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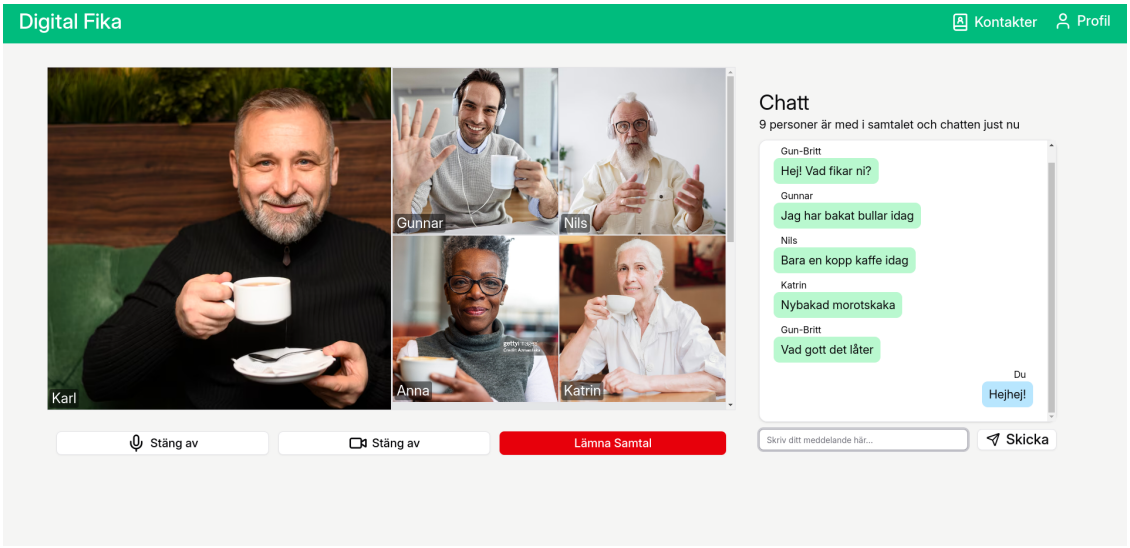

Digital Fika

Designing Accessible Digital User Experiences for Older Adults

Master's thesis in Computer science and engineering

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CHALMERS UNIVERSITY OF TECHNOLOGY
UNIVERSITY OF GOTHENBURG
Gothenburg, Sweden 2025

Master's thesis 2025

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Cover: The video chat interface from our website Digital Fika

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Abstract

This thesis explores accessibility and digital commensality through creating a set of recommendations and developing a website prototype called Digital Fika. Through an iterative process the prototype was developed and tested with a user group consisting of older adults around the ages of 70 and 80 years. The users were a bit skeptical towards Digital Fika at first, but when the concept had a more refined and responsive prototype interface they were more interested and positive towards it. Throughout the process, a set of recommendations for how to build an accessible web page were also created. It became clear during the process that the testers were not diverse enough to create and test a broad set of accessibility recommendations, rather they fit able bodied older adults with some experience of technology and a variation of visual impairments. To further the research in this thesis, one should test the concept and accessibility guidelines with a test group with a more varied set of impairments to give a more accurate account of which accessibility recommendations are important, and more varied in cultural background to see how that affects socialization. In addition to this, one could look at the accessibility of the technology users use to interact with the website.

Keywords: Accessibility, Commensality, Older Adults, Research Through Design, Interaction Design

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Anna Nilsson & Klara Svensson, Gothenburg, 2025-06-19

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Introduction

The rapid advancement of society and technology has made digital tools and platforms an integral part of everyday life. In Sweden, a recent study reported that only 5 percent of citizens do not use the internet [1]. But who are these 5 percent of non-internet users? According to the Swedish Internet Foundations annual report *Svenskarna och Internet*, this group largely consists of people 65 years old and above. Age appears to be a significant factor in determining internet use today, raising concerns about a digital divide related to age.

The term digital divide is well-established in literature and was initially referred to disparities between those with access to information and communication technologies (ICTs) and those without, creating disadvantages for the latter group [2]. Today, the digital divide is often framed as a gap in usage rather than just access, meaning there is a divide between those who use digital media in their daily lives and those who do not [3]. There is also a gap between older adults who participate in information and communication technologies and those who do not, this often referred to as the gray divide. The gray divide specifically highlights the exclusion of older people from digital participation, despite there being infrastructure for it in place [4]. An example of the gray divide is that during COVID-19 pandemic, there were many older people who experienced limited access to specialist health care due to it being digitalized. Mubarak and Suomi [4] argue that this reduced access could have been mitigated if digital healthcare systems had been designed with older users in mind. The pandemic also changed how we connect socially, where isolation and restrictions meant that many of our daily interactions moved online. This shift exposed and deepened already existing inequalities in digital participation. According to Sin et al. [5], the older adults who took steps to engage more with digital technologies to maintain contact with others often encountered challenges such as limited support, inaccessible platforms, and internalized ageist assumptions that made them feel less welcome online.

In this context, it becomes relevant to also consider the concept of commensality, the act of eating together, which plays a significant role in the social life and well-being of people [6]. Meals are often a moment for social connection, something many older adults already struggle to access in everyday life due to isolation, illness, or mobility limitations. There have also been related research on how the COVID-19 pandemic

affected university students eating patterns in terms of social connectedness [7]. However we could not find research that covers the topic of digital commensality accompanied by accessibility for older adults. This tension led us to consider how digital commensality could be made more accessible and inclusive for older users.

1.1 Research Question

As master's students in Interaction Design and Technologies at Chalmers we have been developing our skills in designing accessible interfaces and through our collaboration with RISE (Research Institutes of Sweden) we were introduced to considerations such as commensality and autonomy. Their project 'We are All Old', see 2.3, inspired us to include a user group often forgotten in designing technological artifacts, older people. We wanted to explore how digital experiences around food and socialization could become more inclusive, recognizing that aging is an experience we will all have in one way or another. We also wanted to attempt implementing design practices when developing a website to both improve our personal skills but also gain a better understanding of what goes into creating an accessible website from a coding perspective. Given these aspects, we established the following research question:

What should be considered when designing websites focused on digital commensality for older adults?

To answer this question, we have taken a Research through Design approach combined with our own interpretation of the triple diamond paradigm outlined in 6.1.2. We iteratively explored, designed, and evaluated a digital prototype and a set of design recommendations. In our case, this prototype is a website aimed at facilitating online commensality and encourage usage by older adults. In terms of scope, our work was limited to older adults who are already somewhat familiar with computers and do not rely on screen readers or alternative navigation methods. These decisions were made early in the project based on our initial knowledge, time constraints, and available participants. The aim of the project was not to provide a generalized solution, but to give insights into potential design strategies that can improve inclusion and agency in digital settings. This project is exploratory in nature, and our aim was to contribute to the discourse on inclusive design by offering insights into how digital platforms can support commensality, autonomy, and dignity in old age.

2

Background

Achieving a level of accessibility in design that affords agency and autonomy requires a deeper understanding of what challenges older adults encounter when interacting with technology and what encourages them to keep interacting with it. With the European Accessibility Act[8] that will come into effect in 2025, it is of increased importance that we design with an understanding of how to improve usability for people with disabilities and older adults to also conform to regulations. In this chapter, we will discuss what accessibility is, RISE's project 'We are All Old', accessibility guidelines, existing web development tools, and cover some background for older adults internet usage in Sweden and existing websites aimed at older adults.

2.1 Elderly and older adults

This thesis will use older adults and older people to reference people over the age of 65. Elderly are the oldest of older adults and are thus a part of older adults. Older people are more likely to have many health conditions that together can become complex, leading them to need several different forms of accessibility. Common disabilities among older adults include hearing loss, visual impairments, motor difficulties and dementia [9].

2.2 Accessibility

There is not one all-encompassing definition of accessibility in the field of research. Accessibility is also a term that is used in many different fields of research such as medical, architecture and city planning, human computer interaction, design and more. There are those who look into what forms accessibility has been researched, such as Mack et al. In their literature review of computer human interaction papers, Mack et al. looked into the research of accessibility [10]. Here they note which types of disabilities receive more focus than others and also provide guidance on which gaps could be covered in future research. Others suggest new definitions of accessibility that they argue encompasses what accessibility means for their specific field. Petrie et al suggest a new definition for web accessibility which they have based on several other accessibility definitions of web accessibility [11]. They suggest the definition: "all people, particularly disabled and older people, can use websites in a range of contexts of use, including mainstream and assistive technologies; to

achieve this, websites need to be designed and developed to support usability across these contexts" Accessibility, in general, can also be defined as something having the quality of being entered or used by everyone including those with disabilities, but also the quality of being easy to understand or enjoy [12]. In the context of this thesis, we refer to accessibility in the design of digital tools and experiences that can be used and understood by as many people as possible, including those with disabilities or age related impairments. Our definition of accessibility also includes the emotional, cognitive, and social accessibility ensuring that users not only can interact with a system but also feel included and respected in the process.

2.3 We Are All Old

Ensuring that the design of websites align with the needs of older people and meeting regulations are only part of the solution. It is important to also facilitate usage by supporting the users independence and well-being. These values are at the core of the project We Are All Old", led by Research Institutes of Sweden (RISE)[13], [14]. RISE is a research institute that works to promote sustainable growth and innovation through collaboration between academia, industry, and society.

In their project Welcome to the Table [15], which is part of the We Are All Old project, RISE aims to explore how food and meal experiences can create systemic change and improvement in elderly care. The project focuses on themes such as autonomy, social interaction, and different senses, centered on how older people experience meals and life. Food and meals should be a more central part of healthcare and elderly care, and their prototype emphasizes the need for autonomy and dignity in relation to this, accurately naming it We Are All Old. The title "We Are All Old" underscores that rather than designing for a group separate from elderly, older adults or those who have special needs, we should recognize that aging is part of everyones future. Design should reflect this, where we can build a future in which we maintain dignity and independence, regardless of age. In this way, aging is not seen as a decline, but rather a life stage deserving of recognition and agency.

In this thesis, autonomy is the ability of older adults to make their own decisions without being controlled or coerced by anyone else when using technology [16]. Agency in the context of older adults interacting with technology, is the ability and space to take action or choose what action to take [17], as well as choosing their own experiences. Finally, nutrition is not just about food intake, but an experience that contributes to well-being, community, and identity [18]. By combining RISEs work with our own accessible web design efforts, we aim to highlight how design can create more inclusive, empowering futures not just for older adults, but for all of us.

2.4 Accessibility Guidelines

Accessibility is a key part of creating inclusive designs, ensuring that digital tools and resources can be used by a large majority of people including those with disabilities. There are many guidelines and frameworks available to support developers and designers in development, and major companies like Mozilla[19], Apple[20] and Google's Material design[21] all have established accessibility guidelines. Google and Apples guidelines are more focused on native applications (for iOS and Android devices), while Mozilla's are more applicable for web development. Being available for different areas of development, their commonality is that all these resources and frameworks reference to the Web Content Accessibility Guidelines (WCAG)[22] as a resource for guidelines for accessibility. WCAG is an international standard for accessibility when designing and developing websites recognized by The World Wide Web Consortium (W3C)[23]. They present several detailed guidelines that must be fulfilled in order to meet the requirements to make web content more accessible.

2.4.1 WCAG - Key Principles

WCAG is structured around four key principles: Perceivable, Operable, Understandable and Robust (POUR)[24]. The Perceivable principle aims to ensure that information is presented in a way that users can perceive, such as text alternatives for images. Operable aims to ensure that users must be able to interact and navigate with a website using different input methods that are available to them. Understandable aims to ensure that operating the content, such as navigating the user interface as well as information on the site, should be easy and manageable for the user. Robust ensures that content works well with a wide variety of users as well as assistive technologies, and allows for future implementations. If any of the POUR principles are not achieved, users with disabilities may not be able to use the web to its full extent.

2.4.2 WCAG - Levels of Requirements

WCAG is also divided into three levels of requirements corresponding to different accessibility levels[24]. Requirements A denote the lowest level of accessibility, AA the middle level and AAA the highest level, which is more strict. To reach a level of AA accessibility, one must fulfill all A and AA requirements. For example, Guideline 3.1 Readable, has a level A success criterion 3.1.1 which states that The default human language of each web page can be programmatically determined. Programmatically determined means that the content and information of the website is authored in a way that is accessible for user agents including those with assistive technologies [25]. Several success criteria also require that the website is accessibility supported, this means that websites work well with assistive tools like screen readers and browsers. Guideline 3.1 also has a level AA success criterion, 3.1.2 Language of Parts, which states The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of

the immediately surrounding text.. Finally, an example of a AAA success criterion from that same guideline, 3.1.3 Unusual Words, reads A mechanism is available for identifying specific definitions of words or phrases used in an unusual or restricted way, including idioms and jargon.. The varying levels of accessibility requirements showcase the increasing level of complexity and depth of considerations necessary to make web content truly inclusive and accessible for all users.

2.4.3 European Accessibility Act

Starting June 2025, the European Accessibility Act [26] will introduce new accessibility requirements and directives for digital products and services, such as websites, across the EU. This directive aims to ensure compliance to the requirements to improve accessibility. This entails that websites, apps, and other digital tools or services must reach an AA level of accessibility from the WACG 2.2[22]. Organizations must also follow EN 301 549[27], which are accessibility requirements for Information and Communication Technology (ICT) products and services. This regulation aims to create a consistent accessibility standard across the EU referencing WCAG, ensuring inclusive design for people with disabilities.

2.5 Web development tools

There are several java-script libraries that can assist in creating websites, React [28], Angular [29], Vue [30], and Svelte [31] are a few. They allow developers to build complex dynamic websites. Tailwind [32] is a CSS framework that is often used in relation to java-script libraries to ease the creation of interfaces. Shadcn [33] is another css framework that can be used to easily build UI elements. It is built on Radix UI [34] which is compliant with WAI-ARIA authoring practices guidelines, meaning its components work with screen readers and other accessibility tools.

2.6 Communication platforms

There are several websites and programs that allow their users to participate in video calls with others. Zoom [35], Discord [36], Teams [37], Whatsapp [38] and Telegram [39] are all different alternatives with similar use cases but different focuses. Zoom and Teams are often used to host meetings in professional or academic environments. Discord has voice,video calls, chat function, and what sets them apart is their servers where users can create and engage in multiple chats and voice channels. Discord users decide themselves if they want to share video of themselves or not while in voice channels. Telegram and Whatsapp are mostly used for messaging but have video calls available for their users as well. All these alternatives allow for one on one conversations as well as video calls with multiple people with the exception for Telegram. Here one user can only connect with one other user for a call.

2.7 Population and Internet usage of older adults in Sweden

SCB is the Swedish statistics bureau [40], who collect statistics about the Swedish population. There is information available about the projected growth of the Swedish population in the future, and how they will be distributed percentage-wise between different ages. Their study shows that the population under 65 years will decrease, aside from a slight uptick in the 16-24 years olds in 2030, and the population over 65 years old will continue to increase [40].

	1970	2020	2030	2070
Total population, millions	8.1	10.4	10.9	12.6
Percentage of 0-15 year olds	22.2	18.8	17.3	16.9
Percentage of 16-24 year olds	13.6	10	10.8	10
Percentage of 25-64 year olds	50.5	51	48.9	47.4
Percentage of 65-79 year olds	11.4	14.9	14.6	15.2
Percentage of 80 years or older	2.4	5.2	7.5	10.5

Table 2.1: Projection of the Swedish population til 2070. Excerpt focusing on the age of the population. [40]

We need to adapt our designs to the increasingly aging population. The Swedish Internet Foundation (Internetstiftelsen) [41] conducts a yearly survey, called 'Svenskarna och Internet' [42], in Sweden to track usage of the internet and digital services of the Swedish population. In their report for 2024 [43], they write that older adults, 65 years and older, are in danger of being excluded from the digital society. The statement is based on the fact that fewer older adults use digital services such as digital identification methods, letterboxes, and payment services. They do not only use the internet less than the rest of the population, they also require more help when using it. There are two primary reasons older adults require more help, sickness or physical disabilities [44]. The Swedish Internet Foundation also reports that older adults in Sweden experience the technology as difficult to understand or use, and feel like they are falling behind in keeping up with new technologies [45], further discouraging them from using it.

2.8 Existing Websites for older adults

There are several websites targeted towards older users, or that older adults could use in their daily lives. While many of these websites might attempt to intentionally follow accessibility standards such as WCAG or do so unintentionally, the technical implementation does not always mean that there are accessible or enjoyable user experiences for older users.

There is AARP [46], an American website dedicated to Americans 50 years or older to help and empower them to choose how they want to live as they age. The orga-

nization advocates for present health issues and works toward bettering the lives of older people. The website uses high contrast and large text, aligning with WCAG[22] 'guideline 1.4 Distinguishable', making it more readable to older people. There are also alternative text to the images that would follow the WCAG[22] guideline 1.1 'Text Alternatives'. However, the website could be perceived as cluttered or disorienting. Meaning it is not readable, WCAG guideline 3.1 [22] or understandable for all users.

A Swedish website, Pensionsmyndigheten [47], is made primarily for people to understand their pension, which is usually necessary for people within the age group of 60-65 or older. This website also provides text alternatives for visual elements following WCAG [22] guideline 1.1 'Text Alternatives', along with being predictable, guideline 3.2, and readable, guideline 3.1. While the website conforms to some guidelines, some older users might benefit from the option to have an even larger default font size or more prominent buttons to enhance readability further.

Another Swedish website that should be accessible to older people, even if it might not be their primary or only user group, is the 1177 healthcare advice website [48]. This website is where people can get information and advice about their health and communicate with healthcare professionals and their doctors. A study carried out on 1177 [49] found that the main website is generally accessible, following the previous version of WCAG 2.1. However, the e-services had accessibility issues, including inconsistent design, poor contrast, and unclear interactive elements. While most of the main website was easy to use, the e-services part required more effort and concentration, making it less accessible for users with color vision deficiency (CVD).

There are also websites and applications that focus on socialization for older adults. Mötesglädje [50] is one such example, a Swedish app where older adults can meet and socialize with other older adults, through activities, meetups, digital or physical, or talking. The app was developed in collaboration with SPF Seniorerna, an organization for retired and older people in Sweden. They work for a better and more active life for older people [51]. Based in the United Kingdom is Senior Chatters, a webpage where you can chat with other people over the age of 50, they have around 9700 members at the time of writing this [52]. You can chat with individuals or join different chat rooms with different themes, e.g casual chatting or a quiz room where users can answer questions together or compete. The app uses high contrast and large text for the most part, and minimizes the amount of clutter on the website. Navigational hierarchies are also clear to the user. The color and spacing on the links could be improved, as they are quite close together and uses a blue that could be hard to see.

2.9 Configurability

One approach to handling a problem such as the one with accessibility for older adults is configurability, which is digital systems being able to be adapted to individual needs, abilities, and requirements [53]. This would, however, not fully solve the problem that still lies within the social and agency aspects of using a website, such as feeling included and empowered to use it. Configurability could in fact create more challenges and problems, potentially overwhelming users with the amount of options and ways to tailor the system to fit their needs. This is challenging, as users a lot of times do not know themselves what would aid them in terms of usability. It should just work with them, and this is especially true with older people. We argue that individuals with limited technological experience, or those experiencing cognitive or motor challenges, should not be responsible for designing or making configuration decisions for systems intended for their use. Instead, designers should take active responsibility for understanding and incorporating their needs through inclusive and participatory design processes. So while configurability provides some flexibility for using technology and, therefore, a partial solution to the problem, it also amplifies contextual dependencies and the absence of a definitive solution, reinforcing its nature as a wicked problem.

2.10 Research Gap

While there are existing and well-established frameworks for accessibility such as WCAG, we found that a lot of existing research fails to capture the specific needs of certain users, usually older adults. Although there has been research on potential digital exclusion [43] and accessibility challenges [54], there still is a noticeable lack of research addressing how digital commensality can be made more accessible. Existing communication platforms rarely focus on the act of eating together, or incorporate designing a meaningful experience with older adults in mind when it comes to supporting dignity and ease of use for them. With this thesis, we aimed to fill this gap by combining different insights of accessibility, social interaction and web development that emerge from the design process. By targeting the intersection of accessibility for older adults and commensality we hope our research can contribute to a larger discourse surrounding how we can create more inclusive design and digital social experiences.

3

Theory

This theory chapter will cover relevant design theory frameworks as well as research related to this thesis. These lay the foundation of what kind of problem we are working with and what has already been found within the field. They also highlight what work has yet to be done, and the gap that our research will attempt to fill.

3.1 Older adults and Technology

Previous research has highlighted that there are barriers that elderly and older adults face when using technology.

Lassfolk [54] examined the use of smartphones among older users and their exclusion from the design process of smartphone applications. The research shows that many apps usually fail to meet some of the needs of older users, particularly those with visual impairments, which leaves those users without access to important digital resources. This exclusion means a large number of applications fail to take a lot of age-related physical and cognitive needs into account, making it more difficult for these groups to use these interfaces. Lassfolk proposes a set of guidelines for creating mobile applications for these users. The guidelines focus primarily on large text, high-contrast visuals, and voice-assisted navigation. They emphasize the need to research and investigate what the target users needs are within design, and what kind of functions they need from a lens of understanding and empathy. While this paper covers important topics, it fails to fully address the potential methods to give older people more agency in using technology. Accessibility in websites and apps has an increasing demand to also include methods that welcome these groups into interacting with them.

Elderly people are described by Aguirre and Abadía [55] as non-natives to the technological world, compared to younger generations who are considered natives. Younger generations have grown up with technology, making them fluent in the culture and language. This divide creates challenges for older adults in navigating digital environments as they are usually made for natives, particularly when it comes to accessibility. While accessibility guidelines such as WCAG exists, Aguirre and Abadía highlight that these frameworks do not fully account for the specific needs of the population of older adults. The review of accessibility and usability guidelines in their study reveals that disabilities often related to aging, such as motor, cognitive, and visual impairmentsare not sufficiently addressed, creating barriers that hinder

older users from effectively engaging with digital content. They emphasize that the digital divide is not only due to technological availability but also design and integration. Even though tools and guidelines exist to facilitate accessibility, older users often find digital environments unintuitive or, importantly, unwelcoming. The lack of specific design adaptations for older people reinforces the difficulty of transitioning into the digital space, leading to exclusion. As the population ages, ensuring that digital platforms are inclusive becomes increasingly important. Addressing these gaps is not simply a matter of compliance with existing accessibility standards but a step towards fostering a more inclusive digital environment.

Castilla et al. [56] further emphasize the gap between the low number of older adults using the internet and the growing size of an older population. The study compared two designs of the same email Web application with linear versus hyper-textual navigation styles. The research revealed that the linear navigation style condition had a higher success rate, lower performance time, better satisfaction ratings, and greater user preference. This research highlights the importance of navigation design in systems aimed at older users, suggesting that linear navigation is better suited to their needs.

Haase et al. [44] examine how older and younger people engage differently with digital technology, such as older people primarily using it for phone calls and accessing information while younger people use it throughout their everyday lives, and also highlight the specific challenges older people face. One of the key barriers to digital technology lies in the lack of accessibility for older people who experience age-related cognitive and sensory changes, such as visual impairments, as well as motor limitations. Motivational factors also play a role in how older people engage with digital technology, such as uncertainty about their abilities, leading to these users leaning more on support from family or friends to help with digital tasks.

3.2 Commensality - eating alone or together

Amanda Björnwall et al conducted a scoping review on the eating habits of older adults, focusing on what effects eating together had compared to eating alone [6]. They conclude that commensality is a significant benefit for older people's life. When looking at women with compromised nutritional status the women experienced a greater cognitive decline when eating alone compared to women who ate together with someone. The authors underline the importance that nutritional programs should not only focus on nutrition but also who the people eat with. Other studies the authors looked at also shows that eating alone is connected to a decline in health and an increase in depressive symptoms. They also note that meals had been described as an opportunity to meet people which then combats loneliness.

3.3 Swedes as a people and user group

Åke Daun writes about how Swedes as a people value individuality and collectivity in his article Individualism and Collectivity among Swedes [57]. He writes that Swedes tend to value social autonomy and do not want to rely on others, especially if they are outside their small inner circle of family and close friends. They are hesitant to ask others for help or a favor as they may then be indebted to them or become dependent on them. The issue does not lie in owing someone something, but instead in the new relationship that forms. Independency is taught to be valued from an early age, and something to hold onto when one becomes elderly. Young people are encouraged to move out as soon as they can, when it is practically and financially possible, and elderly are also encouraged to live independently as long as possible. Living in an elderly home can be seen as an undesirable trespass on the individual [57].

4

Methodology

4.1 Design processes

Design processes are ways to work with and handle design problems which are categorized wicked problems. These processes are often iterative to allow for change, and the management of new problems that may arise. Design processes usually feature frameworks for considering human needs and offer ways to define and tackle problems in a user-centered way.

4.2 Wicked Problems

A wicked problem is a type of problem that does not have a clear formula nor a correct final solution [58]. They are also indeterminate, meaning they can not be solved in a straightforward way. This is true for all design problems except the most trivial ones that are often determinate or analytical problems. Unlike these problems, which are more straightforward with clear paths leading towards a solution, wicked problems are more complex. They involve many different factors, sometimes with conflicting needs, and often new considerations or problems arise during the process. Wicked problems also have no definitive rules or clear stopping points, and as such is never really solved completely. The solutions to wicked problems are also heavily dependent on the context around the problem.

4.2.1 Design thinking

Design thinking [59] is a non linear, iterative process that goes through five steps: *Empathize, Define, Ideate, Prototype, and Test.* During *empathize* the designer researches the users needs and wants. In *define* the users needs and problems are clearly defined. During *ideate*, the designer creates ideas for potential solutions and challenges their own beliefs of the user by thinking outside the box and what is normative. During the *prototype* phase, solutions of different fidelity and in the final step, *test*, these solutions are tested and evaluated. This method is well suited when designing for a wicked problem thanks to its nonlinear approach as well as its iterative, exploratory and somewhat chaotic process[60].

4.2.2 Double diamond

Double diamond [61] is a popular framework that starts with researching the area to then define a problem to look into, after that ideation is done in the develop phase and finally prototyping of the solution. After this, one can iterate back to discover and define. The method was created to be iterative, to be more effective at handling wicked problems.

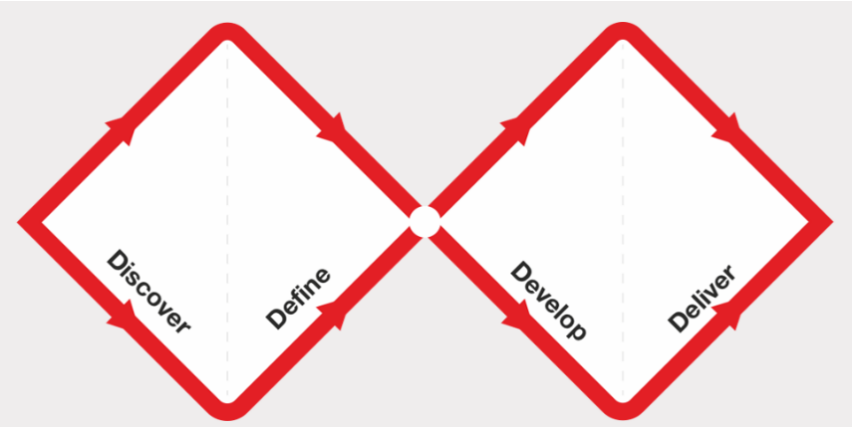

Figure 4.1: Double diamond by the Design council

4.2.3 Triple diamond

Triple diamond [62] is similar to double diamond but has added an additional diamond before. The first diamond consists of: Explore, Choose challenge and define, and covers a pre-study of sorts where the area of interest is determined. After this it follows a similar structure to double diamond except for their deliver stage. In triple diamond deliver is the final result and design concept.

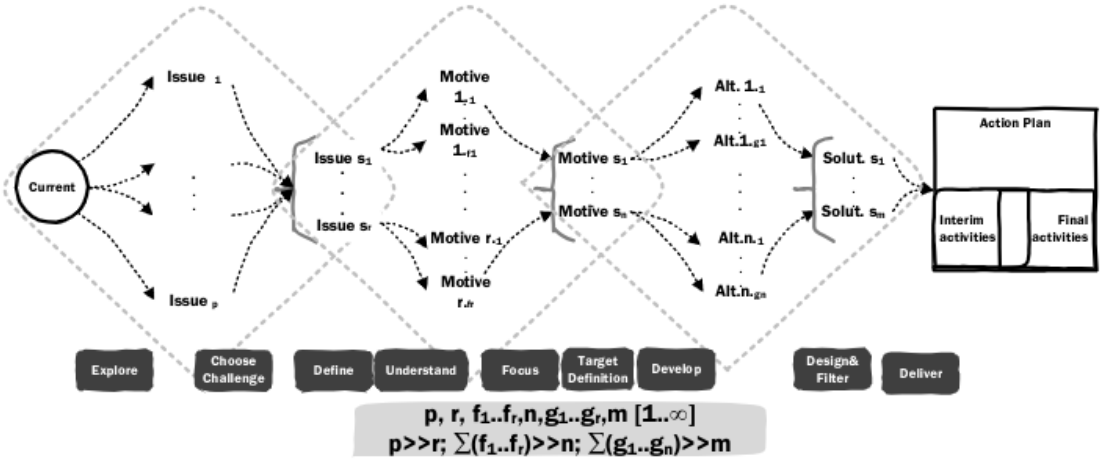

Figure 4.2: Triple diamond figure by Marin-Garcia et Al.[62]

4.2.4 Research Through Design

Research Through Design (RTD) is an approach that uses design as a means of conducting research and generating knowledge [63]. Rather than design being a way to apply already existing theory it proposes using the design process to investigate a problem scope or question where then insights emerge from the iterative design process. It's relevant when working with wicked problems as it addresses exactly how interaction designers can engage with them [64], such as the problem mentioned in this thesis.

RTD usually involves creating an artifact or experience that are not necessarily the final outcome or a complete solution, but will be important for new insights and knowledge to come forward. The process often includes documenting decisions, iterations, and reflections to produce the knowledge in a concrete way [64].

4.3 Design methods

During the design processes there are many design methods that we considered that could help with the different steps. These steps can have different names depending on the process but are here generalized as research, ideation, prototyping, testing and evaluation.

4.3.1 Research

It is important to be fully immersed in the research to fully understand the subject. This can be done by reading related works, research papers, articles, but also conducting interviews or surveys. There are different types of interviews, unstructured, structured, semi-structured, group interviews and focus groups [65]. The type of interview conducted depends on how specific the questions are and what kind of interviews subjects one has access to. Interviews can also be qualitative, quantitative, or a mix of both. We decided to conduct semi-structured interviews, as they are good for encouraging discussion and allowing for new areas of topic or questions to emerge during the interviews while still having a set of questions to come back to [66].

4.3.1.1 Thematic Analysis

Thematic analysis is a method for identifying themes and patterns within collected qualitative data to be able to organize and describe it in better detail [67]. We considered thematic analysis because it is a flexible method and it is widely applicable across different kinds of qualitative research. Rather than simply summarizing what participants of an interview said, thematic analysis involves interpreting the data to understand the underlying meanings and ideas. The process begins with becoming familiar with the data and then systematically coding interesting aspects. These codes are then grouped into potential themes, which are reviewed and refined to

ensure they reflect the data accurately. Then the themes are defined and clearly described.

4.3.2 Ideation

Ideation is the creative generative phase of ideas and concepts with the aim of solving a problem. There are many different methods used to help ideate. *Brainstorming* [65] is a common ideation method to quickly generate in groups, *brainwriting* and *braindumping* [68] are similar but here participants write down their ideas or ideate alone respectively. We considered brainstorming as it allows for many different ideas to be generated. *Speedstorming* [69] is a similar method but a bit more structured. Here, one has papers with different prompts that one passes around. Each participant gets to sketch or write down their ideas until the time is up where they send the paper to the next participant and receives a new one from another participant. Another method is *SCAMPER*, defined by Bob Eberle [70], which can be helpful when some ideas have been gathered. For each idea several questions are considered. Can something be *Substituted*? *Combined*? *Adapted*? *Modified*? *Put to other use*? *Eliminated*? Or can it be *Reversed*? There are many other methods that can be used to generate ideas, mindmapping, storyboards and sketching are all useful visuals methods to generate and present ideas. [68].

4.3.3 Prototyping

A prototype is an artifact that is an approximation of a feature part of a product, service or system. The objective of prototyping is to refine and gradually improve a design, communicate the design idea to both team and users, explore and seek out new design concepts and gain new knowledge. Early prototyping in the design process is very important for creating space for innovation in design projects. A prototype can be low fidelity or high fidelity. A low fidelity prototype is made quickly and often of cheap materials such as paper, cardboard, etc. These are usually created early on in prototyping while deciding on what ideas to move on with. Users are more likely to give more feedback on low fidelity prototypes compared to high fidelity prototypes.

High fidelity prototypes are more refined prototypes that are closer to the final design. These can be websites, Figma mockups [71], arduino powered boxes, etc. Compared to presenting a concept, like low fidelity prototypes do, these typically present the design in a tangible, interactive and more immersive way.

Paper prototyping [72] is the process where design concepts and ideas are quickly actualized with a paper representation to test and evaluate them early in the design process. The paper prototypes are low fidelity and are time and cost effective at the beginning stages of a project. Due to the low cost, this method also allows for a lot of iterations without designers getting too focused on details.

4.3.4 Testing and Evaluation

Testing is usually done by presenting an idea or prototype to users and seeing how they interact with it. This can range from unstructured exploration to more structured tasks, and can take place either in real-world setting or in more controlled environments [65]. There are different types of evaluations based on when they are conducted. Formative evaluations are conducted throughout the design process to gather feedback from stakeholders and users that can guide future iterations. These evaluations help identify areas for improvement early on and make the development smoother. In contrast, summative evaluations are typically conducted later in the process to assess how well a design meets its intended goals.

A variety of methods can then be used during evaluations, including interviews, questionnaires, experiments, observations, and case studies, some of which have already been described in the research section [65]. To make sense of the qualitative data collected through these methods, analysis techniques such as thematic analysis, as previously mentioned, can be applied to identify themes and patterns within the data.

5

Planned Process

The endeavor to create more accessible web interfaces for older people, especially with an inclusion of commensality, goes beyond checking off a checklist or simple implementations. Creating digital commensality opportunities for older users presents a wicked problem, as it includes technology, aging and effects that come with that when using technology, social life, and cultural norms. The solution is therefore quite uncertain and is shaped by the context in which it is explored, which influenced how we approached our process from the start.

5.1 Approach Choices

Our chosen process was grounded in our research question, the outcome we aimed for: design recommendations and a functioning prototype, and our own skills and constraints. Rather than designing a mockup using Figma, we chose to develop a somewhat functioning website prototype, which also made the most sense when looking at web accessibility guidelines to answer our research question. As students in Interaction Design and Technologies with backgrounds in IT, we wanted our thesis to be an outlet to refine our development skills. This decision allowed us to explore not only the visible aspects of interaction but also the underlying code, where many important accessibility features such as keyboard navigation and programmatically determined content are implemented. Some of these features are difficult to test and evaluate through visual design alone, and building a website gave us deeper control over and understanding of how accessibility works in practice.

Given the complexity of our topic and our want to explore both technical and experiential aspects, we chose to follow a Research through Design methodology and our own version of the Triple Diamond design process. This structure allowed us to iteratively explore the problem space, define the potential challenges, develop a prototype, gather feedback, and reflect on our findings while generating knowledge and insights throughout the design process. This was done throughout three iterations. We went with this approach, as it fits well with the aim to create design recommendations that are grounded in both theory and real-world interaction rather than a generalized set of guidelines.

5.2 Initial Planning

The early stages of our process functioned as a discovery phase and pilot-study, focusing on understanding the challenges that older adults experience when interacting with technology in terms of accessibility. We began by gathering literature and resources about web application accessibility, examining guidelines such as WCAG, and talking to some older adults about their technology use. This stage informed and helped us define what should be considered for the development phase of the prototype. Accessibility methods and the objectives of this research were also explored here.

As shown in Figure 5.1, we initially followed a more linear structure with separate phases. However, as we began this work we realized that the problem scope was more complex than we had expected, and we also added the aspect of commensality to accessibility for older adults. This influenced us to shift our process towards a more iterative design process, Research Through Design and the Triple Diamond as mentioned earlier in this chapter. This also meant that our planned process was changing and adapting throughout the thesis to fit the time constraints and also adapt to the findings we made. Therefore, it is difficult to capture a single planned process that we strictly followed through the entire period, however a rough outline of the process we followed is included in Figure 5.2 and described in more detail in the chapter 6: Process.

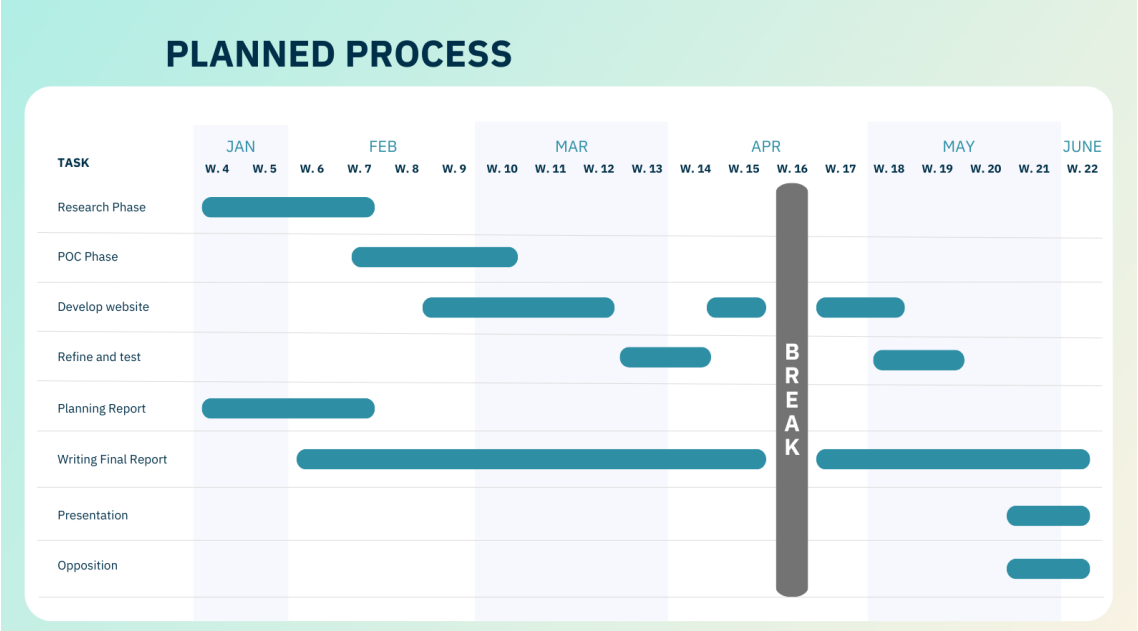

Figure 5.1: The initial Planned Process

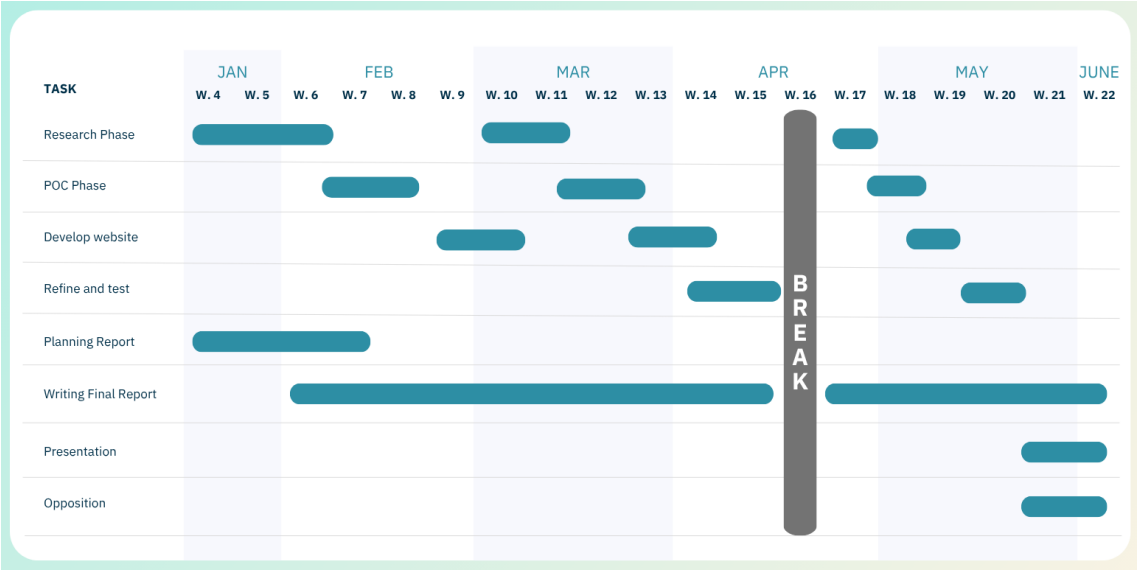

Figure 5.2: The Actual Followed Process

6

Process

This chapter will cover the iterative working process of this thesis. It begins with a pre-study conducted before the official start of the thesis and three iterations following our alternative triple diamond design process described in 6.1.2.

6.1 Pre-study

The pre-study consisted of developing the project idea through research and discussion with RISE, our academic supervisor, and between ourselves. The research was focused on accessibility in general, but also focused specifically on older adults. Here our focus was in finding gaps in the research, gaps that we could work to fill.

During this time we also reached out to several elderly homes in the hope of visiting to gather data and input from a relevant user group. We sent them an email explaining who we were and what our research was about as well as what we would like their help with.

6.1.1 Pilot study - technology habits of older adults

We also conducted a small pilot study where we looked into the habits of older people regarding technology. For this study we had two participants. Both participants use their phone or tablet everyday. Mostly for news, communication, or entertainment. They are both fairly comfortable using technology, but they tend to only use things they are familiar with or have been introduced to. Seeking out something new often means learning new ways of navigation. The development of technology moves fast and one of our testers feels like it can be hard to keep up with learning how to use them.

Test Participant (TP)	Age	Gender
TP1	91	Man
TP2	82	Woman

Table 6.1: Participants of the Pilot test

6.1.2 Alternate triple diamond, our own iterative interpretation

Inspired by the methods mentioned in methodology we created a new version that has a similar form as triple diamond, three rhombs, and was more suited to our planned process for this thesis. We call this new method the alternate triple diamond, ATD. The method has three diverging and converging parts that create a visual structure of three diamonds, hence the name. Each of these diamonds contain two steps that one cycles though until saturation has been reached or time constraints push the process forward.

The first diamond cycles through research and gain knowledge, converging into defining the problem. Through research one gains knowledge, and through that knowledge one knows what to look into further. The second diamond cycles through ideation and prototyping which converges into one or more solutions. During several iterations the prototype is bound to become higher in fidelity in our case. The last diamond cycles through testing and refining. Here one solution is tested and further refined. This process is highly iterative and one can iterate backwards from each of the diamonds. During the first iteration one might not have enough to fully test and refine a solution, thus might only do the first two cycles of the ATD.

Through all these cycles going towards a definition the research question will continuously be evaluated and reshaped as we become more informed about the subject and discover new possible solutions to it. A visual of our process is outlined in 7.7

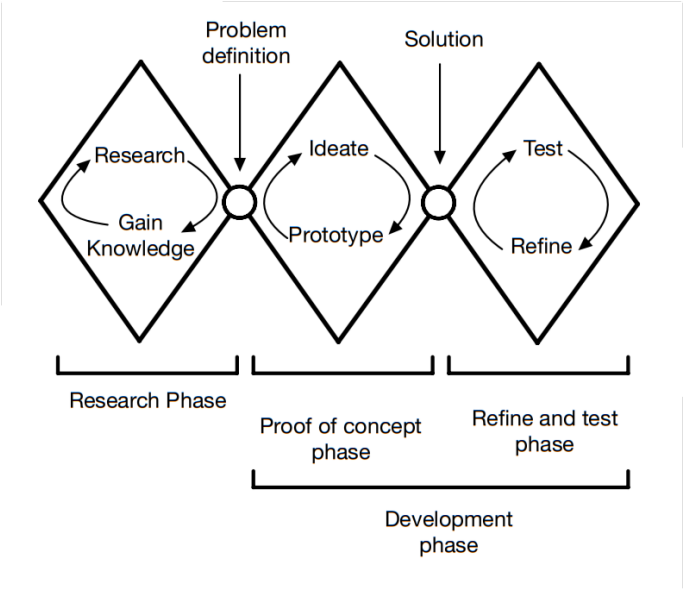

Figure 6.1: Our alternate triple diamond. Each phase is iterated upon at least once within each diamond. One iteration consists all the phases.

6.2 Iteration one - Starting the project

The thesis started in earnest with iteration one. Here we conducted further research on accessibility, was invited to test RISE's project "Welcome to the table", ideated and created some low fidelity prototypes.

6.2.1 Gain knowledge - diving deeper into accessibility for older adults

To further our understanding of accessibility through the lens of older users as well as explore previous projects and research we conducted a literature review. This involved searching for academic papers and other sources we deemed credible using keywords aligned with our research objectives, as well as exploring related literature that supports the purpose for this study. Our selection of sources included studies on older adults health, website usage, and social isolation among older adults, giving us a broader context and understanding of the topic. See background and related works. See Previous research, 3.2.

6.2.2 RISE - "Welcome to the table"

Through our collaboration with RISE, we were invited to participate in their exhibition and experiment conducted at the science museum Universeum in Gothenburg. The experience consisted of a three course meal of sorts. The meals were also more focused on providing an experience and things to reflect on rather than an actual meal. All together we were five people who participated in the experience. For the first meal we were closed off from the other participants with folding separators and served a mound of colorless gelatin. The meal left us with no appetite and sitting there in isolation, with no color or flavor was an experience that stayed with us both. Isolation is a big problem among the population of older adults, and it can have negative effects on their lives and well-being as there's a correlation between loneliness and depressive symptoms [73]. About 10-15 percent of older adults experience involuntary loneliness in Sweden [74]. After the COVID-19 pandemic, this became even more apparent, with older adults experiencing more loneliness and a decreased quality of life [75]. The isolation we felt during this part of the meal is nothing compared to what many experience, for us the feeling was however palpable and something we brought with us when continuing our thesis.

After this the screens were taken down and we were each given a plate with food cut into squares with toothpicks in them. There were three cubes of different food and each toothpick had a paper flag which identified them as autonomy, senses and social. One of the participants got to select a theme they wanted to discuss and then we each got a turn to share what we thought about it.

We were then presented with an assortment of plates with different things on them, edible and non-edible, such as dirt, pumpkin seeds. These plates had paper labels on them representing different keywords such as tailored meals and contribution, that

would symbolize our relationship and experience with food now as well as what we want it to be like in the future.

Through this experience, we noticed that what we, the authors, and the other participants had in common was that we all valued social aspects in regards to food. We also valued autonomy when it comes to food choices, both what we eat, when we eat and perhaps most importantly how we eat, such as the circumstances surrounding the eating experience. With the removal of the screens, all of us instantly felt better. Not only because we could see each other but we could also finally talk about the bad experience we just had and connect over that, which is very important. We talked about how heavy we felt, how isolated the experience was, and how bad the meal tasted. We were then also prompted to discuss the choices we had made for the plates, making us reflect and dive deeper into conversations about our relationships with food and how older people are treated today. The important things we brought with us from this experience was the palpable feeling of isolation, how this was something none of us wanted, as well as what matters to us. Now and in the future. Aspects of autonomy and social life, as well as contributing to a community or society stood out in this conversation.

6.2.3 Ideation - Initial concepts

After the pilot study, the first ideation session was conducted where we used brainstorming and speedstorming, see 4.2.2. Here we utilized the knowledge and insights gained from the pilot study as well as the research conducted so far. The goal for this ideation session was to come up with different ideas of services and websites that related to both accessibility and older adults.

When utilizing speedstorming the prompts Social, Autonomy, Nutrition and Wildcard were inspired by our experience with RISE project and the research we had conducted so far. Social and Autonomy were specifically inspired by the project We are all old. Wildcard was a prompt where we could down any other idea we had that did not fit any of the other prompts, thus making sure that all ideas were welcome.

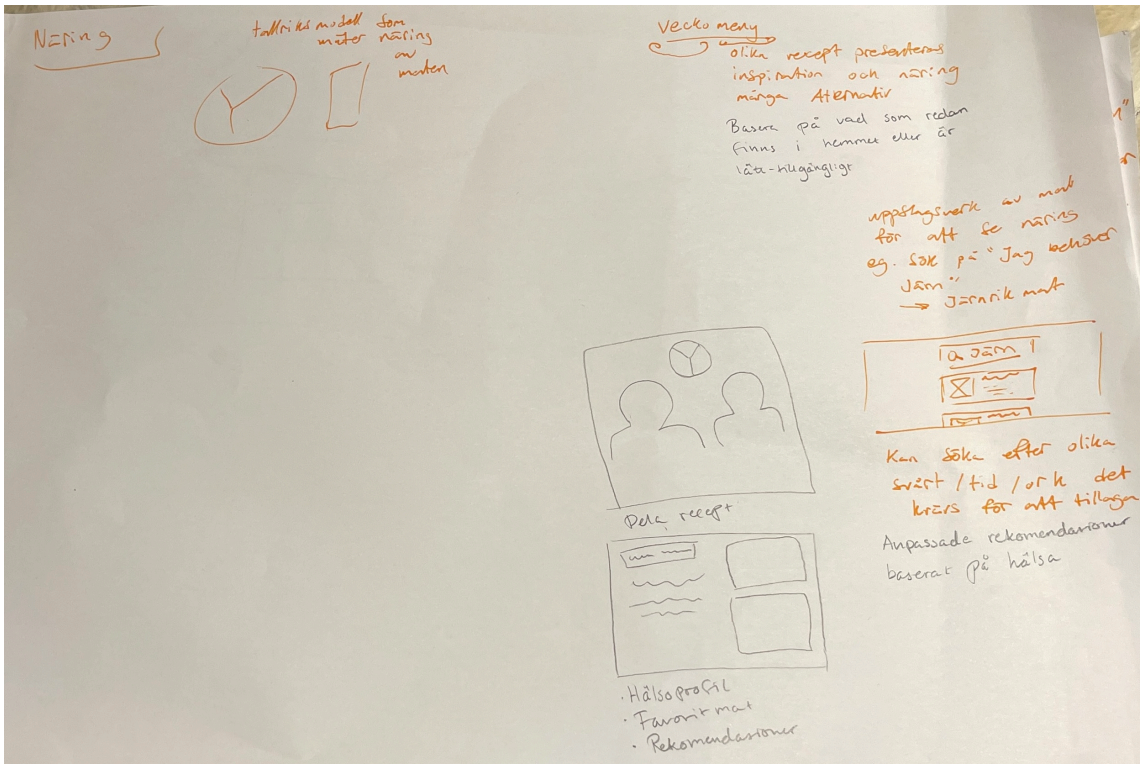

Figure 6.2: Sketches and ideas from the Speedstorming session. This page had the theme Nutrition.

At the end of the ideation we had several different concepts that we thought had potential and we wanted to explore further. One idea was a website with a video chat where older people can get company while eating from the comfort of their own homes. This was partly inspired by the phenomenon Mukbang that originates from South Korea, with its original purpose being the person broadcasting themselves eating providing company to others eating alone. Our idea is that people, mainly older people, can use this website and enjoy the company of other people while eating. Commensality is a big part for many cultures and families, and with an increasing digitization it is not surprising seeing people socializing over food online. We chose commensality as it encapsulates a lot of the themes we wanted to explore in connecting the project by RISE and accessibility.

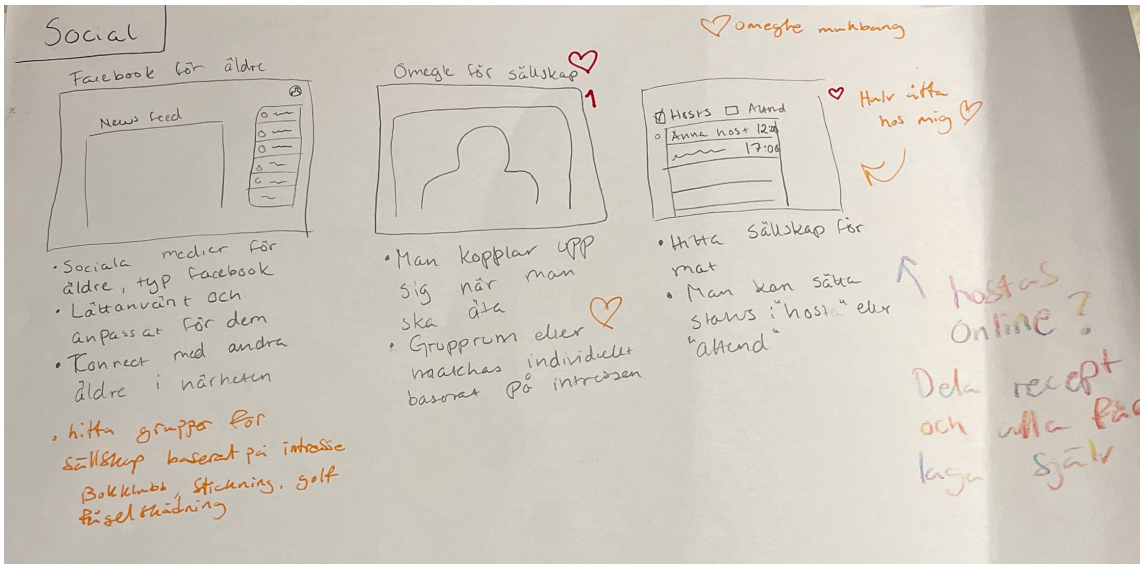

Figure 6.3: Sketches and ideas from the Speedstorming session. This page had the theme Social.

Another idea was to create a sort of playground for older adults. It would be a website where they can explore different UI elements that are commonplace on many websites and learn what they do and why. The idea is that this would be a safe and secure way to become used to navigating websites as this is just pretend and there are no stakes. There would be clearly labeled undo and redo buttons that can move things back and forward. The hope with this is that it can increase older adult's autonomy by giving them knowledge and creating familiarity with common features on websites. Features could include, payment, forms, chats, etc.

The last idea we took with us from this ideation phase was a planning website that would help older adults gain autonomy through structuring their life. The planner would give suggestions of different local events and social gatherings that might interest the user.

There were several more ideas that can be seen in figure 6.1, 6.2 and 6.3. These did not feel robust, nor did they feel as connected to the themes, Social, Autonomy, Accessibility, which we want to keep central in this project.

6.2.4 Prototyping - sketching and exploring shadcn

Prototyping in this iteration consisted mostly of sketches. These were also used to explore the different ideas from the ideation stage more fully. We also started building a high fidelity prototype, using React and shadcn, of the video chat focusing on eating. They are both well documented so there were no major difficulties creating the starting page. The flexible css elements shadcn allowed us to implement served as building blocks that we created the website from. They were solid enough to serve different purposes and functionality but also flexible enough to allow us freedom to design the webpage as we saw fit. During this stage the video chat felt like the most

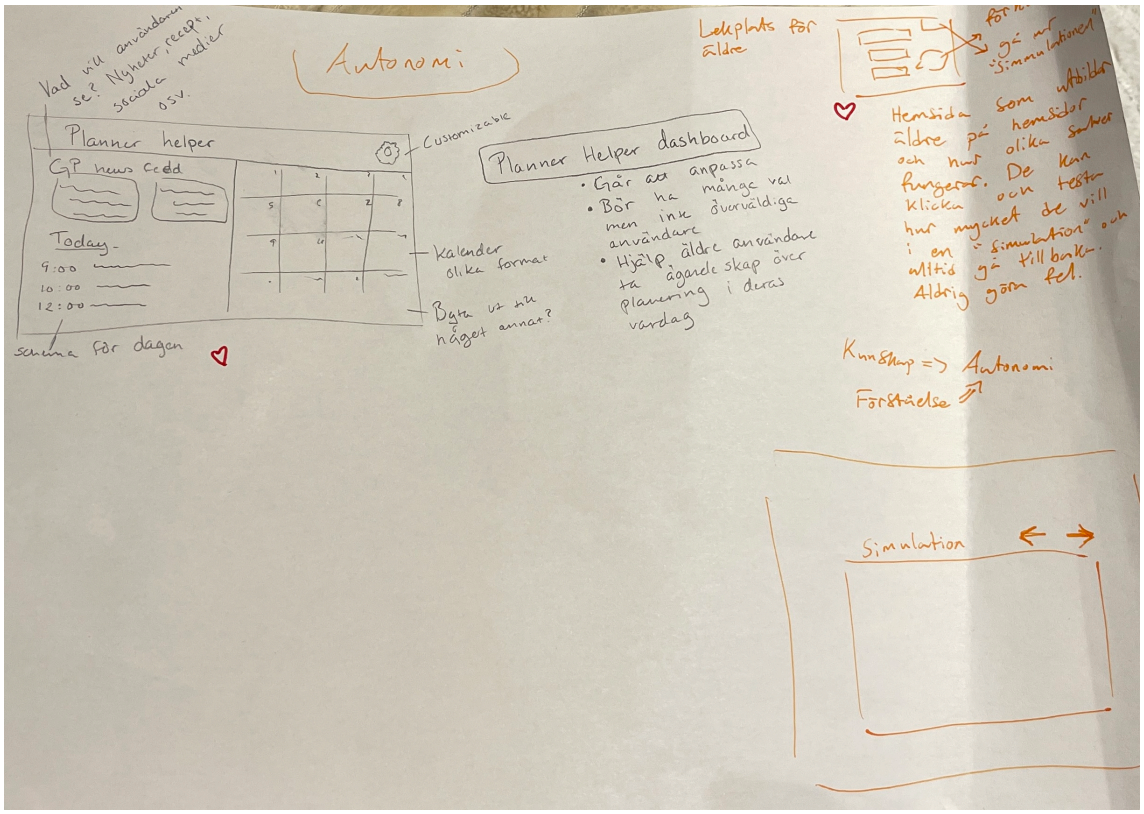

Figure 6.4: Sketches and ideas from the Speedstorming session. This page had the theme Autonomy.

promising concept as it contained themes of commensality, social aspects and it was something new we had not seen like the planning application for example.

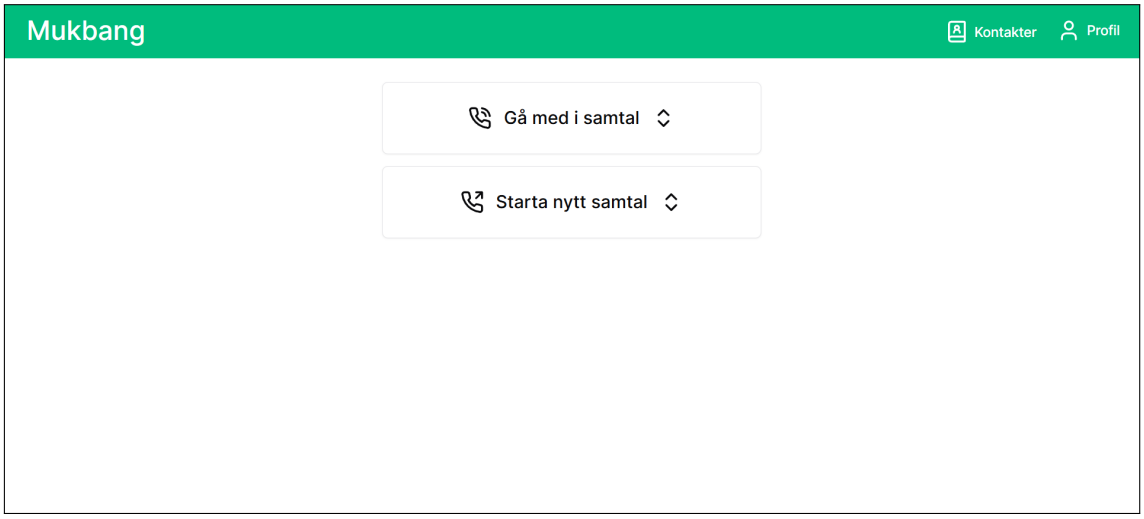

Figure 6.5: First prototype of the website

6.2.5 Initial recommendations for creating an accessible website for older adults

Knowing that we could not yet validate the recommendations that we made, we heavily relied on WCAG 2.2 AA standards as well as literature and research for creating a foundation of things to consider when designing websites for older adults. At this stage we had not yet added the aspect of commensality to our research question, thus the focus is moreso on accessibility and how to create an inviting interface for older users. We structured the recommendations taking inspiration from WCAG 2.2 where there are descriptive titles for the recommendations themselves and then further explanations and arguments underneath. We also included a category dedicated to the WCAG guidelines we identified could be interesting for this particular project, which are described in our own terms, in 9. WCAG 2.2 in the list below. We recommend the following:

1. Use descriptive color and high contrast
    (a) Information, actions and other interactive elements should not rely solely on color but also provide sufficient contrast to be distinct. Though, not too sharp to be harsh on the eyes. (Cooper, 2014)
2. Use descriptive text and labeling
    (a) Buttons and actions should have descriptive text that clearly indicates the relationship of what will happen when interacted with. The user should know beforehand what will happen. (Cooper, 2014)
3. Use skeuomorphic elements, icons representing real-world usage
    (a) Using skeuomorphic design elements, such as phone symbols for calling or trash can for deleting, has the potential of being beneficial to help users quickly understand the usage of elements in the user interface (Cooper, 2014). This could reduce learning curves, especially for older people.
4. Use clear and concise error messages, only inform what is necessary
    (a) Error messages should be short, simple and concise. Clearly inform the user what went wrong without interrupting them and only draw their attention when necessary. (Cooper, 2014)
5. Utilize hierarchies to ease navigation
    (a) Visual hierarchies help users understand how actions and information relate to each other. Categorical data, such as categorising types of fruit under fruit, often benefits from hierarchical grouping to reduce cognitive load and supporting navigation (Munzner, 2014).
6. Use text and captions for screen readers
    (a) Images and video content should be accessible through multiple channels, including descriptions (Cooper, 2014).
7. Eliminate Excise for ease of use

(a) For older users, we aim to eliminate any unnecessary mental or physical excise with these four aspects (Cooper, 2014; Pilot study):

i. Cognitive: Avoid making users understand and learn too many new things. Use simple, clear, brief language.

ii. Memory: Minimize the need for users to remember too many or unnecessary things, such as information between steps.

iii. Physical: Avoid requiring precise movement, unnecessary navigation across the screen and complicated keyboard commands.

iv. Visual: Avoid clutter and make functional elements clearly distinguishable from decorative ones.

8. Handle resizing of website

(a) Text and icons should be resizable. According to Cooper (2014) The elderly and other sight-impaired users require larger and more readable typefaces. Resizing should also be able to be done without compromising the structure or general layout (W3 schools, 2025) so that users can use tools that help resize text and so on.

9. An emphasis on the following WCAG 2.2 guidelines, numbers in parenthesis correspond to the success criterias in WCAG.

(a) Perceivable

i. Provide text alternatives for non-text content (1.1.1)

ii. Support adaptable layouts and logical grouping of information for assistive technologies (1.3).

iii. Ensure content is distinguishable with enough contrast (1.4.11),ă

iv. Allow for text resizing (1.4.4) and text spacing (1.4.12) without loss of content or functionality.

(b) Operable

i. Ensure that all functionality can be used and accessed through a keyboard (2.1.1).

ii. Allow users enough time to read and interact with content (2.2).

iii. Content is not designed in a way that is known to cause seizures or physical reactions. (2.3)

iv. Users are provided with help to navigate, find content and determine where they are. The webpage uses titles that describe the topic or purpose of information or content. (2.4)

(c) Understandable

i. Text content should be readable and understandable (3.1).ă

ii. Ensure consistent navigation and consistent identification of actions across the website (3.2.3 & 3.2.4).

(d) Robust

i. Interface components are programmatically determined and are either visible to the user or only in the code. This is for assistive technologies that can detect and understand the elements of the webpage to effectively convey it to the user. This is achieved by giving components correct names, roles, states, and values. (4.1.12)

ii. Important updates on a webpage are announced to users who rely on screen readers (4.1.13).

These considerations were a starting point for our list of things to consider, and ones that we focused on testing and refining on in future iterations.

6.3 Iteration two - concept realization

During the second iteration we selected one concept to focus on fully. We also focused our research around commensality and its potential mental health benefits. We also conducted a user test where older adults tested the accessibility of a webpage.

6.3.1 Gain knowledge - commensality and loneliness

With a few solid concepts we went back to the research and gain knowledge stage, focusing on what was relevant and related to the concepts we had. Here we found the term commensality, the act of sitting at the same table and eating a meal together. Commensality is something we, the authors, have found important throughout our lives and it is something that many other cultures and people find important. There is research on digital commensality and differences on eating together or alone, see 3.2.2. The research shows that commensality is not only good for increasing the amount of nutrients get but also good for their mental well being. There had also been a review on using ICT interventions to reduce loneliness for older adults.

We also looked at ICT solutions for communicating through video calls and websites catering for older people. None of these websites and programs featuring video calls or catering for older adults are specifically focused on food or commensality. As described above there is research on how eating together is a social activity that helps people feel less isolated and lonely. See 2.5 and 2.7.

When we had reached a certain level of saturation, while still staying on schedule, we moved on to ideation and prototyping again. Paper prototyping was used to explore the three final concepts from iteration one further. We looked at how they related to our themes again, how we could explore them and especially at what was doable with our knowledge, experience and the time we had. Another important factor was that we did not want to create a solution to a problem that already had many solutions that no one really uses. The comic shown in Figure 6.6 was something we had in our heads at the time.

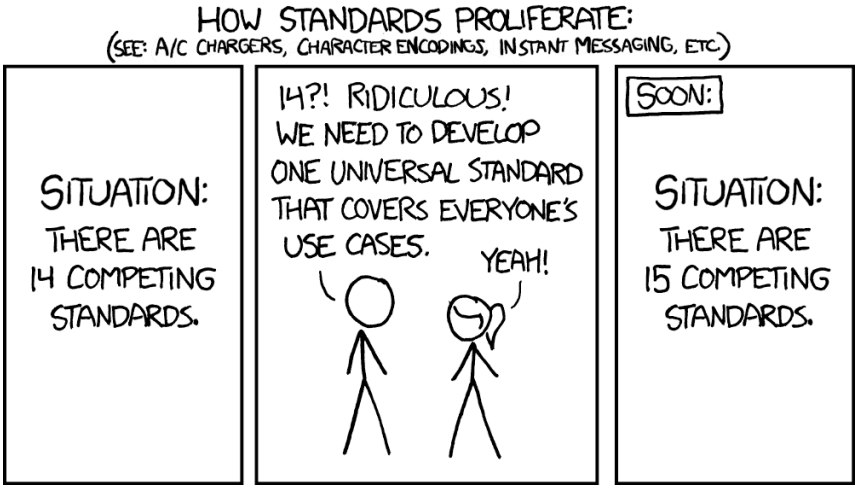

Figure 6.6: XKCD comic about standards. [76]

6.3.2 Gathering Participants

In this iteration, we began reaching out to potential user groups. We had initially planned to recruit participants from elderly care homes to have a diverse user group in terms of impairments, technology use, and so on. Despite multiple attempts, we were unable to establish contact or secure interviews in those settings. This led us to rely on convenience sampling through our personal networks. Specifically, we interviewed and tested our prototype with 5 older adults living on the island of Tjörn in Sweden, who we had prior contact with. While we knew that this would introduce certain limitations in diversity, we believed discussing our ideas and examining their experiences with websites could still provide us with valuable insights. The participants were between the ages of 70 and 85, three of them men and two women, see figure 6.2. We interviewed four of the participants in pairs, P1 and P2, P3 and P4, and one alone, P5. This was because of convenience of time, but we also found that the participants interviewed in pairs were able to discuss among themselves which proved useful for gathering more feedback and understanding their internal discourse around accessibility.

Participant (P)	Age in years	Gender
P1	75	Man
P2	78	Woman
P3	74	Man
P4	71	Woman
P5	77	Man

Table 6.2: Participants of the first test

6.3.3 User testing - Accessibility and our concept

The first set of interviews with the participants on Tjörn investigated how older adults interact with digital technology. In particular how they interact with web-

sites and how they find the accessibility, and to see whether or not our concept could be interesting to the user group. We wanted to understand their experiences and feelings when using and interacting with technology in their everyday lives. We were also interested in how digital tools and technology can be used to facilitate social interaction and whether they could also feel confident in using them. It was important to understand these experiences to identify what factors are most important to consider when designing more accessible digital solutions. What we learned from these conversations was used directly to inform design decisions in each subsequent iteration of the prototype.

During our pilot study, we noticed that some participants struggled to provide specific examples of websites that they disliked, as well as what aspects they liked about their frequented websites. This made it difficult to gather concrete insights into their experiences with navigating a website. To address this, we added a website navigation task for the participants, where they were asked to find a specific program on Sveriges Radio. Sveriges Radio was chosen because it has a wide target user group, including older people. By having the participants perform a real-life scenario we want to capture more detailed feedback regarding useability, accessibility, and their thoughts navigating a website.

With the insights from this interview, we identified what currently works well and what could use some improvement. We recognize that the use of technology is highly personal, even more so with age. Factors like personal interest, help available and cognitive or motor skills and so on influence the individual experiences. While some of the questions touch on topics like social life and confidence, we wanted them to be open-ended and non-intrusive for the interviewee. Participants were welcome to skip a question or end the interview at any point.

As this was the first iteration, the participants interacted with an existing website unrelated to ours and our own early prototype rather than a fully functional website. Even in this early stage, it was clear that small details, for example, button labeling and unclear icons were important for understanding and confidence.

It is worth noting that a lot of the participants were not particularly enthusiastic about the concept of a website for digital social interaction, especially around shared meals. They were expressing that meeting in real life is better. For some, the idea of using technology for something as intimate as eating food may also be discouraging. This initial skepticism helped us understand that a platform like the one we may want to create for commensality needs to be not only accessible in a functional sense but also emotionally appropriate and inviting.

Despite the initial skepticism, we decided to continue with the concept. We recognized that this resistance likely stemmed from a generational gap rather than a fundamental problem with the idea itself. As younger generations today grow older, digital commensality may become more normalized. Thus, we believed the idea still had value, if not for todays population of older adults, for future ones.

6.3.4 Prototyping - sketching

During this iteration we used sketches to prototype and explore how we could build up the website. The focus was mostly put on the video call view as this would be the most complex web page on the website. The goal was to start with a minimal viable interface, only the necessary functions that the users would need. For this we looked at other video call or chat applications such as Zoom, Teams, Discord and more. See 2.6, communication platforms. Many of these include features that would not be usable by our users in the context of commensality. Sharing a screen, drawing on a white board, raising your hand, etc are features that can be useful in a workplace setting. For the purpose of video chatting for commensality, especially for older adults, many of these features could be confusing and take away from the experience.
Figure 6.7 has sketches of several different layouts for different views on the website. In the left corner are different layouts for the video view. Here we experimenting with how to show several video feeds at the same time while still being clear and visible to older users. We also wanted there to be chat available for people who are mute or not able to talk at the moment. Here the sketch shows that the chat would pop out from the right of the screen and then be able to be dismissed. This was as we wanted to keep as much space as possible to allow the video feeds to take up space.

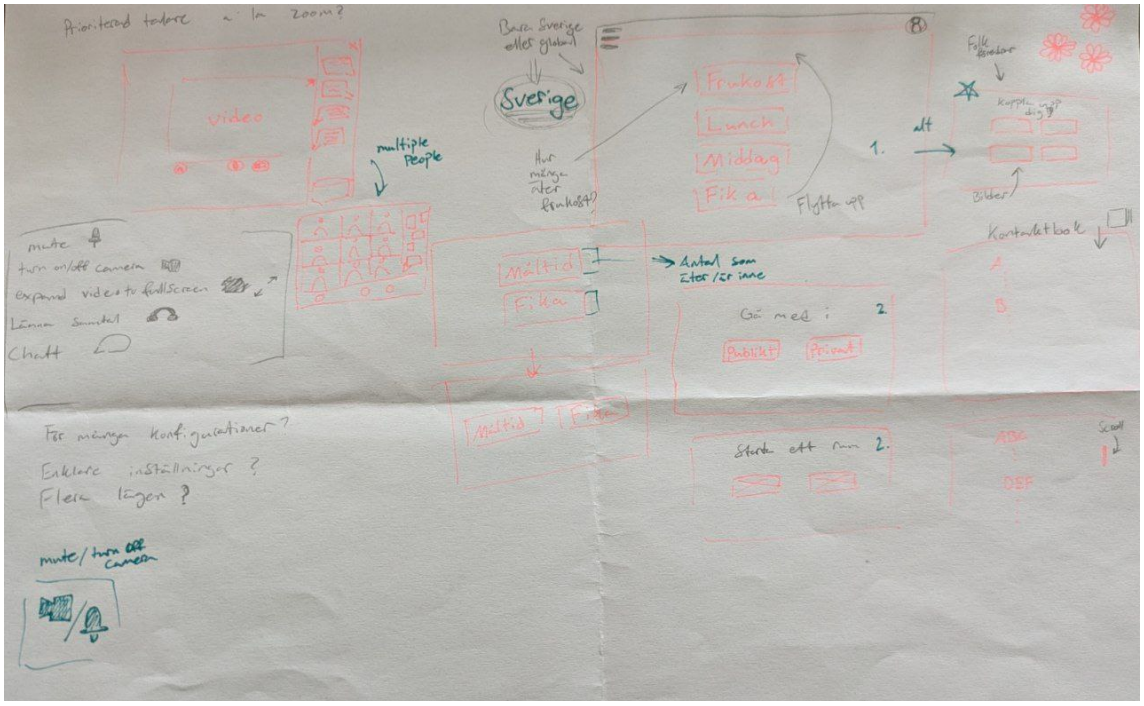

Figure 6.7: Sketches of layouts from several views on the website.

Figure 6.8 focuses solely on the video view. A lot of the sketches focus on the different buttons needed for the video view. There are three main functionalities needed for the call; muting the microphone, turning off the video camera, and leaving the call. Grouping buttons close together is a good technique to show that their

actions are similar. However when designing for older adults we want to consider that their motor functions might not be very precise, thus the buttons might need to be bigger and perhaps with more space between them. The buttons also need to clearly express what happens when they are pressed. Relying only on icons might be difficult for users who are not well-versed in using technology, which is true for some older users. We also did not want to rely solely on text. Keeping it clear and concise with just text was difficult. Text like "Microphone off" can be interpreted as saying that the microphone is off or that the microphone will be turned off when the button is pressed. The final sketch we settled on is a combination of text and icons. Prompting the user to turn on or off the camera or microphone. The icon is crossed over with a line when the device is turned off and not when active. See figure 6.9.

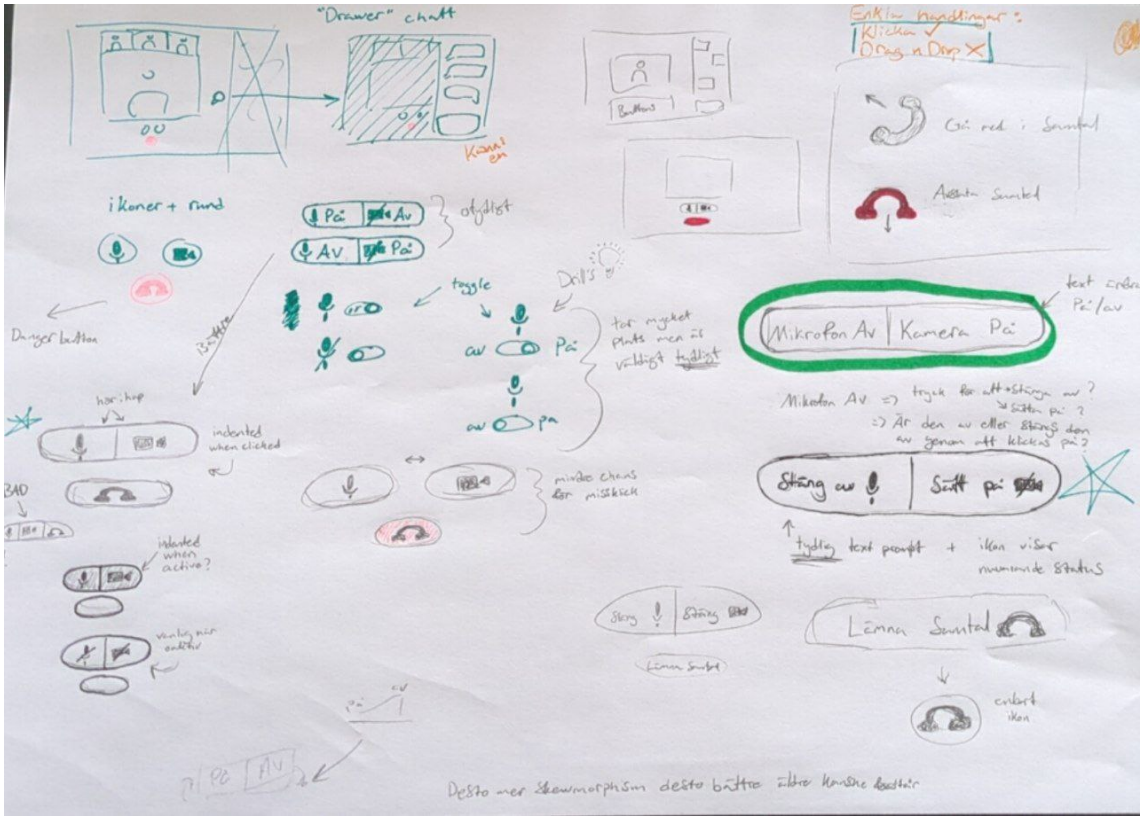

Figure 6.8: Sketches of the video call view and various configurations of buttons.

Figure 6.10 shows a bigger sketch of the video call. Under is the final buttons we decided on with both icons and text. There is one big video feed in the middle and above that are the smaller video feeds. On the right is the chat that opens and closes with the press of a tab, seen high up on the right. We decided that there were only three necessary actions needed below the video call. Turning on and off your microphone and video camera as well as leaving the call.

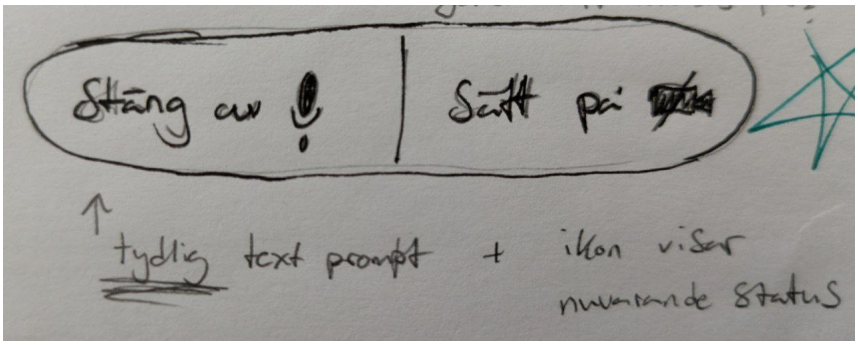

Figure 6.9: A close up of a pair of buttons (microphone and video).

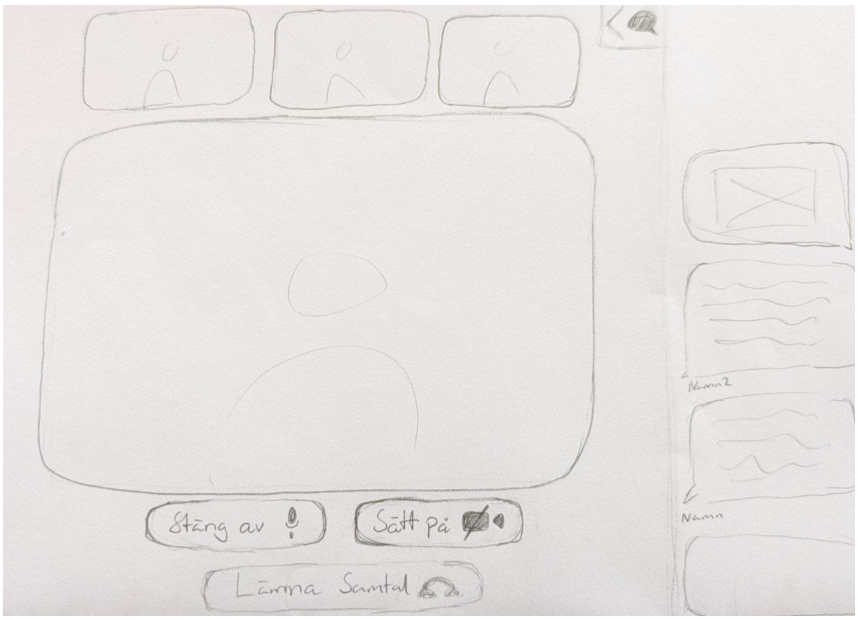

Figure 6.10: A sketch of the video call layout.

6.3.5 Refined recommendations

After creating a foundation based on WCAG 2.2 and literature, we refined our scope and focus along with the research question by adding aspects such as digital social interaction and commensality. This iteration we also validated our assumptions with a group of older people through interviews. This iteration of recommendations reflects updates based on those findings where we removed or added insights and recommendations to fit the intended user group. The list below only includes what was changed from the previous iteration. Any entries from the previous iteration not included below remained unchanged. As in the last recommendation, numbers in parenthesis correspond to a specific WCAG success criteria.

6.3.5.1 Added:

1. Use descriptive color and high contrast

- Interviews revealed that it is also important to account for issues with dark mode and gray on black background, which participants reported made content harder to read and distinguish. Lighter backgrounds and strong contrast are preferred.
- Even more focus was placed on increasing text size and ensuring clear contrast based on the difficulties users experienced reading small fonts and low-contrast elements.

4. Use clear and concise error messages, only inform what is necessary

- Although we found that error messages should still be short and simple, we want to emphasize that preventing errors entirely is equally important. Frustration over broken forms or lost inputs (interviewees mention surveys or bookings) shows the need for being able to recover information or states when errors occur.

9. WCAG 2.2 a. Percieveable

- Ensure content is distinguishable with enough contrast (1.4.11): Importance highlighted after participants struggled to notice interface elements such as the scrollbar, particularly in dark mode.ă

c. Understandable

- Ensure consistent navigation and consistent identification of actions across the website (3.2.3 & 3.2.4): Predictable placement of key features (such as the search bar) was found to be important to user flow.

10. Support user flow

- We found that there is a strong need for supporting the users flow throughout using the website. Users were frustrated when actions like scrolling or picking a date disrupted their flow or progress.

11. Predictability in navigation, layout and interaction

- Layouts and interactions needed to be as predictable as possible, minimizing surprises or hidden interactions, such as hidden scrollable areas (also mentioned in WCAG 2.2 a iii).
- Our findings suggest for this group that it would be beneficial to have a section that explicitly states what the sorting order of a list is (newest first, up until chosen date) to make it clear for the users and make finding what they are looking for a lot smoother.

12. Feedback lets users know what is happening and that things are working correctly

- It can be beneficial to provide visible feedback when a user takes an action, for example when selecting a date. For example using animated scroll to show the results to the users.

6.3.5.2 Removed:

9. WCAG 2.2

- Operable:
  - Removed 2.3: No strong concerns about motion sensitivity arose in the interviews, so this was deprioritized for now.
- Robust:
  - Removed 4.1.12. While recognized as important under WCAG 4.1.2, this was removed due to time constraints and technical scope limitations. It is however still important and should be tested further in future work.
  - Removed 4.1.13. We chose to focus first on visual and interaction accessibility since our target group primarily used tablets and mobiles without assistive screen readers.

6.4 Iteration three - high fidelity prototype and user group musings

During the last iteration we finished the high fidelity prototype, a website, of our digital commensality concept. Here we also discussed the user group that might benefit from our concept and that they might not be the same as the testers we had access to. We did a final user test that was conducted similar to the previous user test but here it was conducted using our prototype.

6.4.1 Research and gain knowledge - user feedback and user groups

This research and gain knowledge phase began with going through the interview notes from iteration two as well as discussion about our research question and the user group. Swedes are infamous for their individualistic and introverted nature. Young people are generally expected to move out from their parents after they turn 18 and they are expected and often want to live on their own as long as possible before moving into elderly care facilities. See 3.2.3. Looking at both older adults that are not very used to digital socialization and on top of that Swedes who are very particular with who they socialize with presents a challenge. This is one of the reasons why we decided to reach out to people with a different cultural background. To see if the Swedish individualism and introversion was a factor in the hesitation our testers felt. See 6.4.2 for how we reached out to people with different cultural background.

We also looked at different communication programs that featured video calls again, see 2.5. This time the focus was on what different actions users had available when in a video call and if these actions or elements were relevant for our video call.

6.4.2 Researching cultural differences

We reached out to people we know that have friends and family abroad, not in Sweden, to see if they were more open to our concept. Including our two contacts We received input from eight people in total, one in their mid twenties, three in their late 20's, two in their early fifties, and two between 86 and 96 years old.

Participants for cultural difference research (CD)	Age in years	Gender
CD1	28	Woman
CD2	25	Man
CD3	53	Man
CD4	54	Woman
CD5	29	Woman
CD6	28	Woman
CD7	86	Woman
CD8	96	Woman

Table 6.3: Participants with a non-Swedish cultural background.

The oldest participants, CD7 and CD8, had been hesitant to begin using technology, but when introduced to positive aspects they came with they were convinced. They were also given pamphlets that explained how to make video calls, these were designed and created by CD2. One positive aspect that drew them in was video calls, giving them the opportunity to see their grand-kids and friends. Both of them prefer video calling compared to chatting or voice calling, it is important for both of them to be able to see the person they are talking to. One of them has never shared a meal with someone digitally and is a bit skeptical about how it would be set up but otherwise views the concept positively. The other already practices digital commensality from time to time in the form of tea-time with their child. One of them also have a friend who they can no longer travel to see without assistance, nor can their friend, that they want to socialize with more, perhaps through a solution such as ours. CD2 has also participated in digital commensality. They have had tea while talking to a parent, something they note might be cultural as they both have grown up in a country with tea-time in the afternoon. It is also not something predetermined, it just happens when they talk in the afternoon. This participant also has had meetings over discord with a friend where they drink together, these have been planned out.

CD1, CD5 and CD6 are more varied in their means of communication and need for digital commensality. One always calls someone to talk with if they are out eating alone while another feels like they can not focus on their meal if they are talking with someone through digital means. One dislikes video calls as they feel that it restricts them too much. They have to focus on both what they say as well as how they look, it also does not feel as easy to use eg. on the street or at home in your at home clothes. They prefer to use voice notes or messages with family and

close friends, it does not feel as limiting while allowing them to speak spontaneously. Another uses video calls mostly at the time the question was asked. They mention that they have a new baby that family wants to see. The third uses both video calls, phone calls, and voice notes. They all agree that the concept sounds useful, and if not for them for others that could benefit from it. When this question was asked the one who calls people for company while eating out enthusiastically said that this is something they already do.

CD3 and CD4 both prefer video calls. However one of them also likes voice notes and also finds them easier to use in everyday life while the other likes phone calls. One of them notes that you feel connected through voice or video, you can actually hear or see if the person you are interacting with is doing well or not. They both feel positively towards the concept, one says it might make meals more fun while the other notes that it can replace meeting in person but better than nothing for people who live far away.

Something all these participants have in common is the need and want to socialize with someone they cannot easily meet in person. This is not as true for the other testers we have. Talking to people who have a need to talk to people far away showed us that there was more potential for our concept than we had seen from our testers in Sweden.

6.4.3 Ideation - solving user feedback

The ideation stage was spent brainstorming ideas and solutions to the feedback we had received for both the concept as well as general things to consider when creating an accessible website. One key guideline we kept in mind was If you can not see it, it does not exist. Both in that if there is a feature that is not visible to the user, they will not know it exists and thus not use it as well as if they do not see feedback from an action they will assume that nothing happened when they performed that action.

6.4.4 Prototyping - developing the website

This iteration's prototyping had full focus on creating a high fidelity prototype, continuing work with the website to build an interactive and responsive prototype. By making the prototype interactive and semi functional we believed that we could gather better user feedback. Especially considering that the testers we had access to seemed to need to actually see what was happening rather than imagine it themselves.

The coding continued fairly smoothly and most issues arose when placing elements or creating java script functions, for the search function for example. These were however resolved fairly quickly through utilizing Chrome DevTools for CSS issues or reading documentation for others. Our test group did not have need for features

such as Screen reading, as they during testing could see and read what was on the screen. They were used to navigating through visual elements with a pointer device, e.g a computer mouse, so we decided to not put focus on fully implementing and testing the functionality of e.g screen reading, keyboard navigation, etc.

The largest portion of this iteration was spent on creating the website, now named Digital Fika which can be seen in the top left of figure 6.11-6.18. Two additional pages, video call and contacts, were added and more functionality implemented on the already existing start and profile page. The background color was also changed from stark white to a very light gray. This was to ease the strain on the users eyes.

The video call consists of three groups of elements, the video calls, the buttons under the video call and the chat to the right side on the page. See figure 6.11. The video chat features one large video feed, taking up half of the space, of the person currently talking or the person who spoke last. The rest is split into four video feeds. If there are more than 5 video feeds a scroll bar appears and the user can scroll to see the rest of the video feeds. Not featured in the prototype but planned behavior is that your own camera feed is prioritized below the other video feeds, making sure the space allocated for video feeds features other users. Under the video feeds are three buttons. Two with a microphone and camera icon which both say stäng av, turn off. Clicking these buttons changes the icon to the same but a line crossing it and the text to sätt på, turn on. The choice of having both icon and text was made to double code the information. It was also thought to give more experienced users a quick way to skim and immediately recognize the actions while still allowing those newer to this type of information coding clear information as well. The last button has a phone with a line drawn over it and says lämna samtal, leave call. This button prompts a modal popup to appear where the user has to confirm again that they want to leave the call, see figure 6.12. This is to ensure that a destructive action is not executed by accident. Many older people can experience motor difficulties which makes this feature even more important to ensure unwanted destructive actions go through. Last is the chat on the right side of the website. The chat is always visible, which differs from many of the other video call programs. This was done to keep in line with, If you can not see it, it does not exist. We believed that if it was instead a sidebar, like in our original sketches, see figure 6.10, that would pop in and out on the website many users would forget to use it. Having both a video call as well as a chat was also for accessibility. Not everyone can talk and communicate through writing. It is also accessible for those who feel they can not break into the conversation without interrupting anyone, giving them a chance to be part of the conversation by writing or by asking for room to speak. The chat has been implemented so that testers can write and send messages in the chat. It took time to implement but as we noticed from the pilot tests the testers needed visual feedback to know if something was working, us asking them to imagine how it worked would not have had the same effect.

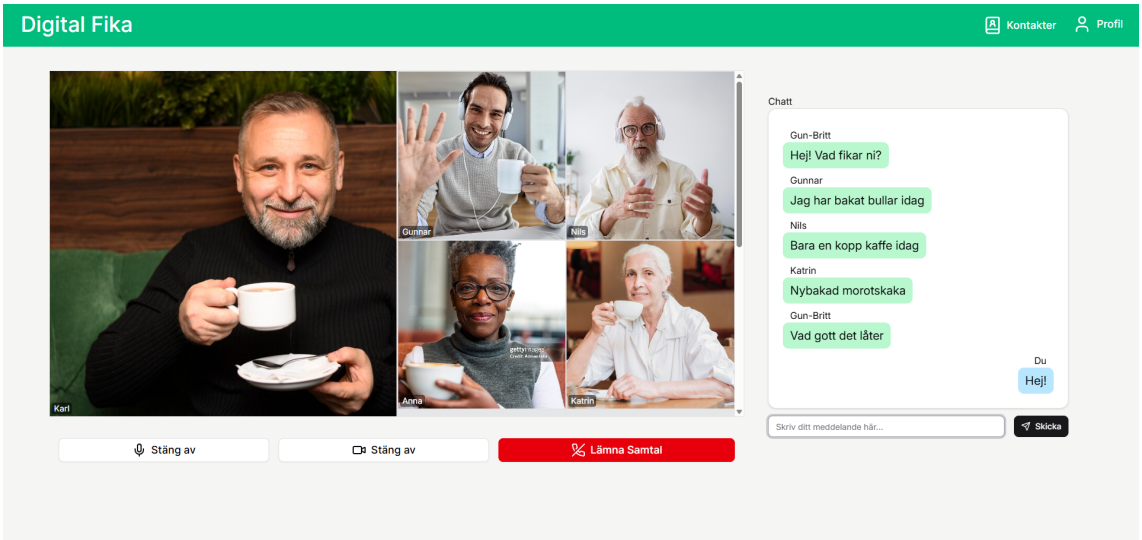

Figure 6.11: The video call view from the website.

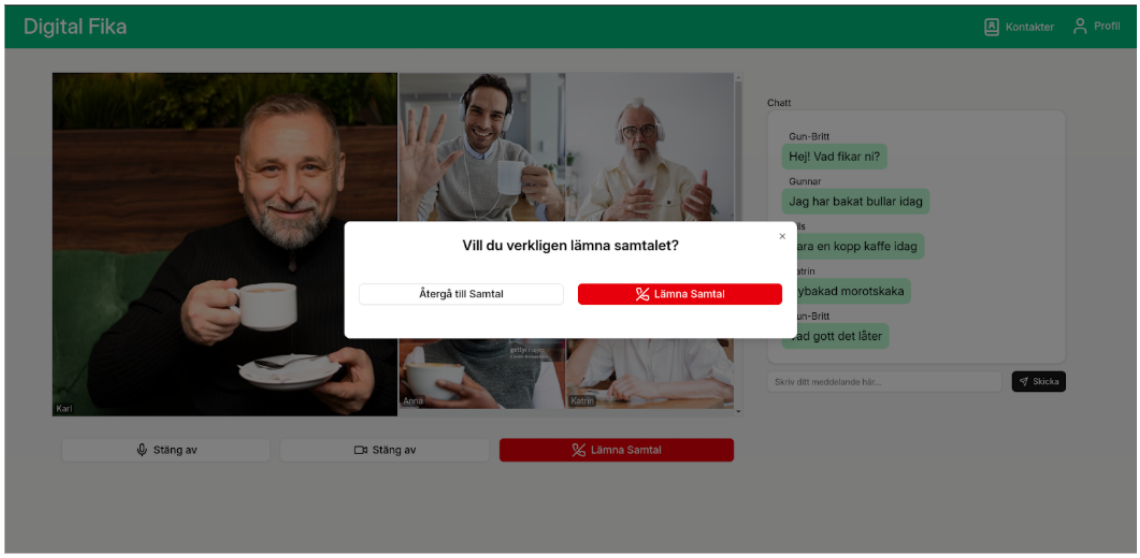

Figure 6.12: A modal pop-up that shows up when the user presses the button to leave the call.

The contacts page was created, see figure 6.13. Here users can find people they have added to their contacts and go to their profile. The page features a search bar that updates the contact list based on the current search. When nothing is entered in the search bar the contact list in its entirety is shown. Creating a working search bar was again a deliberate choice. The reason is the same as for the chat in the video call view.

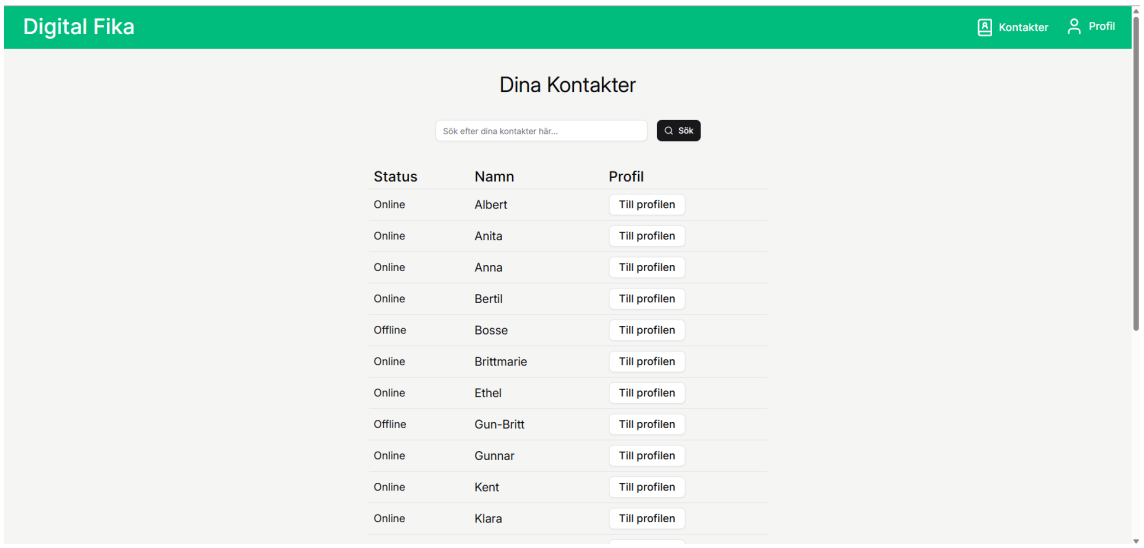

Figure 6.13: The contacts page.

Clutter was removed from the profile page, see figure 6.14. The original idea of having users describe themselves in both a short and longer text was scrapped.

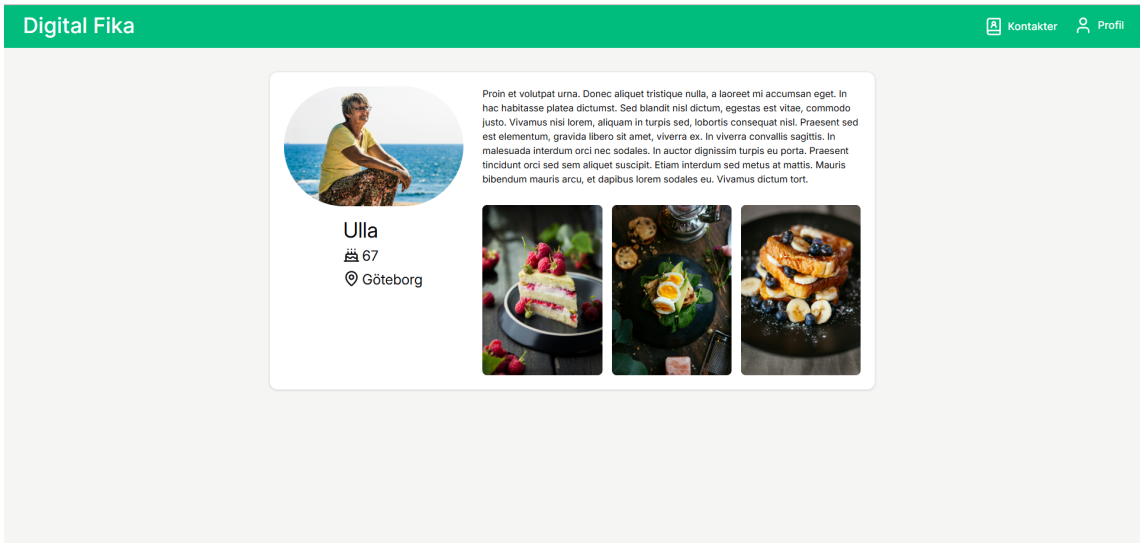

Figure 6.14: The profile page.

The start page has two prominent buttons, see figure 6.15. One labeled Pågående Samtal , Ongoing Calls, and Starta nytt samtal, Start new call. When each of the buttons are pressed a menu appears below, see figure 6.16. On Ongoing calls there is a window with all the different calls that are currently active that users can join. To the right one can see how many people are currently in the call. In the start new call window the user can select if the call is open for everyone or if it is private and only open for the user's contacts. The user can also invite specific people to the call who will then get a notification that they have been invited to a call. See figure 6.17 and 6.18.

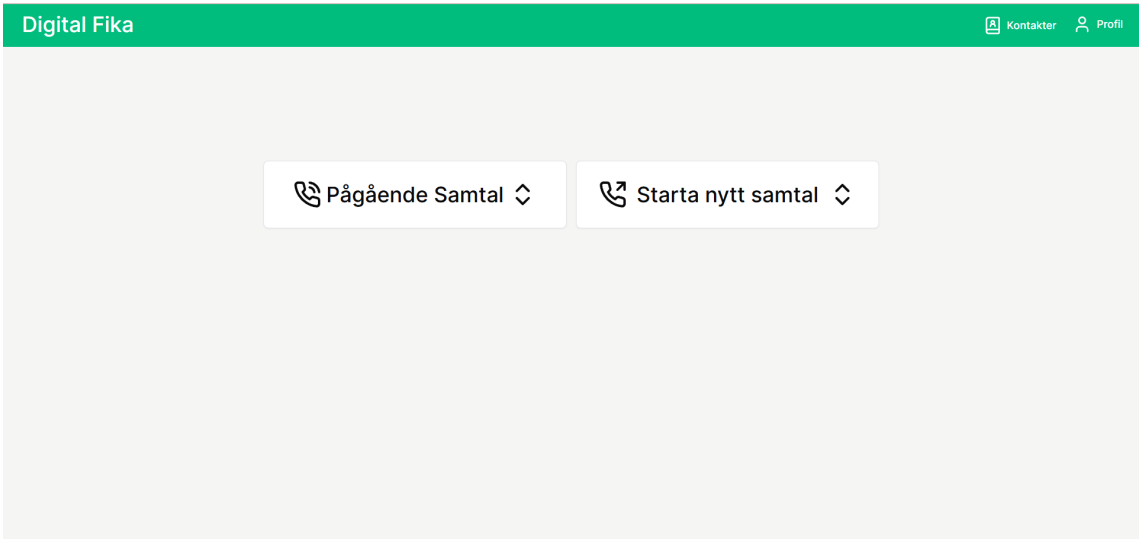

Figure 6.15: The starting page.

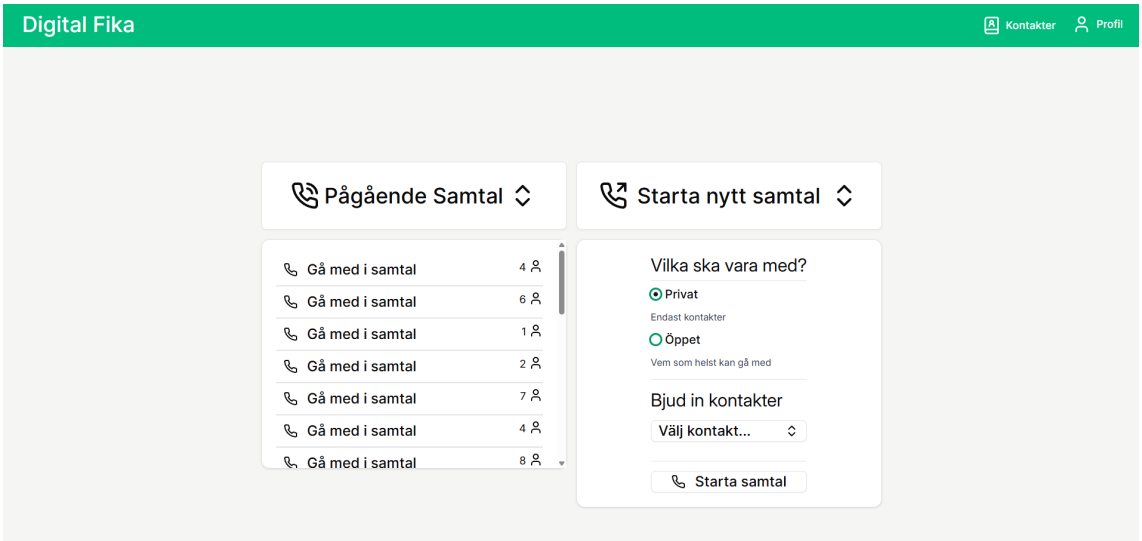

Figure 6.16: The starting page. Both buttons have been pressed and are showing more options.

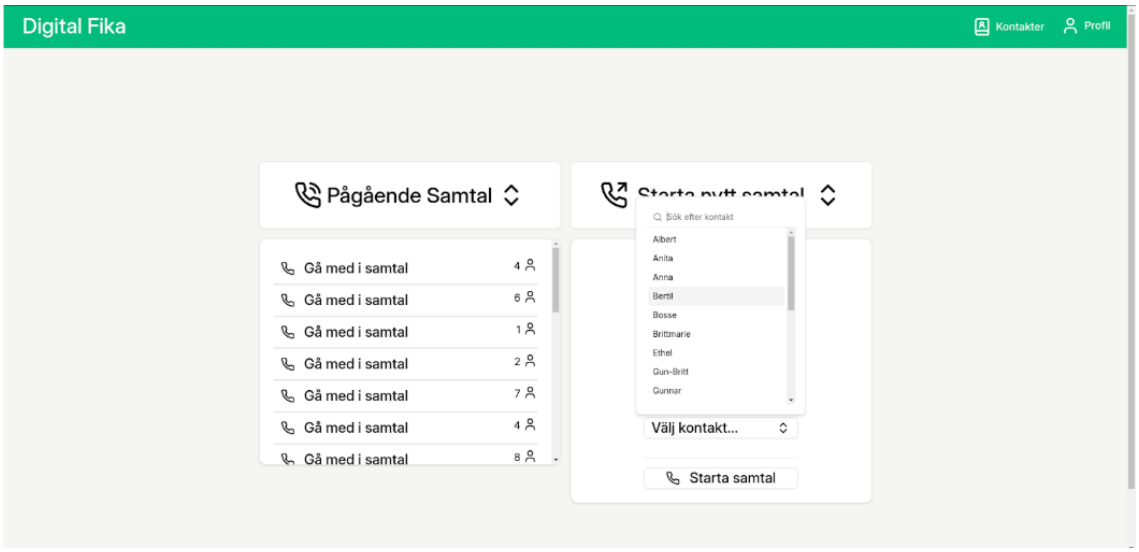

Figure 6.17: The start page. A drop-down menu has been expanded and are showing contacts that can be invited to the call.

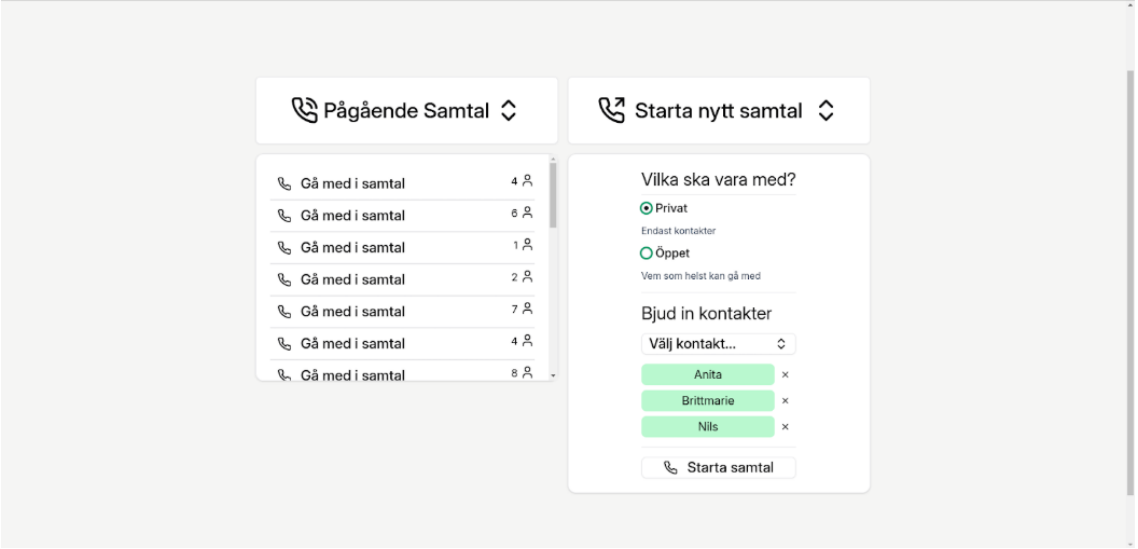

Figure 6.18: The start page with both menus expanded. Now there are three names in the Start call that have been invited.

6.4.5 Final testing - testing our website

As in the previous interview of Iteration 2, we again asked the participants to interact with a website following instructions using the think-aloud method. This iteration we presented the users with our final version of the website artifact. Its important to note that most of these participants, P1 - P5, have briefly interacted with the earlier iteration of the website, and therefore the results were likely influenced by this as they were already slightly familiar with the general layout. While the website roughly had the same layout, there had been an amount of visual elements

and components added and we believe it was still valuable to evaluate this iteration.

Participant (P)	Age in years	Gender
P1	75	Man
P2	78	Woman
P3	74	Man
P4	71	Woman
P5	77	Man
P6	82	Woman
P7	83	Man

Table 6.4: Participants of the second test. The first five participants are the same participants from the first test. P6 and P7 have not tested the website before.

We once again ensured the participants that they are not the ones being evaluated - the website is. How well or quickly they completed the tasks would not have any reflection on them but rather the achieved accessibility and usability of the website. First, the participants completed tasks using the website, then they were asked some follow-up questions to evaluate the website.

The tasks included joining an ongoing call, starting a new one, using the chat function, and going to a given contact profile. Participants were encouraged to verbalize their thoughts, reactions, and any difficulties they encountered. This allowed us to observe how usable the final design was and whether previously identified issues or areas of improvement had been addressed. For the most part, the participants found the website easy and straightforward to navigate. The user interface was described as "simple" and resembling an app with its navigation. That made most of the tasks easy to complete and left users feeling like they could handle the website. However, it can also backfire if the users expect a certain kind of navigation and usage from a website and get confused when using the website.

There are still aspects of the website that could need more refinements. One user felt that the chat might be a bit disconnected from the video call. They suggested that there should be some form of notification close to the video feeds when a message is sent so that even if users are focused on the video feeds they will know that someone has written in the chat. Some symbols and functionalities could also be made clearer, for example the camera symbol was a bit small and unclear as to what it meant, and could benefit from having more descriptive text about what the button actually does (eg. "turn off camera" instead of "turn off"). The scrollbar was still found to be a major problem that was not addressed. Participants in user testing reported difficulty noticing and using the scrollbar due to poor contrast and not standing out enough. The scrollbar was described as "invisible," "blending into the background," and "not looking like something you can interact with." and was generally met with surprise when it was pointed out to them. This means that the users loose out on an entire functionality of the webpage, making it an important factor to keep

in mind when designing. Some participants also mentioned that the text could be even bigger, and should be more consistently the same size throughout.

The participants also mentioned having a more positive view of the concept compared to before, where they were very skeptical. Although we did not actually aim to evaluate the concept this time, the participants brought up being positively surprised by the shape the website had taken, and could imagine using it in the future after seeing how much it had developed.

After the interviews above, another interview was conducted with two new testers who had not been part of the previous tests. These are participants P6 and P7. The test was conducted in the same manner as described above. The had the same issues with the touch pad mouse but otherwise completed all the tasks without greater difficulty. They thought that the webpage was clear and fairly easy to see what different elements did. They also had feedback on things they thought could be improved. They do think that almost all elements could benefit from being bigger. When the starting page and contact page were enlarged to 150% up til 200% they felt it was even more clear and much easier to read the content without having to lean in closer or straining their eyes. They felt that there should be something in the video call view that shows the user how many participants there are currently in the call. When you start a new call you should also get a notice when joining the call that all invites have been sent out successfully. One should also only be able to send out invites to contacts who are already online and will receive the invitation notification.

7

Result

The results consists of a set of recommendations for how to create an accessible design and webpage and a prototype in the form of a website. These results, recommendations and prototypes, have been iterated on through all our iterations and here the final versions are presented.

7.1 Recommendations for Accessible Websites for older adults

While WCAG provides a broad framework for ensuring accessibility, they are intentionally general in order to apply across different contexts and user groups. WCAG guidelines are long and complicated to navigate, and we sought to clarify and adapt these guidelines by making them more specific and actionable design recommendations tailored to our target users. In so doing, making accessibility guidelines more accessible.

For the final set of recommendations, we continued from the previous iterations where we used existing guidelines and design principles as a base and then added or modified them to fit our user group. What we found in the interviews was that some things were of higher importance to our specific sample and others less, which influenced the choices of what to keep in the final set of recommendations. It is worth mentioning that the guidelines or principles that were removed or de-prioritized are still important and should be taken into consideration, such as screen readers and so on. We could just not confirm and evaluate it with our specific user group, due to time constraints, scope, and our assumptions about the user group and appropriate accessibility based on our previous knowledge in Interaction Design. We recommend considering implementing the following.

1. Color and text for identifying elements and enough contrast
    (a) Information, actions and other interactive elements should not rely solely on color to convey information, they should be double coded with text for example. It should also provide sufficient contrast to be distinct and/or appropriate icons. Though, not too sharp to be harsh on the eyes [77].
    (b) Interviews indicate that it is also important to account for issues with dark mode and grey on black background, which participants reported

made content harder to read and distinguish. Lighter backgrounds and strong contrast are preferred.

(c) Even more focus was placed on increasing text size and ensuring clear contrast based on the difficulties users experienced reading small fonts and low-contrast elements.

2. Understandable text and labeling

(a) Buttons and actions should use concise and descriptive text that clearly indicates the relationship of what will happen when interacted with. The user should know beforehand what will happen when they interact with an element [77].

3. Skeuomorphic elements, icons representing real-world usage

(a) Using skeuomorphic design elements, such as phone symbols for calling or trash can for deleting, were considered due to the potential of being beneficial to help users quickly understand the usage of elements in the user interface [77]. We believe this could reduce learning curves for older people using websites, especially when the icons are paired with text.

4. Clear and concise error messages, only inform what is necessary

(a) Error messages should be short, simple and concise. Clearly inform the user what went wrong without interrupting them and only draw their attention when necessary [77].

(b) While we found that error messages should still be short and simple, we want to emphasise that preventing errors entirely is equally important. Frustration over broken forms or lost inputs (interviewees mention surveys or bookings) shows the need for being able to recover information or states when errors occur.

5. Hierarchies ease navigation

(a) Visual hierarchies help users understand how actions and information relate to each other. Categorical data, such as categorising types of fruit under fruit, often benefits from hierarchical grouping to reduce cognitive load and supporting navigation [78].

6. Text and captions for screen reader usage

(a) Images and video content should be accessible through multiple channels, including text descriptions of speech and visuals [77].

7. Eliminate Excise for ease of use

(a) For older users, we aim to eliminate any unnecessary mental or physical excise with these four aspects ([77], Pilot study):

i. Cognitive: Avoid making users understand and learn too many new things. Use simple, clear, brief language.

ii. Memory: Minimize the need for users to remember too many or unnecessary things, such as information between steps.

iii. Physical: Avoid requiring precise movement, unnecessary navigation across the screen and complicated keyboard commands.

iv. Visual: Avoid clutter and make functional elements clearly distinguishable from decorative ones.

8. Handle resizing

   (a) Text and icons should be resizable. According to Cooper [77] The elderly and other sight-impaired users require larger and more readable typefaces. Resizing should also be able to be done without compromising the structure or general layout [79] so that users can use tools that help resize text and so on.

9. WCAG 2.2

   (a) Perceivable content and elements

      i. Double coded content (WCAG 1.1.1, 1.2., 1.4., 2.4.4) - Related to 1. Color and contrast.

         A. In earlier iterations, we noticed the importance of Double coded content, meaning that information should be understandable visually, programmatically, and with multiple visual cues such as text alongside color or icons (WCAG 1.1.1, 1.2., 1.4., 2.4.4).

         B. After iteratively developing and conducting user testing we have confirmed that double coding remains important to keep in mind when developing websites, especially for older users.

      ii. Support adaptable layouts and logical grouping of information for assistive technologies (WCAG 1.3).

      iii. Ensure content is distinguishable with enough contrast. At least a 4.5:1 contrast ratio for small text, 3:1 ratio for large text and 3:1 ratio for icons and other graphical elements. (WCAG 1.4.3 and 1.4.11)

         A. The importance of contrast was clear after participants struggled to notice interface elements such as the scrollbar. Particularly when the built in scroll bar was in dark mode due to the computer's settings. As our testers said, if it is not visible, it does not exist.

         B. Although we had implemented elements with high contrast in the final iteration such as buttons and icons, for example the red button for leaving a call, the scrollbar was evidently still an issue.

         C. Browser default coloring (e.g. in Chrome and Firefox) was not sufficient. It's important to provide enough contrast for all in-

teractive elements manually. Note that in Firefox the scroll bar disappears completely when not in use.

iv. Allow for text resizing (WCAG 1.4.4) and text spacing (WCAG 1.4.12) without loss of content or functionality.

A. The website supports some resizing and zooming, but this use case needs to be tested and evaluated further in the future.

B. We suggest keeping text large throughout the website, in our case in titles, buttons and chat components.

(b) Operable through multiple means of interaction

i. Ensure that all functionality can be used and accessed through a keyboard (WCAG 2.1.1).

ii. Allow users enough time to read and interact with content (WCAG 2.2).

iii. Users are provided with help to navigate, find content and determine where they are. The webpage uses titles that describe the topic or purpose of information or content. (WCAG 2.4)

A. We have implemented clear and descriptive titles, for example Pågående Samtal (ongoing calls) to make it clear to users what the buttons do.

B. We suggest iteratively ensuring that titles stay simple, consistent but most importantly descriptive of what the content contains or actions do.

(c) Content should be Understandable for users

i. Text content should be readable and understandable (WCAG 3.1).

ii. Ensure consistent navigation and consistent identification of actions across the website (WCAG 3.2.3 & WCAG 3.2.4).

A. Predictable placement of key features (such as the search bar) was found to be important to user flow.

10. Support user flow

(a) We found that there is a strong need to support the users flow throughout using the website. Users were frustrated when actions like scrolling or picking a date disrupted their flow or progress.

11. Predictability in navigation, layout and interaction

(a) Layouts and interactions needed to be as predictable as possible, minimizing surprises or hidden interactions, such as hidden scrollable areas (also mentioned in WCAG 2.2 a iii).

(b) Our findings suggest for this group that it would be beneficial to have a section that explicitly states what the sorting order of a list is (newest first, up until chosen date) to make it clear for the users and make finding what they are looking for easier.

12. Feedback lets users know what is happening and that things are working correctly

(a) It can be beneficial to provide visible feedback when a user takes an action, for example when selecting a date. Using animated scroll to show the results to the users could be a solution. The same applies when conducting any action, the user should receive feedback that their action has gone through.

7.2 Digital Fika

The website prototype Digital Fika was intended to convey an interaction of digital commensality during user testing, while everything not being fully implemented functionally. It was designed to appear and behave like the platform we had in mind, allowing us to evaluate the accessibility and the idea with our participants along with applying accessibility recommendations. Navigation elements such as buttons and links worked as expected. Users can move between pages, start or join a call, and interact with buttons related to chat and video call features. These interactions were fully functional from a pure interface perspective. However, features such as the chat and video call were simulated rather than implemented in full. The chat interface responded to input and allowed text entry, but messages were not sent or received in real time using a server. The video call view displayed static images of participants to suggest a video environment, but did not contain any actual communication functionality.

After the final round of user testing and feedback from iteration three a few more modifications were made to the website. The text was made larger in several places, following our recommendation 9a. In the header the contacts and profile link text was made larger, the icons was also made bigger to match the text. We also added a welcoming banner with text explaining what the website is about. See figure 7.1. The links in the header, "kontakter" and "Profil", and the buttons "Pågående Samtal" and "Starta nytt samtal" all follow the recommendations 2, 3, 9a, 9c and 12. They use clear and concise language to communicate what they do or where they lead to (2, 9c). They also use skeuomorphic elements to more clearly communicate their purpose as well as double coding the content(3). The text and icons all have a high enough contrast ratio (9a iii).

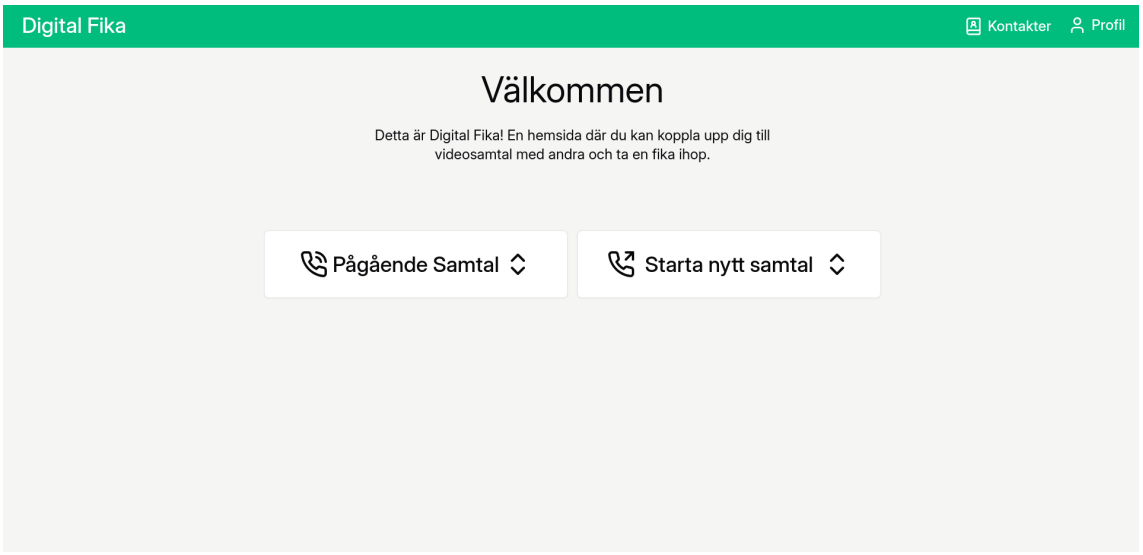

Figure 7.1: The final starting page.

We also added a new option to the Start Call menu. Now one can start a call where only those invited can join. Having the option to have a call where only specific people could joined, people the user selects, was given as feedback during the last iteration. See figure 7.2.

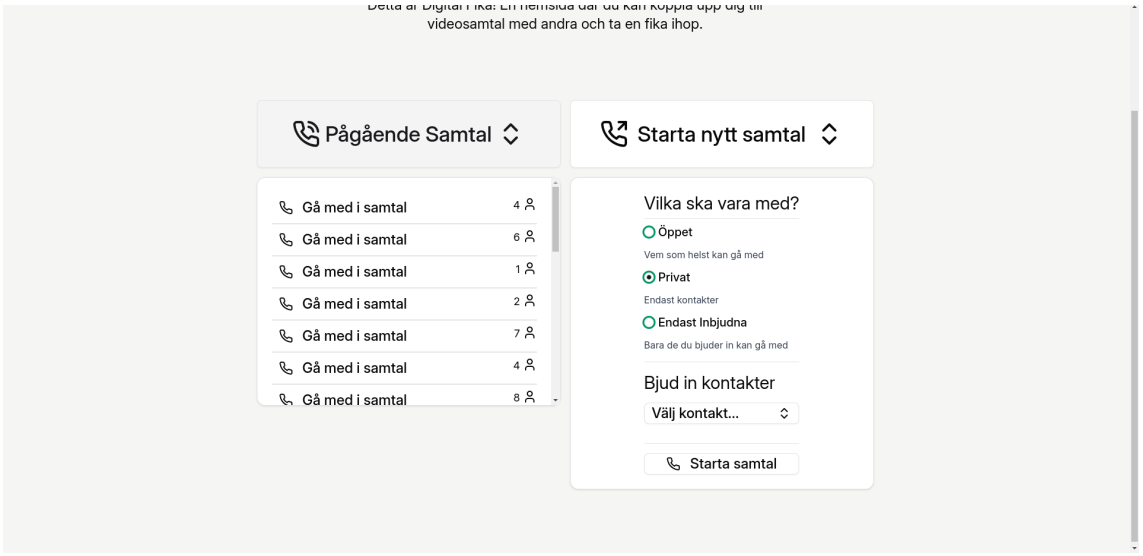

Figure 7.2: The starting page with the menus showing.

The text was also made larger on the contact page. There was an issue with making the text larger in the input field however so this text stayed the same size. See figure 7.3.

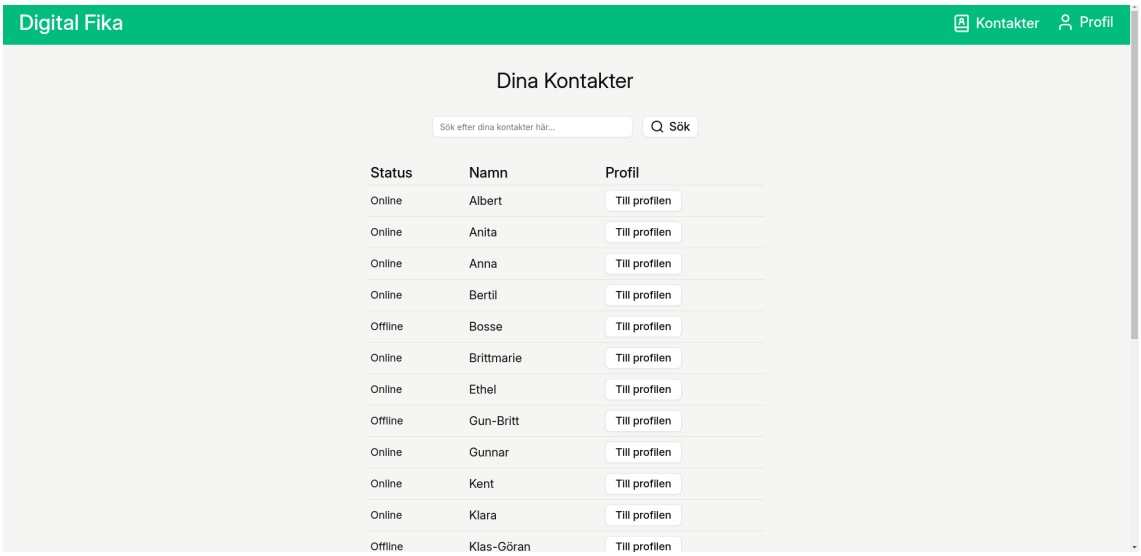

Figure 7.3: The contacts page after the final changes.

The majority of changes were done in the video call view. Here the text was also made larger in several places, excluding the input field. Most notably are the names in the video feeds showing the name of the participants. All testers thought that the text here was too small and so it was changed. The text above the chat marking it as the chat was also made larger. Under it is text telling the user how many people currently are in the call. Not visible but a bug was fixed where the chat would expand indefinitely to hold all the messages. Now it holds a fixed amount and when that has been reached a scroll bar appears to let the user scroll through the messages. The chat updates so that the last message written is shown and all older messages are pushed upwards. See figure 7.4.

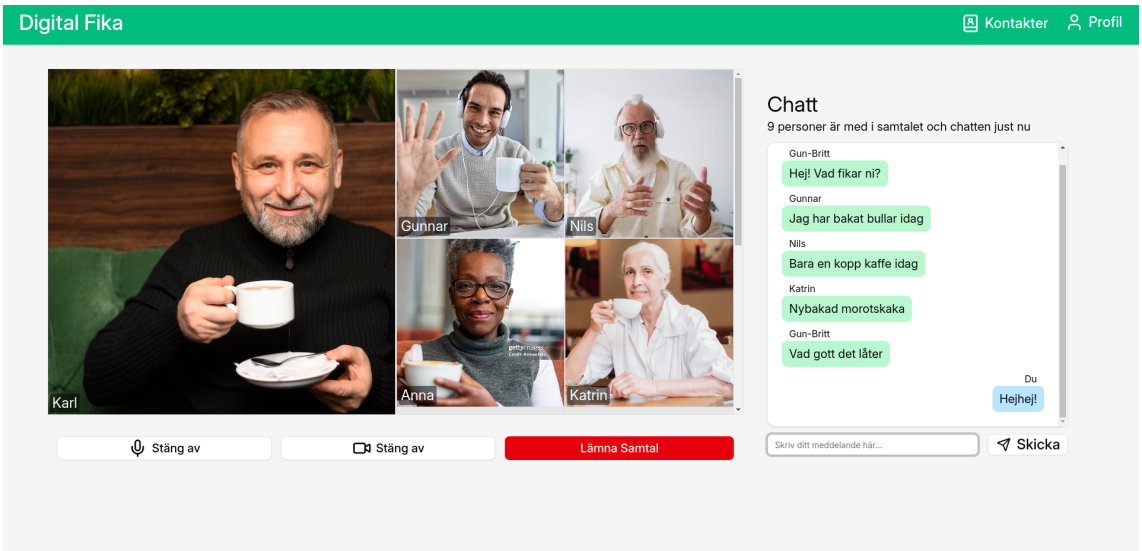

Figure 7.4: The video call view after the final changes.

All of the pages of Digital Fika follows recommendations 5, 7, 10, 11 and 12. The

hierarchies (5) with the menu bar at the top and content following below, this structure is followed for all pages of the webpage which creates a predictable navigation for the user(11). This structure in addition to responsive actions(12) help support user flow(10). For all the pages we have also tired to only have necessary actions to eliminate unnecessary options and distractions. All language of on the site is also short and concise, the pages are also visually minimal. All of this eliminates excise for the user(7). Recommendations 6 and 8 have not been fully implemented on Digital Fika as of now. As none of our users used a screen reader to navigate websites this recommendation 6 was not applied to the site. Recommendation 8 works for the "Kontakt", see figure 7.5, page but not up to 200% for the other pages. Our goal with the website was that no zoom would be necessary as the elements would be big enough from the start. This was true for all users except P6 and P7 who wanted the Start page, the "Profil" and "Kontakt" page to be zoomed in to 150%. This is possible for all of them without a loss of function or information. Both the start page and "Profil" page, see figure 7.6 and 7.7 respectively, can be zoomed in up to 175% without a loss of function or information and the video call page can be zoomed in up to 110%.

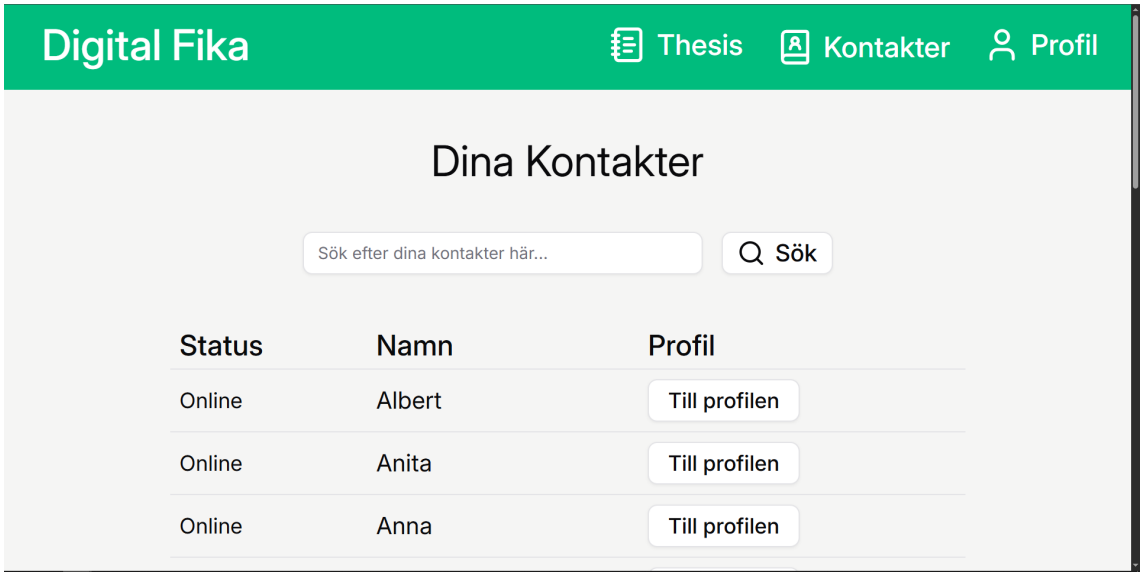

Figure 7.5: The "Kontakter" page zoomed in to 200%.

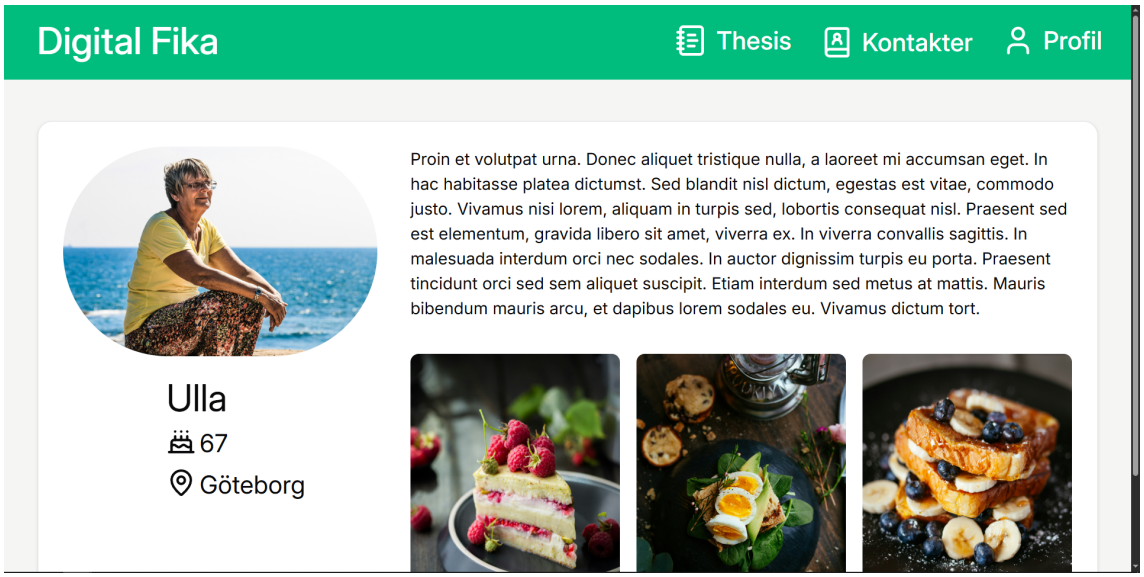

Figure 7.6: The "Profil" page zoomed in to 175%.

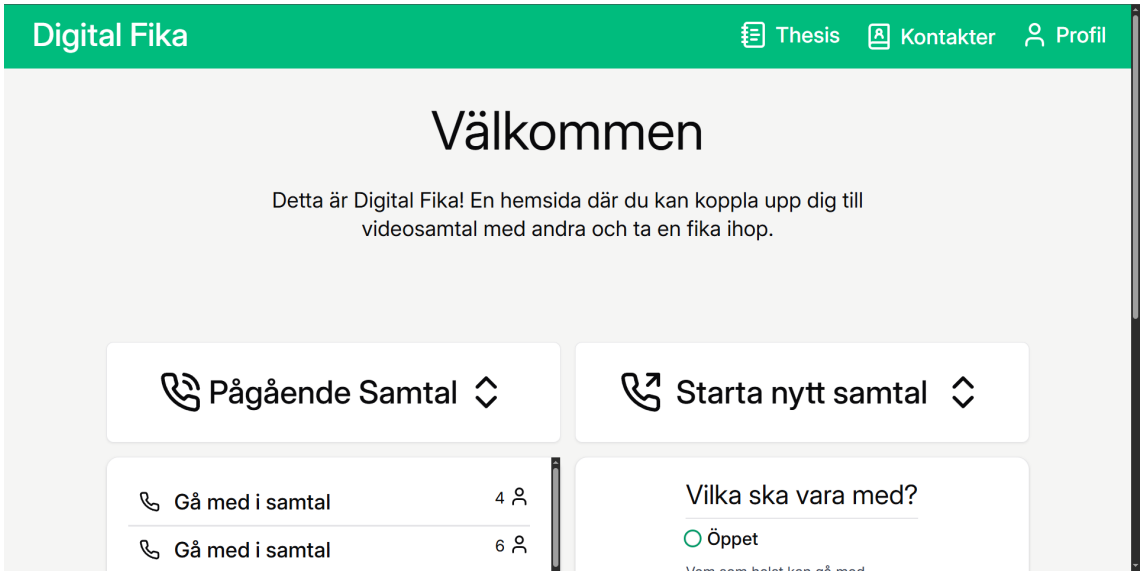

Figure 7.7: The start page zoomed in to 175%.

The profile page, the modal window that shows when leaving the call and other elements that has been shown in figures under 6.4.4 have not been changed. These can bee seen in figure 6.12, the modal popup, 6.14, the profile page, and 6.16 as well as 6.17 for start call elements. The zoomed in versions are also shown above in figure 7.5, 7.6 and 7.7.

7.3 What should be considered when designing websites focused on digital commensality for older adults?

When designing a website for older adults that focused on digital commensality there are several things that should be considered. First of all, one should consider accessibility, our recommendations can be read in section 7.2. As mentioned in 7.2 there are several more accessibility factors that should be considered, such as alternate modes of input, support for screen readers, etc. Some of these have been implemented but has not been tested due to limitations in testers and time. Another thing to consider is the user group. All older people do not want to socialize through digital channels, nor do all older people have a need to socialize through digital means. This is seen when looking at the Swedish testers from Tjörn compared to the people with another cultural background that looked at our concept. See 6.4.2. So in addition to looking at accessibility one also need to consider that the user group has a need, want or will benefit from digital commensality.

8

Discussion

In the upcoming sections we will reflect on what we learned during this process and what the results might mean both for accessibility and older adults but also accessibility in a broader sense. We will discuss the final results, how the participants reactions to the concept, Digital Fika, changed throughout the iterations, the influence of the user group and the feedback we received. We also address some ethical questions, including how we handled consent and anonymity, along with what it means to design for users who may not consider themselves in need of better accessibility. We also discuss limitations and what we believe needs more work in the future to push the research further along.

8.1 Reflections on the Result

When we set out to explore accessibility for older adults, one important aspect that we realized was how interconnected accessibility and confidence can be. While following guidelines such as WCAG 2.2 and focusing on accessibility in a technical sense is valuable, we understood through this endeavor that the emotional and social aspects of using a website are also important. This aligns with what has been found previously within the field, that websites need to be relevant and socially meaningful in terms of community [80]. In connection to this, we also found it interesting that the participants in our study reported feeling uncertain and less confident interacting with the website in early stages of the prototype when elements were more unclear or unfamiliar. In later stages when the website was more stable it was experienced as more clear and familiar, which made a big difference in their perspective on it and the potential of the concept.

The results also shaped the iterative aspects of the project, and this worked well with the ATD we worked with. This allowed us to gather feedback throughout the entire process, and kept us aligned with the final goal results by continuously including our user group. We believe that our results are an indication of how design can influence digital participation. By developing a prototype that our users could interact with and see take shape over time, they even shifted their perceptions of skepticism to curiosity.

8.1.1 Reflections on our Design Recommendations

The design recommendations in this thesis took form throughout the process and was iteratively worked on in parallel with the development of the website. The foundation of the initial recommendations were based on relevant literature and WCAG 2.2 where we comprised them largely based on previous personal experiences and assumptions. As we included our user group of older adults in the iterations we expanded and adjusted the recommendations to better fit them based their specific needs that emerged through testing and user feedback. Meaning that certain recommendations did not disappear because they are unimportant, but because they were not relevant for our specific testers.

8.1.2 Final Website prototype of Digital Fika as a Design Outcome

As mentioned earlier, developing a website prototype allowed us to try and implement a lot of guidelines and recommendations in practice. Since both of us have a background in software engineering, we wanted to utilize our knowledge in programming as well as continue to develop our skills using current web development tools. WCAG is also not only guidelines for designing for visual accessibility. Many of the WCAG success criteria need to be implemented in the code itself, thus it made sense to develop the prototype in the form of a website where we could fulfill the most success criteria rather than using a mock-up tool like Figma [71]. WCAG are also specifically for websites, which pushed even more for the prototype to be a website.

Throughout this process we learned how accessibility can take place in actual user interactions. For example how color or contrast that was compliant according to both WCAG and other design recommendations, still had room to improve in practice tested on our user group. This highlights that technical compliance does not always equal perceptual clarity, in particular for older users who may have different visual needs or expectations [56]. We believe one of the biggest advantages to having built a coded website prototype is the understanding of what it means to build a website in an accessible way and the level of detail we could receive in our user feedback in later iterations. Making quick changes to show the users during testing was also made possible thanks to this. Changes that we did during testing were minor and mostly consisted of a change in the size of text.

One challenge in developing the prototype was to both ensure that we reached a level of functionality, at least making it appear functional, so that we could have our users test and interact with them while also ensuring that it gave clear and visible feedback. As we touched on in the evaluation of iteration 3, some participants were unsure about whether or not their actions had registered in the system, for example sending a message. Improvements can be made to improve the visual clarity of the system working or their input registering properly, to establish some

trust with the website.

A missed opportunity with the website was that we did not have a chance to test many of the built in accessible features such as keyboard navigation, focus and screen readers. This was due to our user group not having a need for these features and time constraints not allowing us to test it ourselves by facilitating these circumstances for ourselves.

The structure of the recommendations was inspired by the WCAG format [22]. While working with and reading the WCAG guidelines, we found that they were easy to navigate, read and follow. With the short but descriptive headings and ability to find more detailed information underneath. While we did not include the hyperlinks featured in WCAG, we instead include our insights from the study under the recommendation titles, to give an example of the use case but also argue for why it may be important to consider. We wanted the list to be accessible not only to potential users but designers who may want to consult it during the design or development process of a website.
While we believe our recommendations partly answers the research question of what should be considered when designing websites focused on digital commensality for the group of older adults we included in the study, the list is by no means comprehensive. It is based on our own experiences and feedback from our user group, from observations we made and feedback we gathered. In this study we did not conduct a broad systematic review of all available web design recommendations or guidelines, nor were we able to include a wide range of participants in terms of impairments or technical experience. This means that while the recommendations we propose are grounded and practical, they are also influenced by the scope and limitations of our study. As such, they should be understood as a reflection of what we found to be most important and relevant within the context of our work, and not as a universal checklist for accessibility.

8.1.3 Answering the Research Question

The research question for this thesis was "What should be considered when designing websites focused on digital commensality for older adults?" We are aware of the broadness of the question, and that it is one where the answer is dependent on the context and even more so when conducting an exploratory approach to answering it. Accessibility in itself is very dependent on the context and what the goal of the design is, as well as the intended user group. The users we included in our study were older adults and fit into the age category we wanted to gather input regarding accessibility. However they were all relatively experienced in using digital technology, such as phones and tablets were part of their daily life, and physically able. Thus the user group influenced the answer to the research question of what might be more or less important to consider, and this should be kept in mind when reading them.
Within the scope of this thesis, we only looked at digital accessibility. There are however more technology other than websites that also needs to be accessible, such

as means of input, computers, tablets and audio devices. We noticed this during one of the experiments where we had forgotten to bring a wireless mouse and the participants had to use the touch pad. In general they were more uncomfortable using this and it was more difficult for them to interact with the website, especially scrolling. Many of the testers were more comfortable using tablets or phones, touch based interfaces, which was not tested during this thesis. It could be interesting to develop an application for a tablet to explore a different set of recommendations.

8.2 Reflections over the Process

The overall process, working after ATD, worked well for for this thesis. Speed storming along with sketching worked very well to facilitate ideation and early prototyping. The same can be said for programming and building Digital Fika. In all the process went smoothly and without much of note, the testing and interviews were however more interesting.

8.2.1 Insights from Interviews and Testing

The interviews and testing during this project did not only give us data about which accessibility areas to focus on but also more understanding and ongoing dialogue surrounding how our participating group of older adults use digital technology. Since we also wanted to incorporate commensality to the accessibility question, it added another level of discussion and insights to be had. Testing the prototype meant testing the accessibility but also the possibilities of social interaction and eating together online. This in turn raised questions on how to consider that users feel comfortable enough to participate, encouraged or a need to use such a website along with being able to use it.

We chose to conduct the interviews mostly in pairs, only one was conducted with one participant, which turned out to be an effective way to gain more user feedback and open discussion. We believe that it created a more relaxed space to invite the participants to more openly share their thoughts and input in conversation not only with us but also among themselves. They often reflected out loud together and since they already knew each other, their experience with completing the tasks for the website and answering questions were more collaborative. We noticed this when interviewing one of the participants alone, where the discussion would be shorter and more concise. This is not necessarily a negative thing, and we believe gaining insights from both ways was valuable.

We also utilized the think-aloud method, which we believe was successful when giving the participants tasks to complete using the website. The participants were good at verbalizing their thoughts when navigating the website and trying to understand what to do. They made it clear when there were moments of hesitation or doubt, or when something was easy and just made sense. One of the bigger insights from the interviews was that we found the participants mentioning the need for visible

feedback, both when using Sveriges Radio in the first interview round and when testing our own prototype. If their action did not give them a noticeable response, they would assume something was wrong or that their input had not registered.

The interviews were recorded and we took notes during the sessions. After we wrote our own reflections on the testing as a whole. Having recordings and notes allowed us to go back to parts of the interviews where something interesting was said or done, which was helpful when comparing the responses between the iterations.

Our approach also had its limitations. As mentioned before, the user group lacked diversity in terms of cultural background, comfort with technology, impairments, social life, and so on. This meant that the while the group of older adults that we talked to had no need for example screen readers or direct need for the concept of digital commensality, it does not mean that this is true for other groups. To explore this, further testing needs to be done with a more varied user group.

8.3 Ethical Considerations

There are several ethical considerations to keep in mind when working with accessibility, social norms, eating, and older people. Our project touched on all these areas, which meant we had to keep ethics in mind during both testing and throughout the design process.

As mentioned in the Process chapter, the participants that tested our prototypes were people known to us, the authors. While this created a comfortable environment for the participants it also brings some ethical responsibilities in relation to this. We made sura that they were thoroughly informed before and during every test that they themselves were not being evaluated, only the interface they were tasked to interact with. They were also encouraged to be as truthful as possible when giving feedback and criticism. We ensured them that there would be no hurt feeling on our part and that everything they said would aid in our work. We also made sure to affirm and thank participants for their feedback as it was given. We also informed them about how data was collected through the tests and how we intended to use it in this thesis. All participants consented to the recording, collection and use of their interview data and feedback in this thesis. It is, of course, difficult to ensure complete anonymity as attributes such as age and geographical location play a part in the result. However we kept the participants anonymous outside of this by not including names, association or any other identifying information in the report.

One of the outcomes from the thesis was a set of design recommendations. While they are grounded in a specific context and user group, we hope and believe that they, and the process, still contribute to a growing discussion about what it means to design accessibly. The recommendations are not a critique of existing guidelines,

but rather a more concrete and adaptable way to address accessibility that designers and researchers alike can build upon.

If the website is deployed in a more fulfilled stage, there could be affects and consequences both positive and negative. It has the potential to decrease loneliness for older people and thus improve their mental and physical health. It can help people stay connected, particularly for those who are far away from family or friends or unable to meet them in person. However some of our participants have discussed whether the concept has the possibility of people using the website to cause harm. There is a fear of scams or manipulation, especially given the vulnerability of some older users online. This concern is not unfounded, older people are often targets for online fraud and manipulation, and any platform that encourages social interaction must also take responsibility for keeping the users safe. While some protective measures can be taken within the design of the website, such as discouraging users from sharing personal information or allowing users to report others breaking the rules, design alone may not be enough to eliminate the risk. We recognize that a website such as this requires a clear ethical framework and policies, along with collaboration with trusted moderators, to keep users as safe as possible. These are beyond the scope of this thesis, but are just as important to consider when discussing the broader implications of this kind of system.

8.4 Future Work

There are several aspects one should consider for future work within this thesis. First there are more improvements that can be done on the website prototype. As one tester suggested, there should be more feedback from the chat showing that a message has been written. This could be in the form of a small modal popup at the bottom of the video feeds, as to not cover the video feeds but still drawing the users attention. Another potential addition are chats not connected to the video calls. Many of the testers were more interested in keeping contact with people they already know, thus chat communication could be beneficial to schedule calls. The chats could also be a basis for to start a video call, where a video call started through these automatically invited all the members in the chat. As other websites for older adults have, Digital Fika could have different video call rooms with themes or topics. This could also be true for chats if implemented, and these are a good way of meeting people with similar interests.

Although our project focused on digital commensality for older users, our evaluation was mostly focused on the accessibility and usability of the website interface. While these aspects are important to ensuring that a platform is inviting and usable by its intended audience, we were not able to fully explore or test the commensality aspect of the design in practice. Due to time constraints and the technical scope of the prototype, we did not implement a functioning video call system, nor did we conduct user tests in digital contexts such as sharing a meal or "fika". As a result, we were unable to conclude whether or not the platform can facilitate commensality or a sense of togetherness in use. Future work could be to test the platform over

a longer time period, ideally with a fully implemented communication system or using an existing one like Zoom [35] and include contexts that involve sharing a cup of tea or meal. This would allow for a more comprehensive understanding of how commensality and digital tools can be beneficial to older users.

The design recommendations presented in 7.2 would benefit from being evaluated with a more diverse set of testers with other impairments to further evaluate what accessibility requirements are important. The tester group influences the results of any research and this even more clear when researching accessibility while not having access to a group with diverse impairments that can accurately represent accessible needs.

The research would also benefit from looking further into in which context users want and benefit from digital commensality. As the majority of our testers have a spouse or equivalent they are living with they do not have the same need for socialization as someone living by themselves. Looking at a broader group with a variation in social network would be beneficial.

Lastly one can also look more into the technology surrounding the website and digital commensality. We noted that a change in wireless mouse to touch pad as pointer input drastically changed the difficulty in interacting with the prototype. Looking at these and more technology one might need, such as the difference in a computer or tablet, how different forms of microphones, speakers and headphones change the interaction would be interesting.

9

Conclusion

This thesis explored *What should be considered when designing websites focused on digital commensality for older adults?* This question and thesis was inspired by RISE's project We Are All Old, that explore eating, aging, and how you yourself relate to your image of how life will be when you are old.

Through or own iterative and exploratory design process, we designed and developed a website prototype, Digital Fika, and a set of recommendations. Digital Fika was tested by a group of older Swedish people, who at the first test were hesitant towards the concept of digital commensality. However, we found at the final test they were more enthusiastic about it. After this, we looked into how different cultures socialize to see if others than Swedes, a notoriously introverted people, were more open towards digital commensality. Through this, we uncovered how different context can affect the needs and wants of engaging with it. Digital Fika represents our concepts and implemented what should be considered in practice while the recommendations are based on user feedback, testing of our prototype, literature and existing design principles. The purpose was not to create a final solution, but rather to learn from the process and add to the discussion of accessibility in technology.

To further this research one should include a more varied set of testers with a wider need of accessibility, e.g users who need screen readers or keyboard navigation to use a website. Something that we did not have access to during this thesis. In addition one should further consider in what context users are in need of digital commensality.

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A

Appendix 1

Interview questions

Background

1. Age
    a. 66-70
    b. 71-75
    c. 76-80
    d. 81-85
    e. Over 85
2. Gender
    a. Man
    b. Woman
    c. Non-binary
    d. Other
3. Have you previously worked with technology or computers?
   (If yes, for how long and in what field?)

Using technology

4. Which devices do you use regularly?
    a. Mobile phone
    b. Computer/laptop
    c. Tablet
    d. None of these (Which one?)
5. How long have you been using a mobile phone/computer/tablet?
   (What and number of years)
6. How did you learn to use technology/devices?
    a. Self-taught
    b. Through work
    c. Family or friends showed me
    d. Other
7. How often do you use devices?
    a. Every day
    b. Several times a week
    c. Once a week
    d. A few times a month
    e. Less often
8. What do you primarily use technology/devices for? (Multiple answers possible)
    a. Banking and paying bills
    b. Healthcare and medical services
    c. News and information
    d. Social media and communication
    e. Entertainment

    f. Other
9. How often do you need help when using digital technology?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never
10. What do you most often need help with?

Website navigation

To test how users experience a website, we ask them to visit, for example, Sveriges Radio's website.

Instructions:

1. Go to the Sveriges Radio website.
2. Find the program P3 Dokumentär.
3. Select an episode published in February.

Questions:

1. How was it to find the program?
    a. What was difficult?
    b. What was easy?
2. How did you experience navigating the website?
    a. Was it clear where to click or not?
    b. Did you experience any difficulties?
3. Did it feel slow to find an episode?
4. How was the readability of the text on the website?
    a. Was it easy to read headlines and menus?
        i. Was it easy to distinguish between different sections?
        ii. Was anything unclear?
    b. Would you like to change anything about the website?
5. If you got stuck, what was unclear?
    a. How did you try to solve it?
    b. What could have made it easier?
6. If you were to help someone else find an episode on Sveriges Radio for the first time, what would you tell them to make it easier?
7. Would you use this website again? Why/Why not?

User Experience

11. On a scale from 1 to 5, how comfortable do you feel using new technology?
    (1 = I don't know where to start, 5 = I feel very confident and comfortable)
12. How do you feel when using new technology?

(Note if they need example words: e.g., curious, stressed, frustrated, confident, uncertain.)

13. What do you find difficult about using websites?
14. Is there anything that makes websites easier to use?
15. Can you name a website you enjoy using? Why?
16. Is there a website you dislike? Why?

Social aspects

17. How do you stay in touch with family and friends digitally?
    a. Phone calls
    b. Video calls
    c. SMS
    d. Social media
    e. Other
18. Do you feel that technology helps you stay connected with others?
19. Do you use video calls?
20. How comfortable do you feel using video calls?
    (1 = Not comfortable at all, 5 = Very comfortable)
21. If you don't use video calls, why not?
    a. I don't know how
    b. I don't have anyone to talk to via video
    c. I find it uncomfortable
    d. Technical issues (sound, image, internet problems)
    e. Other
22. Do you use technology/devices during meals?
    (For example, watching something while eating, looking up recipes, talking to others.)
23. Do you think technology can help reduce loneliness? Why/Why not?
24. Is there anything that makes it harder for you to stay connected digitally?
    a. I don't need it
    b. Technology feels difficult to use
    c. I don't know where to start
    d. I don't have anyone to talk to digitally
    e. It doesn't feel like "real" social interaction
    f. Other
25. Would you be interested in participating in digital social activities, such as virtual coffee meetups?

Interview Questions 23/4

Website navigation

First the participants will complete tasks using the website, then they will be asked some follow-up questions.

Instructions:

1. **Join an open call ,** turn off the camera, type a message in the chat and leave the call
2. **Start a new open call**, invite three contacts
3. **Go to the contacts** and find “Anita”, click on Anita’s profile

Questions:

1. **Join a call:**
    a. How was it finding and joining a call?
    b. What let you know that it was an open call?
        i. Or was it unclear?
    c. Was how to join the call clear?
    d. Was it easy to find how to turn off the camera?
        i. Was it clear/unclear that it was off?
    e. Did everything work as expected?
        i. Did anything not work as expected?
    f. Was there something you wished would've happened that didn't? Or did?
    g. Was the chat easy to use?
        i. Was the text a good size? Do buttons make sense?
        ii. Was it easy to tell who is sending which message?
2. **Start a call:**
    a. Was it clear how to start a new call?
    b. Did anything about the task feel complicated or unexpected?
    c. How did inviting contacts work for you?
        i. Did the search function work as expected?
    d. How did it feel being in the call?
    e. What would make it easier to start a new fika call?
3. **Contacts:**
    a. Was it easy or difficult to find the name in the contacts?
    b. Was it clear how the contacts were sorted?
    c. Was the contact list easy to read?
    d. Would you want to use this contact list to reach people you care about?
    e. Did the layout make sense to you?
4. **Overall experience:**
    a. How did you experience navigating the website?
        i. Was it clear where to click or not?
        ii. Did you experience any difficulties?
    b. How was the readability of the text on the website?
        i. Was it easy to read headlines and menus?

        ii. Was it easy to distinguish between different sections?
        iii. Was anything unclear?
    c. Would you like to change anything about the website?
    d. If you got stuck, what was unclear?
        i. How did you try to solve it?
        ii. What could have made it easier?
    e. Would you use this website again? Why/Why not?
    f. If you lived far away and/or were unable to attend a real-life fika, would you enjoy having a chat like this with a friend or family member?
    g. If you remember how the website was last time, how do you feel about it now?

Swedish ver.:

Instruktioner:

1. Gå med i ett öppet videosamtal, stäng av kameran, skriv ett meddelande i chatten och lämna samtalet.
2. Starta ett nytt öppet samtal och bjud in tre kontakter.
3. Gå till kontaktlistan, hitta “Anita” och klicka på hennes profil.

Intervjufrågor:

1. **Gå med i samtal**
    a. Hur var det att hitta och gå med i ett samtal?
    b. Vad fick dig att förstå att det var ett öppet samtal?
        i. Eller var det otydligt?
    c. Var det lätt att förstå hur man stänger av kameran?
        i. Var det tydligt/otydligt att kameran var avstängd?
    d. Fungerade allt som förväntat?
        i. Var det något som inte fungerade som du trodde?
        ii. Var det något du önskade skulle hända som inte hände
            1. eller tvärtom?
    e. Var chatten lätt att använda?
        i. Var texten i lagom storlek? Var knapparna begripliga?
    f. Var det lätt att se vem som skickade ett meddelande?
2. **Starta samtal**
    a. Var det tydligt hur man startar ett nytt samtal?
    b. Var det något som kändes krångligt eller oväntat?
    c. Hur tyckte du det fungerade att bjuda in kontakter?
        i. Fungerade sökfunktionen som du trodde?
    d. Hur kändes det att gå med i samtalet?
    e. Vad skulle kunna göra det lättare att starta ett nytt fikarum?
3. **Kontakter**
    a. Var det lätt eller svårt att hitta namnet i kontaktlistan?
    b. Var det tydligt hur kontakterna var sorterade?
    c. Var kontaktlistan lätt att läsa?
    d. Skulle du vilja använda denna kontaktlista för att nå vänner/nära och kära?
    e. Kändes layouten logisk?

4. **Generell feedback**
    a. Hur upplevde du det att navigera på webbplatsen?
        i. Var det tydligt var man skulle klicka eller inte?
        ii. Upplevde du några svårigheter?
    b. Hur var läsbarheten av texten på webbplatsen?
        i. Var rubriker och menyer lätta att läsa?
        ii. Var det lätt att särskilja olika sektioner?
        iii. Var något otydligt?
    c. Är det något du skulle vilja ändra på webbplatsen?
    d. Om du fastnade, vad var otydligt?
        i. Hur försökte du lösa det?
        ii. Vad hade kunnat göra det lättare?
    e. Skulle du vilja använda denna webbplats igen? Varför / varför inte?
    f. Om du bodde långt bort och/eller inte kunde fika i verkligheten, skulle du uppskatta att ha ett samtal som detta med en vän eller familjemedlem?
    g. Om du minns hur webbplatsen såg ut förra gången, hur upplever du den nu?