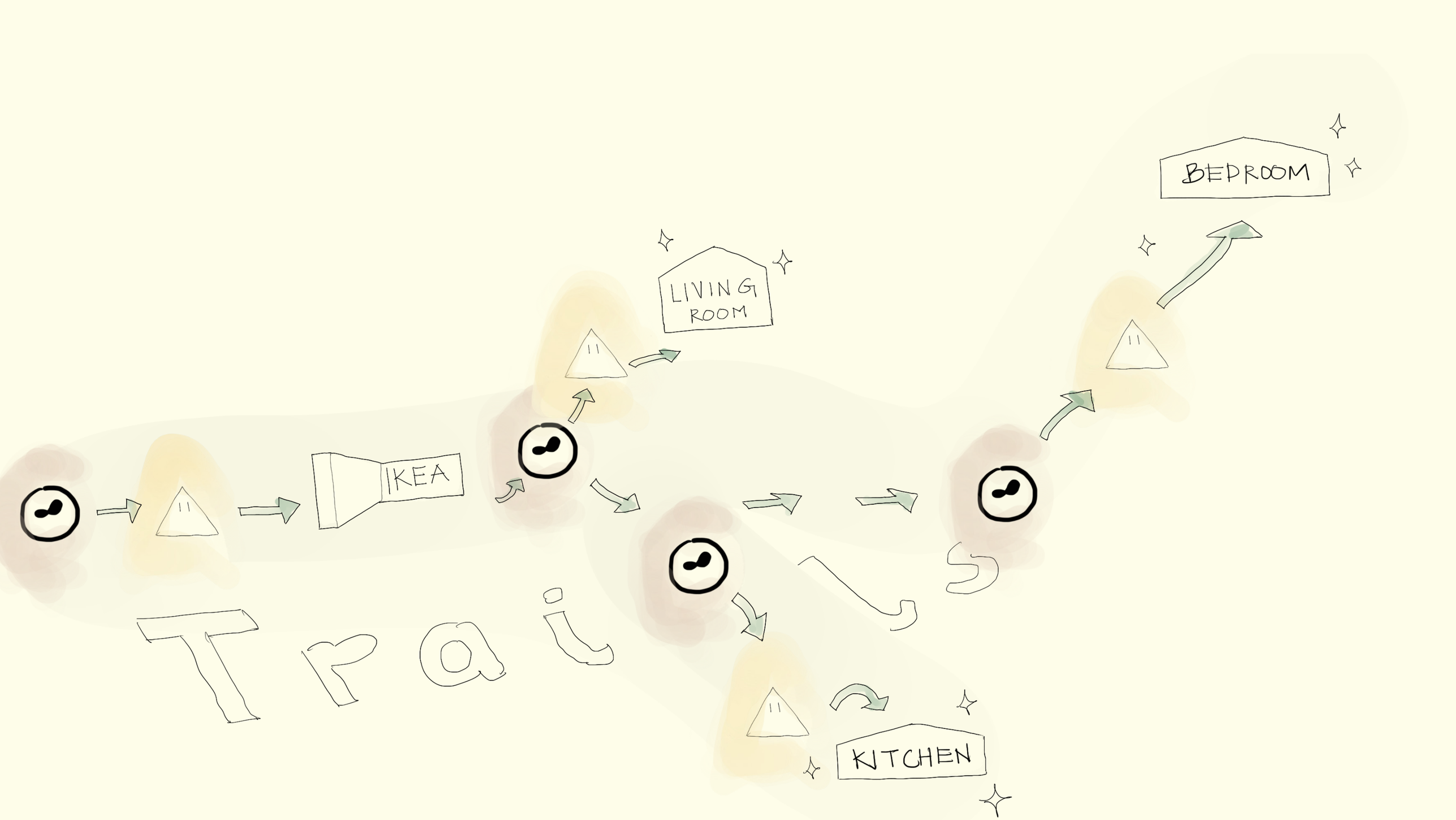
90. What Do Blind People See? Facts and Research. (n.d.). Retrieved 30 May 2024, from https://www.healthline.com/health/eye-health/what-do-blind-people-see
91. What is How Might We (HMW)? — updated 2024 | IxDF. (2016, November 22). Interaction Design Foundation- IxDF. https://www.interaction-design.org/literature/topics/how-might-we

y

92. Yin, M., Shaewitz, D., Overton, C., & Smith, D.-M. (2018). A Hidden Market: The Purchasing Power of Working-Age Adults With Disabilities. www.air.org
93. Yu, H., Tullio-Pow, S., & Akhtar, A. (2015). Retail design and the visually impaired: A needs assessment. Journal of Retailing and Consumer Services, 24(C), 121–129. https://doi.org/10.1016/J.JRETCONSER.2015.03.001
94. Yuan, S., & Dong, H. (2014). Empathy Building through Co-design. In LNCS (Vol. 8513).

Z

95. Zhang, B., & Dong, H. (2016). User involvement in design: The four models. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 9754, 141–152. https://doi.org/10.1007/978-3-319-39943-0_14/FIGURES/6
96. Zhao, H., Yao, X., Liu, Z., & Yang, Q. (2021). Impact of Pricing and Product Information on Consumer Buying Behavior With Customer Satisfaction in a Mediating Role. Frontiers in Psychology, 12, 720151. https://doi.org/10.3389/FPSYG.2021.720151/BIBTEX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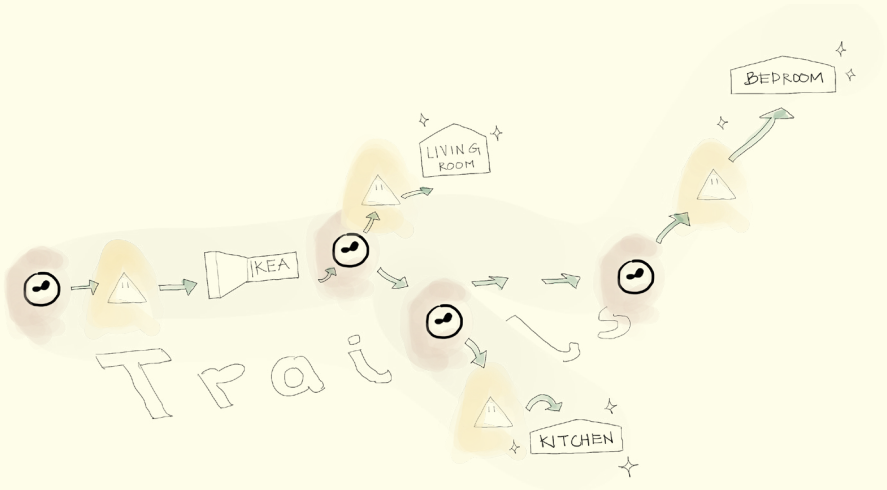

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