AARHUS KOMMUNE

Bachelor degree project

Enhancing Kommune's digital concept for booking sports premises

and providing added value through community engagement

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Executive Summary

Sports & Leisure is an important department within Aarhus Kommune, which is tasked with providing and managing different facilities for sports and leisure, to give *the city a pulse* and *citizens a good experience,* ultimately supporting the Kommune's mission and vision of developing the city and communities of Aarhus. (Aarhus Kommune, 2022)

The overarching challenges that the department is currently tackling are the physical and mental health of the people, potentially as an effect of the COVID-19 pandemic, with a significant and increasing number of people dealing with severe obesity and loneliness. To tackle these and more challenges the department has created a Sports and leisure policy 2022-2025, which focuses on providing more and better sports facilities and securing inclusive and accessible sports and leisure activities. (Aarhus Kommune, 2022)

The current digital solution provided by the department for individual booking of sports premises, which should act as the enabling tool to access these facilities, is currently not functional, which creates a bottleneck in delivering value for the community and results in suboptimal capacity usage. Moreover, as a result of the dysfunctional booking system, the employees of the Sport & Leisure department are overwhelmed by manual email booking requests, creating frustration on both ends.

In response to said challenges, a re-conceptualized digital solution is proposed to tackle the specific pain points and provide added value to the community. To ensure controlled use of resources and enable the adaptation of the solution based on the user feedback, the incremental implementation is suggested in three different steps.

The first release is focused on user adoption, tackling fundamental access and usability issues by enabling intuitive booking, visibility of amenities, and a streamlined process for premise reservation. The second release focuses on adding value with community engagement features, allowing citizens to access and have an overview of associations that match their level of sports proficiency, thereby fostering connection and regular participation. The third and final release is launching a comprehensive mobile application to provide more convenience and secure user retention.

The process of creating the solution followed the Design Thinking approach to ensure a thorough understanding of the users' needs and the municipality's goals. This approach drove the ideation and iterative refinements, resulting in a platform that is truly user-centric and ultimately aligns with said objectives of the Aarhus Kommune and Sports & Leisure department.

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Introduction

Aarhus Kommune is the central municipal authority of Aarhus, offering a wide range of services to promote the economic and social development of the city. Based on the considerable societal and economic benefits associated with digitalisation and self-service, the Kommune has recently adopted a new channel strategy which focuses on incentives for citizens to use digital solutions, aligning with the Danish national eGovernment strategy pushing digitalization. (Aarhus Kommune, 2023)

Culture and Citizen Service is one of Kommune's six magistrates' departments, which further spans different organizations aimed at creating the framework for *good lives with experiences, accessibility, activities, creativity and lifelong learning*. (Kultur og Borgerservice, 2023) Sport & Leisure is one of the organizations under Culture and Citizen Service responsible for supporting leisure life in Aarhus by primarily managing and lending different sports and leisure premises. Overall, the goal of the department is to *give the city a pulse* and *citizens a good experience,* ultimately supporting Kommune's mission and vision of the city's development. (Kultur og Borgerservice, 2024)

The overarching challenges that the department is currently tackling are the physical and mental health of the people in Aarhus, potentially as an effect of the COVID-19 pandemic, with a significant and increasing number of people dealing with severe obesity and loneliness. To tackle these challenges the department has created a Sports and leisure policy 2022-2025, which focuses on providing more and better sports facilities and securing inclusive and accessible sports and leisure activities. (Appendix 1)

Foreningsportalen, the current digital solution provided by the department for individual booking of sports premises, which should act as the enabling tool to access these facilities, is currently not functional, which creates a bottleneck in delivering value for the community and results in suboptimal capacity usage. Moreover, as a result of the dysfunctional booking system, the employees of the Sport & Leisure department are overwhelmed by manual email booking requests, creating frustration on both ends.

This ultimately acts as a barrier to achieving Kommune's city development and digitalization ambitions. (Appendix 1, Appendix 2)

Problem statement

In response to these challenges, this project aims to understand the pain points of all stakeholders to create a digital solution for booking sports and leisure premises that is functional and accessible, ensuring streamlined, effortless, and frequent participation for end-users in booking premises.

To achieve this, the project will focus on researching the following crucial questions:

- What are the key pain points experienced by stakeholders involved in the premise booking process in Aarhus, including both users and staff members of the Sport & Leisure department?
- How can a digital solution address these identified pain points and challenges to ensure a more streamlined, effortless, and frequent participation for end-users in booking sports premises and participating in sports?
- Could this solution be used to foster more community engagement in Aarhus, thereby creating added value in supporting the overarching vision and mission of the Aarhus Kommune?

Methodology

Research design and epistemological considerations

After getting an insight into the different pain points and barriers that the stakeholders are facing when it comes to booking sports facilities in Aarhus, I started my mixed-methods research case with an aim to gain a comprehensive understanding of these barriers, establish a cause-and-effect relationship, and create a digital solution which would ensure a more streamlined, effortless, and frequent participation for end-users in booking sports premises and ultimately doing sports.

In order to do so, I attempted to work extensively with my stakeholders following the human-centered Design Thinking approach, where I iteratively included their insights in crafting a solution that would truly tackle their pain points.

The majority of my insights were drawn from a constructivist approach, as I believe that the value of my solution is embedded in the nature of subjective experiences of my users in relation to booking sports premises. Furthermore, I tried to balance the subjective qualitative insights from interviews and focus groups with more quantifiable objective data gathered through my user survey. This mix of positivist and constructivist approaches, as well as combining different data points enabled me

to create a holistic overview of the case and create the most effective end-solution for all the stakeholders involved.

To synthesize broad themes and draw conclusions for my research, I used inductive reasoning, which enabled the development of my concept. Furthermore, I applied deductive reasoning in the detailed design of the solution, with an example of different features employed in the improved booking system, such as map overview, optimized filtering system, simplified booking process, and community integration

I believe that this method proved to be highly effective in making best use out of my research and empirical insights, while also making informed design choices that are grounded in best practices in digital interface design.

Primary data collection

For the purpose of this project, I gathered and used the following primary data which will be elaborated on in the sections below: qualitative interview and ongoing correspondence with a representative of Aarhus Kommune responsible for the Sport & Leisure department, a quantitative online survey targeting potential users, collaborative co-creation workshop for ideation and concept validation, and a series of iterative user tests to evaluate the usability and effectiveness of my digital concept.

1. Semi-structured interview with Sport & Leisure department

My research process started with a semi-structured interview with a Sports and Leisure Department representative from Aarhus Kommune, with an aim to understand their business model, their satisfaction, experience and particular pain points around the current process and solution on their website, as well as ambitions for future improvement.

I tried to facilitate a semi-structured discussion online to best cater to their availability and keep a balance of direction and agility, which enabled a collection of in-depth insights while maintaining a natural conversation, detailed in the Appendix 2.

This initial engagement not only facilitated a meaningful interaction with my primary stakeholder but also laid down the fundamental groundwork for my project and adjusted the scope according to their needs. These insights were critical in identifying the core problematic areas which I continued to further investigate with the current and potential users of the solution in the latter stages of my research.

2. Online user survey

The primary goal of integrating both qualitative and quantitative data in my survey was to gather insights into the different habits, pain points, and expectations by individuals when booking sports and leisure facilities in Aarhus. The sampling strategy used was convenience and voluntary participation due to resources I had at my disposal for the research process. The survey was implemented through SurveyXact platform and shared across several relevant Danish and international Facebook groups in Aarhus. I used this method for its efficiency and its effectiveness in capturing a wide audience relevant for the creation of my end solution. The questionnaire was a mix of open-ended and closed-ended questions including several demographic questions.

A total of 217 anonymous participants completed the survey in the set timeline for completion. Data analysis was conducted within SurveyXact and detailed findings from this survey are documented in Appendix 3. The insights I gathered from this survey were another foundational piece guiding the rest of the research project, as well as quantitatively validating my initial hypotheses regarding important features and functionalities for providing the most value in the end-solution.

3. Focus group co-creation

To start the Ideation phase, I conducted a focus group co-creation session with an aim to validate some of my hypotheses before defining the concept, but also to produce a productive brainstorming session incorporating different but relevant perspectives.

The group consisted of four people who all live in Aarhus to utilize purposive sampling method and gather targeted insights beneficial for the solution. The session consisted of interactive exercises, such as descriptive brainstorming and sketching to actively engage my participants and have tangible results I could incorporate into my solution to make it truly user-centric.

4. User testing

The prototyping and testing phases were happening in iterations, which is also reflected in the structure of my report where these two are combined. The purpose for doing my user tests was to, again, ensure that the solution is truly user-centric. I facilitated think-aloud, AB split testing and usability testing online, which was a very quick and efficient way to get relevant feedback. I was fortunate enough to have a lot of touchpoints with potential users, since I am immersed in the Aarhus community

myself, which was a beneficial and convenient resource throughout the testing phases. In retrospect, a notably better improvement and a suggestion for the future development of the platform on the behalf of Aarhus Kommune would be to ensure equal representation and include more versatile age groups in the user testing phase. Nevertheless, the potential end-users I tested the platform with provided constructive and relevant feedback which led to the creation of the final solution.

Secondary data collection

The quantitative and qualitative secondary data was sourced online based on the problem statement and specific needs. I used the data provided by the Sport & Leisure department representative and the data from their website to analyze their business model and identify strengths and weaknesses of the company, as well as their current booking system. To analyze the external environment and formulate a strategy, I used relevant websites, databases, articles and reports relevant to sports and leisure. Each data source was critically evaluated at the spot for its relevance and reliability, employing a set of criteria which was specific for each piece of data. Additionally, a selection of academic models and literature was employed to identify effective analytical tools and frameworks to consolidate all the data in the Defining phase, which have been noted in the References section.

Reliability and validity

The data acquired from the representative of the Sport & Leisure Department is considered valid and reliable, given their interest in the improvement of their services. As mentioned before, the online survey was conducted using non-probability sampling methods and self-reported data, which introduces potential biases and participant errors, potentially impacting the overall validity and reliability of the findings. Acknowledging these limitations, I understand that the primary data, while not fully representative, still offers valuable insights into user perceptions and behaviors relevant to the sports and leisure booking process. These insights were instrumental in guiding the initial stages of strategy development and highlight the need for further research on a larger and more statistically representative scale.

Regarding secondary data, my strategy involved sourcing information from a variety of databases, articles, and reports, prioritizing sources that were not only recent but also reputable and objectively credible to enhance the accuracy and applicability of my findings and recommendations.

Lastly, it is crucial to consider my position as a researcher and how my personal experiences with sports and leisure activities in Aarhus might have influenced the

research process and outcomes. As a member of the target demographic, my perspectives have inevitably shaped the research focus and the development of the final strategy. Having this self-awareness since the beginning enabled me to practice my reflexive stance in research, ensuring that my interpretations and conclusions are critically evaluated in the context of my subjective experiences.

By transparently addressing these aspects of reliability and validity, I aim to provide a grounded and conscientious foundation of my research findings and recommendations for the Sport & Leisure Department's booking system.

Ethical considerations

In conducting this research on the Sport & Leisure department's booking system, I tried to adhere to proper research ethics practices, particularly in relation to the survey and user testing sessions conducted with individuals.

Participation in these research segments was entirely voluntary, with ability to withdraw at any time. Prior to their involvement, I briefed all participants on what my research objectives were and how I intend to use their insights, ensuring transparency and informed consent. As the person responsible for data management, I also ensured strict confidentiality of all personal data and used it solely for the purposes of my research. Furthermore, the survey introduction contained all the information about the purpose of the research and all participants were kept anonymous.

Additionally, all consulted sources and original authors or direct quotations incorporated into the study were cited in Harvard citation style as demonstrated in the References section. The research questions and methodology was further validated through approval by my project supervisor, ensuring they are suitable and appropriate for the academic purpose of the research.

Delimitations

In my research process, I encountered a couple of significant constraints that were limiting to the research process and creating the solution.

Firstly, being the sole researcher and analyst considerably narrowed the scope of work, impacting the depth of data that could be gathered and analyzed, and problems to be solved with my digital solution. This, together with risk assessment and funding considerations, particularly reflected on the scope of the prototyping work, which is consequently focusing solely on the first release of the proposed

solution. Ideally, the future work on the Kommune's website should be done in a larger team to ensure a cohesive and successful platform across the different departments.

Furthermore, the primary data collection relied on non-probability sampling methods due to limited financial resources and the accessibility of the population within the given timeframe, creating potential participant bias. The sample sizes were not as extensive, resulting in the data not being fully representative which could affect the adoption of the solution in real life. For future studies, adopting probability sampling methods such as stratification or simple random sampling would enhance the reliability of the data, as well as ensuring a more statistically significant sample size.

Another challenge I faced was the difficulty in engaging my primary stakeholder, presumably due to their heavy workload. This limitation, coupled with a language barrier resulted in the proposed solution to be considered a preliminary proposal, subject to revisions and final adjustments according to the ambition and capabilities of the Sport & Leisure department.

1. Empathize: desk and field research

Client interview

I started the empathizing process with an interview with Aarhus Kommunes' Sports & Leisure representative, since they are my primary stakeholder. (Appendix 2)

I discovered that the primary activities of the Sports & Leisure department include providing grants and financial support to associations and evening school activities, as well as lending out sport halls and publicly owned facilities, making them available to the entire community. Their main goal is to provide the citizens of Aarhus with all *the best conditions* in order for them to take part in being active and developing a community around Sports & Leisure, and in turn supporting the physical and mental health of the entire community.

Furthermore, they shared their policy for 2022-2025 where I learnt about their ongoing incentives to bring citizens and community together through sport, leisure and activities, encapsulated in the belief that *an active leisure life is about pulse, immersion, and community.* The main push behind this incentive was the damage and disruption caused to local communities during the recent pandemic.

The department of Sports & Leisure also has inclusion as a main concern, trying to facilitate enough activities for handicapped citizens and for the aging population of Aarhus. But their target audience goes even further, as they try to combat loneliness in the younger generation, as they mentioned that a large percentage of teenagers dropped out of communal sports societies since COVID-19 and have not rejoined.

To strengthen the community around sports and leisure, the city council has decided to invest 34 million DKK annually for the next ten years into maintaining and constructing new sport facilities, which is why they would need a digital solution to increase accessibility and visibility of the premises for the citizens of Aarhus.

One of their biggest pain points and the reason I initially reached out to them is the solution they have right now on their Forenigsportalen. The page is used for *single bookings* of sports halls, where individual users can search for and book available sports halls or facilities. The problem with it, which I also experienced, is that its usability is poor and the system doesn't function, which causes a large influx of emails being received everyday on the email listed on the website, asking for specific bookings to be made. The correspondent of the emails then has to make the bookings manually and it takes a lot of their daily work load and therefore taking their time away from more meaningful tasks.

In conclusion, they validated my initial hypothesis, and helped me scope my project towards rethinking and developing a new concept for this webpage, which would overall save the client considerable time and energy on their end. Moreover, it would support their future investment plans in sports facilities by increasing visibility and accessibility. This, in turn, would encourage more individuals to participate and foster a community through a digital platform. Ultimately, such improvements would align with and advance the primary objectives of the sports and leisure department by leveraging digital solutions. Finally, since the community was echoed in all of their goals, I felt prompted to research the idea of creating added value to the community through my digital solution.

Assessment of the current solution

To begin my desk research, I started by analyzing their existing solution. Once again I was primarily focusing on the *single booking* page of Foreningsportalen. The mobile version is entirely distorted, whereas the web page starts off the first 100 view heights, both with a heavy amount of text explaining how to use the filter options that they have provided. The explanation on its own is quite confusing and tries to teach you how to use the filters properly, showcasing the difficulty of usability to begin with. (Figure 1)

As Krug (2000) explains in *Don't Make Me Think*, the navigation and the usability of the filters should speak for themselves and shouldn't have to be explained in order to provide users with a good experience on any digital platform. Finally when you scroll down to the filters and use them, it’s almost like a trial and error process to finally find any location or category of sport that has any available time to book, with the majority of my searches showing that the allocated time has “expired” as seen from their color coded legend. The more confusing element is that the shown expired times are not past but future times. (Figure 1)

Every time you press to search for your desired category or filter options the site also reloads and sends you back to the top of the page. Furthermore, the filter lists are quite large and even in the sport category some are repeating, which is not up to the standards considering that this is a solution provided by Aarhus Kommune. The third filter option “Place” also requires you to know the name of the facility you are looking for without knowing where that sports hall is located, if you knew the gym you were looking for perhaps just having a search bar would speed up your process. Furthermore, choosing a future date comes up as *NaNa-NaNa*. On the right side above the legend, the site gives you the option to extend your search by week or month, a useful functionality although it's not easily visible. (Figure 1)

Moreover under “Facilities that match your search” on the left side have a small blue “+” symbol which enlarges on click, but with no added information shown. Finally after I managed to find an available time slot element which was clickable, although when clicked, it ended up not responding, with nothing opening. After trying it for a while I scrolled down to find a “create account button” believing that this was the reason why I couldnt make a booking, but when I created an account I had to wait to be accepted for up to 5 working days. (Figure 1)

Overall, based on all the principles of usability heuristics (Nielsen, 1994), Jacob’s Law (Nielsen, 2000), and Hick’s Law (Hick, 1952), the usability of this solution does not adhere to the proper standards, which reflects on the solution not being functional, leaving space for significant improvements with my solution.

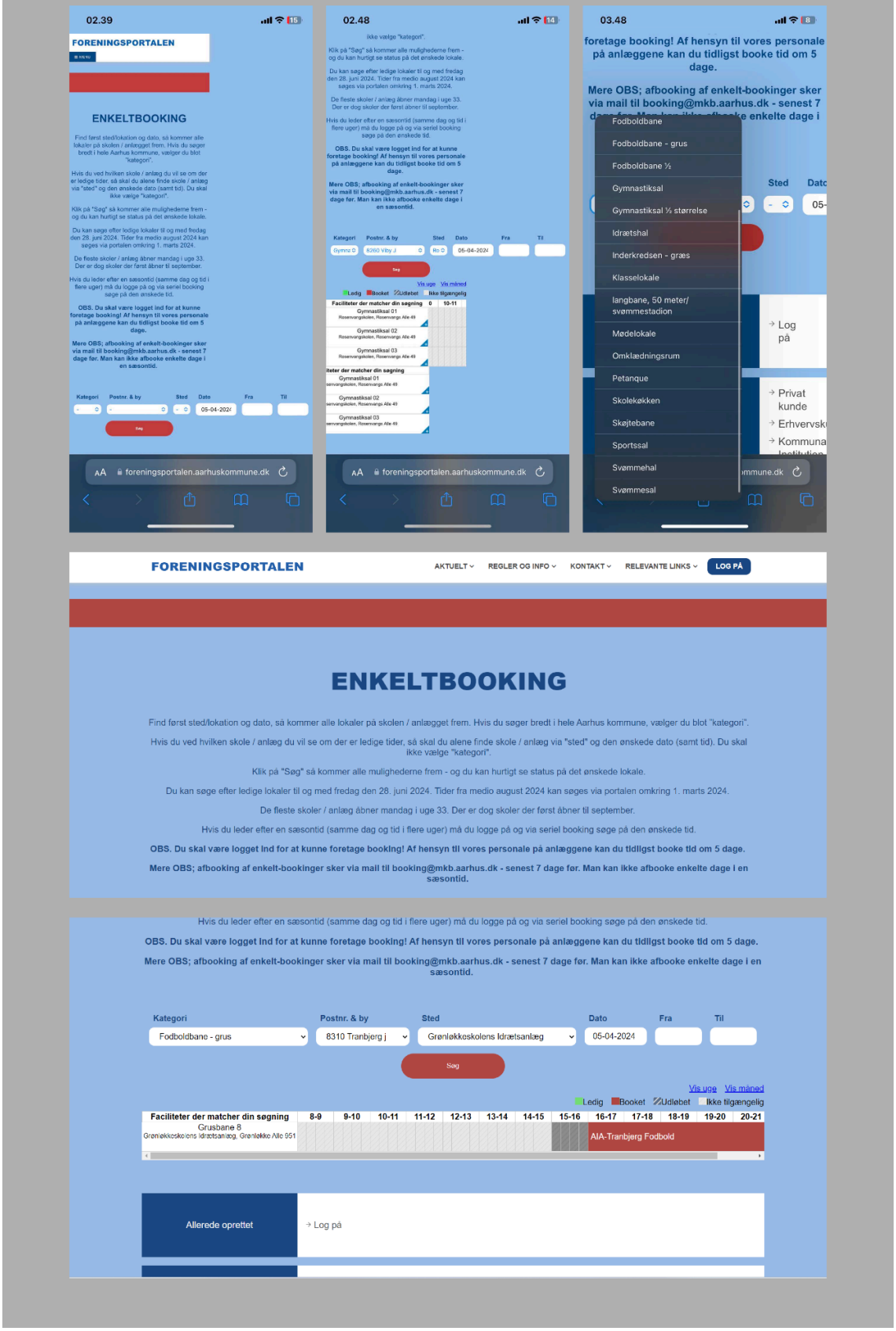

Figure 1. Current solution on the Foreningsportalen

The solution compared to Copenhagen Kommune

As a direct comparison I wanted to see how Copenhagen's Kommune was solving the same issue and whether or not they had a better digital solution to support the booking of premises. Copenhagen's Kommune provides users with a map in which they can search for available sport halls, although there is no filter option it still makes the facilities visible through this means of visualization. Clicking on a specific sport hall then redirects you to a side page, still on the Kommunes website where it then displays some details about the facility as well as its available halls. You can also search via their filters of category, place and date for a specific venue, the visual identity and usability of the page is much superior to that of which Aarhus provides, allowing users to actually sort through and book venues with ease.

In conclusion the solution that Copenhagen's Kommune provides severely out weighs that of Aarhus, the functionality and usability of the platform work and allow an easy user journey to meet their needs, wants and desired end goal, leaving the user fulfilled rather than frustrated.

Online survey analysis

To collect as many insights into the different habits, pain points, and expectations of individuals when booking sports and leisure facilities in Aarhus, I conducted an online user survey with potential users. Since I also wanted to explore the previously mentioned topic of adding value to the community through my digital solution, I divided the survey into two parts, one where I ask about booking halls preferences, and the other section about the importance of community and their habits surrounding that aspect, to try to analyze where I can add value. However, the people who answered they never booked a sports hall were redirected to only community related questions to keep the responses relevant.

Detailed survey analysis and statistics are attached in the Appendix 3, with the biggest takeaways highlighted below:

I was able to see how the respondents felt about filter options and which details were the most important when searching for a specific sports hall. Naturally, the most important category was the type of sport they were looking to play, followed by availability of sport halls to their specific date and time frame, the location of the facility, price, amenities provided by the specific location, reviews and finally images.

The most frequent answer to the question: "Have you ever encountered difficulties or frustrations when booking a sports hall?" was the fact that there are just too many different digital solutions available and that there was no consolidated platform

where they could search for a variety of different sports as well as see all available facilities in Aarhus Kommune. Another pain point of respondents was the lack of knowledge about the facilities amenities, whether that be if the location was heated, indoor but especially when it came to the provision of necessary sporting equipment. For example, some respondents mentioned that they arrived to play padel at a specific location and had no access to rackets and balls as they were previously used to in other padel halls.

Payment was another problem that was shared, the usual use case is that one person makes the booking for the group as well as the payment, once they had finished game the organizer would at times have to chase participants down for payment, sometimes not even receiving it and therefore making the organizer have a bad experience and unwilling to repeat the process.

For the question: “What improvements or features would you like to see in sport hall booking platforms” the consensus was to have all available venues in one singular digital solution. Here they also mentioned having a map view of Aarhus and easy and intuitive filtering options allowing them to be specific in what they need. Here they also responded saying how ease of payment method was important as well as concise instructions on how to enter the facility and at times where in the school the gym was located. Another interesting point to mention is the reference of being able to join in and play with others at the same skill level, be that open games or possibly match making.

Another result to mention was that respondents would prefer to use a web solution for browsing, search and booking the facility rather than an app, assuming it is a bigger commitment to download an app unless it would improve their usage of the solution or add an apparent value.

Even though respondents would prefer not to have to download an app, the majority of them would prefer to use their mobile for searching and booking a facility, therefore implicating the need for a responsive mobile friendly solution.

The vast majority of respondents answered that they would always prefer to play sports with either friends or a group of people and when it came to rating how important a sporting community was for them, the most people rated it between 10-7, with 10 being very important. Unfortunately most of the participants are not a part of a sporting community or club even though they would like to be, and this was mainly because of the lack of knowledge of where or how to join in, with others mentioning that they were scared or nervous about the level of skill required to participate and that often when they hear the word club, they expect it to be a high level of player skill almost professional, as well as a high level of commitment required and those with a full time job lack the time in their schedule.

Competitor analysis

After the survey, I got more insights into the competitor list, so I started analyzing what they were doing differently and how I could position my solution to make the most of Aarhus Kommunes unique selling points in comparison to the competitors. I analyzed both the website, phone responsiveness solution and apps as well.

1. WannaSport

WannaSport is a digital solution which aims to provide users with the ability to book sport halls of different varieties of sports all across Denmark. The visual identity and usability of the site is not the best as you are met with a plethora of options to select on the homepage, starting with a searching option, by category and location, underneath the search bar the solution continues to show all categories of sport, followed by all locations and the sports they provide and finally the ability to switch to a map view.

The first usability issue I found with the landing page was the repetition of information. Why not show all categories in the filter, especially since the dropdown options are not the entire available sports categories they have to offer. Secondly when you select any of the options on the front page you are always redirected to a map view.

The map view in my opinion is the best way of visualizing this data and since it has the exact same filtering options as the start page it would make sense that users would start their journey here.

To conclude the biggest take away from the solution WannaSport is providing is the low number of facilities on their database, as the ones which are included are only those which are privately owned, this detail coupled with a sub-par usability could hinder its growth and return of users to the platform.

2. HoldSport

HoldSport is an integrated membership platform for all associations from large to small. This solution focuses heavily on providing a platform for a specific association and does not delve into allowing users to search for available associations to join.

The solution also provides the association with a database where they can manage activities in a calendar, keep track of members, handle book keeping and communication to and between members. The members themselves have an easy way to view upcoming events or games through a calendar view and the ability to join and participate in them as well. The platform also provides a chat room for each event to allow seamless communication in the groups.

I found this solution to be interesting in consolidating a community in sports for the specific facility, although I believe for users it would be extremely beneficial if they were not just limited to the association which they joined through. Members can be a part of multiple different clubs, as long as the association has an account in HoldSport, which not all of them do, but to do this the user would have to find the link for joining the associations club through the associations own website.

3. Matchi

Matchi is a digital solution which spans across the world, with its focus only on racket sports. This solution allows for a simple and easy booking process of venues as well as allowing players to match together. When opening the solution you are given the options to search by category of racket sport and location, seeing as they provide this solution world-wide being able to filter by location is a necessity.

For the navigation you can “book” which opens up a list view of all venues possible, still providing you with the filter options to find those that meet your specific needs. The second option on the top bar is activities, where they allow for players to join in on specific events created only by the venue. Finally there is an option to search by venue which opens up a map view with the venues listed underneath, the booking visual display changes from that of the first navigational option of “book” which could be seen as a usability issue.

All together this solution works well for its specific target audience and offers membership deals as well.

In conclusion, a lot of the offerings available to the target audience are separated by different needs. There is no one consolidated solution for searching, booking and creating community around sports. Each solution fits to their specific use case and if Aarhus Kommune would have a platform which would be able to contain everything in one solution it would make its possible in the market undeniable. Due to the fact that they have the outreach and access to all public indoor and outdoor sport facilities, they would just have to create a solution to display this and allow users a simple and easy process to find and book sport halls to their specific needs.

1. Define: user challenges and objectives

With the majority of my research completed I was now able to go into the defining stage to provide a focused direction for ideation and solution development.

Business Model Canvas

After gathering all the information about the Sports & Leisure department, I used the business model canvas framework to systematically analyze and define their operations. (Figure 2)

The key activities of the Sports & Leisure department include ensuring active participation and attractive facilities, as well as a wide selection of both recreational and sports activities for people in Aarhus. The biggest value they are providing to their target audience (the people in Aarhus) is acting as a facilitator of social cohesion through sports, offering programs that cater to underprivileged groups and promoting overall health in the community. The biggest resource that enables them to act as a facilitator is the municipal backing, giving them credibility, access to a large network, funding, and other resources. They engage with their target audience through traditional local media, community notice boards, website, and social media, ensuring a broad reach.

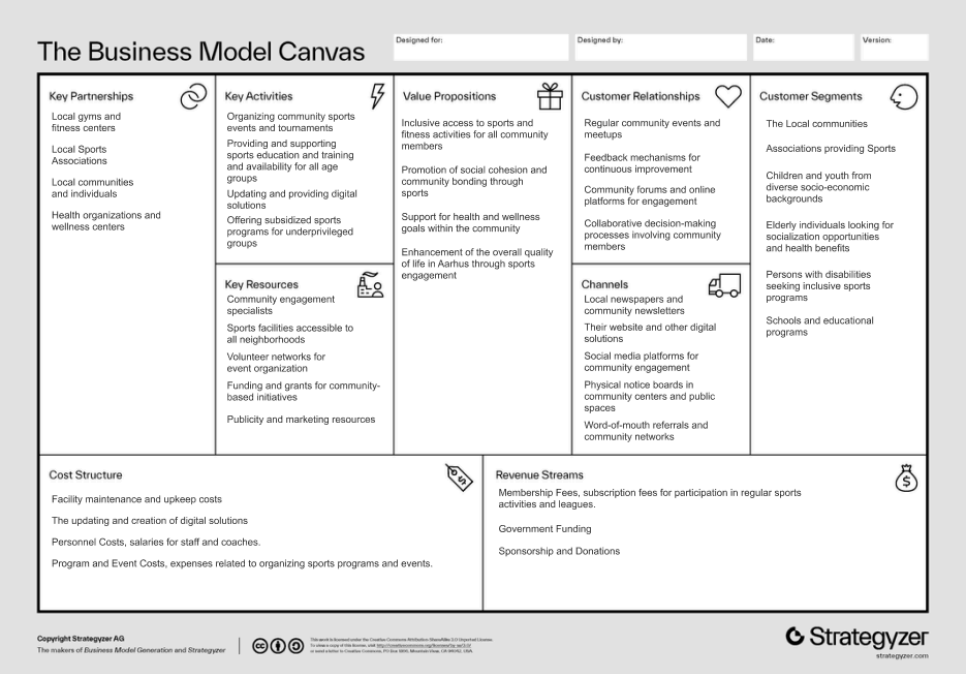

Figure 2. Analysis of the business model with BMC

Empathy mapping

With all the insights I gathered so far I moved on to create an empathy map canvas for each of the main stakeholders of my project's scope. The reason I created an empathy map canvas was to be able to better relate to all their needs and pain points.

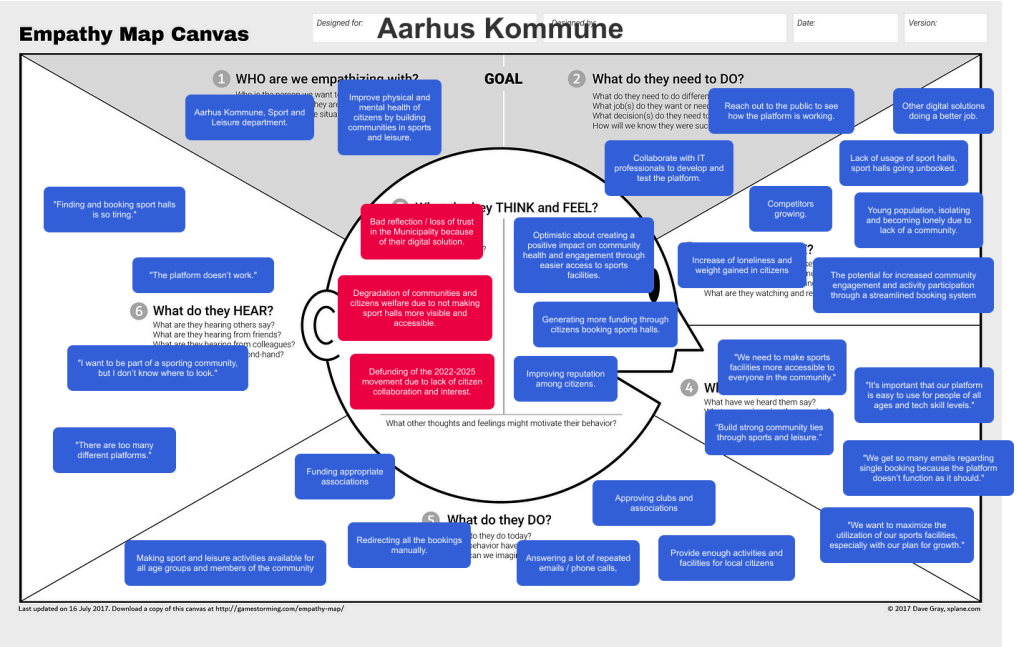

Figure 3. Empathy Mapping - Aarhus Kommune

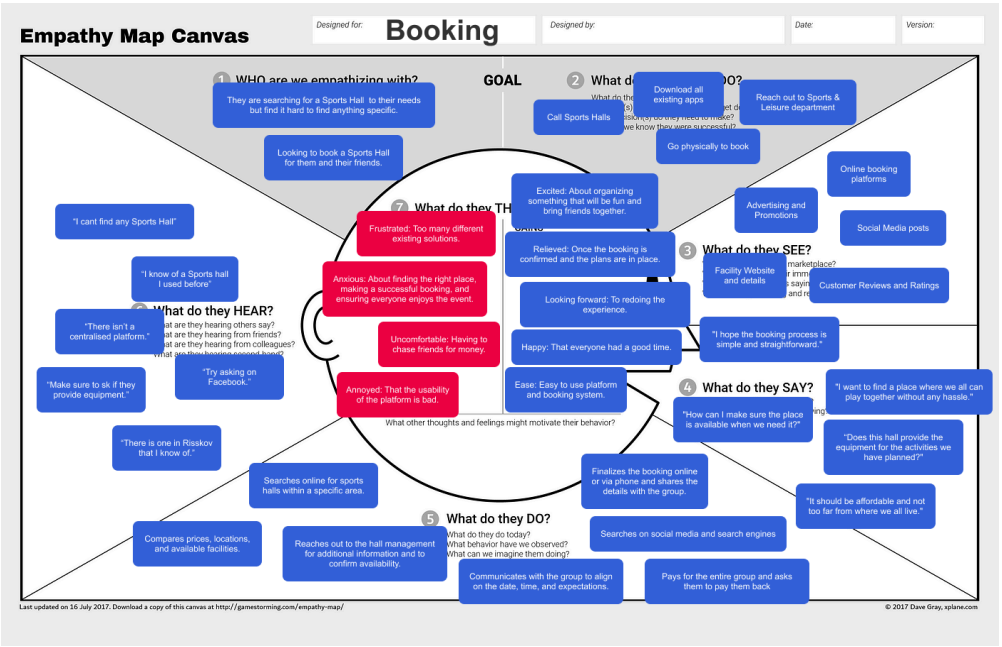

Figure 4. Empathy Mapping - users booking

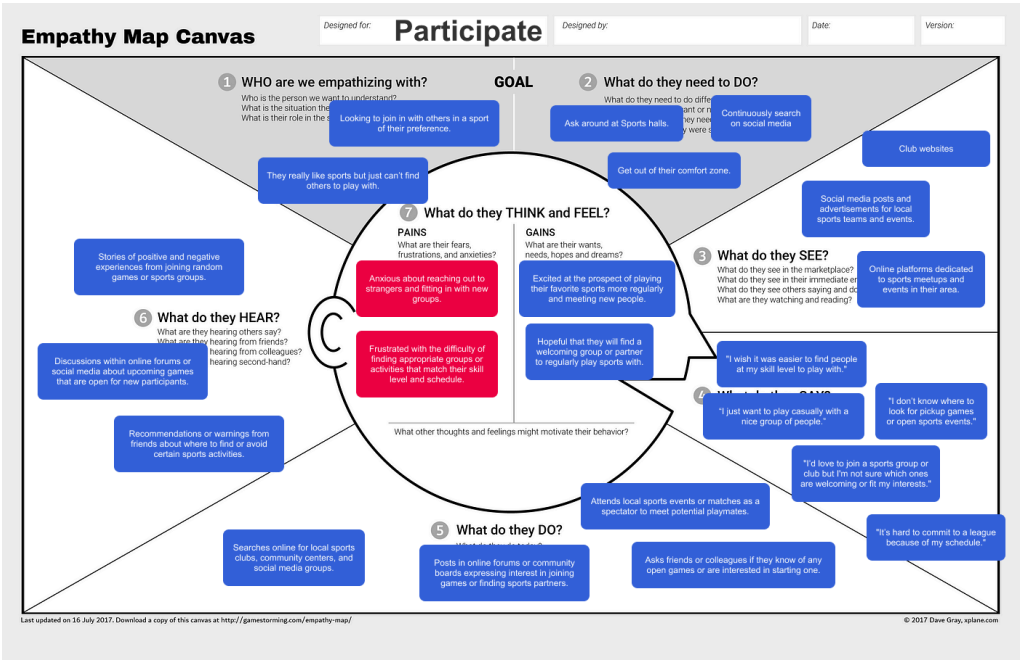

Figure 5. Empathy Mapping - participants

User persona

To empathize further with my main stakeholders I used my insights from the empathy map canvas' to create two personas, one for each of my main user groups. This would allow me to continuously make sure the solution I am developing matches up to both of their specific needs and wants, while simultaneously removing any of their existing pain points.

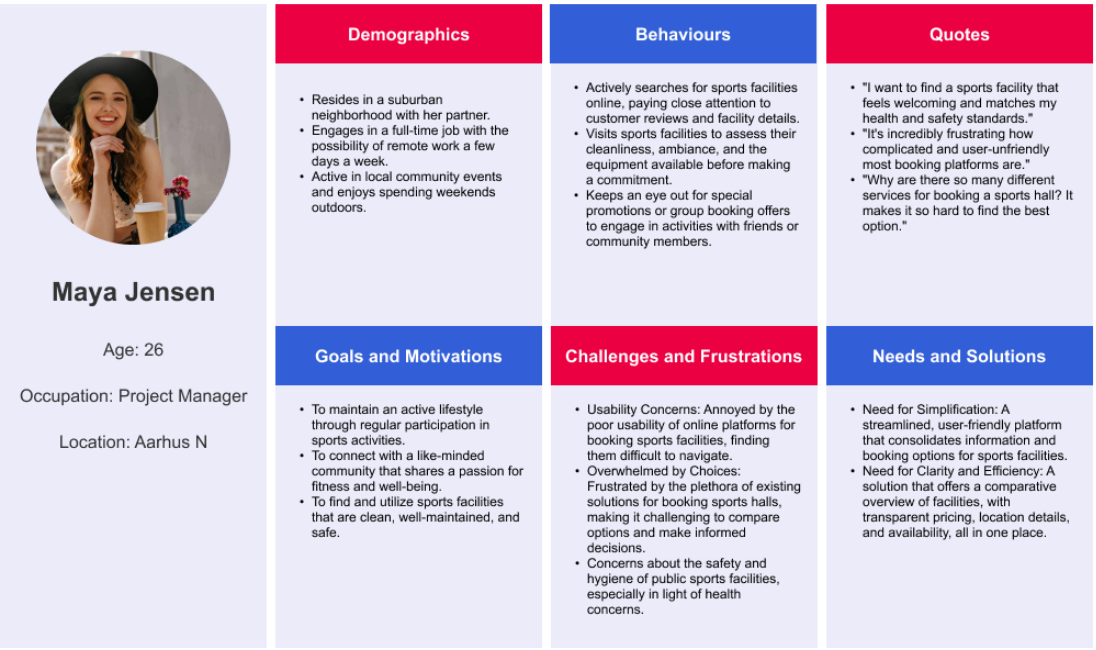

Figure 6. User persona - user booking

Maya has a big group of friends who like participating in a variety of sports. As the organizer of the group she is often left to arrange, find and book the sport hall for the group. She is frustrated with the process of finding and booking sports halls as there are just too many different available platforms and her user journey would be a lot easier if there was just one consolidated platform. She also wants to make sure that the chosen sport hall has all the amenities required to give her and her friends a problem free time. (Figure 6)

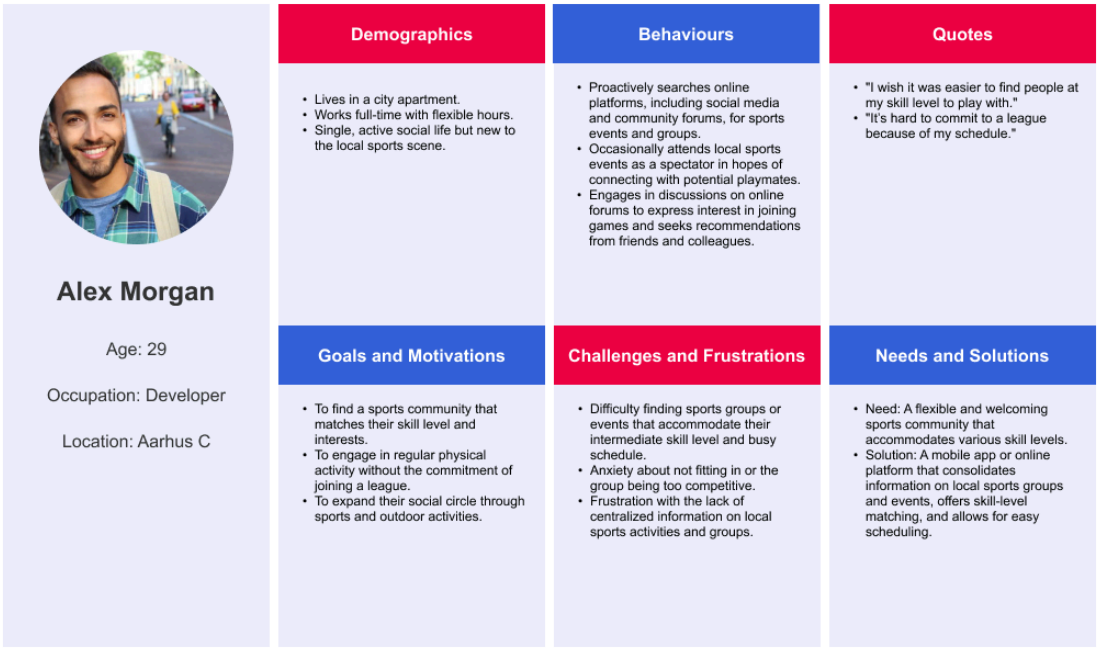

Figure 7. User persona - participants

Alex has an active lifestyle and a love for sports, unfortunately he doesn't have enough people in his network who enjoy the similar things. With his full time job he finds it hard to commit to a specific schedule. He desires to have an easy method of finding available games that he can join in to play with like minded and similarly skilled players. (Figure 7)

Value Proposition Canvas

Leveraging the insights I've accumulated, I proceeded to develop a Value Proposition Canvas for each primary stakeholder. This approach was chosen to effectively align our solutions with the specific needs and challenges faced by our stakeholders, ensuring that our value proposition is precisely tailored to meet their requirements.

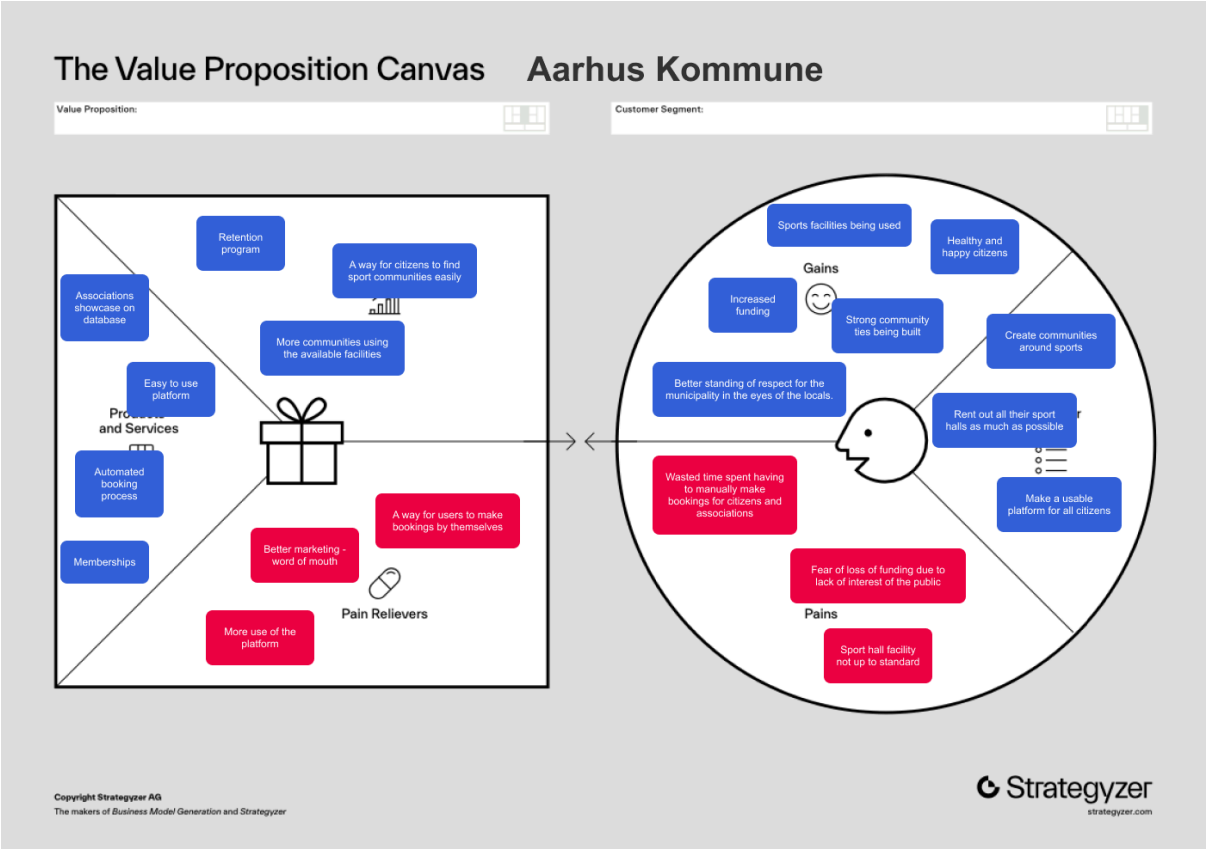

Figure 8. VPC - Aarhus Kommune

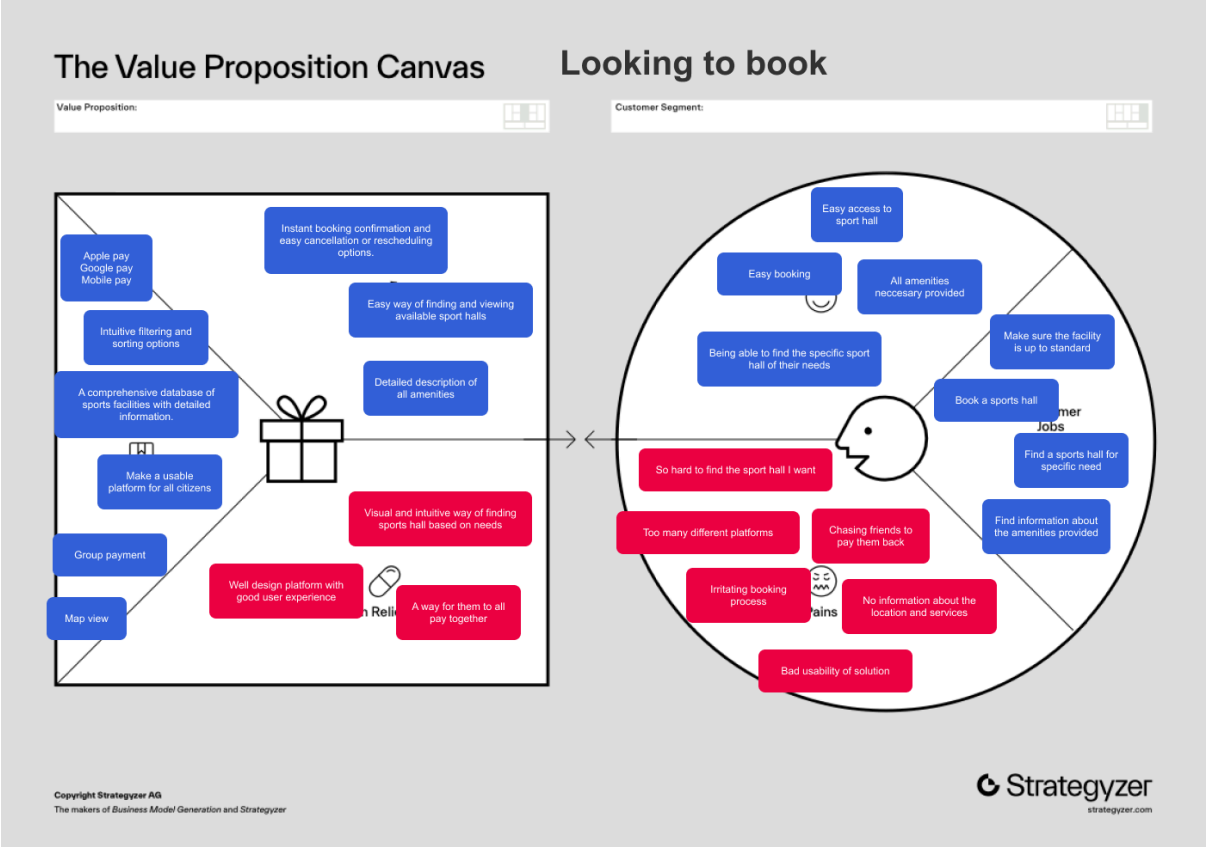

Figure 9. VPC - users booking

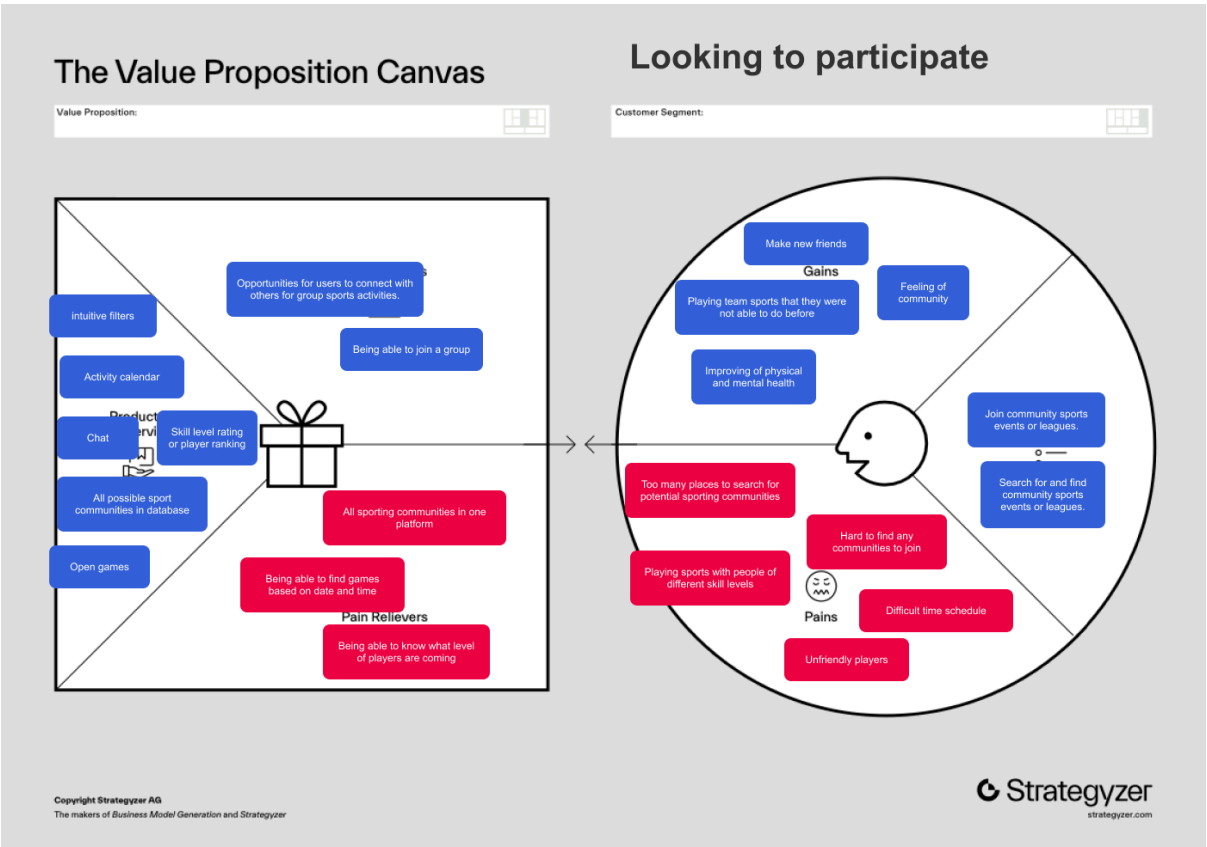

Figure 10. VPC - participants

SWOT analysis

Using what I learnt from the client interview, my continued desk research and the overall frame of my BMC I wanted to better define the business with the use of a SWOT analysis and to identify potential weaknesses to avoid and strengths in which to focus on. (Figure 11)

The Aarhus Kommune's Sports and Leisure Department has a lot of significant strengths, including access to school sports halls, a comprehensive database for managing these facilities, a reputable name, financial support from the municipality, and a wealth of experience and expertise. However, it faces challenges such as an un-intuitive interface, poor platform usability, and delays due to municipal involvement. Despite these challenges, there are also a lot of opportunities for growth and improvement. Some examples are the digitalization wave in Denmark, a fragmented market for sports hall bookings, and high demand for indoor facilities due to Denmark's weather conditions. On the other hand, there are threats like emerging competition, potential loss of public confidence due to their current dysfunctional solution, the threat of another pandemic outbreak, and possible shifts in municipal budget allocations.

Figure 11. SWOT analysis

TOWS analysis

Through a strategic TOWS analysis, the Aarhus Kommune's Sports and Leisure department can identify several strategies that address its current challenges but also use its core strengths and opportunities to mitigate the above mentioned external threats and internal weaknesses, some examples include:

SO Strategies:

- Utilize the existing database and communication channels with schools to launch a digitalized, more user-friendly platform, addressing the high demand for indoor facilities.
- Capitalize on municipality backing and funding to invest in marketing and promoting the visibility of sports halls, enhancing the department's reliable name further.

ST Strategies:

- Employ the department's reputable name and municipal support to differentiate from private competitors through quality assurance and reliable services.
- Leverage existing expertise and resources to develop contingency plans for potential pandemics and budget reallocations, ensuring service continuity.

WO Strategies:

- Address the unintuitive interface and poor usability by embracing digitalization trends, creating a more accessible and mobile-friendly booking system.
- Overcome the lack of target focus by utilizing data to understand and personalize user preferences, thereby meeting the specific needs of different user segments.

WT Strategies:

- Improve decision-making speed and platform usability to retain faith in the Kommune among emerging private competition and potential budgetary changes.
- Refine the department's strategic focus and improve digital interfaces to safeguard against the loss of public trust and ensure resilience against future pandemics.

2. Ideate: conceptualization

Focus group and co-creation session

I decided to hold a focus group at this point to verify all my findings and work closely with my group of potential users to consolidate a co-creation session, which would also help ideate on my digital solution.

To initiate the focus group discussion, participants were asked to provide descriptive adjectives which they believed would characterize Aarhus Kommune, enabling them to express their initial impressions before the main topic of sports hall booking was introduced. Each of the participants were given sticky notes to write on and in turn we went around and shared our thoughts.

The main words they gave were:
Respectable, clean, credible, sensible, organized, helpful, serious, accessible, informative and inclusive.

For the next stage of the focus group I asked them to separately use their own devices, search, find and book for a sports hall of their specific preference. This allowed me to observe their process while they did that. Once they had completed this activity we went around and shared what their user journeys were and the different experiences they had.

As my previous research showed, the user experience and journey differed from participant to participant, depending on what sport they were looking for and the majority expressed their dissatisfaction with the process. They also voiced out that they would instead use a social media site like Facebook to look for groups of people with a similar interest to find a group of people to play team sports with. Thereby strengthening the idea that community is important and having a place to consolidate and enhance that experience would be optimal.

Then the current solution of *single booking* on the *Foreningsportalen* was shared with the participants and they were urged to try to use it. The results of their experience was similar to my own. They were left dissatisfied with the solution and were shocked that this solution was provided by the Aarhus Kommune.

Finally we brainstormed together in ways in which the platform could be improved to meet their needs and end goals. The answers received from this brainstorming session were the same to those of the survey therefore verifying my previous research, with the respondents first mentioning a huge improvement of usability was necessary to make the solution desirable, continuing to say that this would require a

visual update alongside better more intuitive filtering options which would show searched results in real time.

To continue the co-creation process the participants were then asked to sketch out how they could imagine the solution looking and we discussed each solution and voted on the favorite design. (Figure 12)

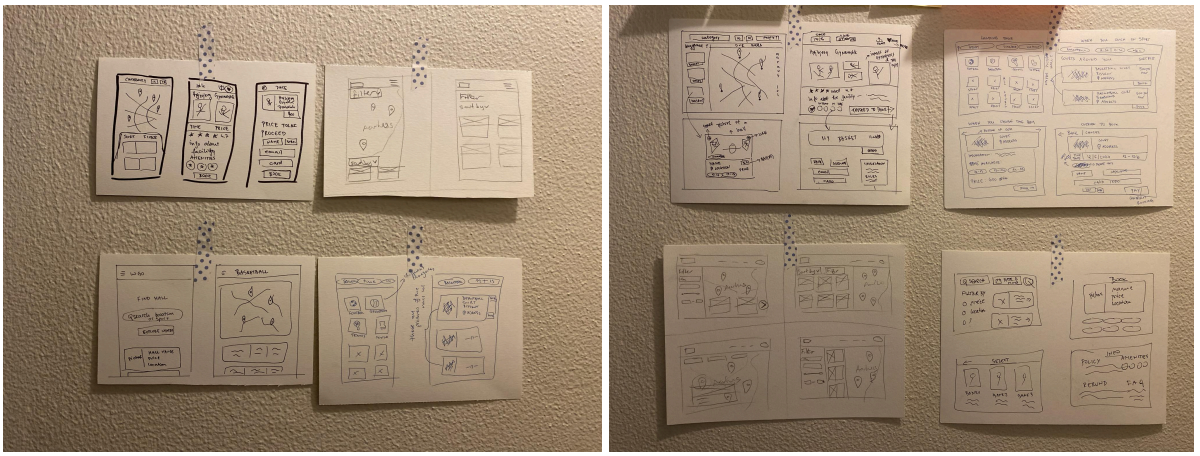

Figure 12. Sketches from focus group and co-creation session

To end the session, I then presented the participants with two different moodboards and asked them again with adjectives to describe them. The moodboard shown in *Figure 13.* was chosen as the most preferred as it also represented the same adjectives they have listed in the beginning of the focus group.

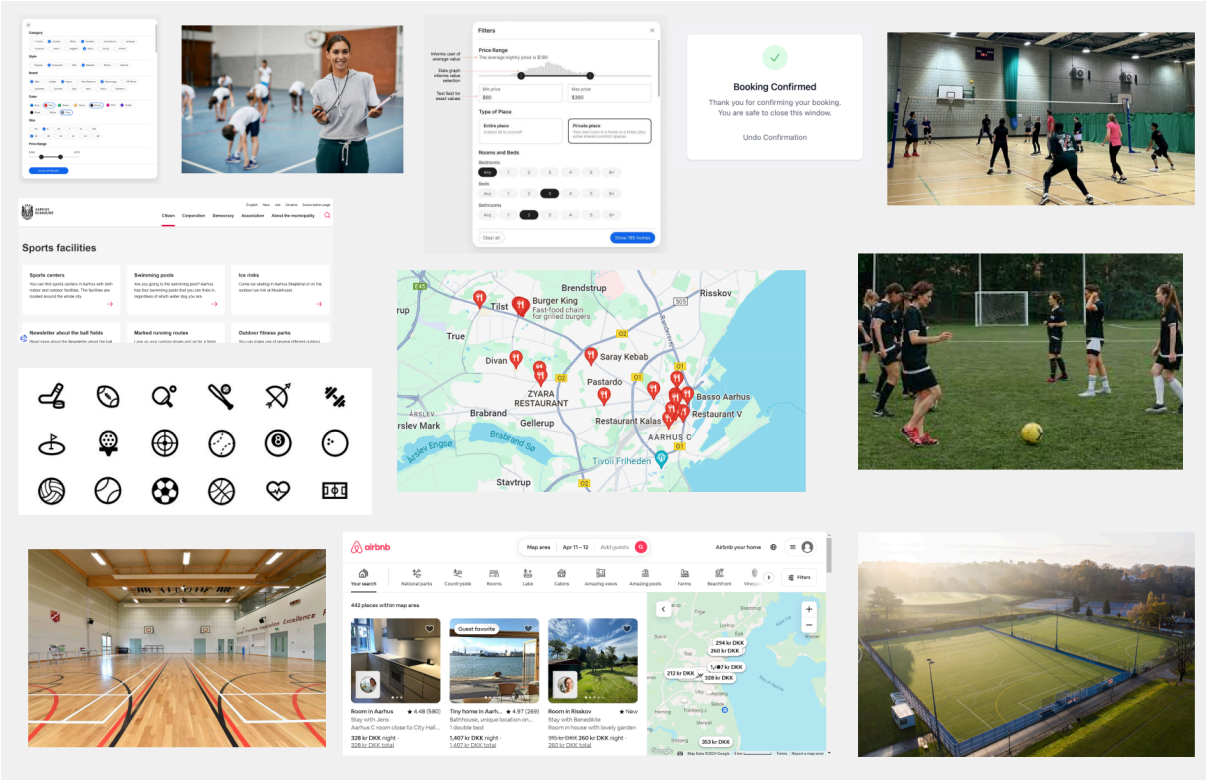

Figure 13. Selected moodboard

Overall this session was extremely helpful and allowed for the validation of my initial hypothesis and overall concept. The participants agreed that it would be great to have a platform for all the sport halls Aarhus has to offer and since Aarhus Kommune has access to them its digital solution would be extremely beneficial to solving their preexposed problems.

How Might We

Using all of the data I got from my preliminary research and empathizing with my main user groups and the prior focus group, I formulated the main How Might We questions in order to work towards solving the major pain points that the target audience faced. (Figure 14) I then used the main How Might We questions to conduct a brainstorming session to come up with solutions in order to solve all the underlying pain points of my target audience. (Figure 15)

Figure 14. HMW excercise

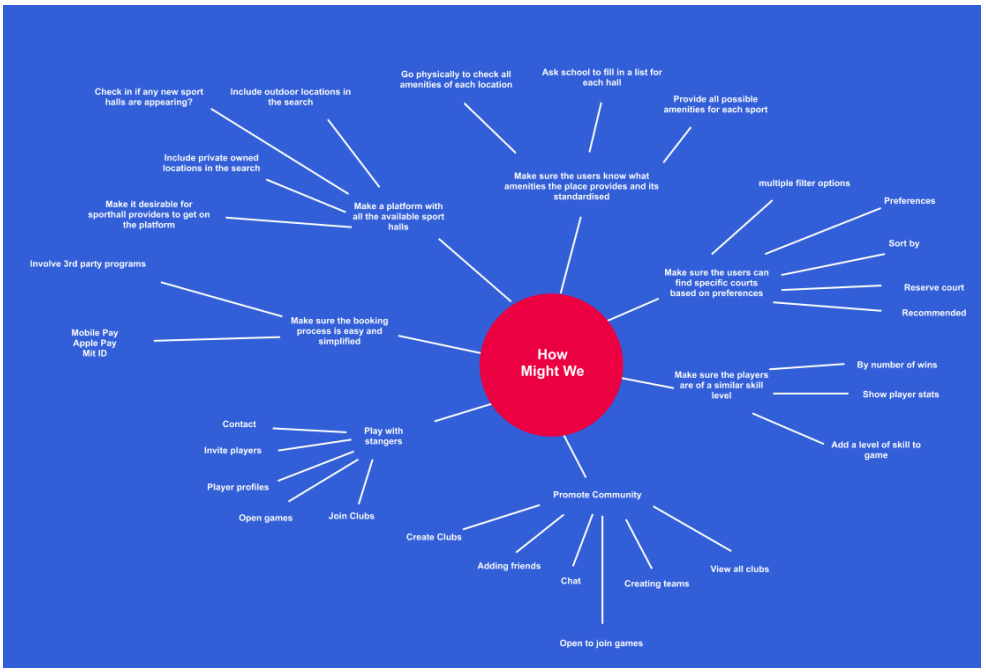

Figure 15. HMW exercise with potential solutions

Concept creation

With all the research of the project completed and my Empathize, Define and Ideate phases done I was able to finally create the overview and formulate the entire concept of my solution.

Usability

The usability of the solution should be easy and intuitive for all members of the local society, no matter the age or level of tech savviness. This is not only because my solution directly represents Aarhus Kommune but also because of what I learnt from my clients inclusivity and how they aim to cater to all members of their local community. The weak usability of the existing platform is also the primary reason for peoples' pains and therefore affect the Municipality as well.

Filtering

Since being able to find a specific sport hall was a key need from my users the filtering options should be as easy to use and intuitive as possible. Through my research I was able to learn which criteria was the most important when impacting a user's decision. For this reason the filter options should be listed from left to right in order of importance and relevance to the users needs.

Map

Throughout my process I learned that having a map view was ultimately the favorite method of data visualization for the users as it gave them a concrete understanding of how many options of sport facilities they had and where they were located and with location being the second most important criteria to choosing which sport hall to book it almost goes without saying that a map view should be included in my solution.

Description of sport halls and all amenities provided

Another necessity of the target audience was having a consistent easy way of understanding what the sport hall offers compared to others, whether that be changing rooms, providing sporting equipment to having snacks and drinks.

Integrated payment

Users also want an easy integrated payment method, whether that be apple, google or mobile pay. With other digital solutions offering this quick form of payment it becomes a hassle and a pain in today's world for users, seeing as the majority, especially in Denmark, are used to paying with their mobile and some don't even carry around their credit card.

Mobile friendly

The digital solution should be responsive both on the web and mobile, to make sure that users have a seamless and easy user experience no matter if they are at home or on the go.

Making Clubs more visible

Finally to consolidate community into the digital solution and to facilitate more participants joining clubs, they should also be showcased on the platform. This is not only to help users easily find and access all available clubs, but also because of how important creating a community is for my client and their proposed goals.

Skill level

Another big pain for potential club members is skill level. Research showed that this could be an underlying factor for users not joining clubs or associations, due to not being sure if they were good enough to play among the others. Skill level should be openly displayed digitally to remove this pain point.

Visual inspiration

Before the designing process I began looking for inspiration from other digital solutions, my primary objective was to find digital platforms which included a map view. Due to Jacob's Law (Nielsen, 2000), the first solution I looked into was Google Maps and how they displayed all their filtering options and information. AirBnB also followed the example of a digital solution that the majority of the population is used to using. I continued to view Booking.com and AllTrails.

The mobile versions are comparatively similar to each other. They all include a map view as well as a left scrolling database of their elements on the webpage. (Figure 16, Figure 17) The left side of the interface worked with the idea of Jacob's law and for these reasons I decided to implement the same design thoughts into my own design.

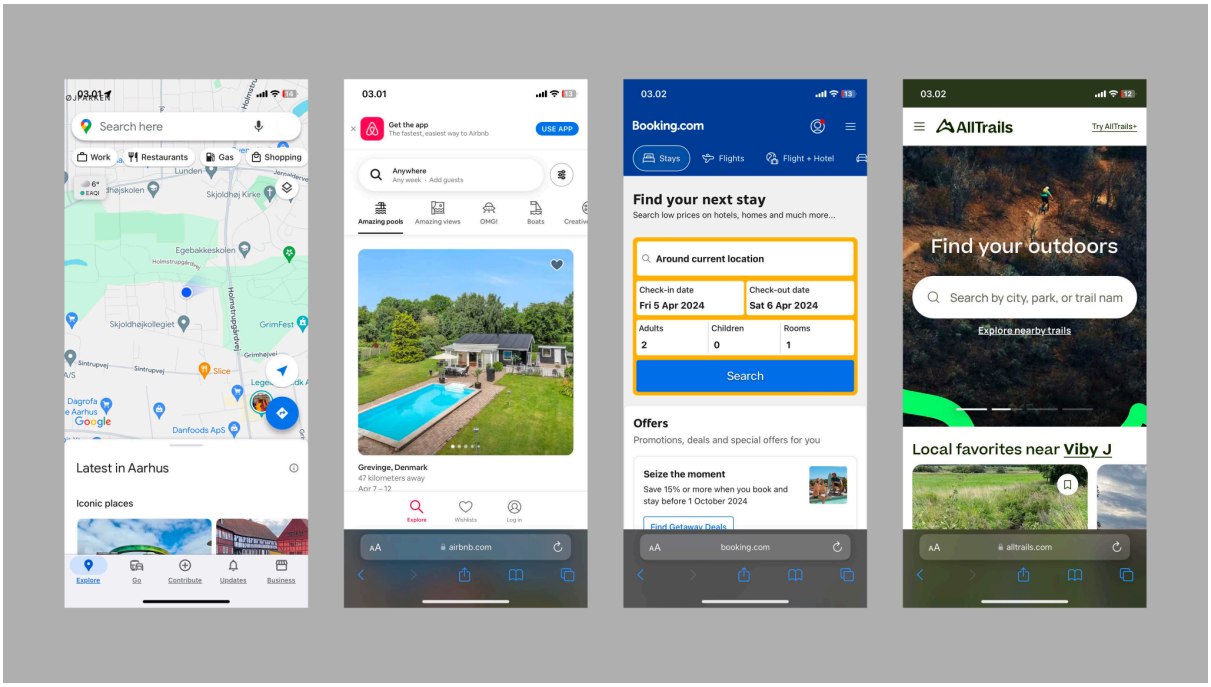

Figure 16. Visual inspiration - mobile

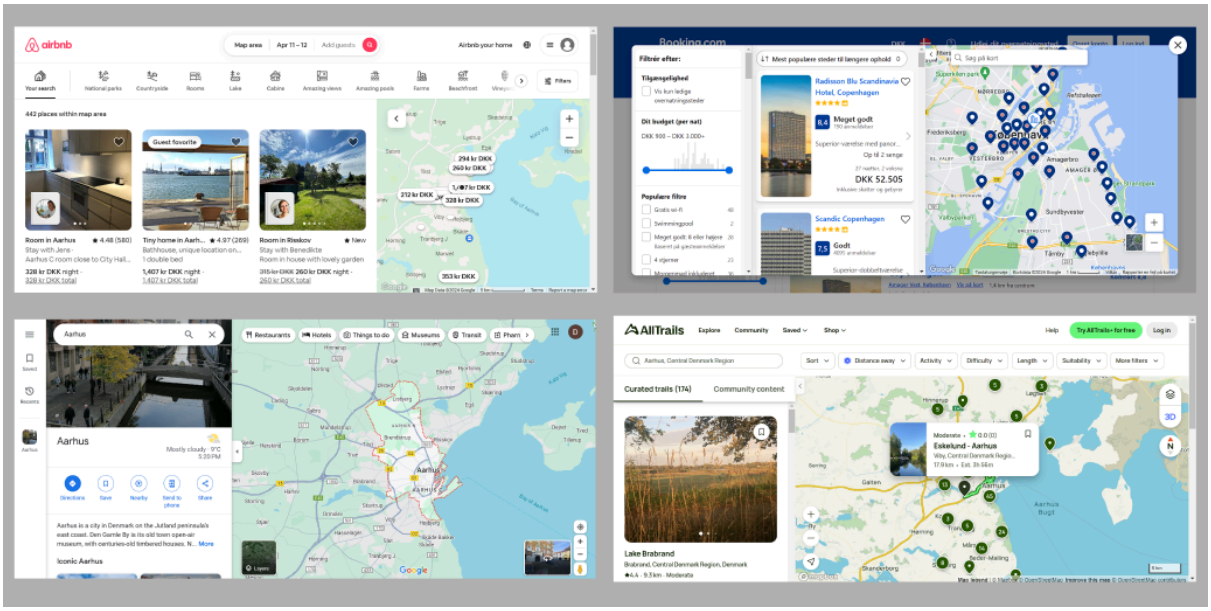

Figure 17. Visual inspiration - webpage

Style tile

In preparation for moving to the Creating phase, I created a style tile to visually anchor my design. I incorporated the feedback from the moodboard testing, incorporated relevant icons to contribute to a more user-friendly design, and chose a color palette and typography which reflects Aarhus Kommune's visual identity to ensure consistency across their digital platforms. (Figure 18)

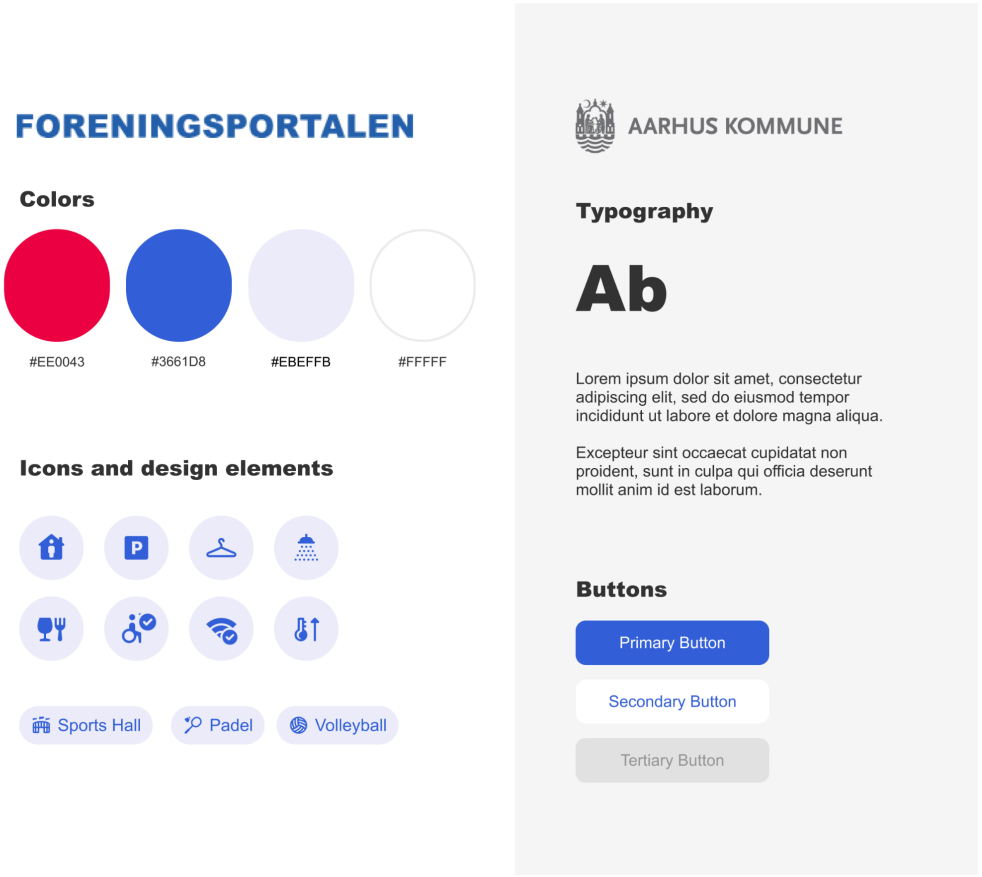

Figure 18. Style tile

3. Prototype and test: concept creation and iterations

As mentioned in my delimitations, my design process will be focusing solely on the first release of the proposed solution.

Wireframes

With the basis of the sketches acquired from the focus group and the inspiration from similar digital solutions I created wireframes of my project to give me a basic view and scope of my design and all relevant pages. (Figure 19)

Figure 19. Wireframes

AB testing

Before I had fully completed my designing process I conducted an AB split testing. The main reason behind my testing was the filtering options and to find out what felt natural and intuitive for the users.

The first element I tested was the filtering options, I designed three different variations of the filters and asked the participants to think aloud while examining them. (Figure 20, Figure 21, Figure 22) This helped me to understand what the user would expect to happen, so that I could design my final filters to match their expectations based on similar principles to that of Jacob's Law. (Nielsen, 2000)

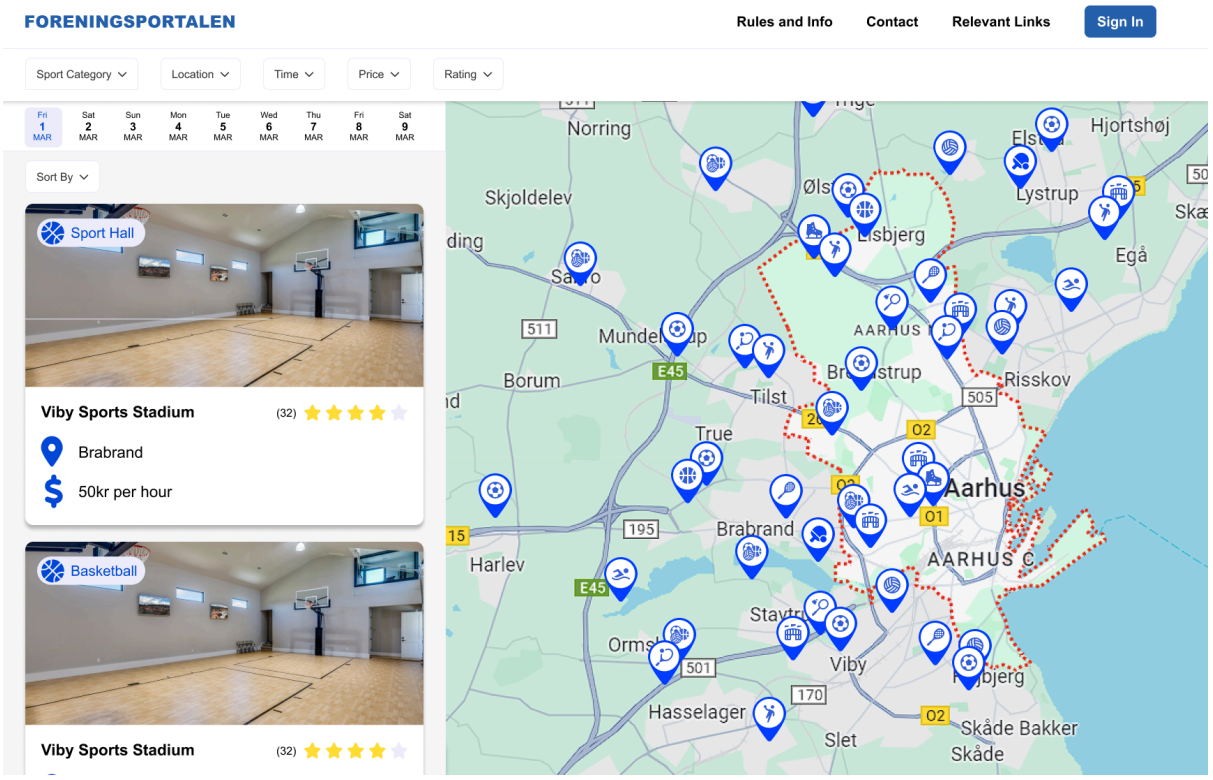

Figure 20. Filtering - option 1

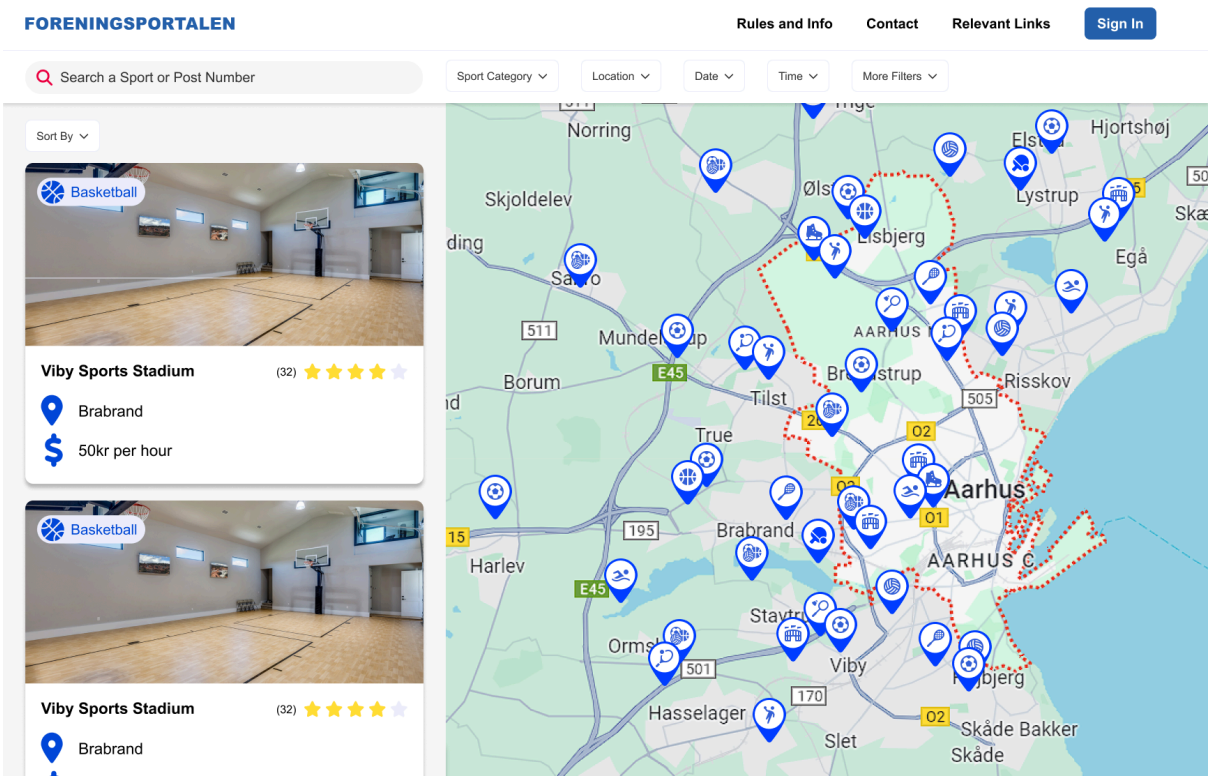

Figure 21. Filtering - option 2

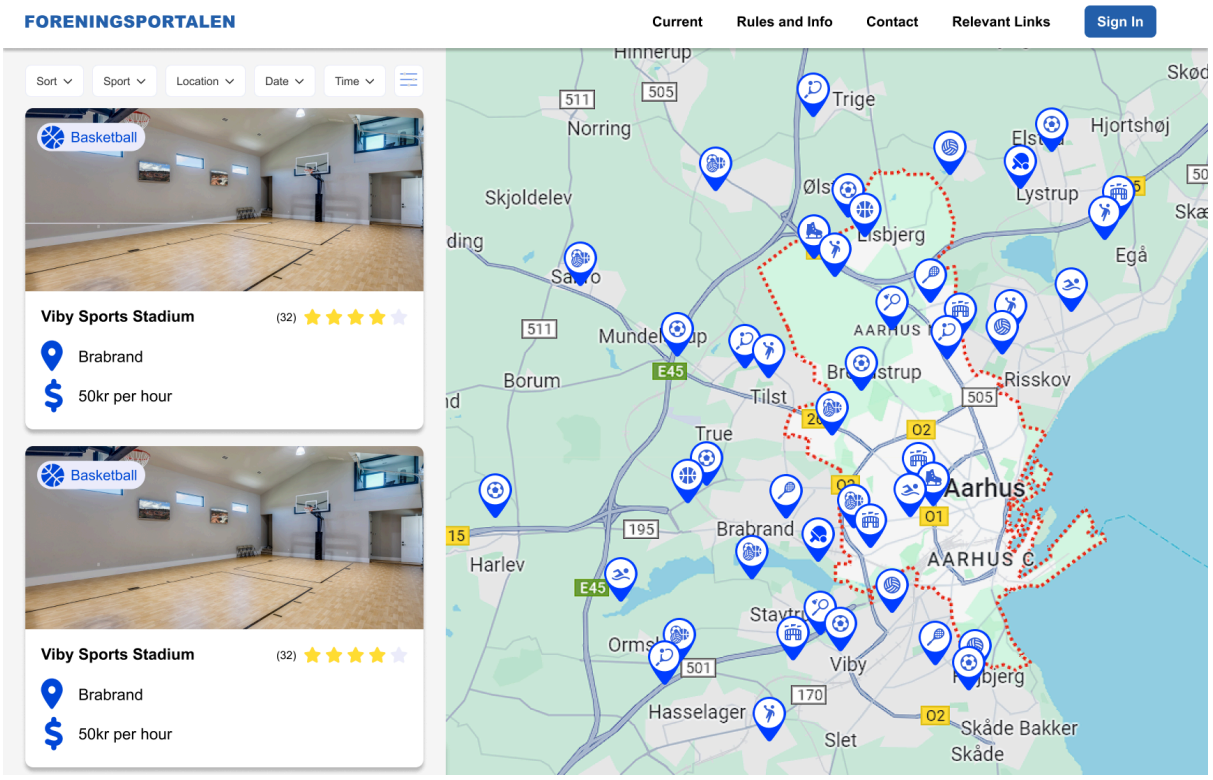

Figure 22. Filtering - option 3

Option 2 was the one chosen by all my participants. (Figure 21) They liked the addition of the search bar, allowing them quickest access if they knew what they were looking for instead of having to sort through each filter. Moreover they were fond of how clean the left side of the page was, leaving the sort by button to affect the arrangement of the available sport halls. Another key point they mentioned was that the participants did like how Option 1 clearly indicated that the searching of available sport halls was set on today and that this similar idea could be implemented in my final solution as well. (Figure 20)

The second element I tested was the “More Filter” function, where I gave participants two different options for each filter category and used this as a co-creation process, allowing them to choose and put the options in the hierarchy as they felt it made most sense for their searching process and their preferences. (Figure 23)

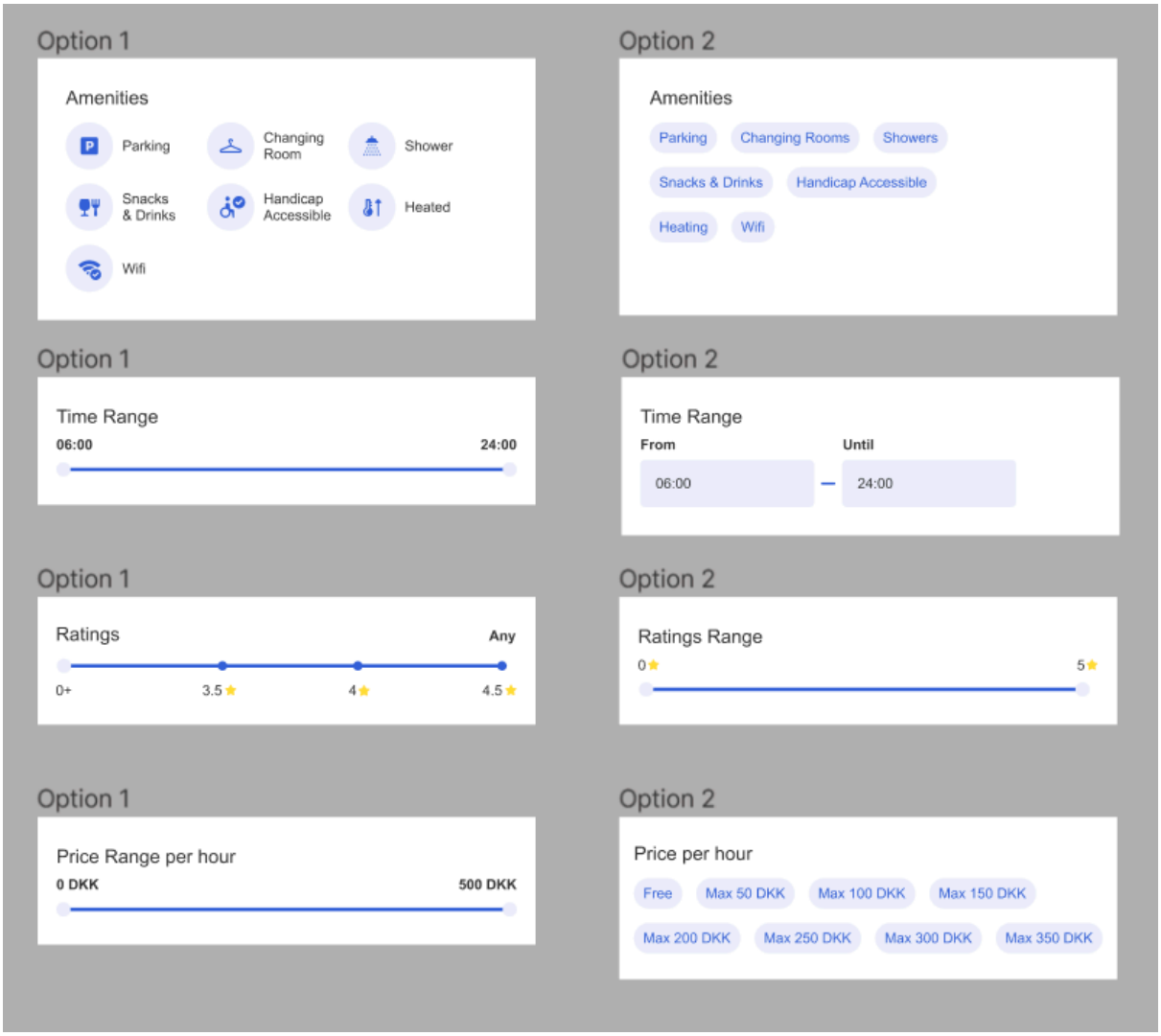

Figure 23. More filter options

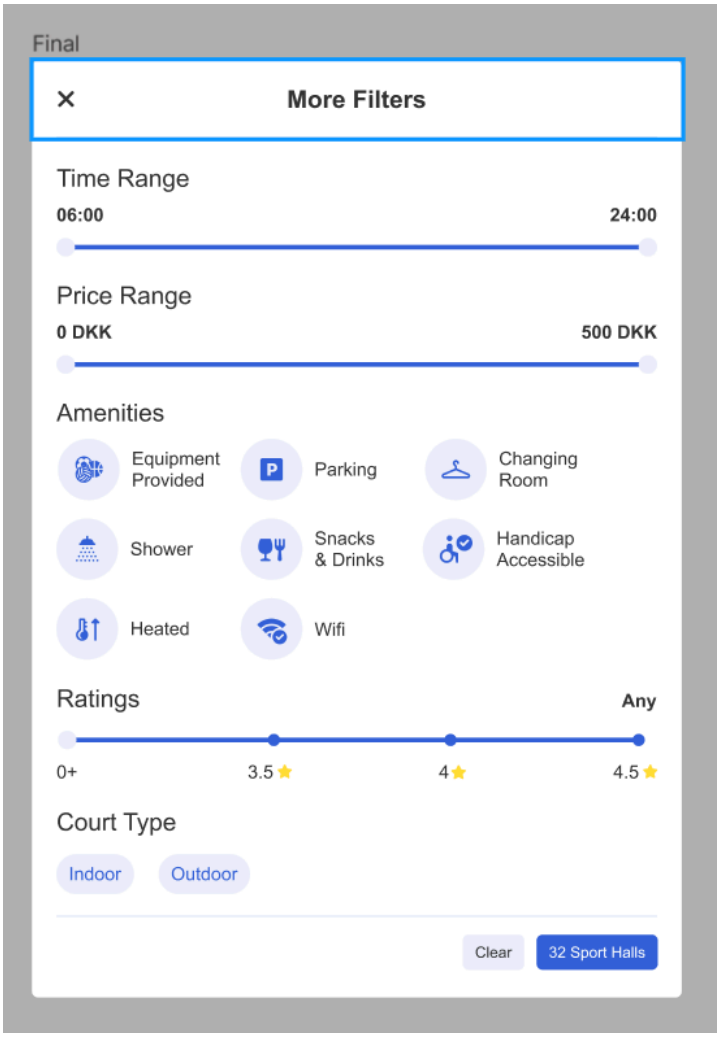

Figure 24. More filter options - final

I tested two options of the date and time selection and both were actually seen as not the best usability. Users didn't like the idea that they had to scroll all the way to the bottom to find the available date and times. They told me that the viewing and selection of both available date and times was the first thing they wanted to see and voiced their opinion of placing it higher on the page. (Figure 25)

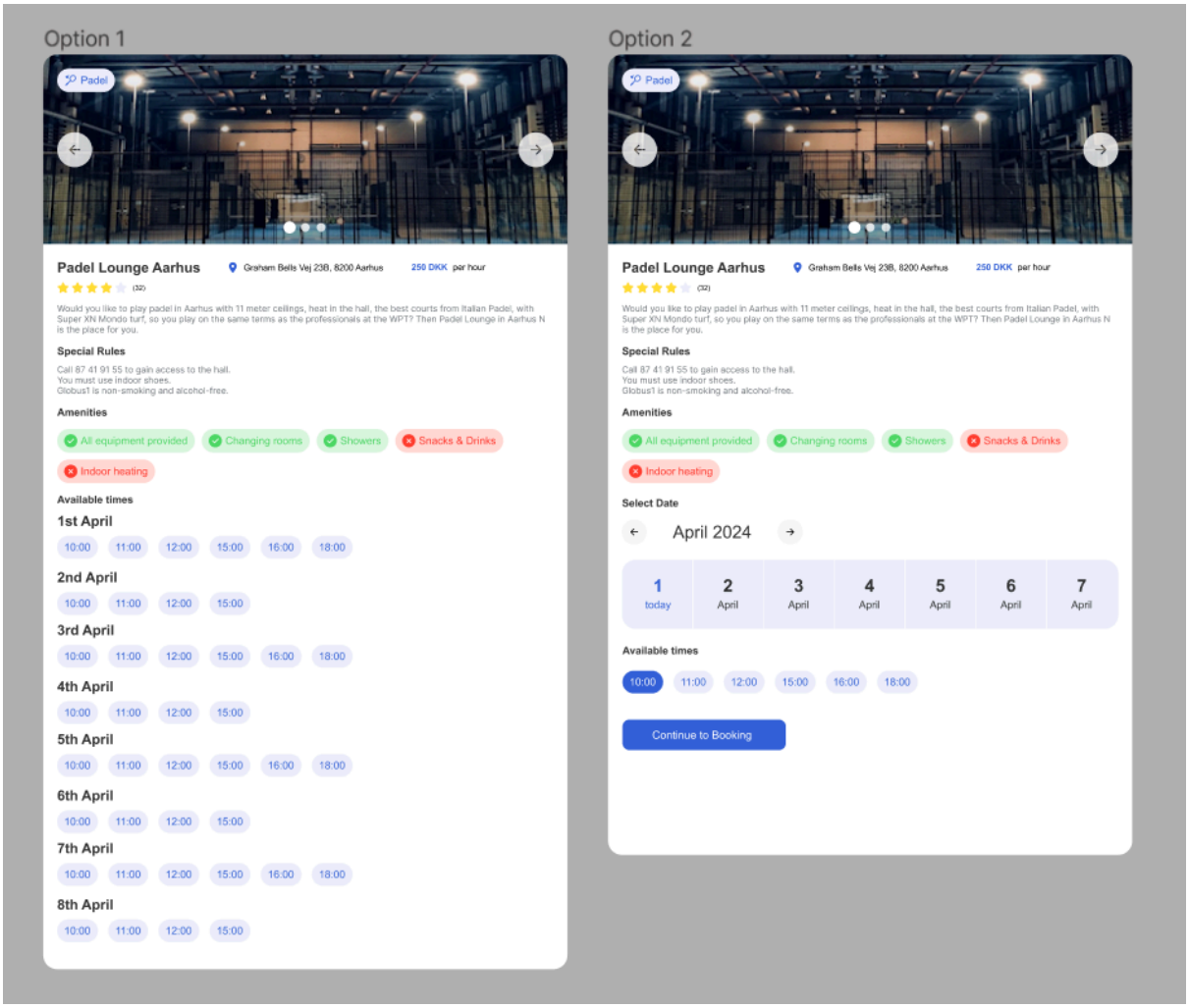

Figure 25. Sports hall details

The final AB test I conducted was to do with how the amenities were displayed. Here participants chose Option 2 as they felt the green and red colours looked too out of place in the design style and looked selectable. Participants also mentioned how the addition of icons alongside the text allowed for an easier visual understanding of what each one meant. (Figure 26)

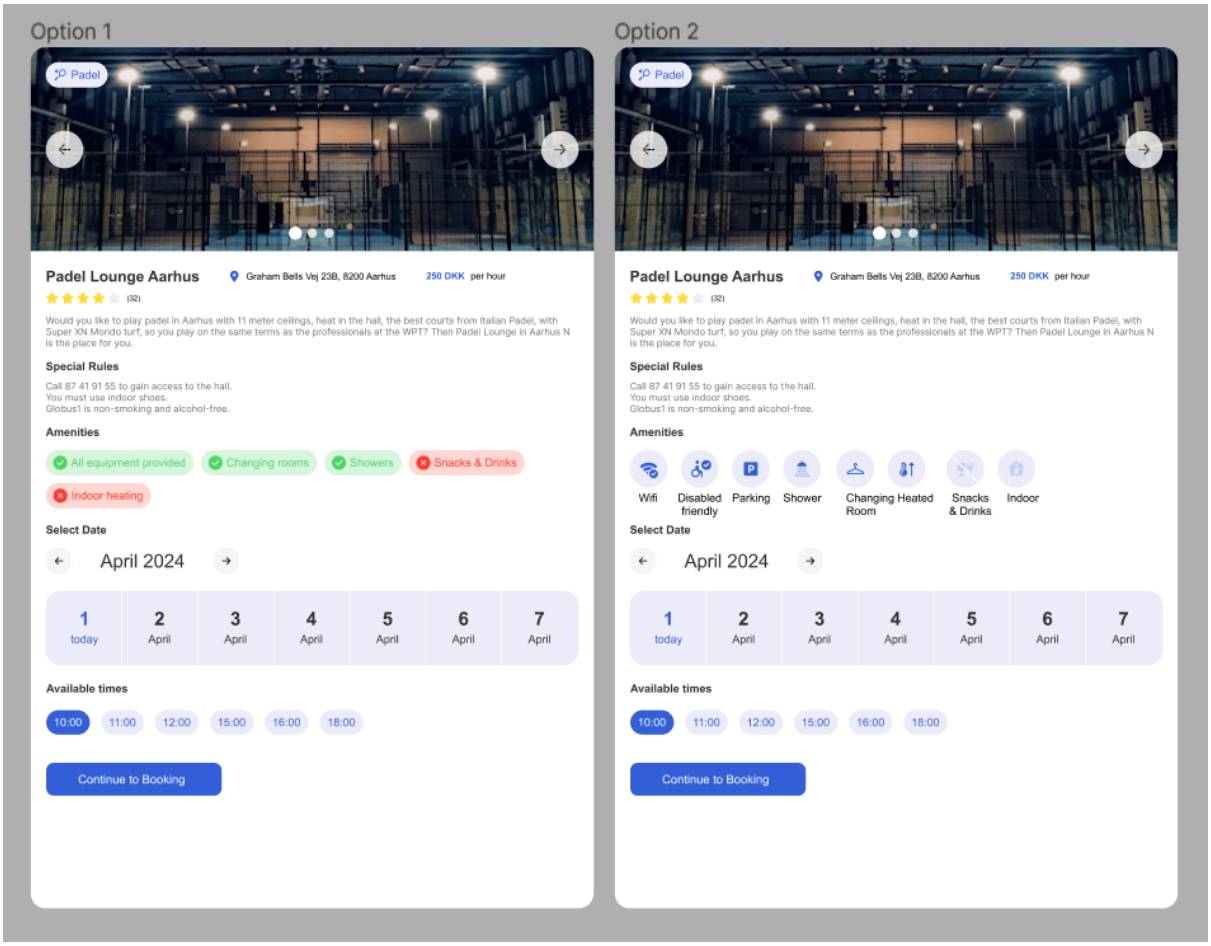

Figure 26. Sports hall amenities

Prototyping

After making all the adjustments learnt from the AB testing, I redesigned the details page of the sport halls. Since I learned from AB testing that the users would prefer to be able to see available dates and times for booking I moved all the content to the left side of the page and designed a sticky booking card on the right side so that it would follow you down the page as you scrolled. (Figure 27)

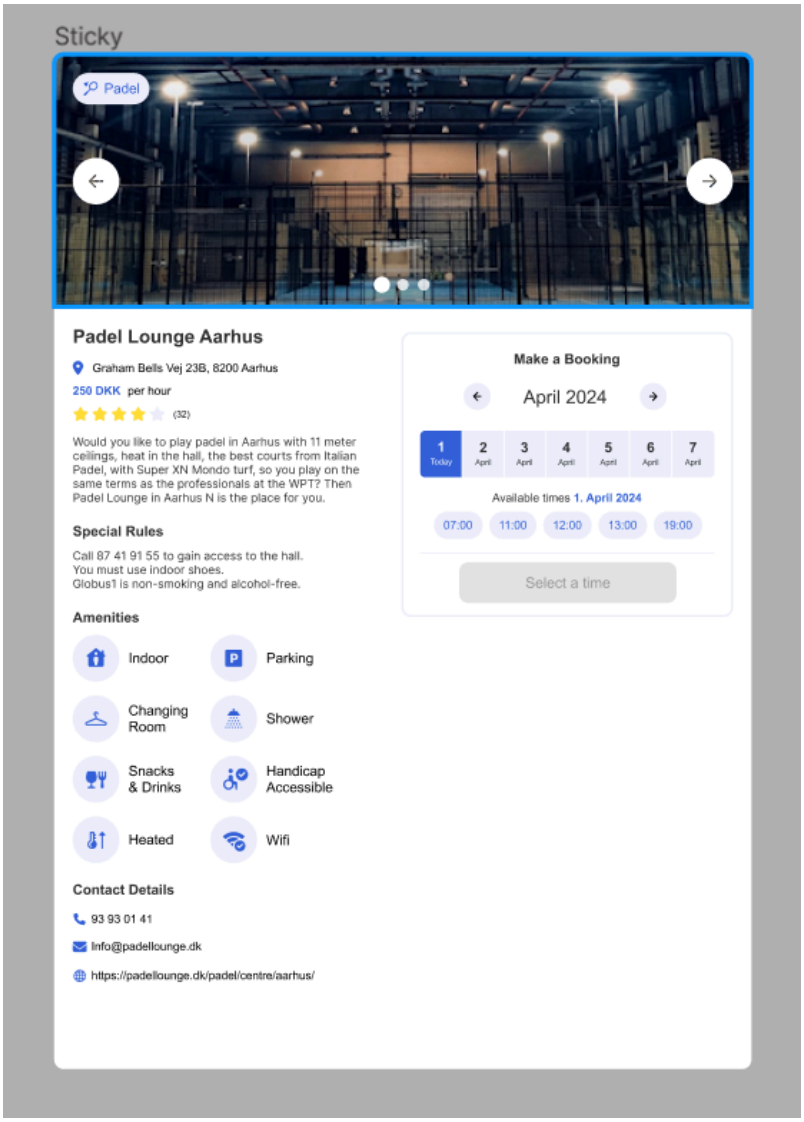

Figure 27. Sticky booking

Continuing the prototyping process, I wanted to focus on creating realistic usable filters. As I learned from my AB, think aloud test it was hard for the participants to really imagine what was expected when they would click the filters. For this reason I dedicated a lot of time in making them functionable with the use of components and variants and connecting them to allow users to feel as if the solution was as close to a real solution as possible, therefore allowing the insights I would gain from usability testing to have the greatest impact. (Figure 28, Figure 29, Figure 30)

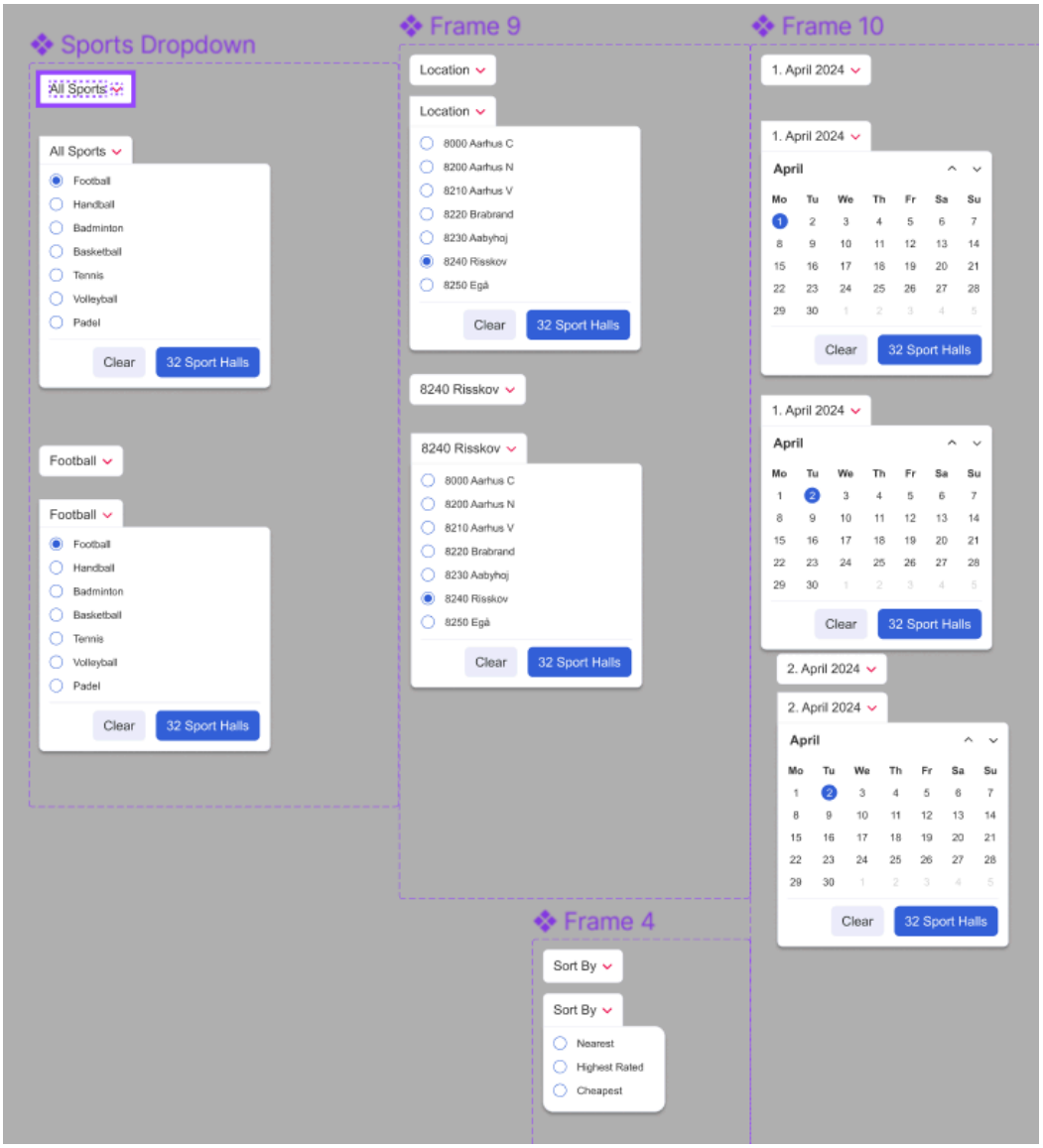

Figure 28. Dropdown components

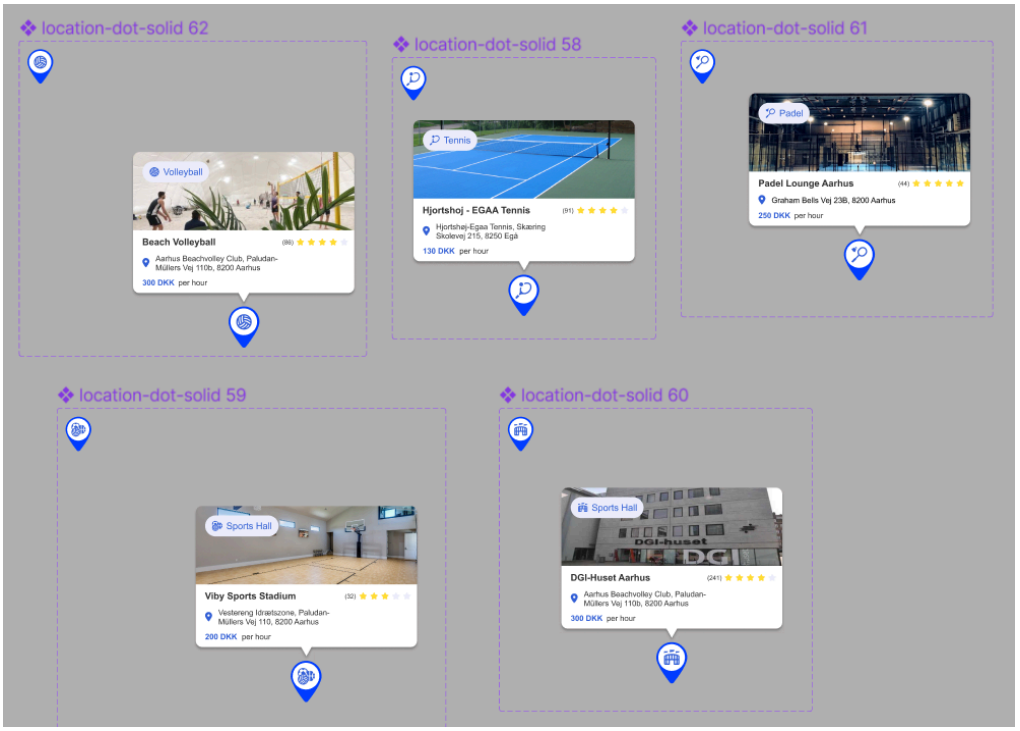

Figure 29. Map components

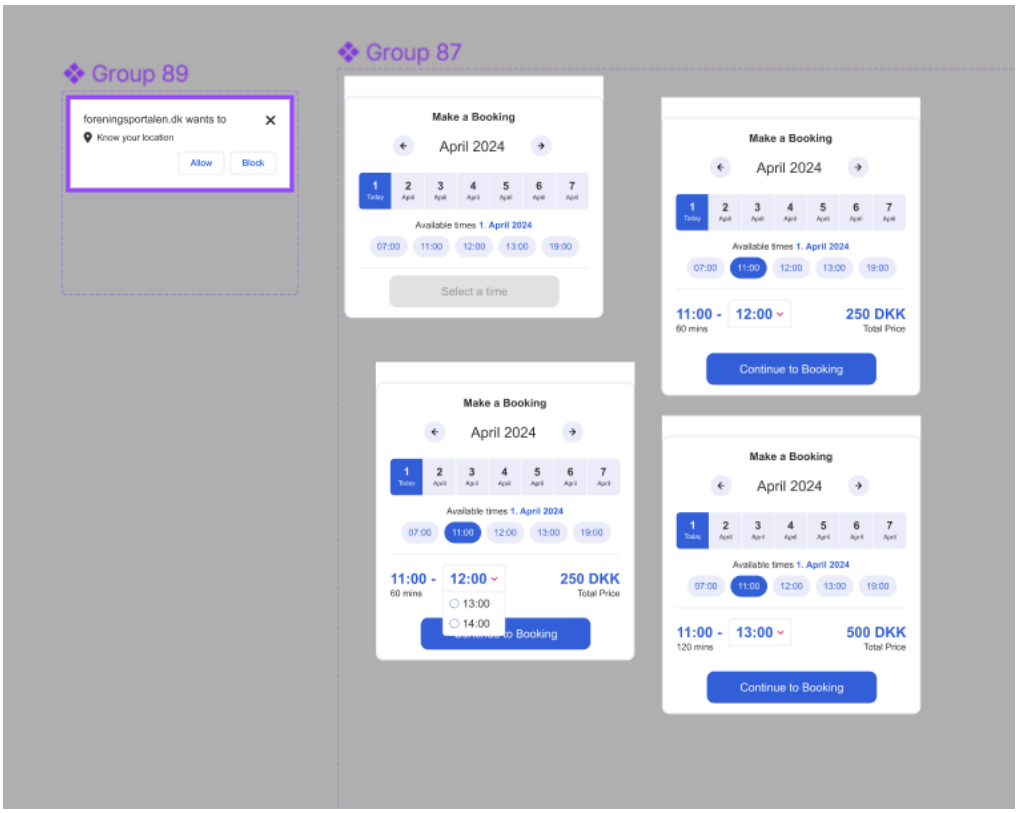

Figure 30. Booking components

Final MockUps

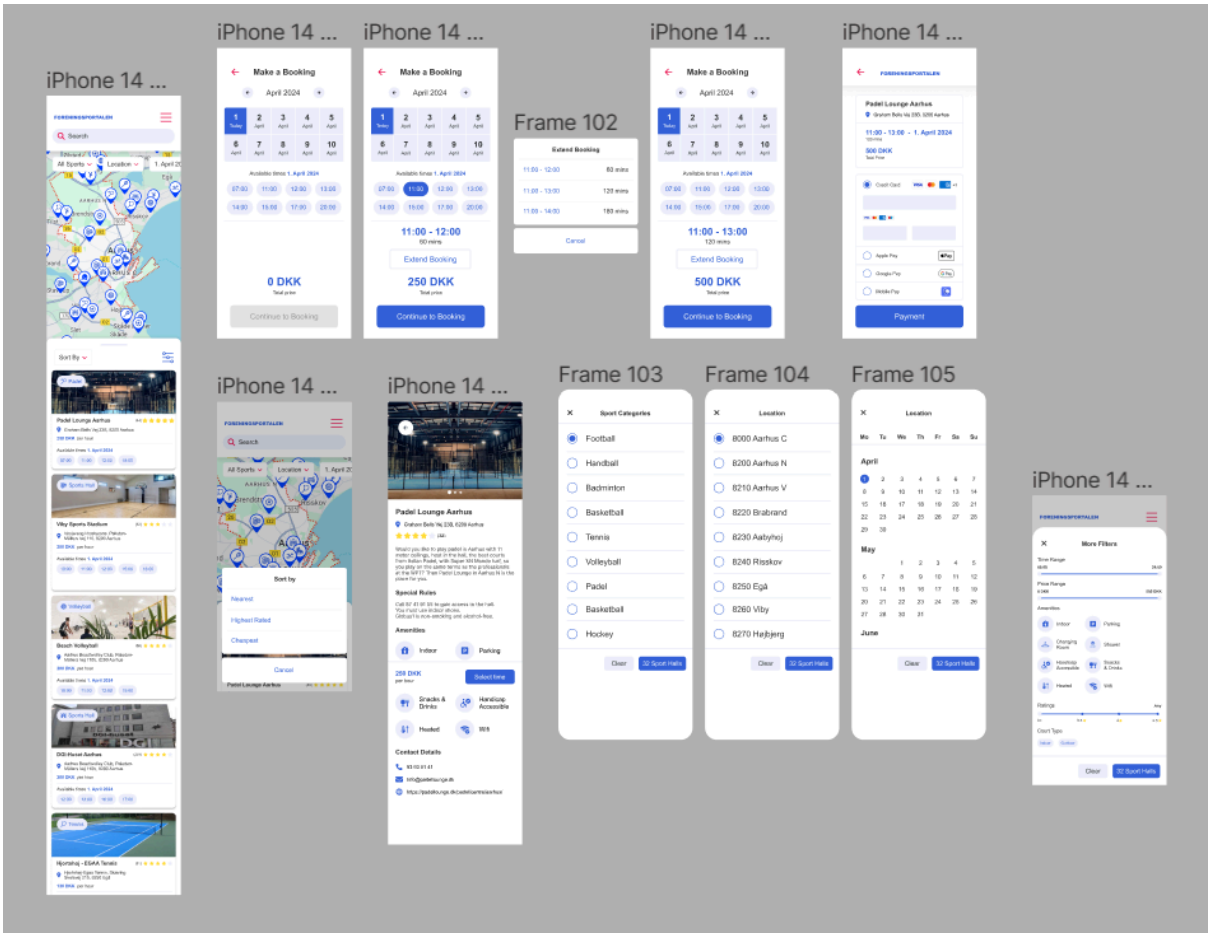

Figure 31. Final mockups - mobile

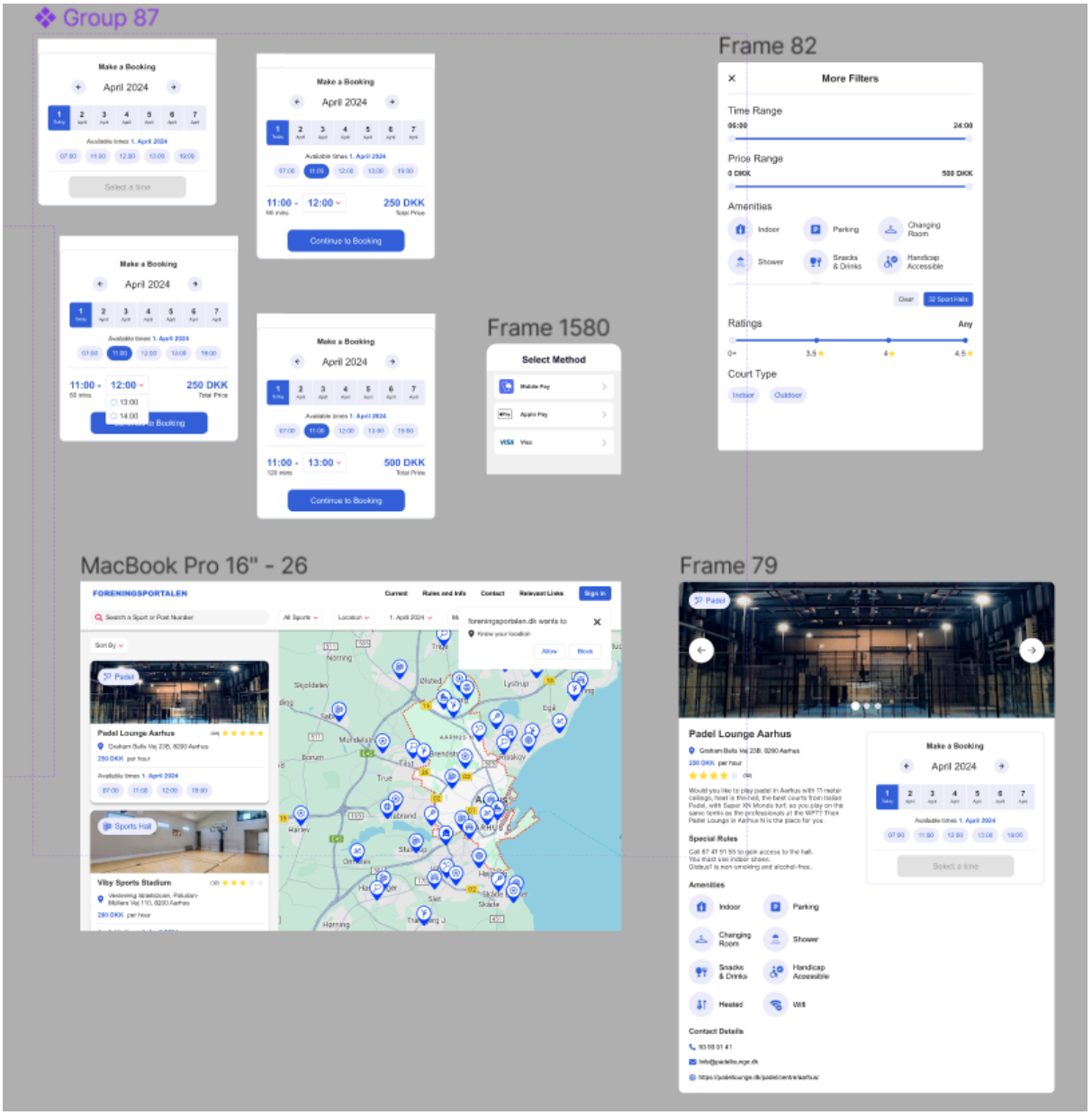

Figure 32. Final mockups - desktop

Usability Testing

Upon completing the prototype, usability testing was conducted to evaluate whether the digital solution effectively addressed the key issues faced by the target audience in locating and reserving sports halls. This testing, performed as a "think aloud" exercise, received overwhelmingly positive feedback.

Participants expressed particular appreciation for the map view, which they found to be an intuitive visual aid for finding sports facilities, with the inclusion of icons eliminating any confusion about the services each location offered. The detail cards

that appeared upon hovering over different locations were also praised for providing essential information at a glance.

The order and intuitiveness of the filtering options were well-received, with the added feature of the button indicating the number of sports halls available per filter enhancing the user experience by setting clear expectations. The layout of the cards allowed for easy identification of which sports were available at each venue, understanding that the icon with multiple balls also meant a variety of different sports.

The inclusion of detailed information on each card, such as pricing per hour and available times for the selected date, was highlighted as an exceptionally intuitive feature that participants found to exceed their expectations.

Further enhancing the user experience, the sticky booking option on the details page on the desktop version, which allowed users to view images and read detailed descriptions while keeping the time and date selection visible, was cited as a significant usability strength.

Overall the participants said the usability was extremely easy and intuitive and that they had no problems understanding how to use the platform and that every added feature made it so easy to find and book a sports hall to their specific need. In the end they mentioned how they wished a solution like this existed and that they would recommend it to their friends.

The one mentionable change that was made due to the responses from usability testing was that the price was not visible enough during the booking process in the mobile version. (Figure 33, Figure 34)

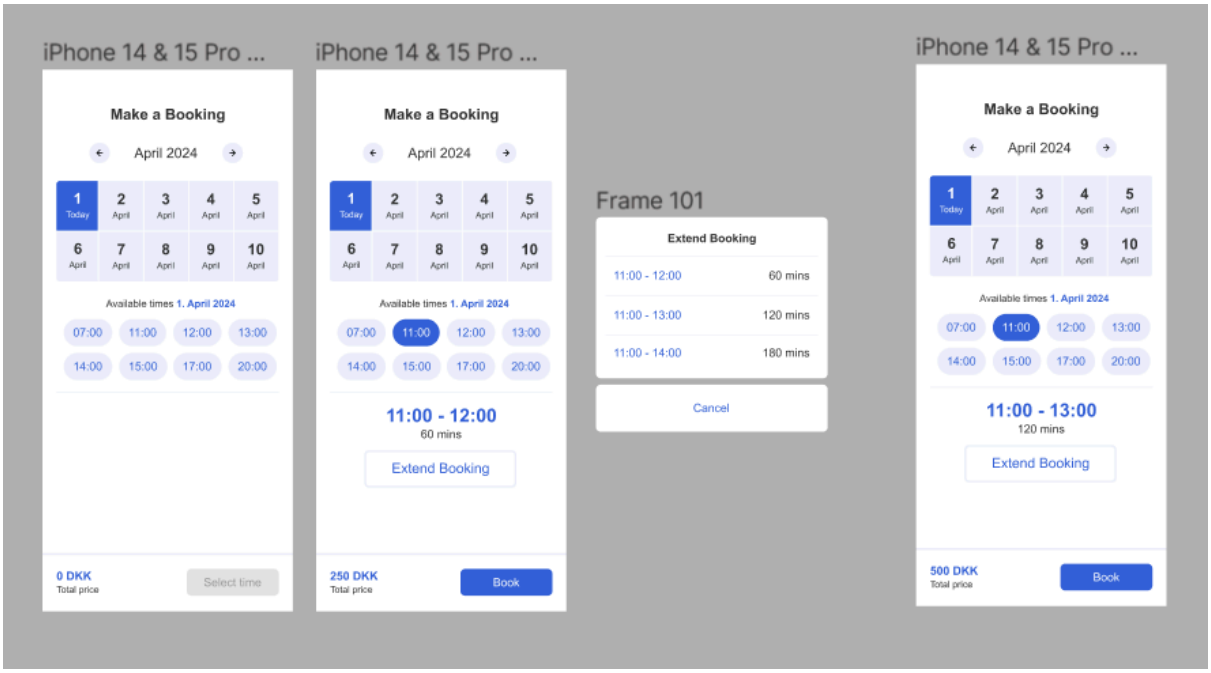

Figure 33. Mobile booking - iteration 1

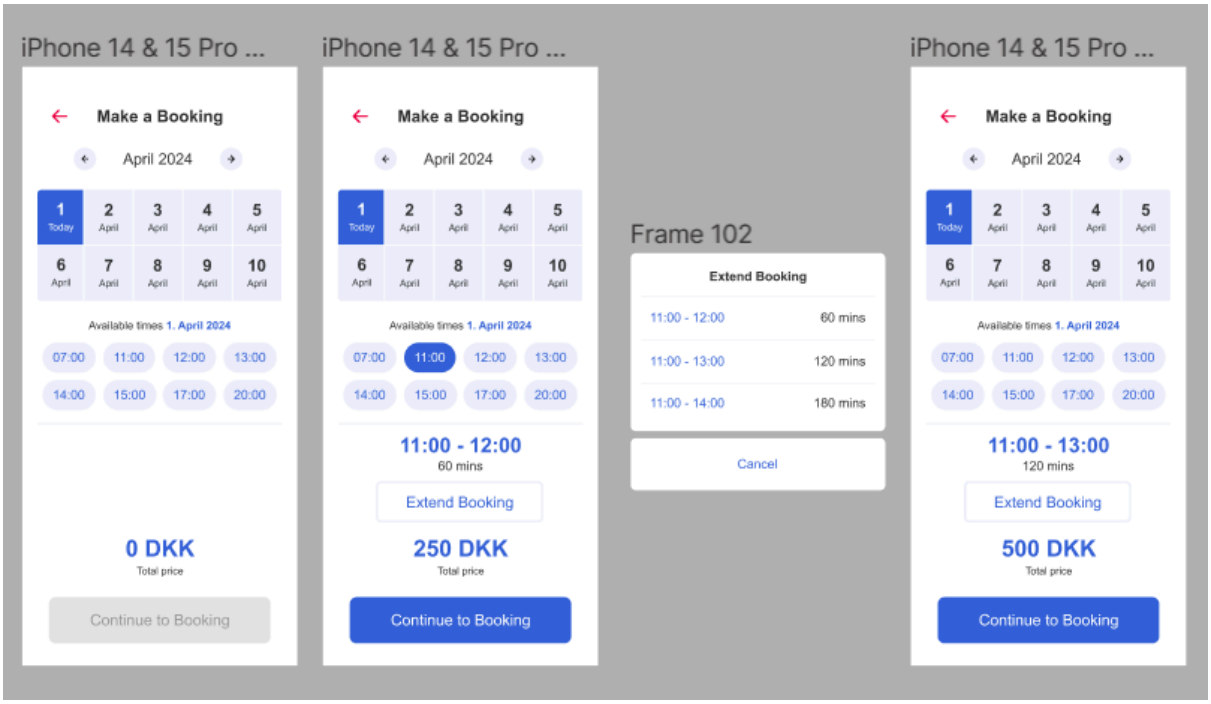

Figure 34. Mobile booking - final iteration

Implementation strategy

Gradual deployment

To manage risk and ensure a smooth transition for people to use the new booking platform for the Sport & Leisure department, implementing the solution in increments would be an ideal approach, following the advice of Humble and Farley (2010) in releasing successful digital solutions. Releasing the solution in increments ensures controlled use of resources and adapting the solution based on the user feedback. (Figure 35) The proposed implementation plan consists of three incremental releases:

1. Release: launching a functional baseline solution for easy adoption

The first development phase focuses on the core functionalities of the new booking platform and laying a solid foundation by integrating all available sports halls and essential features such as simplified booking, filtering, searching, and user-friendly navigation into the new solution. This step will ensure that the platform is functional, intuitive, and meets the primary needs of the users wanting to book the sports premises.

The key performance indicators that the Sport & Leisure department should track in this phase are the number of bookings facilitated through the platform. As baseline figures are currently not disclosed, the decision to proceed will be upon the Sport & Leisure department based on their target benchmarks that they consider successful.

2. Release: integrating community engagement to create added value and increase participation

If Sport & Leisure department assesses that the first phase was successful, the second phase will introduce different features that provide additional value for the users which will in turn increase participation, utilization of the platform and generate more community engagement, ultimately supporting the organization’s goals of promoting community spirit and active lifestyles. The specific features to be introduced in the second phase are incorporating all available associations and clubs into the platform to make them more accessible, as well as creating and displaying a simple classification system of other participants (beginner to expert). These features are intended to motivate and relieve potential participants from the fear they lack the

sport ability to participate. The alleviation of this fear could break the barrier of entry for potential participants, elicit participation and community engagement, foster a sense of community and encourage broader and more frequent participation in sports activities.

The key performance indicators in this phase should measure user engagement and community interaction within the platform, such as number of active users joining associations, number of new sign-ups due to community features, number of invitations sent out to join activities, and user satisfaction ratings.

3. Release: mobile app version to ensure user retention

The final and maybe more ambitious step would include developing a dedicated mobile application which will serve as the central access point for users to engage with the platform and enable more streamlined, convenient and frequent participation. With mobile usage continually on the rise, this step is crucial to ensure the platform is relevant and accessible. The app will incorporate all the functionalities of the web platform, along with additional features optimized for mobile devices.

To conclude, it is crucial to set, measure and assess specific key performance indicators in each launching phase to decide on the next steps. This cautious three-step approach would significantly minimize potential budget losses, reduce the complexity of change management and provide opportunities to curate a truly user-centered and successful platform.

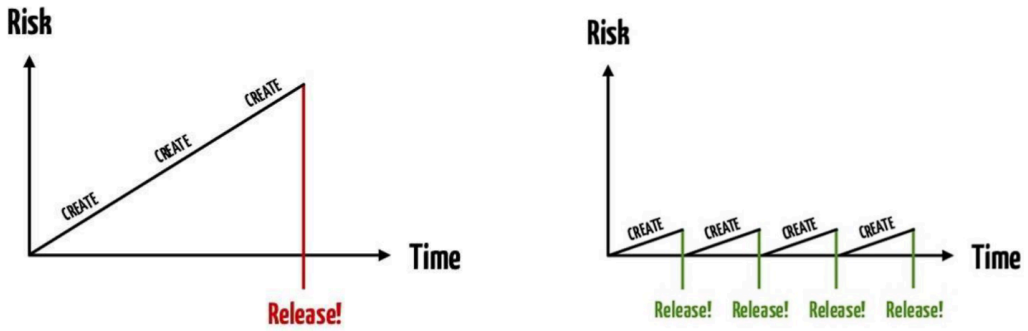

Figure 35. Gradual deployment strategy

Risk overview and management

The introduction of my solution has the potential to bring a lot of value to all the stakeholders, but before investing into the actual implementation process, it is important to highlight some of the potential risks of the entire project and try to find strategies for mitigating them in order to provide the best potential odds for success. The following risk matrix outlines and addresses all the various risks associated with the project in the context of the evolving sports and leisure environment in Aarhus.

Risk Description	Likelihood (1-5)	Severity (1-5)	Mitigation Notes
Insufficient municipal engagement	3	5	Create a simple and concise value proposition which can be clearly communicated to the stakeholders, so they understand the value of the solution and are motivated to engage and invest the resources into its development.
Sports facilities information accuracy	2	5	Implement an automatic syncing system which will enable smooth and real time updates on premise availability, establish direct lines of communication with sports facilities and audit them prior getting on the solution and occasionally, enable users to leave reviews and report premises.
User experience issues	1	4	Prior to launch, the solution should undertake different UX and UI tests on more quantitatively sufficient samples, after which the solution should be revised to implement the feedback accordingly.
Integration issues with their existing systems	2	4	This department should work closely with the IT department of the entire Aarhus Kommune to ensure compatibility and seamless integration with their other elements of the website.
Budgeting shortfalls	2	5	People responsible should make a precise budgeting plan before implementation according to the available resources, and ensure that the resource allocation is continuously monitored.

Market competition	2	3	Due to low barriers to market entry and existing competition, the solution should have unique and functional features, better usability and a lot of available premises in order to position themselves as the central platform in the market ahead of the competition.
Scalability of the solution	1	3	To handle a growing user base and potentially expanding the service offerings, the solution should be designed with scalability in mind. For example, using a scalable database, performing regular load testing, and separating microservices in modular design.
Dependence on third-party services	3	3	Monitor third-party services like MobilePay for reliability and establish a contingency plan in case they don't work, like offering simple credit card payment or Apple Pay.

Figure 36. Risk matrix

Marketing and promotion

In order to achieve the most optimal user adoption and engagement, the Sport & Leisure department should consider creating a complementary multichannel marketing and promotion strategy.

Firstly, utilizing the municipality's extensive reach, the new platform can be introduced to the public as a central tool to access local sports facilities. Aarhus Kommune can promote the platform through its network and official channels, including the website, the E-boks system, and through its email newsletters. The main message should highlight the value and key features of the solution, such as simple access to booking local sports venues, along with direct links to enable immediate action. They could also create a complementary social media strategy which would drive awareness among the younger target audience, which can focus on different success stories of people using it such as professional players, as well as featuring the information about different sport's facilities available on the solution.

Beyond just the digital strategy, they could also do print marketing with posters and QR codes directing to the website, which would be displayed in the sports halls for people to scan.

This approach would aid in establishing the booking platform as a central tool for booking sports and leisure premises in Aarhus, gain momentum, create more visibility and consequently generate more bookings.

Budgeting and funding considerations

Since a significant groundwork for the project has been laid out with the creation of the concept and prototype, the rest of the startup costs they should consider for the development of this solution include comprehensive UX/UI research, multiple testing phases, backend development, effective project management, as well as setup of third party services like MobilePay.

Beyond development, the platform's promotion strategy requires certain budget allocation for marketing, which can be adjusted and aligned internally, according to their strategic goals and the resources allocated by the Kommune.

After launching the solution, the operational budget would include continuous personnel costs for the support staff, third party services, regular system updates and bug fixes, if they occur. These expenses, even though they are very variable, should be considered to adapt to the department's capacity to manage them.

When it comes to obtaining funding, they could again leverage their municipal backing and apply for funding allocated to development of technology and citizen services, since the solution aligns closely with their IoT Development Strategy and other initiatives for fostering active and healthy lifestyles for the citizens of Aarhus.

Conclusion

The current solution provided by Aarhus Kommune for *single booking,* which should act as one of the enabling tools to access the different sports and leisure facilities, is currently not functional, creating a bottleneck in delivering value for the community and resulting in suboptimal capacity usage.

After extensive research and employing the Design Thinking methodology, I was able to fully understand and find solutions for these challenges through the research questions scoped in my report:

- What are the key pain points experienced by stakeholders involved in the premise booking process in Aarhus, including both users and staff members of the Sport & Leisure department?

The primary pain points experienced by the users are the inability to use the platform due to the non-intuitive interface and dysfunctional booking system, leading to an overwhelming amount of manual booking attempts through emails. This process is time-consuming and frustrating for both the users who want to book sports facilities and the staff members who have to manually process all these requests. Furthermore, there is a lack of consistent and accessible information on available sports halls and different amenities included, as well as limited opportunities for people of different levels of sports proficiency to join team sports without long-term commitments.

- How can a digital solution address these identified pain points and challenges to ensure a more streamlined, effortless, and frequent participation for end-users in booking sports premises and participating in sports?

The proposed digital solution directly solves these challenges by offering a user-friendly interface which enables the booking process and makes it intuitive to book sports halls and ultimately participate in sports. More specifically, the use of tested and comprehensive filtering and sorting options, a map providing a clear visual overview of available sports halls, consistent display of available amenities are the key features directly solving the pain points of the users. For staff, the automated booking process would significantly reduce their manual workload, improve the service they are offering to the citizens of Aarhus, and maximize the capacity employment of their facilities.

- Could this solution be used to foster more community engagement in Aarhus, thereby creating added value in supporting the overarching vision and mission of the Aarhus Kommune?

Due to the scalability and incremental strategy proposed in the implementation plan, the digital platform can also be used to provide more community engagement opportunities. The features suggested for the second phase of the release which focus on creating more community engagement opportunities are incorporating all available associations and clubs into the platform to make them more accessible, as well as creating and displaying a simple classification system of other participants (beginner to expert). These features are intended to motivate and relieve potential participants from the fear they lack the sport ability to participate. The alleviation of this fear could break the barrier of entry for potential participants, elicit participation and community engagement and thereby assist the municipality in achieving their ultimate goal of growing stronger and larger community ties around sporting associations in Aarhus.

In conclusion, the use of Design Thinking process has enabled the creation of a truly user-centered digital solution which effectively addresses the key pain points of all the stakeholders, and has the incremental potential to provide added value in alignment with Aarhus Kommune's ultimate mission to promote a more active, healthy and connected community.

References

Aarhus Kommune. (2022). *Sports- og fritidspolitik 2022-2025* [Sports and Leisure Policy 2022-2025]. Available at: https://aarhus.dk/media/0wchn3du/sports-og-fritidspolitik-2022-25.pdf [Accessed 2 Mar. 2024].

Aarhus Kommune. (2024). *Citizens' Services*. [online] Available at: https://aarhus.dk/english/collaborate-with-the-city/organisation/citizens-services [Accessed 2 Mar. 2024].

Hick, W.E. (1952). *On the rate of gain of information.* Quarterly Journal of Experimental Psychology, 4(1), pp. 11-26.

Humble, J. & Farley, D. (2010). *Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation*. [e-book] Addison-Wesley Professional. Available at: https://proweb.md/ftp/carti/Continuous-Delivery-Jez%20Humble-David-Farley.pdf [Accessed 1 Apr. 2024].

Krug, S. (2000). *Don't Make Me Think: A Common Sense Approach to Web Usability*. New Riders Publishing, pp. 10-20.

Kultur og Borgerservice. (2023). *Om os*. [online] Available at: https://kulturogborgerservice.aarhus.dk/om-os [Accessed 1 Mar. 2024].

Kultur og Borgerservice. (2024). *Sport & Fritid*. [online] Available at: https://kulturogborgerservice.aarhus.dk/organisation/sport-fritid [Accessed 1 Mar. 2024].

Nielsen, J. (1994). *Usability Engineering*. Academic Press, San Diego, pp. 155-165.

Nielsen, J. (2000). *Designing Web Usability: The Practice of Simplicity*. New Riders Publishing, Indianapolis., pp. 101-105.

Appendix

Appendix 1 - Sports & Leisure policy 2022 - 2025
Appendix 2 - Interview transcript with Sports & Leisure representative
Appendix 3 - Online survey report analysis