

Experimental

System Development 2023

Anton Wernegreen, 202108587

Nikolaj Peter Wold, 202105413

Kirstine Vinther Uttrup, 202008856

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Supervisor: Henrik Korsgaard

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Department of Computer Science

Aarhus University, Denmark

Resume

Denne rapport omhandler vores samarbejde med en lokal kolonihaveforening, samt processen omkring udarbejdelsen af en prototype. På baggrund af feltarbejde i form af brugerobservationer, contextual interviews, samt workshops har vi forsøgt at forbedre både det administrative arbejde for bestyrelsen, samt oplevelsen for ansøgerne der står på ventelisten.

Det administrative arbejde for bestyrelsen indebar flere Excel ark for bearbejdelsen af ansøgernes data, samt manuel kommunikation over mail. Dette arbejde forekom tidskrævende og unødvendigt. Vores mål var derfor at fremstille en prototype, som mindskede den unødvendige kommunikation, samt strømlinede arbejdsprocessen ved overlevering af arbejdet til nye bestyrelsesmedlemmer.

Vores projekt er inspireret af agil udvikling, med fokus på tæt samarbejde med brugergruppen. Den endelige prototype er en server-baseret hjemmeside, som sammenkobler bestyrelsens tidlige arbejdsopgaver i én webapplikation. Bestyrelsen vil med prototypen kunne bearbejde alle ventelister med et inkorporeret mailsystem og derved kunne kommunikere med de nødvendige ansøgere nemt og enkelt. Derudover er ventelisten gjort offentligt tilgængeligt, hvilket vi håber vil lette bestyrelsens unødvendige korrespondancer med enkeltpersoner.

Abstract

This report presents the development and implementation of a waiting list management system for a local community garden association. The existing system utilized Excel spreadsheets for managing the waiting list, which proved inefficient. It also severely limited their ability to communicate with the people on the waiting list due to time consumption.

We found that the board members spent unnecessary time communicating with individual members of the waiting list as a result of the lack of information given in plenary. Our aim was to create a more streamlined application that allowed for a closer relationship with the people on the waiting list while also decreasing unnecessary communication with individuals.

The project's development was heavily inspired by the practices of agile development and participatory design. Through the use of methods like 'contextual interview' and with inspiration from the method of 'future workshop' we attempted to understand our users' work practices and needs.

The final prototype is a web-based service that combines much of the user's practice, previously done in various programs, into one service. Our application manages all the different lists of applicants with a simple mailing system that instantly contacts the different groups using a specified template. It also serves as a public waiting list for potential applicants, making it easier to get an overview of the waiting process.

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Source Code

[Link to GitLab](#)

Prototypes

Be aware the prototypes might take a few minutes to load.

[Link to public prototype](#)

[Link to prototype for the administration](#)

1. Introduction

For this project, we have collaborated with a local community garden association. The partnership was initiated due to personal interest and experience in the application process for several other community garden associations. At the very moment, one of us is waiting to be able to buy a community garden. However, we have experienced that not every association has a public waiting list, which allows applicants to follow their building seniority. This implies that the applicants have no concept of how long they need to wait before being offered a community garden. This led us to wonder if such a system could be optimized further, even on the administration side. Could we possibly design a better system that both benefits the applicants but also the administration?

In this report, we will present the process of our project, whose structure draws on the fifth chapter of Beyer's article "User-Centered Agile Methods" [1]. Following a project plan, we will introduce the collected data from the field studies we have conducted, which relied on three techniques: user observation, contextual interviews, and semi-structured interviews [2]. Next, by practicing user involvement and drawing inspiration from Susanne Bødker's article regarding participatory design [3], we will gain important knowledge for our design choices and create a prototype on this basis. Subsequently, the prototype itself will be presented along with the associated user stories. Finally, we will present the conducted evaluations that led to our final prototype and the different iterations of our design.

1.1. Design Problem

How can we design a management system for the board of a community garden association that both improves the process of handling the waiting list and at the same time ensures new owners are willing to participate in the community?

1.2. Sub Problems

1. How can we ensure future residents are willing to participate in the community itself while still making sure the community gardens are distributed fairly?
2. How do we create a system which is easy to manage and learn when new board members with different competencies are selected?
3. Can we, through the design of a system, create more effective and less time-consuming communication between the management board and the applicants?

2. Project Plan

We have chosen to implement a system developed for the administration of a community garden association. According to the Danish nonprofit organization "Kolonihave Forbundet", there exists at least 400 different community garden associations and, in total, about 62.000 community gardens [4]

The original idea of community gardens came after the First World War. The practical purpose of the allotments was to make it possible to grow vegetables and save money, but they also served as a haven for the working class to escape the crowded inner-city neighborhoods. Traveling outside the borders was still too expensive for the working class, so the community gardens also served as a small cottage to use during holidays [5].

Today, most allotments are owned by the municipalities and rented out, while the colonists must buy the actual house on the plot. Both the rent and the payment cost for the community gardens are restricted to being cheap, with the intent of keeping them affordable to most people. To make sure the community gardens are distributed fairly, a waiting list is normally created. Potential buyers pay a yearly amount, usually about 100 DKK, to keep their spot on the waiting list. The gardens are sold to the ones highest on the waiting list.

In most community garden collectives, the handling of the waiting list and sales of the gardens is handled with help from volunteer community garden owners. We have chosen to create a system to make this process easier to manage by the board members.

Since there is a change among the board members every couple of years, passing on the work as easily as possible when the board members are replaced is essential to avoid mistakes and creating an unnecessary workload for the volunteers.

As described in the text by Bosson [6] the transmission of tasks and information can be challenging to design. We need to make sure that the information is passed on without information getting lost in transmission and consider that each board might, over time, have different working methods that our system needs to support.

Since it is volunteer work, potentially done by people of all classes and work experiences, we also needed to design a system that is simple and easy to understand, no matter the board members experience with management.

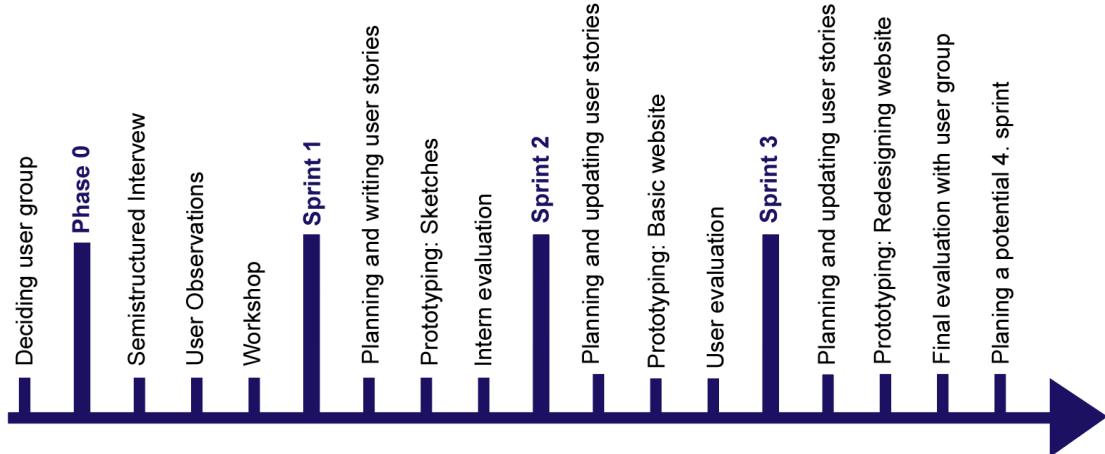
2.1. Timeline of Design Process

For our design process, we have been inspired by the agile design process method [1]. The project consisted of 3 sprints and a phase 0. Phase 0 was conducted using field studies with techniques including observations of the users conducting their work, interviews with the users, and a workshop. All done to help us scope the problem and get knowledge of our users work practices, needs, and goals.

The first sprint resulted in an internal evaluation, and the following two were evaluated by our two main stakeholders from the community garden.

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3. Field Studies

In our process of discovering, analyzing, and scoping the problem, we created field studies with our stakeholders. For this process, we focused on three techniques: user observation, contextual interviews, and semi-structured interviews. The intent of the field studies was to obtain a better view of our users' work practices and have the users participate in the development of our design.

3.1. Methods

We conducted two field studies in total. The first being a semi-structured interview, the second an observation of their work practice, with inspiration from the contextual interview.

First Meeting and Semi structured Interview

On our first meeting with the community garden management, we attempted to keep an open conversation based on a technique called a semi-structured interview [2]. We tried to keep the conversation focused on figuring out what needs they might imagine we could help them solve, while also being open to the interview taking a turn according to what subjects they find interesting.

This gave us some initial ideas, but we were also aware of the pitfalls of using this method. For instance, the users might not always be able to express their real problems, and sometimes it can be hard to come up with ideas subsequently after having experienced a breakdown. [7]

Another pitfall is that this focuses on correcting existing systems and work practices but avoids ideas concerning creating new systems with benefits that might solve a problem they did not even know was present. It could also be problems they avoid mentioning because they don't see a possible solution to the problem.

Observing the Yearly Update of the Waiting List

For our second visit, we were very much inspired by Karen Holtzblatt and Hugh Beyers article "Contextual Design" [8]. Specifically, chapter three, which describes the process of contextual inquiry and the field data gathering method for contextual design, The article outlines several attention points one must be aware of when doing contextual inquiry.

From our initial interview, we found that it might be interesting to work with the process of getting new members on the waiting list and maintaining it while some of the community gardens get sold. Holtzblatt calls this "project focus", and it allows us as the interviewer to narrow the scope, which limits possible distraction and helps one focus on what is important. We had difficulties examining their normal work behavior since their work is quite spontaneous, and therefore the workload and working hours varied greatly. Most of their work was done from their own homes as well. Ideally, a contextual interview would be conducted in the usual work environment, but that was not possible in this case. We therefore needed to arrange a more staged setting, so we arranged a meeting with two of the stakeholders and observed how they handle the yearly update of the waiting list.

We concluded that having them seated together while working made it easier to examine the computer-supported cooperative work they were performing. Heath and Luff also describe it in their article "*Collaborative activity and technological design: Task coordination in London Underground control rooms*" observing computer-supported cooperation has some significant benefits:

"The ability to coordinate activities and the process of interpretation and perception it entails, inevitably relies upon a social organization; a body of skills and practices which allows different personnel to recognize what each other is doing and thereby produce appropriate conduct" ([9], s. 67 l. 9-12)

By observing the two stakeholders, we thereby might get a closer look at how they coordinate and socially interact, compared to a more user-centered focus, which quickly becomes more scientific and less in touch with the context in which the work takes place. Holtzblatt and Beyers [8] emphasize the importance of being aware of the connection between the different subjects during a contextual interview, and we therefore took extra notice of the interactions between them.

3.2. Analysis

Our analysis of the initial interview was primarily focused on drawing a holistic picture of the management board and understanding their work as a whole before even getting into the actual practice of it. All of us wrote down our biggest takeaways from our interview and combined them into a document of key points we should observe and inquire about. We also

decided on a focus point for the upcoming observation session, this being the topic of the "Management of the waiting list."

Since our observation session was very much inspired by the practices of the contextual interview [8], we also tried to adhere to its methods for data analysis. Immediately after the observation, we held what Holtzblatt and Beyers call an 'Interpretation session'. The interviewer presented his findings, while the others questioned them. All findings were written down and grouped in categories like task patterns, breakdowns, etc.

At the same time, we created a simple collaboration model of the collaborative events and how the participants interacted with each other and influenced each other's decision-making.

All design ideas that sparked up were written down separately to be further discussed in another session.

3.3. Results

The Work Structure

Through the initial interview, we got an overall view of the management system in place:

- One person is in charge of responding to the emails sent to the community gardens official email address and updating the waiting list.
- Another person is in charge of the website and also helps with updating the waiting list.
- One person in charge of monitoring the water supply for all the community gardens.
- One person, not present in the interview, who was in charge of all handling with the bank.

As Bosson also explains it in the article: "*The Parameters of Common Information Spaces: The Heterogeneity of Cooperative Work at a Hospital Ward*" [6], they might have divided their tasks between them, but it seemed like the hierarchical structure was very low. The people in charge of the different tasks might be related, be neighbors, or just be good friends, and they would often help each other out. This is what Bosson describes as "gray areas". It was clear that much of the information sharing done between them was done sporadically throughout the day in places not necessarily work-related. We kept this in mind when doing our following

observation of their work, as these "grey areas" could hinder observation of much of the information sharing between them.

Work Practice

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Looking at all the observations and information given at the meetings and observing their work with the waiting list, there were three key areas from Bardram's text: "Activity-Based Computing for Medical Work in Hospitals" [10] in which we believe there is room for improvement.

One of them is activity-centered resource aggregation. The overall work of maintaining the waiting list was spread between different Excel sheets, email, and the website. They kept each Excel sheet's waiting list in their own document. We believe there might be room for concatenating some of the work on one platform.

Another one is activity awareness. Presently, the waiting list is only visible to those who are maintaining it, and this results in waiting list applicants writing emails to the administration asking them where they are on the list. To avoid this, it might be beneficial to make the waiting list visible on the website. This, of course, could also result in more work for the administration to keep it up to date, so having the updating of the public waiting list be automatic was prudent.

Lastly, activity sharing Since all work was being done in Excel sheets, saved locally on the computer, it did not allow for much synchronous work. Their current setup necessitated a clear split in duties, with one member of the management handling the mailing and the other handling the waiting list itself. We found it a priority to focus on creating a system capable of handling synchronous work between several members of the board. Additionally, we deemed

it a focus to develop a low-maintenance system so that the administrative workload can be easily transferred to new board members of the association, which occurs every couple of years. A big part of activity sharing is not only the moment to moment sharing done when working but also the handing over of work between different parts of a larger system. To us this therefore seemed an absolute necessity, as from our observations and interview, the general skill-level varied widely. Ideally, one would create an accessible system with a focus on the not technology minded that can be passed from one administration to the next, keeping all information available, with a focus on learnability.

A level of automation and resource aggregation could also improve the ease of maintenance for stakeholders. Having all the waiting lists in a "proper" database with the ability to easily check mark applicants when payment has been received would reduce the workload of the stakeholders. Additionally, it would allow for statistics, graphs, diagram, for both the management board, but also more generally for future applicants. So, by unlocking this feature and creating a system capable of handling the basics of a database, functionalities such as maintenance would significantly improve the workload for the stakeholders.

Having a "perfect" and "automated" system still needs to take the human factor into account. The individual assessments regarding late payments are something an automated system would ignore and are still needed. Some forms of 'strikes' could be introduced; however, it should still be somewhat invisible.

In our initial interview they also made it clear that applicants should not necessarily be reminded of payment. If they want to maintain their spot on the waiting list, they must show commitment by remembering to pay. However, what we observed in practice was the opposite. Button and Sharrock touch on this topic in their article "*Studies of Work and the Workplace in HCI*" [11], where they mention the importance of not adhering to a questionnaire when doing a workplace study. Often people will do the opposite of what they said they do, so observing the actual practice and questioning the person on it allows for more of an actual view of the work practice. In our case, when pressed on it, the board management explained that, in truth, they did often do workarounds the rules in place, as they felt that it was not right that people who had been on the waiting list for several years lost their spots due to a simple mistake.

4. User Involvement

To better understand the needs of our users, we hosted a workshop for the committed participants. We managed to bring in eight participants, where two of them were from a different local community garden. For the workshop, we have drawn inspiration from a technique called "future workshop" described by Kensing & Madsen in their article "*Generating visions: Future workshops and Metaphorical Design*"[12].

We started our workshop by giving a short presentation about us and the project, and then led into the main event with these three phases. The theme for the future workshop was regarding their waiting list, which is the technical aspect we wanted to emphasize. We wanted to find frustrations, we wanted to find difficulties, and we wanted to find possible solutions that would help us design a greater system emphasizing the functionalities regarding their waiting list.

4.1. Methods

"The workshop is often portrayed as the hallmark activity of Participatory Design—the scene of direct collaboration between designers, researchers, computer professionals, future users, and stakeholders." ([3], p 53 | 1-2)

Our workshop is heavily inspired from the technique by the future workshop, as earlier mentioned. Notably, we maintained the overall structure of the future workshop technique, with the multiple different phases.

The agenda of the workshop was mainly inspired from the article as earlier stated, "*Generating visions: Future workshops and Metaphorical Design*" by Kensing & Madsen[12]. Inspiration has also been drawn by the book "Participatory Design" by Susanne Bødker et. al [3].

Introduction

We started the future workshop with a short presentation about us to get familiar and to create a safe environment, as stated. Afterwards, we gave them a short presentation on the agenda of the day to seem structured and well-prepared and to give them a sense of the time needed, which Kensing & Madsen explains [12]:

"In addition, the invitation briefly presented the overall idea, the phases of the workshop, and a program for the day"(p. 161 l. 17-19)

The workshop was being held at dinner time, so to avoid stress from the participants, a walkthrough of the agenda helped the participants focus on the workshop. Our workshop was being held in a conference room on campus, which created an atmosphere of formality and expectation among the participants.

Phase 1: Critique

This theory contains a segmented form of brainstorming where the participants in the first phase (critique-phase) are set to come up with specific issues regarding the present system. We decided to split up our participants into two groups, containing participants who have had experience working with the waiting list administratively in one group and participants who have had the experience of applying for a garden themselves in the other group. Having them each split and resolve their own problem themes in the critique phase allowed them to fully focus on what was most relevant to themselves, and in the final stage of the critical phase, they could then add further input to the other group's points.

Each group had their respective theme on a size A4 cardboard, on which their post-it notes were placed, like in the workshop held by Kensing & Madsen. These problem definitions were also group-focused.

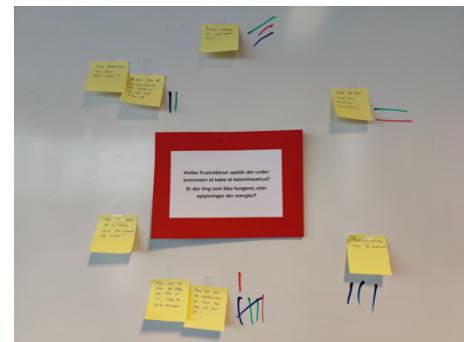


Figure 1 Critique notes

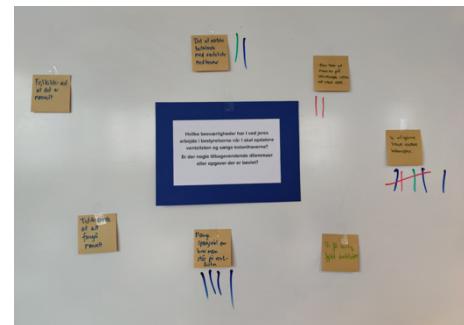


Figure 2 Critique notes

While the participants were working with the first phase, we actively pulled ourselves back into the background so the participants did not feel completely monitored and could focus on their given task. Button and Sharrock emphasize this in their chapter "*It is not about you*" explaining the very title of the chapter:

"...to make yourself scarce". ([12], p. 85, l. 4-16)

We gave the participants approximately 20 minutes to complete this task. Afterwards, we opened a conversation where the participants elaborated on their post-it notes in plenum. Each group made approximately eight post-it notes. See figure 1 and 2. A written copy can be seen in the appendixes (See appendix A: Data from workshop).

The participants then voted on the post-it notes they found the most important in each group of post-it notes. Each participant had four votes.

Phase 2: Fantasy

This led us into the next phase of the future workshop, the fantasy-phase. Here we created brainstorms based on the two post-it notes with the most votes, one brainstorm at a time. Here, the participants were meant to diverge (divergence) as many ideas as possible. This was also done in plenum, making the participants discuss and supplement each other - additionally, when needed, we did also encourage some subjects to thrive the conversation further; but mo

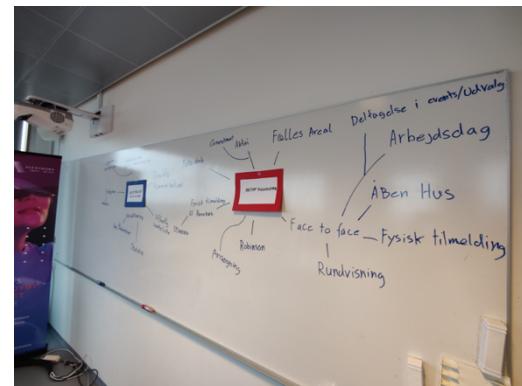


Figure 3 Fantasy phase

The brainstorming took roughly 20 minutes as well, and this was more a natural amount of time, meaning the whiteboard was filled with branches of ideas. See figure 2, 3 and 4. A written copy can be seen in the appendixes (See appendix A: Data from workshop).

Phase 3: Implementation

The ending of the brainstorm and the second phase led us into the final phase of the future workshop. Here the participants had to converge their ideas from the brainstorm into actual solutions. This exercise was also done in separated groups, but this time we have them mixed up having both administrators and non-administrators in each group. The implementation-phase was being done in a creative approach, having each group sketch the ideas based on the former brainstorm into sheets of A3 paper, see figure 4, where they afterwards presented the sketches in plenum opening for elaboration and discussion. All the sketches can be seen in the appendixes (See appendix B: Drawings and pictures) or some of them in the next session.



Figure 4 Whiteboard of brainstorms

After we had finished the overall purpose of the workshop, we asked them to evaluate the overall setting and structure of the workshop. This was just meant to give us knowledge for future workshops we will need to arrange and to get more knowledge about how they experienced taking part in the workshop.

The Benefits of Participatory Design

Our use of the workshop is one of the tools we used to involve the users in the design process. As Bødker describes it in her article "*Participatory Design*" [3], workshops are not only about having the users communicate their wishes to us as designers:

"By engaging people in collaboratively exploring their future, an important part of a workshop is to support mutual learning between different stakeholders in order to facilitate collaborative understanding of current practice and developing vision for the future" ([3], p. 53, l. 6-9)

As she describes it, it is also a tool to get the users to reflect on their practice and share experiences. To contribute to this purpose, we decided to invite members of the administration from another community garden association placed just next to the one we were currently working with. We found that having two community garden associations gather for the

workshop contributed to the discussions. They did not always agree on how they wanted to handle the administration work, but it was obvious that the discussions made them even more aware of their current work practices and made them reflect on whether their work could be handled differently. One of the major differences between the two community garden associations was their limitations on how well they strived to answer emails. While the community garden we were working with was attempting to answer all mails possibly, the guest community garden was answering none.

They did not seem to come to a common agreement on their views of this subject, but it led to an important discussion and it seemed to inspire the two community garden associations and their work practices.

4.2. Analysis

As a result of the future workshop, we retrieved a lot of data: sketches, mindmaps, brainstorms, etc. During the different phases of the workshop, we had one of us transcribing all the thriving conversations occurring back and forth, as well as taking photos of the generated mindmaps on the whiteboard – this meant that even during the workshop, the data was somewhat categorized into different segments (See appendix A: Data from workshop). Nevertheless, we marked the most critical and comprehensive takes for further investigation and processing. By doing so, we could emphasize where our focus should be and, furthermore, open up for new perspectives that we did not initially think of.

4.3. Results of Future Workshop

Lack of public information on community garden:

The clear focus when discussing the application process was that of information and communication. The application process varies greatly for each community garden, and generally, not much information is publicly available. Both the administration group and the group with the buyer's perspective were in agreement on this.

Interestingly, we had invited another community garden administration near the one we were working with, and they pointed out that they themselves had a public waiting list, and they rarely had emails asking for status on applicants' status. This was to us a clear indication that

this public waiting list was being used by applicants, and it minimized the possible confusion for them.

When allowed purely fantasy solutions on the communication problems, they were all in the direction of various graphs and various information packages. These visuals had to be both visually pleasing and fun to look at. Sales barometers, public waiting list, and clear visual cues that changes were done to this waiting list, see figure 5.

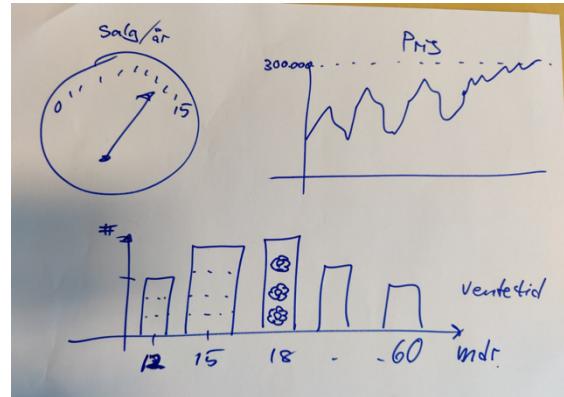


Figure 5 Drawing from workshop

Their notion was also that making more information publicly available would lessen the burden on the administration. As the fantasy of it was relatively practical, there were no major leaps from the fantasy to their drawings of its implementation.

Active garden owners:

Another key criticism that was brought up was the notion of active garden owners. The participants of the workshop were all adamant that a community garden is foremost a community centered way of living. They spoke of being neighborly and supportive. Ideally, all residents would participate in the community meetings. All the workshop participants deemed it a problem that some residents refused to participate in these community meetings. In the same vein, another problem was the issue of ensuring that the people on the waiting list for a community garden are people willing to participate in the community.

Their fantasy ideas for this critique focused both on the current residents and the future residents. Most of the participants' definitions of a real community ship required face-to-face interaction. Several ideas centered around mandatory workdays or social events for not only current residents but also people on the waiting list. The idea of having it be a test of commitment for



Figure 6 Drawings workshop

the people on the waiting list. When pressed about online interaction, most dismissed it immediately. This was a real surprise to us, as digitalization felt like an immediate solution to create more community interaction to us - but to the garden community, it was the opposite of what they wished for. Their implementation of a digital solution to this reflected this notion as well, see figure 6.

They drew a sketch of a "Video Universe", a website with a chain of videos. After watching one video, one could go to the next. The videos were of the community garden members talking about what being a part of a community garden entails, how to apply, how one could participate in the community while applying, and how the sales process goes. The idea behind this being that it would make the website be more human and emphasize the importance of communityship in a way that simple text could not. While we decided to use actual videos in our project, the notion of using the visual medium to portray that it was a real living community that applicants were signing up for was a big inspiration for us and our approach to creating our public waiting list.

5. Our Development Process

Our development process consisted of three sprints. In this section we will describe the methods used in our design process, but also account for the chosen focus of the project. This will be done in future scenarios, where we will describe the use-case of the prototype and additionally explain the use-case for the prototype. Furthermore, meaningful user-stories and functionalities of the prototype will be accounted for. Additionally, we will explain how prototyping can be applied in the functionalities of this project.

5.1. Sprints and Design Methods

Sprint 1

As our first prototype of the system, we used sketching to visualize our idea. As Beyer describes it in chapter 5.3 in his article: "*User-Centered Agile Methods*" ([1], p. 73 l. 1-6), UI based user stories can beneficially be tested using sketches or wireframes. We decided to first use sketching, because as Alan Dix also explains it, sketching is not only a quick way to share your idea, but also a great way to externalize the idea through drawing to get a better idea of the design problem and the possible design solutions [7]. We each made our own design

proposals and afterwards met and shared our ideas with each other. This started an important discussion of the different design solution and gave us the tools to be able to come to a common agreement upon the design of the system's user interface.

The design proposals were then combined into a simple website without any functionalities, as Floyd names it 'skeleton programming'[13]. We made the decision that our prototype would consist of HTML [14], CSS [15] and JavaScript [16], which is run using node.js [17]. We decided to use the platform Render.com [18] for hosting our website online, since it supported node.js.

We were inspired by Hugh Beyer and his approach to agile development in the article "*User-Centered Agile Methods*" [1], wherein he describes the necessity of having a "Big Picture Up Front" when creating a system with time constraints. We tried to create an early big picture skeleton structure of our design; with key features we knew were necessary for the final product.

Sprint 2

For our second sprint we implemented the changes planed after the internal evaluation. We changed the setup of some of the key functionalities of our website. After agreeing on the setup, we started to implement the key features of our system, like for instance adding and moving applicants between the different lists. This way our prototype became more vertical. As Floyd explains this type of prototype:

"[...] basically, oriented at vertical and thus, realistic prototypes: it allows to experiment (at least for all critical parts) with real implementations instead of mockups." [13]

By implementing some of the key features of the system we were able to experiment with our users for the evaluation, which gave us important insight for redesigning our system in sprint 3.

Sprint 3

For our third and last sprint, we tried to implement as much of the system as possible while also spending time changing parts of the system based on the evaluation given in sprint 2. As we were aware that this would be close to our final prototype, we tried to implement as many of our user stories as possible.

A few days before our deadline, we met with the two stakeholders again and made the final evaluation. A few of the minor details they wanted fixed we tried to implement, but other than that, we were mostly interested in getting their view on the final prototype to evaluate our design process. The meeting also served as a way for us to hand over the final prototype to the stakeholders and conclude the collaboration.

5.2. Future scenarios

At the end of phase 0, before starting the development process, we wrote two future scenarios. One from the perspective of the board/administration and another scenario from the perspective of the applicants. As Rosson describes it in his article: "*Scenario-Based Design*", scenarios are a great tool for using the knowledge gained through field work in the design process:

"Scenarios help designers to reflect about their ideas in the context of doing design. [...] The story enables readers to empathize with the people in the situation, which in turn leads to questions about motivations, intentions, reactions, and satisfaction." ([19], p. 6, l. 26-30)

Other than using the scenarios as a way of generating ideas, we also used them as a tool for communicating our ideas and agreeing upon a design solution. Following is first our scenario from the perspective of the administration, and second the future scenario from the perspective of the applicants.

Future scenario from administration perspective

"Catherine and Susan are a part of the administration of the local community garden. Every year they meet to update the waiting list for the people who would like to buy a community garden. The applicants on the waiting list must transfer 100 DKK to the administration every year to keep their position on the waiting list.

At the meeting, Catherine and Susan extracted a list from the bank containing all 100 DKK transactions made by the applicants wanting to keep their position. Catherine and Susan's jobs are to update the former waiting list based on the extracted list of paying applicants.

Catherine is looking at the former waiting list, while Susan is looking at the extracted list from the bank. Susan reads aloud the first name of the extracted list, and Catherine uses the search

function below the waiting list to find the mentioned applicant and checkmark the concerned person. This collaborative work continues until no more names are on the extracted list.

Catherine and Susan have now created two groups: checked applicants and not-checked applicants. With a press of a button, two different emails will be sent out to the two different groups, one confirming the received transaction and their spot on the waiting list, and the other being the email explaining that they no longer have their spot due to missing payment. Catherine and Susan can edit these emails directly on the page as well.

Now, Catherine and Susan can either delete the not-checked applicants one by one or they can press the 'delete all' button, removing all applicants who did not pay. Now the waiting list only contains 57 names, opening up 43 new spots for applicants applying on the 1st of April."

Future scenario from applicant perspective

"John ponders the idea of signing up for a community garden. Hesitant about the wait time, he looks at the website of the local community garden and sees that they have a public waiting list. On the waiting list, he can see various examples of people getting a community garden - their wait time and their number on the list. With this information, John feels confident in signing up for the community garden.

He notices the "sign-up" tab at the bottom of the waiting list and goes to fill out the application. He immediately receives an email confirming his information has been received and a bank account information for sending a 100DKK. A few days after signing up and paying the 100DKK, John receives an email saying he is now officially on the list, with a link to the waiting list. John clicks the link and sees he has the number 97 spot on the list. This reassures him that he is now officially on the list.

Over the next year, John will check back once a month to see the progress on the waiting list. He can see that he is slowly climbing up the waiting list, which cheers him on. He can also see that people ahead of him are getting gardens, which makes the dream of getting a garden himself even more tangible".

5.3. Final Prototype of our System

Our prototype consists of two server-side applications run in the environment Node.js. As mentioned in sprint 2, the prototype is hosted via Render.com, which is a platform that offers free hosting of Node.js servers. By utilizing Node.js we were able to handle multiple lists, which, combined with vanilla JavaScript, let us handle, process, and manipulate the data within as wished.

Our prototype can be used by two different types of users: members of the administration and users not a part of the administration, hence the two different links.

Non-administrative users:



The sign-up page has a light blue background with floating clouds containing names and waiting times. The main form is titled "Tilmeld dig ventelisten". It contains fields for "Fulde navn" (Full name), "Telefonnr." (Phone number), and "Mailadresse" (Email address). A "Ansøg" (Apply) button is at the bottom. The floating clouds include: Olaer (Væntet 3 d. Købte for 100.000 kr.), Eske (Væntet 3 d. Købte for 100.000 kr.), Marie (Væntet 3 d. Købte for 100.000 kr.), Morten (Væntet 3 d. Købte for 100.000 kr.), Lars (Væntet 3 d. Købte for 100.000 kr.), Mette (Væntet 3 d. Købte for 100.000 kr.), Søren (Væntet 3 d. Købte for 100.000 kr.), Anders (Væntet 3 d. Købte for 100.000 kr.), Mette (Væntet 3 d. Købte for 100.000 kr.), and Line (Væntet 3 d. Købte for 100.000 kr.).

Figure 7 Sign up page



The public waitinglist page has a light blue background with floating clouds. It displays a table titled "Oldhøjens venteliste" showing names and waiting times. A "Flyt væk fra køben" (Move away from the queue) button is on the right. The table data is as follows:

	Oldhøjens venteliste
1	Pia T.
2	Marcus B.
3	Lars J.
4	Mette N.
5	Søren L.
6	Anders H.
7	Anders P.
8	Mette A.
9	Line M.

Flyt væk fra køben

Figure 8 Public waitinglist

The main page of the prototype is the public waiting list. Here, applicants can see their position on the waiting list and furthermore watch the floating clouds of the present colonists' names along with their waiting time and the price of their respective community garden. The code behind the clouds is inspired from an example from codepen.io [20]. Just below the waiting list, a button will transfer the user to a new page, where newcomers can apply for a spot on the waiting list.

Administrative users:

The admin side is of the prototype constructed of four different lists: The waiting list, the internal waiting list, list of newcomers and a list consisting of present colonists. Most of the features are duplicated to each of the different list-pages, such as adding and editing, and others are tweaked. Below the list on each side, there is an array of buttons which contains different functionalities. On /adminList, there are four different buttons:

The first button (Send mail) opens a mail tab where four different categories can be selected, "Har betalt", "Har ikke betalt", "Reminder" and "Havesalg". Each category has a mail template which can be edited as well. The user can thereby select a category and hit the send button and the respective receivers of that category will receive the mail.

The second button (Har betalt) lets the user mark applicants on the list, dividing them into two groups of payers and non-payers. This will furthermore be the two different groups the mail-system will differentiate between. When pressing the second button, a delete-button appears as well, making it possible to delete all the non-payers from the waiting-list.

The third button (Rediger kolonist) lets the user to edit the data of the applicant-element if accidentally typos happened. Each applicant-element will be editable upon click.

A screenshot of a web-based application interface titled 'Oldhøjen.dk'. The main header has tabs for 'Vænteliste', 'Intern vænteliste', 'Ansægere', and 'Havesjæle'. The 'Vænteliste' tab is active, showing a table with 7 rows of data. Each row contains a small green circular icon with a plus sign, a name (e.g., Pia Thomasen, Markus Skov), an ID number (e.g., 63729479, 52396224), an email address (e.g., mtholmeng@gmail.com, markusskov@gmail.com), and a date (e.g., 1999-05-19, 1996-02-20). A search bar is at the top right, and a footer with navigation icons is at the bottom right.

Figure 9 Admin list



Figure 10 Mail tab

A screenshot of the 'Oldhøjen.dk' application showing the 'Vænteliste' table. The last three rows of the table have been highlighted with green bars. The first column of these rows now contains a green circular icon with a white checkmark and a red circular icon with a white minus sign. The other columns remain the same as in Figure 9. The footer with navigation icons is visible at the bottom right.

Figure 11 Paying applicants

The fourth button (Flyt til haveejere) lets the user move an applicant on the waiting list to the list of living colonists, in case that the applicant has bought a garden.

Due to the overall structure of the prototype is consisting of multiple lists, a sketch is made for visualizing which lists affects one another, see figure 13.

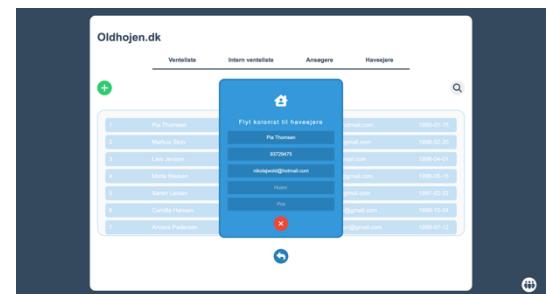


Figure 12 Transfer applicants

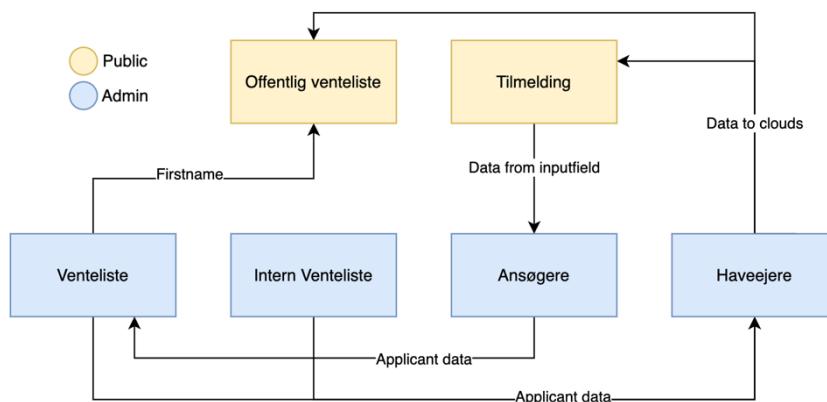


Figure 13 List structure

Venteliste	'Venteliste' list sends the first name and the first letter of surname to 'Offentlig Venteliste' for public display. The data of the applicant elements can also be transferred to 'Haveejere' if the applicant has bought a garden.
Intern Venteliste	'Intern Venteliste' has one connection to 'Haveejere' when the applicant data is transferred at the purchase of a garden.
Ansøgere	'Ansøgere' gets data from 'Tilmelding' when a newcomer applies for a spot on the waiting list. Applicant data from 'Ansøgere' can also be transferred to 'Venteliste' when the newcomers spot is accepted.
Haveejere	'Haveejere' retrieves the data from 'Venteliste' and 'Intern Venteliste' as mentioned, and transfers applicant data to both 'Offentlig Venteliste' and 'Tilmelding' in terms of the clouds in the background.
Offentlig venteliste	'Offentlig Venteliste' retrieves data from 'Venteliste' as well as 'Haveejere' for the data in the clouds.
Tilmelding	'Tilmelding' transfers the submitted data to 'Ansøgere' as well as retrieves the incoming data from 'Haveejere'

5.4. User-stories

We created an extensive list of user stories, categorized in different groups, (See appendix C: User-stories). We have used color markings to signify priority of implementation. We were heavily inspired by Mike Cohn's "*User Stories applied*" [21], and the six attributes of a good user story it describes. We kept note of keeping our user stories small and independently testable, while still combining some user stories into a more general user story for one practice. An example of this would be:

"User profiles on the waiting list should be editable, deleteable and moveable in the waiting list (3 H)"(See appendix C: User stories, 3.3)

This user story is for the general practice of allowing the administration to fix user mistakes made when creating new users on the waiting list. This was a wish expressed by the administration during our interview with them, as sometimes people on the waiting list wished to change phone numbers or email addresses.

We did an estimation of time required to add this feature, and due to moveability being a somewhat new concept to us we allocated additional time for this user story.

One of Cohn's attributes we mainly focused on was keeping all our user stories testable. This allowed for a clear end outcome of our user story, this gave us an end point where we could confidently say the user story was fulfilled. It also allowed for a degree of negotiability, as the end outcome of our user stories were clear, we could discuss whether this was the solution feature to our project. Often, we fulfilled our user story, but we found that the feature implemented was not the right fit for our project, and we went back and did changes in our user story and went reimplementing it.

6. Evaluations

6.1. Evaluation Methods

We did one internal evaluation, and then we evaluated twice with our stakeholders regarding the system we have built.

The agenda of the first user evaluation was to test the functionalities and the usability of the system. To conduct our user evaluation, we drew inspiration from the article by Nørgaard and Hornbæk [22], and its description of think-aloud tests. A think-aloud test is a structured user test, where the user has a defined task-list that the user goes through. At each point of decision-making the user thinks aloud and explains why he chose his actions. It allows for a clear understanding of the user's decision-making process for the designers.

We made a set of small tasks for our stakeholders; small assignments that would test the stakeholder's perception of the system and additionally the overall usability. These tasks concerned the basic functionalities such as adding new colonists to the waiting list, sending out confirmation mails for all non-payers, transferring specific applicants to the list regarding garden-owners etc. (See appendix D: Tasks for evaluation)

In addition, these sets of tasks also assure the overall user experience of the system. How well was the iconography presented? Was the navigation straightforward? Did the functionalities make sense? And what is your experience of how the examples are presented as clouds?

After conducting the think-aloud tests separately the three of us and the two main stakeholders sat together and discussed whether there were any utility changes necessary. This could be functionalities unnecessary or functionalities missing that would be important to implement in the third sprint.

Subsequently, after we conducted the evaluation, we summed up our findings and comments and planned for the last sprint.

The second evaluation was rather short compared to the first one. This evaluation was more focused on evaluation the final prototype we had implemented and get their view upon which changes we would implement in a potential fourth sprint. Other than that, we asked them for

an evaluation of how they experienced participating in this project and asked for advice for future projects involving collaborating with users.

6.2. Analysis

During the think-aloud tests notes and comments were written down, as well as a screen recording with audio. Visual confusion, navigation issues, misperceptions were noted, however also things that worked well. For instance, things that our evaluators figured out on their own, and thereby were designed as intended. During the think-aloud tests, assistance was provided if needed, which surely was noted as well.

For analyzing the collected data, we drew inspiration from the methods of Nørgaard and Hornbæk [22]. We processed the data in phases. Our observations were categorized into segments of types. Whether it regarded the button-layout, user experience, or navigation issues. After the division, we got a picture upon how critical the different categories were, based on the number of repetitions. From these results, we were able to plan out usability design changes for the third sprint.

6.3. Results

Sprint 1: Internal Evaluation

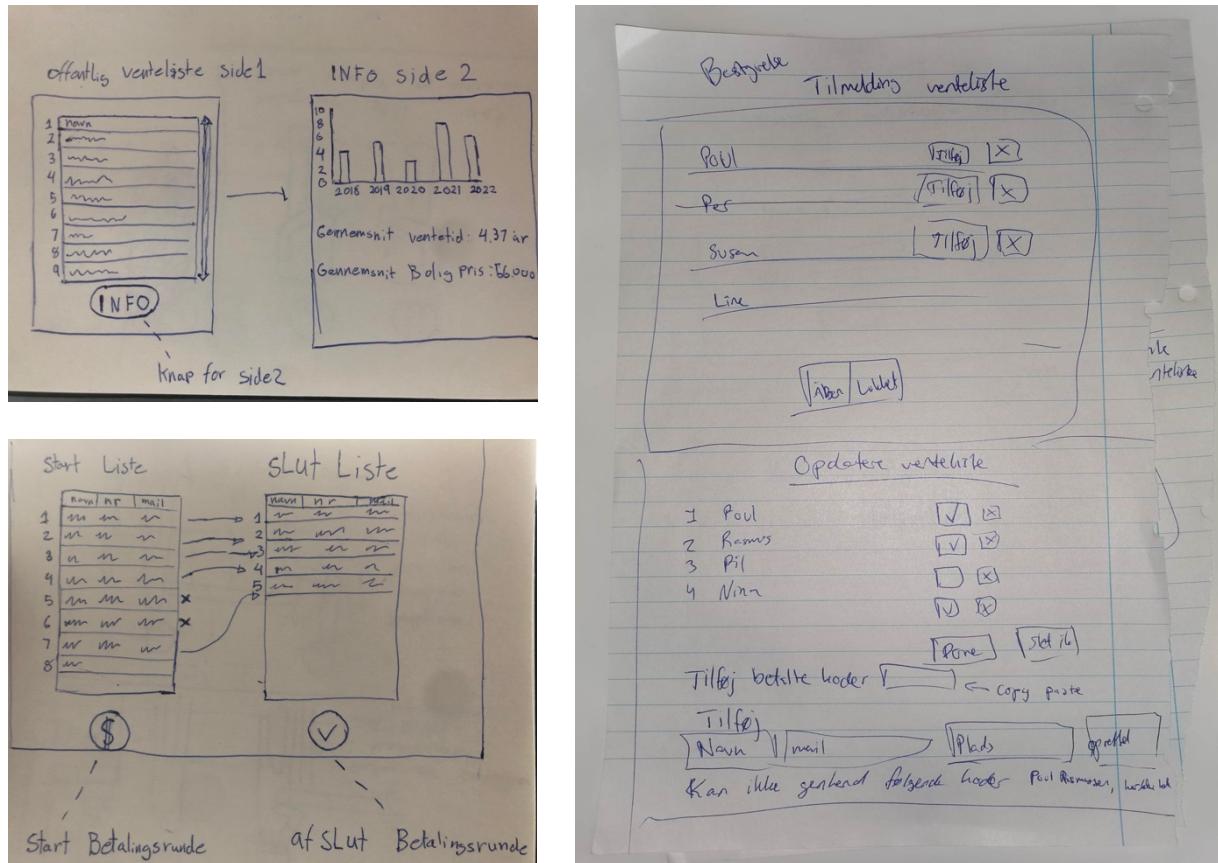


Figure 14 Sketches

From our own internal evaluation of primarily sketches of various design ideas, we decided on using small clouds with information about people who live in the community garden, like name, spot on the waiting list, and wait time, to give a more general view of various questions that might arise with potential applicants. See figure 14. These clouds do not provide as holistic a picture as actual graphs would. They, however, have a more human approach to them, showing that actual people got on the list and eventually got a community garden and that potential applicants could be one of them and not just a number on a list.

This human-centered approach seemed prudent to us after conducting our workshop, where one of the major takeaways was the wish for more residents who were willing to participate. While these clouds do not necessarily show the work required to be a community garden owner, they do show that you are going to be living with actual people as neighbors.

Afterwards we started wireframing the website with HTML and CSS. We tried to make the website contain all important modules, without the functionalities implemented. See figure x and appendix E: First sketch. We evaluated our design internal and concluded that our search functionality and way of adding applicants to the waiting list were not urgent to be visible all the time. Therefore, we decided to change the structure of the website and hide these functionalities behind buttons. To see final prototype of sprint 2 in figure 15 with the functionalities hidden behind buttons.

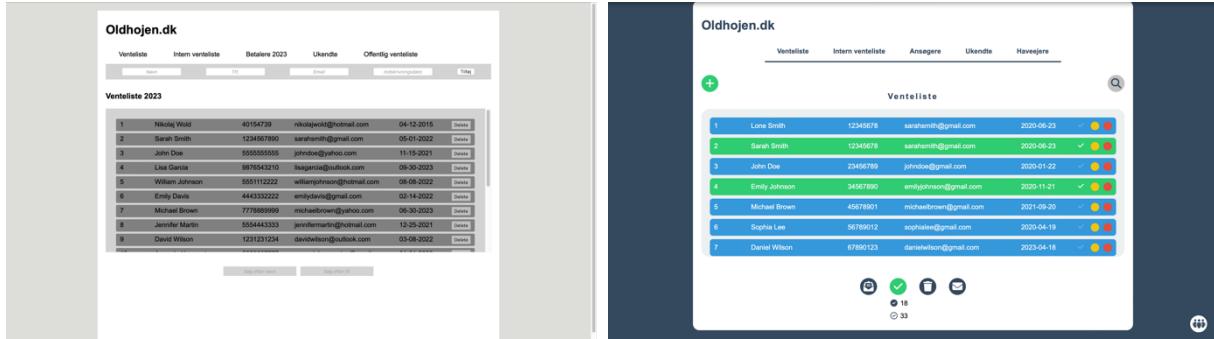


Figure 15 first and second iteration of prototype

Sprint 2: User Evaluation

As a result of our user evaluation and think-aloud tests we managed to gather a lot of information regarding needing changes of the prototype.

Firstly, our stakeholders found the lower button-layout confusing; there was too many unused buttons when one of them was selected. This led to confusion regarding which buttons could be pressed at a certain time and additionally which button was the right one to continue the desired task, hence the third principle ‘constraints’ of Don Normans principles of interaction design [23]. To accommodate this, emphasizing the usable buttons could assure the occurring confusion and simplify the given options and by that, minimizing errors. See figure 16.

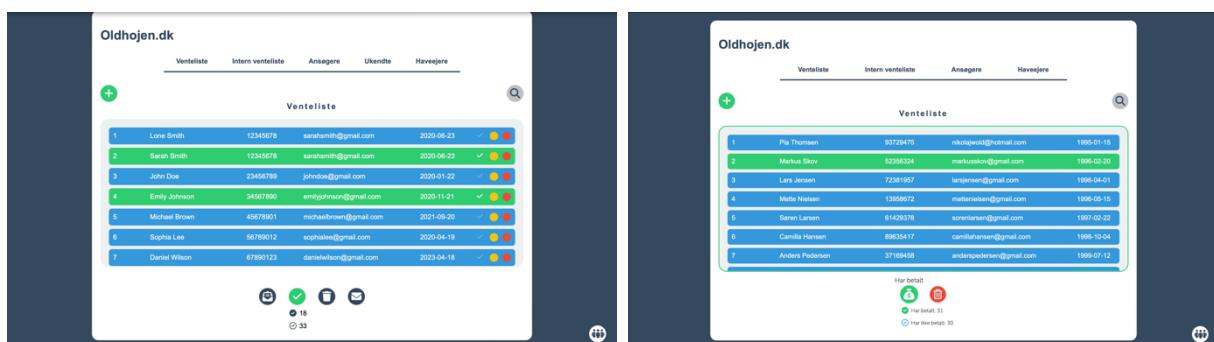


Figure 16 Second iteration

Secondly, consistency regarding manipulating the applicant elements was also an issue. The lower buttons had manipulating functionalities; however, the applicant elements did also contain buttons which could manipulate the surrounding applicant (delete and edit buttons). This spread the manipulative functionalities to different places and furthermore had different approaches; the lower buttons made the user select the applicant elements in list, whereas the buttons inside the applicant elements are connected to that specific applicant element. Furthermore, comments were made regarding the inner buttons not informing the user what they did. To accommodate these issues, the manipulative functionalities should be grouped together and share the same approach of manipulating and selecting the applicant elements in the list, which implies the removal of the inner buttons as well.



Figure 17 Mail system

Another modification was concerning the mail functionality. From our first user evaluation we concluded that we had to minimize the number of options concerning sending out emails through the administration website. In our second prototype mail buttons were split in two. A button for modifying email templates and another button for sending out emails. We decided to concatenate the two buttons and limit the number of email templates, so it was only possible to use the mail function for sending out standard emails to all on the waiting list at once, and not for sending personal emails to one specific person on the list. See figure 18 showing the change in design.

Figure 18 change of buttons

Lastly, we were also made aware that the option of having the applicants sign up to the waiting list through the public website would minimize the time-consuming process of having to add the applicants manually to the waiting list, but also that the emails they receive concerning getting added to the waiting list are often quite long. Many applicants believe that with the right persuasion and arguments they will get a better position on the waiting list and get offered a community garden quicker. By adding a sign-up page, we hope to minimize these types of emails. See figure 19 showing the sign-up page.



Figure 19 Sign up page

These were the most important issues our stakeholders were facing during their evaluation tasks. See appendix F: Sprint 2 to get a better view upon our design changes from sprint 2 to sprint 3.

Sprint 3: User evaluation

At our second user evaluation, we prepared some topics that we would like to discuss before ending the collaboration. One of the topics we wanted to discuss was whether they would

have liked us to implement a way for the applicant to mark if they are interested in buying a specific community garden. This way, we would be able to make the system decide which applicant has the highest priority and gets to buy a specific community garden. But after presenting our idea for the board members they gave us the information that this design would probably not minimize the burden of communication since people often have many other questions when applying for buying a specific community garden. They preferred to keep the personal correspondence in this situation.

But on the other hand, they would have liked a way to trace deleted applicants. We had earlier discussed whether it should be possible to get a second chance to stay on the waiting list in case the yearly fee was not paid in time. The board members seemed to be in doubt. They did not want to spend time helping people who did not prioritize to pay the yearly fee in time, but in practice they often ended up doing it anyway because they felt bad for the people losing their position on the waiting list after earning it over a long time. They therefore argued that they would possibly need a way of tracing back the deleted applicants.

7. Theoretical analysis: The use of Externalization

Externalization was a major tool for us as designers when we were working on the design of the product. We used user stories extensively, both in what Dix and Gongora refer to as the problem space, the facet of the design focusing on the problem to be solved, and in our user stories, which acted as concrete problems to be solved. At the same time, our user stories also heavily influenced our decision-making in the design space, as our user stories acted as design points to be discussed and reworked throughout our design process.

From the perspective of a designer, we were surprised how effective the use of the future workshop allowed for externalization of the attendees' thoughts. Alan Dix and Layda Gongora describe the use of externalization in the article "*Externalisation and Design*" [7], as externalization being a projection of thought and meaning through speech, action, or objects. The article describes several functions of externalization, the simplest being informational. This is the passing of information from one subject to another, and initially, much of the workshop was just that. Through sticky notes, which they then further clarified, they were able to express their criticisms of the current system in place. What we found, however, was that once the sticky notes were all placed on the board and the explanation of them began, new thoughts and criticism started to form. The article describes this as the formational

function of externalization - the externalization of one or other thoughts responding to you, allowing you to form new thoughts. What really surprised us was the debate over the definition of a community garden, and what an active resident is. The attendees externalized themselves transcendentally, discussing not the subject's form, but the idea behind what they were doing. This level of externalization allowed us to rethink our approach to the design space itself and had a large influence on our product.

8. Discussion

Throughout the design process of our system, we have been heavily inspired by the article "*User-Centered Agile Methods*" by Beyer [1]. The article outlines the best practices of user centered agile development and its many use cases. We have stuck to the overall structure of Beyer's development process, with, an early development cycle of user research and visioning, and then proceeded to do three Sprint each acting as their own development cycle.



Figure 20 Model of agile development

From the beginning of our project after our first initial meeting with the community garden management, we tried to create a "Big picture up for front" for ourselves. As Beyer explains in the article, often it is necessary to have some form of up-front design, that serves core structure to iterate on during development. This is opposed to what he calls the "Big design up front", where the designer creates an entire design of the system in phase 0 of the development process, which could lead to a lot of unnecessary work being done, when the user does not respond to what is very much the designers own design. Most importantly it locks the design choices in too early and does not allow for much actual agile development. As Beyer explains, the user will often only respond to what is given to him, so when the design as a whole has already been done from the beginning, it does not allow much user insight.

We therefore stuck to creating a big picture up front, in our case we knew we wanted to create a waiting list management system for the community garden, and it should probably

also have a public waiting list feature. The management system should use some form of toolbar, and applicants on the list should have a degree of mobility; able to get put on one list, and then later moved to another. This early vision of our product also served as what Beyer calls the project focus for both our contextual interviews, and the workshop we conducted [8].

This approach does have its weaknesses. What we found during our development was that some parts of our up-front picture of our product, required what Rosson calls in his article "*Scenario based design*" [19] a "solution first approach", where we prescribed a solution to a problem, to then have concrete basis for analysis and further design of our system. Rosson does stress the hazards of this approach, in that it leads to hasty solutions and premature commitments to design decision, without taking into consideration other possible solutions.

When considering our own project, this can be seen in the fact that we used some form of toolbar at the bottom of our webpage almost throughout the whole design process. It seemed to us the obvious solution for managing multiple-choice decision for users. We did several different iterations of it, in response to our users' feedback, but as mentioned, users will often only respond to what is given to them, in our case suggesting changes but not alternatives to it.

Having a big picture up front was, however, a major help when working in a time crunch. It acted as the basis of our user stories, and our future scenarios. These user stories were then subject to change, while still retaining the big picture as a whole. Having an early vision of a management system combining several of the community management's different systems into one, also served as the focus point of the workshop we held and allowed for more concise discussion with our user group.

However useful this big picture up front was for us, its tendency toward the solution first approach had the problem that it often simplified the design space as a whole. This became evident to us during conducting of our workshop.

9. Reflections on the workshop: Shifting from a Tame to a Wicked Problem

In the beginning of conducting our field study, we made user observations. We observed how the administration updates the waiting list annually. Afterwards, we felt very sure that we had a solution to the design problem. We quickly felt that we had an understanding as a whole, and we started creating our big picture of the system as a whole. We started sketching a simple user interface, focusing on limiting the work for the administration and making it easier for the community garden owners to pay their yearly fee to stay on the waiting list, see figure X. This is a clear example of what, Rosson and Carroll describe in the article: "*Scenario-based design. In Human-computer interaction*" [24], as the 'solution first' approach. We believed that after making the initial interview and observing them update the waiting list, we were able to understand the user's needs. But after conducting the workshop, we found that we had to reframe the problem.

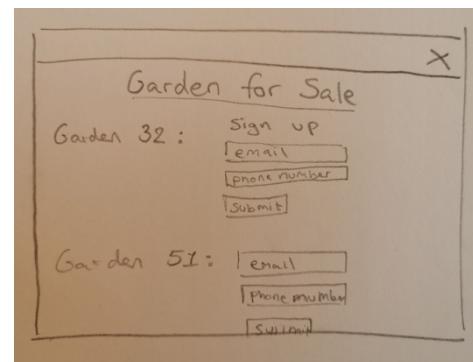


Figure 21 Sketch

Initially, we thought the problem was that there was too much manual work for the administration and that the potential garden buyers on the waiting list needed help remembering to pay for the waiting list yearly and generally making it easier to get on the waiting list. But after the workshop, we found that the administration was also interested in making sure that the people who got to buy a garden were beneficial to the social environment in the community garden.

They wanted to make sure that the future owners of the community gardens were helpful people, who took part in the social community and were invested in getting to know the other neighbors. This discovery made a significant change in the framing of the problem. As described in the article "*Dilemmas in a general theory of planning*" by Rittel and Webber[25], we went from having a slightly tamer problem with a simple solution to a wicked problem being more difficult to design. There are many possible solutions, and it can be more challenging to frame the problem, for instance we might ask the questions:

- What do they mean by wanting social and active garden owners?

- Is it ethically acceptable to make a system which helps the administration make sure they get future garden owners who is preferable?
- Is it possible to create such a system, while still living up to a social responsibility and no exclusion of any groupings like people who are introverted, socially untalented or simply just of a specific age, nationality or other characteristics that might be referred to with a stigma?

As also described in the article by Rittel and Webber, wicked problems also often end up being a question of ethics and politics:

"As distinguished from problems in the natural sciences, which are definable and separable and may have solutions that are findable, the problems of governmental planning--and especially those of social or policy planning--are ill-defined; and they rely upon elusive political judgment for resolution." ([25], p. 160 l. 20-23)

All these questions we had to consider while designing to make sure we are understanding the problem fully and not designing a product with a negative effect in the world when released. We were in doubt whether making it too easy for the applicants to sign up for the waiting list would result in having too many unmotivated applicants. Maybe it would be more beneficial if the applicants had to be physically present at the community garden association to be able to sign-up for the waiting list?

After discussing it further with the board members at our first user evaluation, we came to an agreement that the practical benefits of having webpage for signing up to the waiting list would make a greater difference than the possible negative outcome of making the sign-up too easy. They believed hosting these physical sign-up events would be too time-consuming. Instead, we tried to help the applicants get more knowledge upon the community through representations of present community garden owners as clouds floating in the background of both the waiting list and sign-up webpage. Our hope is that this might help the applicants get a better base for deciding whether they believe they are willing to not only buy a community garden, but also take part in the community.

10. Conclusion

We have designed a prototype that is supposed to benefit not only the board of a community garden but also the applicants already on the list and potential future applicants. This design approach is based on our field studies, where we observed the current board members working with many separate waiting lists while responding to emails and requests. This was both a time-consuming process and required a good overview due to so many waiting lists being in their own separate files.

Our prototype gathers these different tasks into one web application, streamlining the process of maintaining the waiting lists. It is both capable of updating the waiting lists and handling general email correspondence with the applicants on the lists.

Through conducting a workshop, we gained a valuable understanding of our user group. They stressed the importance of active and willing garden owners. We have attempted to incorporate this need into our prototype through the design of a public waiting list. The public waiting list both serves as a way for the applicants on the list to follow their progress, while at the same time, it also attempts to act as a way of communicating to potential applicants that it takes time to get a community garden plot and that one is going to live with real people as part of a community.

The development process of the prototype has been heavily inspired by various agile development methods. After our field studies, we have done three sprints, with first user evaluations and then later user evaluations. The user evaluations were conducted using both think-aloud tests and follow-up interviews to allow for a clear understanding of the user's decision-making process. The feedback from the evaluations was then incorporated into our final prototype.

We have attempted to keep the development process as agile as possible, adhering to the user's needs and wishes and thereby doing several iterations of what was to be our end prototype. We have, however, stuck relatively closely to our initial vision of the system as a whole. This has been a hindrance at times, limiting the range of design decisions for our prototype, but it has also allowed for a more concise discussion with our users on specific needs. We have been aware of these pitfalls during our development process and have made

several changes in our design perspective, with a major shift after our workshop to also focus on conveying the wish for active applicants.

Overall, our hope is that our prototype is able to ease the work process of the community garden management board while at the same time communicating to potential applicants that community garden living is part of an actual community.

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12. Appendixes

12.1. Appendix A: Data from Workshop

Blue (administration)

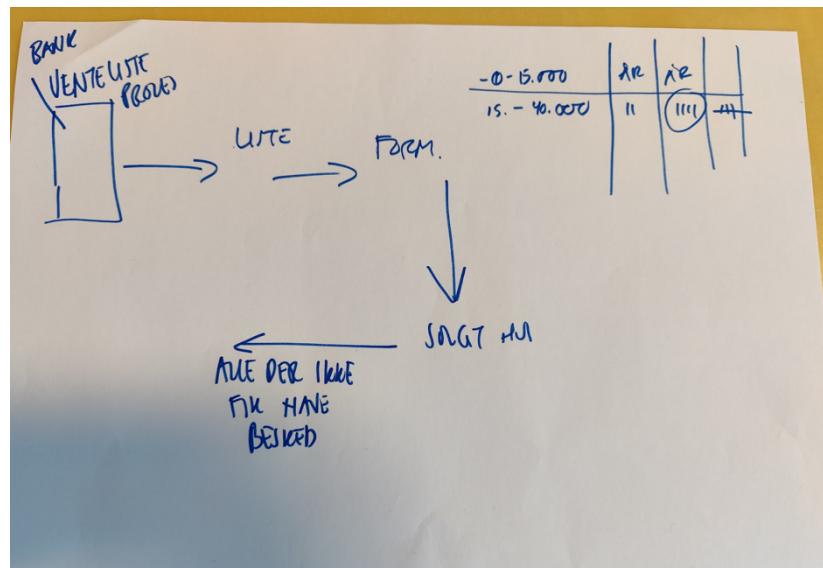
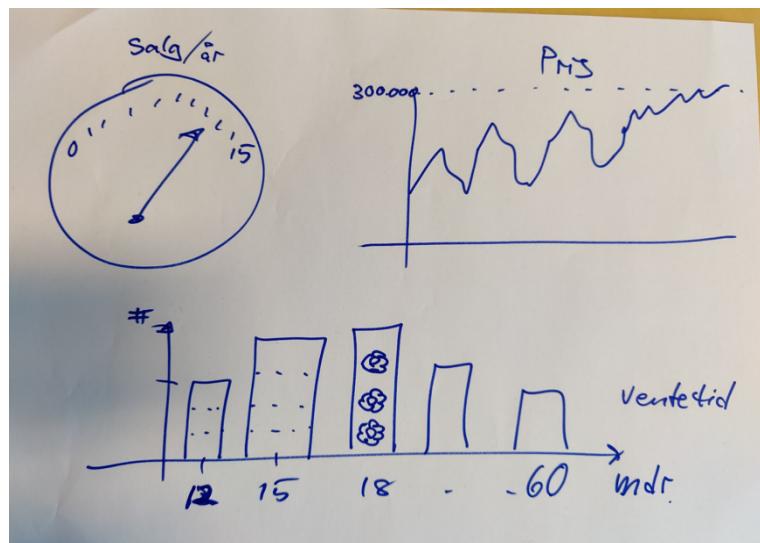
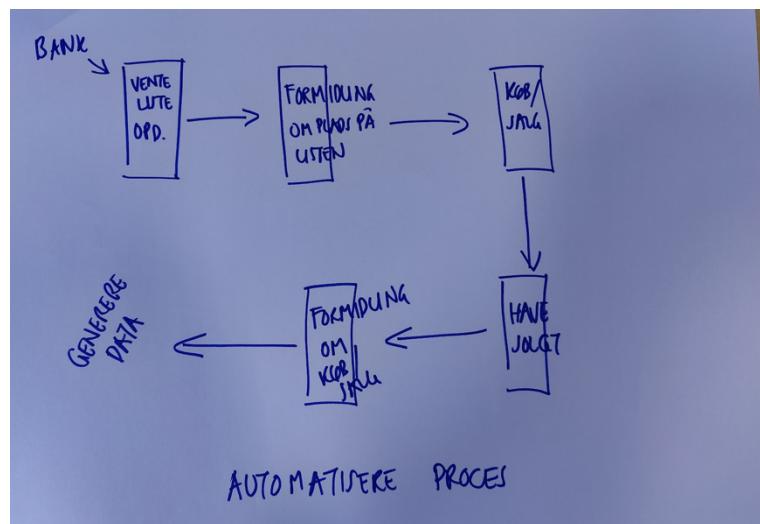
- Vi vil gerne have aktive kolonister //most votes
- Man tror man er på venteliste uden at være det
- Tidskrævende at alt foregår manuelt
- Det at matche betalende med venteliste-medlemmer
- Fejlkilder ved at det er manuelt
- Mange spørgsmål om hvor man står på ventelisten
- Vi får hurtig fyldt ventelisten

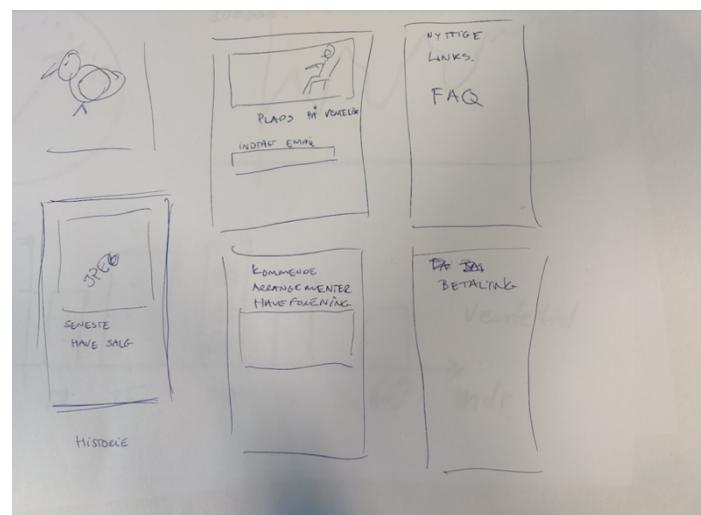
Red (non-administration)

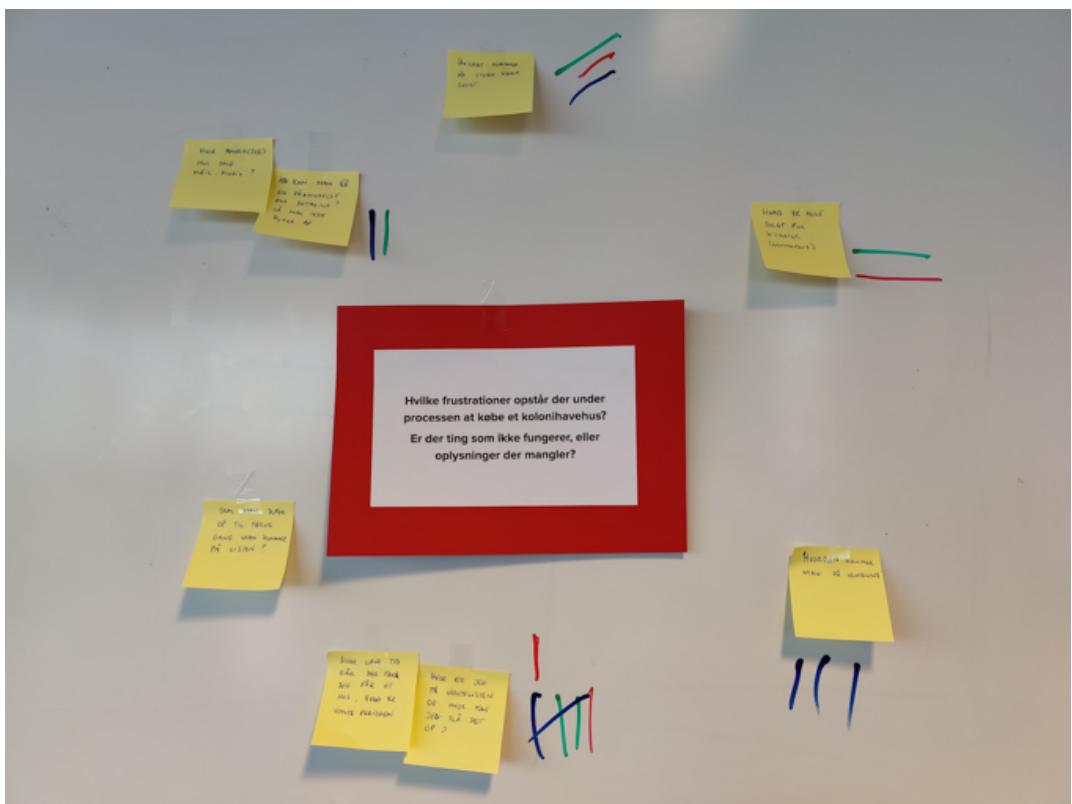
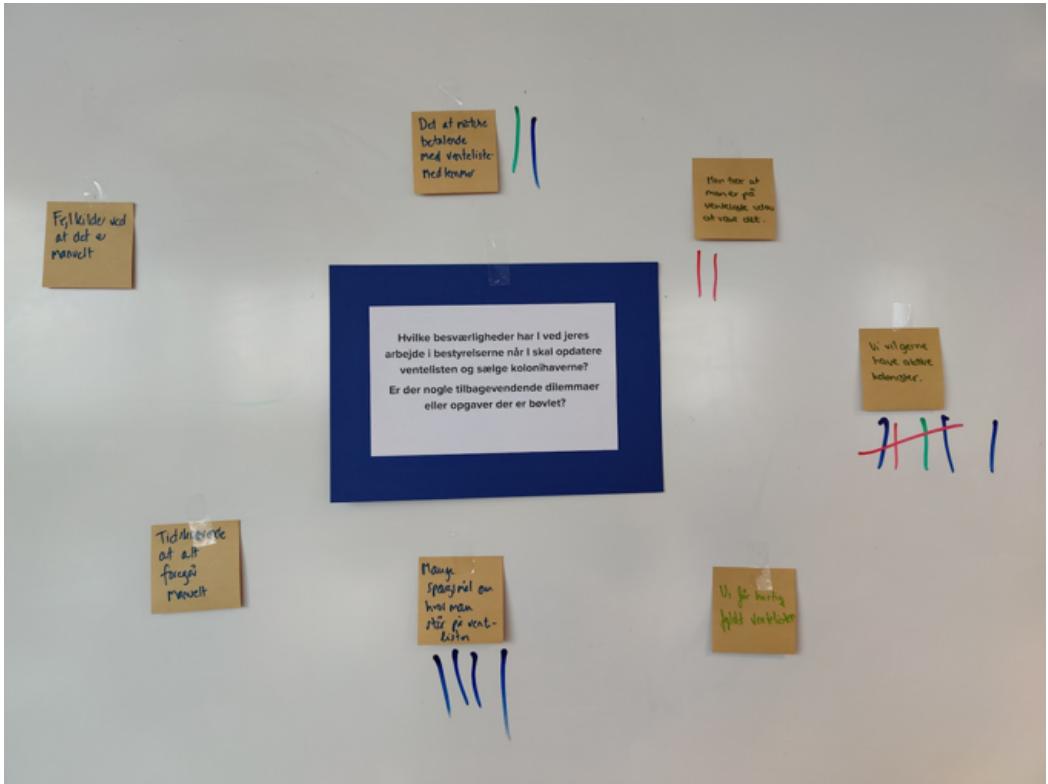
- Hvordan kommer man på venteliste
- Hvad er huse solgt for historisk (gennemsnit)
- Hvilket nummer på listen købte sidst
- Hvor annonceres salg af hus? Mail? Mobil?
- Hvor lang tid går der før jeg får et hus, hvad er ventetiden? //most votes
- Hvor på ventelisten er jeg og hvor kan jeg slå det op?
- Skal man dukke op første gang man er på listen?
- Kan man få en påmindelse om betaling så man ikke ryger af?

Aktive kolonister	Venteperiode for at få en have
<ul style="list-style-type: none">• Fællesareal• Face-to-face<ul style="list-style-type: none">◦ Rundvisning◦ Fysisk tilmelding◦ Åbent hus◦ Arbejdsgdag◦ Deltagelse i events/udvalg• Robinson• Ansøgning• Havekøb• Naboskab• Commitment• Aktivitet	<ul style="list-style-type: none">• Direkte kommunikation• Offentlig venteliste• Visualisering<ul style="list-style-type: none">◦ Statistik◦ Salgs-barometer• Histogram<ul style="list-style-type: none">◦ Ventetid• Opdatering om aktivitet• Information om egen tilstand/position

12.2 Appendix B: Drawing and pictures from workshop









12.3. Appendix C: User Stories

1. VISUALISER OFFENTLIG VENTELISTE:

- Man skal kunne se den årlige venteliste offentligt samt følge med når den løbende opdateres. (2 H)
- Ventelisten skal kun vise fornavn og initialer på personerne (20 m)
- Ventelisten skal automatisk re-justere sig (numre), når bruger forlader ventelisten (30 m)

2. MANAGEMENT AF FOLK PÅ VENTELISTE:

- "Developer-side" til administration skal kunne tilgås.
- Administration skal kunne oprette en bruger på ventelisten med alt information (navn, oprettelsesdato, Email, telefonnummer) (2 H)
- Brugerprofiler på ventelisten skal kunne ændres og slettes manuelt i ventelisten (3 H)
- Man skal ved få klik kunne sende en advarsels-mail ud vedrørende manglende betaling.

3. MANGLENDE BETALER:

- Man skal kunne sende reminder ud på mail om at man skal huske at betale inden en specifik dato (2 H)
- Man skal kunne highlighte folk der har betalt (20 m) X
- Man skal kunne ved et klik af en knap slette alle folk på listen der ikke er highlighted og derfor ikke har betalt. (30 m)

4. AutoMail System:

- Man skal via en separat side kunne redigere sine standard automails
- Der skal være automails til:
 - o Mangel på betaling (alle der ikke er highlighted som betalt)
 - o Confirmation at man står på ventelisten(Alle highlighted)
 - o Reminder
 - o Information om havesalg
- Siden skal holde en menu, hvori man kan skifte mellem forskellige automails.
- Inden man sender mailen skal man kunne se hvor mange, hvem der får den, og hvad der står i mailen

5. OPRETTELSE AF NYE FOLK PÅ VENTELISTE:

- Man skal kunne skrive sig op på ventelisten med alle ens oplysninger (4 H)
- Der skal være en liste over alle dem der har udfyldt en formular og gerne vil optages på ventelisten (30 m)
- Hvis man har udfyldt en formular, skal man kunne se hvordan man betaler (2 H)
- Hvis antallet på ventelisten og listen over folk der gerne vil optages på ventelisten overstiger 100 skal det ikke være muligt at udfylde tilmeldingsformularen og man skal gøres opmærksom på at ventelisten er fyldt op. (3 H)
- Man skal kunne tilmelde sig en reminder-service hvis man gerne vil have en reminder når der igen er plads på ventelisten (3 H)

6. VISUALISERING AF TIDLIGERE KØBERE

- Man skal se tidligere salg af haver, med ventelistenummer, ventetid og salgsdato (Måske visuelt flair i form a skyer) (7 H)
- Man skal kunne markere når en person har købt en have, skrive ind hvad haven kostede, og nr. og opdatere visualiseringen af solgte haver (6 H)

7. OPRETTE OG BESTYRE HAVE SALG

- Administrationen skal kunne oprette et nyt havesalg, hvor de kun skal indskrive have-nr. (2 H)

12.4.Appendix D: Tasks for evaluation

1. Send reminder

Det er tid til at folk på ventelisten skal betale det årlige beløb.

Kontakt brugerne på ventelisten om at de skal sende deres årlige kontingent.

2. Opdater venteliste

Fristen for hvornår man skal indbetale det årlige beløb er overskredet. Du har allerede været inde på hjemmesiden og markeret de mennesker der havde betalt sidst, du kiggede på haveforeningens konto. Du vil gerne fjerne de mennesker fra ventelisten, der ikke har betalt.

Siden du sidst var inde og se kontoudtoget for haveforeningen kan du se at følgende mennesker har overført penge til haveforeningens konto:

- Louise Jensen
- Christian Sørensen
- Nina Jensen
- Kontakt alle dem i fjerner fra listen
- Kontakt alle dem der fortsat beholder deres plads på ventelisten

3. Salg af hus

Følgende folk på ventelisten har tilkendegivet, at de gerne vil købe hus nr. 15 til en pris på 120000 kr.

Find ud af hvem der må købe kolonihaven og fjern personen fra ventelisten.

- Martin Jørgensen
- Louise Jensen
- Camilla Hansen
- Anne Larsen
- Sofie Møller

4. Tilføj nye personer til venteliste

Du skal tilføje nye medlemmer til ventelisten. Flere har ansøgt, men ikke alle har betalt.

Tilføj alle dem der har betalt

Dem der har betalt:

- Isabella Norkvist
- Elias Morvad
- Oliver Mortensen
- Jonathan Balling
- Carlo Rasmussen

5. Tilføj en eksisterende haveejer til venteliste

En person som allerede ejer en have vil gerne købe en anden kolonihave og skrives på den interne venteliste, her er personens oplysninger:

Helle Toft, telf: 43523545, mail: helletoft@gmail.com, husnr: 43

6. Opdater oplysninger

En person har kontaktet jer, og fortæller at hun har fået nyt telefonnummer og beder jer fremover bruge hendes nye telefon nummer.

Camilla Hansen kontakter jer. Hendes nye nr er: 12345678

7. Rediger mail

Du vil gerne redigere i den mail der normalvis sendes ud til folk der slettes på ventelisten

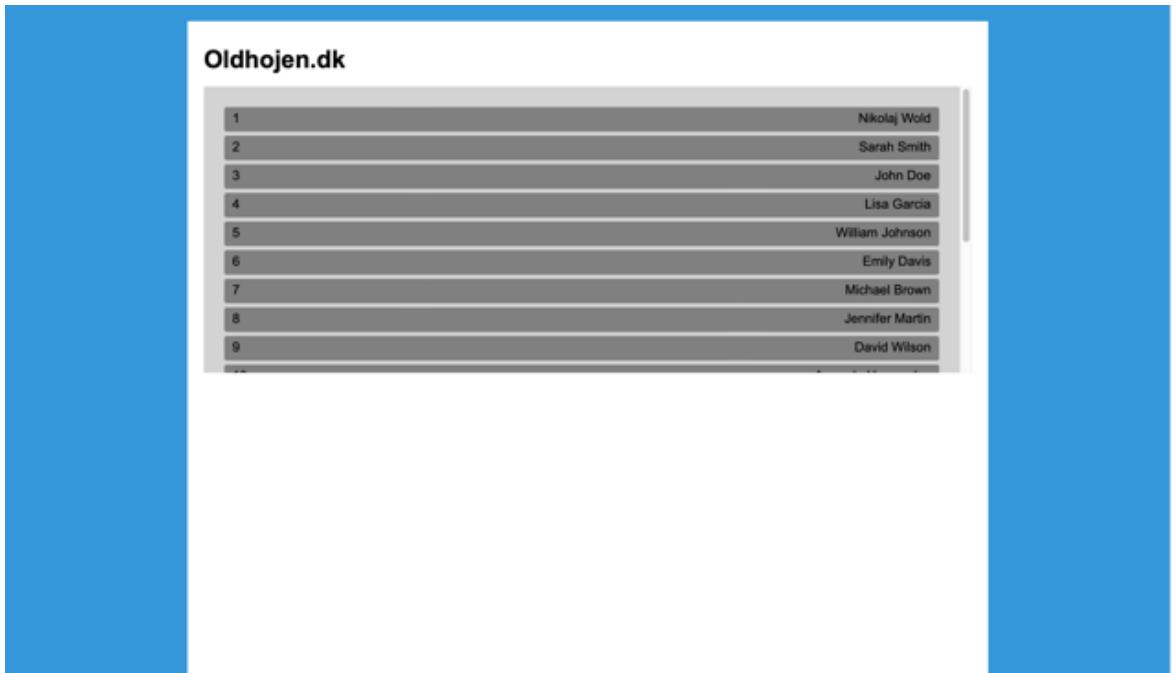
12.5.Appendix E: First sketch

Management website sketch

The sketch shows a web interface for managing a waiting list. At the top, there is a header with the logo "Oldhojen.dk". Below the header, there are five navigation tabs: "Venteliste", "Intern venteliste", "Betalere 2023", "Ukendte", and "Offentlig venteliste". Underneath these tabs is a search bar with fields for "Navn", "Titel", "Email", "Indberetningsdato", and "Tlf". A sub-header "Venteliste 2023" is followed by a table listing 10 entries. Each entry includes a number (1-10), a name, a phone number, an email address, a date (e.g., 04-12-2015), and a "Delete" button. At the bottom of the table are two buttons: "Søg efter navn" and "Søg efter id".

	Name	Phone	Email	Date	Action
1	Nikolaj Wold	40154739	nikolajwold@hotmail.com	04-12-2015	Delete
2	Sarah Smith	1234567890	sarahsmith@gmail.com	05-01-2022	Delete
3	John Doe	5555555555	johndoe@yahoo.com	11-15-2021	Delete
4	Lisa Garcia	9876543210	lisagarcia@outlook.com	09-30-2023	Delete
5	William Johnson	5551112222	williamjohnson@hotmail.com	08-08-2022	Delete
6	Emily Davis	4443332222	emilydavis@gmail.com	02-14-2022	Delete
7	Michael Brown	7778889999	michaelbrown@yahoo.com	06-30-2023	Delete
8	Jennifer Martin	5554443333	jennifermartin@hotmail.com	12-25-2021	Delete
9	David Wilson	1231231234	davidwilson@outlook.com	03-08-2022	Delete
10					

Public website sketch



12.6.Appendix F: Sprint 2 prototype

Public website

The screenshot shows a public website for "Oldhøjen venteliste 2023". In the center, there is a list of names from 1 to 9. To the left and right of the list are several white clouds, each containing a user's name, age, and purchase information. A lock icon is located at the bottom left.

Oldhøjen venteliste 2023

Number	Name
1	Pia T.
2	Markus S.
3	Lars J.
4	Mette N.
5	Søren L.
6	Camilla H.
7	Anders P.
8	Mads A.
9	Line M.

Cloud Data:

- Emilie: Venterid: 10 år, Købt for 70.000 kr.
- Marie: Venterid: 6 år, Købt for 50.000 kr.
- Lasse: Venterid: 34 år, Købt for 200.000 kr.
- Laura: Venterid: 8 år, Købt for 60.000 kr.
- Emma: Venterid: 22 år, Købt for 150.000 kr.
- Niklas: Venterid: 30 år, Købt for 250.000 kr.
- Sofie: Venterid: 28 år, Købt for 170.000 kr.
- Maja: Venterid: 26 år, Købt for 180.000 kr.
- Ida: Venterid: 20 år, Købt for 160.000 kr.

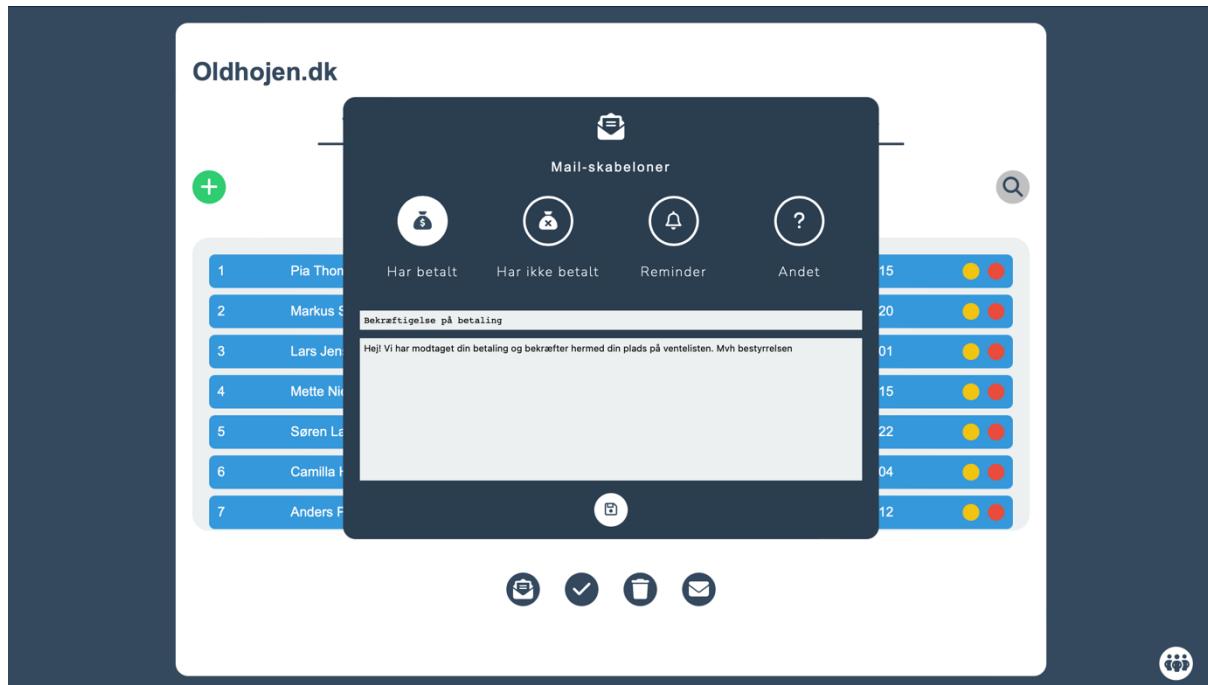
Management website

The screenshot shows a web application interface for managing a waiting list. The header "Oldhojen.dk" is displayed above a navigation bar with tabs: Venteliste, Intern venteliste, Ansøgere, Ukendte, and Haveejere. A green circular button with a plus sign is located on the left side of the Venteliste tab. To the right of the tabs is a search icon. The main content area is titled "Venteliste" and displays a table of 7 entries:

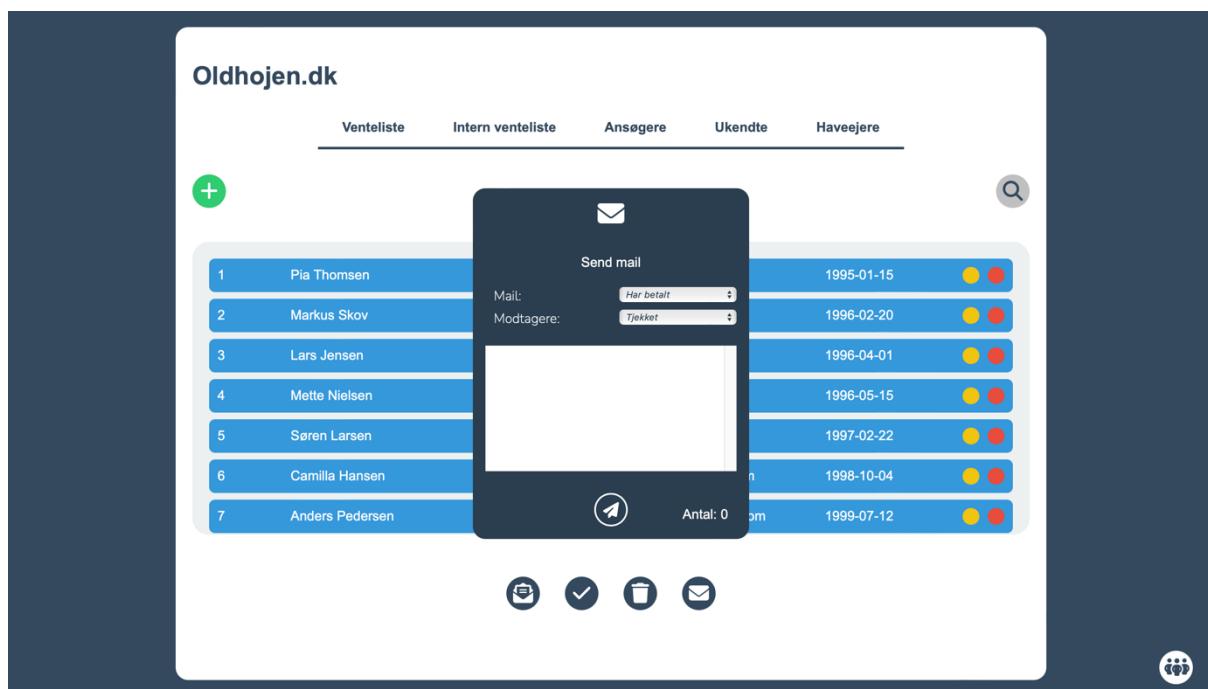
Plads	Navn	Tlf.	E-mail	Dato	Aktioner
1	Pia Thomsen	93729475	pia@thomsen@gmail.com	1995-01-15	[Yellow, Red]
2	Markus Skov	52356324	markusskov@gmail.com	1996-02-20	[Yellow, Red]
3	Lars Jensen	72381957	larsjensen@gmail.com	1996-04-01	[Yellow, Red]
4	Mette Nielsen	13958672	mettenielsen@gmail.com	1996-05-15	[Yellow, Red]
5	Søren Larsen	61429378	sorenlarson@gmail.com	1997-02-22	[Yellow, Red]
6	Camilla Hansen	89635417	camillahansen@gmail.com	1998-10-04	[Yellow, Red]
7	Anders Pedersen	37169458	anderspedersen@gmail.com	1999-07-12	[Yellow, Red]

Below the table are four small circular icons: a clipboard, a checkmark, a trash can, and an envelope. In the bottom right corner of the main window, there is a small logo consisting of three overlapping circles.

Mail templates



Send emails



Mark paying applicants

Plads	Navn	ID	E-mail	Dato	Status
1	Pia Thomsen	93729475	piathomsen@gmail.com	1995-01-15	Blå, Gul, Rød
2	Markus Skov	52356324	markusskov@gmail.com	1996-02-20	Grøn med Kryds, Gul, Rød
3	Lars Jensen	72381957	larsjensen@gmail.com	1996-04-01	Grøn med Kryds, Gul, Rød
4	Mette Nielsen	13958672	mettenielsen@gmail.com	1996-05-15	Grøn med Kryds, Gul, Rød
5	Søren Larsen	61429378	sorenlarsen@gmail.com	1997-02-22	Blå, Gul, Rød
6	Camilla Hansen	89635417	camillahansen@gmail.com	1998-10-04	Blå, Gul, Rød
7	Anders Pedersen	37169458	anderspedersen@gmail.com	1999-07-12	Blå, Gul, Rød

Delete nonpaying applicants

Plads	Navn	ID	E-mail	Dato	Status
1	Pia Thomsen	93729475	piathomsen@gmail.com	1995-01-15	Blå, Gul, Rød
2	Markus Skov	52356324	markusskov@gmail.com	1996-02-20	Rød Kryds, Gul, Rød
3	Lars Jensen	72381957	larsjensen@gmail.com	1996-04-01	Blå, Gul, Rød
4	Mette Nielsen	13958672	mettenielsen@gmail.com	1996-05-15	Blå, Gul, Rød
5	Søren Larsen	61429378	sorenlarsen@gmail.com	1997-02-22	Blå, Gul, Rød
6	Camilla Hansen	89635417	camillahansen@gmail.com	1998-10-04	Blå, Gul, Rød
7	Anders Pedersen	37169458	anderspedersen@gmail.com	1999-07-12	Blå, Gul, Rød

Add new applicant



Search for applicant



Waiting list for community garden owners

The screenshot shows a user interface for managing a waiting list. At the top, there is a navigation bar with tabs: Venteliste, Intern venteliste, Ansøgere, Ukendte, and Haveejere. Below the navigation bar is a search bar with a magnifying glass icon. A green circular button with a plus sign is located on the left side. The main content area is titled "Intern venteliste". It displays a table with 7 rows, each representing a person on the list. The columns are numbered (1-7), name, ID number, email, house number, and two small colored circles (yellow and red). The table has a light gray background with blue horizontal rows.

1	Nikolaj Vinther	40154739	nikolajvinther@hotmail.com	Husnr: 4	● ●
2	Line Sommer	52462445	line.sommer@hotmail.com	Husnr: 7	● ●
3	Lars Hansen	31234567	lars.hansen@email.dk	Husnr: 43	● ●
4	Mette Jensen	22345678	mette.jensen@mail.com	Husnr: 87	● ●
5	Anders Nielsen	40123456	anders.nielsen@mail.dk	Husnr: 111	● ●
6	Maria Petersen	50123456	maria.petersen@outlook.com	Husnr: 245	● ●
7	Hanne Jensen	22123456	hanne.jensen@mail.com	Husnr: 25	● ●

List for people applying to be on waiting list

The screenshot shows a user interface for managing an application list. At the top, there is a navigation bar with tabs: Venteliste, Intern venteliste, Ansøgere, Ukendte, and Haveejere. Below the navigation bar is a search bar with a magnifying glass icon. The main content area is titled "Ansøgere". It displays a table with 7 rows, each representing an application. The columns are numbered (1-7), name, ID number, email, date, and two small colored circles (yellow and red). The table has a light gray background with blue horizontal rows.

1	Isabella Nordkvist	12345678	isabella123@gmail.com	2023-04-23	● ●
2	Carl Høj	23456789	carlhoj@gmail.com	2023-04-22	● ●
3	Oliver Mortensen	34567890	olivermortensen@gmail.com	2023-04-21	● ●
4	Carlo Rasmussen	45678901	carlorasmussen@gmail.com	2023-04-20	● ●
5	Ellen Christensen	56789012	ellenchristensen@gmail.com	2023-04-19	● ●
6	Nanna Madsen	67890123	nannamadsen@gmail.com	2023-04-18	● ●
7	Malthe Damgaard	78901234	malthedamgaard@gmail.com	2023-04-17	● ●

List of unknown payers

The screenshot shows a web interface for Oldhojen.dk. At the top, there is a navigation bar with tabs: Venteliste, Intern venteliste, Ansøgere, Ukendte, and Haveejere. The 'Ukendte' tab is currently selected. Below the tabs, there is a search bar with a magnifying glass icon and a green '+' button. The main content area is titled 'Ukendte' and displays two entries:

??? Anna P	' ved ikke hvem der har betalt ' ' Har betalt 2 gange, men ved ikke hvem det er '	Yellow dot	Red dot
---------------	--	------------	---------

List of community garden owners

The screenshot shows a web interface for Oldhojen.dk. At the top, there is a navigation bar with tabs: Venteliste, Intern venteliste, Ansøgere, Ukendte, and Haveejere. The 'Haveejere' tab is currently selected. Below the tabs, there is a search bar with a magnifying glass icon and a green '+' button. The main content area is titled 'Haveejere' and displays a list of five garden owners:

1 Lasse Rosenmeier 2 Karen Holm 3 Anders Jensen 4 Sofie Larsen 5 Mikkel Nielsen	52354525 85375847 87253468 72345612 83456789	lasserosenmeier@gmail.com karenholm@gmail.com anders.jensen@mail.dk sofie.larsen@mail.com mikkel.nielsen@mail.dk	2 år og 10 måneder 1 år og 8 måneder 1 år og 6 måneder 2 år og 4 måneder 1 år og 0 måneder	200.000,- 150.000,- 130.000,- 170.000,- 100.000,-	Husnr: 9 Husnr: 74 Husnr: 37 Husnr: 81 Husnr: 129	Yellow dot Red dot Yellow dot Red dot Yellow dot Red dot
---	--	--	---	---	---	---

Editing applicant

Oldhojen.dk

Venteliste Intern venteliste Ansøgere Ukendte Haveejere

+ 🔍

Venteliste

Plads	Navn	Tlf.	E-mail	Dato	Aktioner
1	Pia Thomsen	93729475	pia@thomsen@gmail.com	1995-01-15	Yellow Red
2	Markus Skov	52356324	markusskov@gmail.com	1996-02-20	Yellow Red
3	Lars Jensen	72381957	larsjensen@gmail.com	1996-04-01	Yellow Red
4	Mette Nielsen	13958672	mettenielsen@gmail.com	1996-05-15	Yellow Red
5	Søren Larsen	61429378	soren.larsen@gmail.com	1997-02-22	Yellow Red
6	Camilla Hansen	89635417	camillahansen@gmail.com	1998-10-04	Yellow Red

📝 ✓ 🗑 ✉️

👤

12.7 Appendix G: Previous Excel Management File

A1	A	B	C	D	E	F	G	H
1	Første betaling	Bank (2023)	Navn	Adresse	Telefon	Mobil	Email	
2	1	2015	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3	2	2016	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
4	3	2016	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
5	4	2016	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
6	5	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
7	6	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
8	7	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
9	8	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
10	9	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
11	10	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
12	11	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
13	12	2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
14	13	2019	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
15	14	2019	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
16	15	2019	[REDACTED] C	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
17	16	2019	[REDACTED] M	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
18	17	2019	[REDACTED] G	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
19	18	2019	[REDACTED] J	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
20	19	2020	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
21	20	2020	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
22	21	2020	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
23	22	2020	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

K14	A	B	C	D	E	F	G	H	I
1	Nr.:				Navn	Adresse	Telefon	Mobil	Email
2	1				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
3	2				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
4	3				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
5	4				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
6	5				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
7	6				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
8	7				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
9	9				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
10	10				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
11	12				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
12	13				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
13	14				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
14	15				[REDACTED]	Have [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
15									
16									
17									
18									
19									
20									
21									
22									

A1	B	C	D	E	F	G	H	I	J	K	L	M	N
1	0	Første betaling	Gældende Betaling	Udledsdato	Betalere (2022)	Betalere (2023)	Navn	Adresse	Tелефon	Mobil Email	2. Navn	Blivende Betalere	
2	1	2015	29.03.22	31.03.23								1	
3	2	2016	23.03.22	31.03.23	A							1	
4	3	2016	29.03.22	31.03.23	S							0	
5	4	2016	01.03.22	31.03.23								1	
6	5	2016	25.03.22	31.03.23	T							0	
7	6	2016	04.03.22	31.03.23	E							0	
8	7	2016	11.02.22	31.03.23			N					1	
9	8	2017	23.03.22	31.03.23								0	
10	9	2018	09.03.22	31.03.23	L							1	
11	10	2018	11.02.22	31.03.23	P							1	
12	11	2018	16.02.22	31.03.23								1	
13	12	2018	03.03.22	31.03.23	L							1	
14	13	2018	2022	31.03.23								1	
15	14	2018	28.03.22	31.03.23								1	
16	15	2018	29.03.22	31.03.23	V							1	
17	16	2018	09.02.22	31.03.23								1	
18	17	2019	29.03.22	31.03.23	d							1	
19	18	2019	29.03.22	31.03.23	m							1	
20	19	2019	34.22.00	31.03.23								1	
21	20	2019	09.02.22	31.03.23								1	
22	21	2019	29.03.22	31.03.23	J							0	
23	22	2019	2022	31.03.23	N							1	
24	23	2019	19.03.22	31.03.23								0	
25	24	2019	16.02.22	31.03.23								1	
26	25	2019	11.02.22	31.03.23								0	
27	26	2020	23.02.22	31.03.23	T							1	
28	27	2020	08.02.22	31.03.23								1	
29	28	2020	03.03.22	31.03.23								1	
30	29	2020	11.02.22	31.03.23	M							1	
31	30	2020	16.03.22	31.03.23								1	
32	31	2020	2022	31.03.23								1	
33	32	2020	09.02.22	31.03.23								1	
34	33	2020	2022	31.03.23								0	
35	34	2020	07.02.22	31.03.23								1	
36	35	2020	23.02.02	31.03.23	I							0	
37	36	2020	09.02.22	31.03.23	S							1	
38	37	2020	10.03.22	31.03.23	N							1	
39	38	2020	2022	31.03.23								0 Har købt have	

Venteliste 2023 ▾ Intern venteliste ▾ Venteliste 2023 (blivende) ▾ 2023 blivende betalere og Nye ▾

A1	Betalere	B	C	D	E	G
1	Betalere	Tekst	Rente fra	Bebob	Saldo	CHECK
2					100	1
3		04.37.43		04.37.43	100	325.212,50
4		04.37.43		04.37.43	100	325.112,50
5		04.37.43		04.37.43	100	325.012,50
6		04.37.43		04.37.43	100	324.912,50
7		04.37.43		04.37.43	100	324.812,50
8		04.37.43		04.37.43	100	324.712,50
9		04.37.43		04.37.43	100	324.612,50
10		03.37.43		03.37.43	100	324.512,50
11		03.37.43		03.37.43	100	324.412,50
12		03.37.43		03.37.43	100	324.312,50
13		03.37.43		03.37.43	100	324.212,50
14		03.37.43		03.37.43	100	324.112,50
15		03.37.43		03.37.43	100	324.012,50
16		03.37.43		03.37.43	100	323.912,50
17		03.37.43		03.37.43	100	323.812,50
18		03.37.43		03.37.43	100	323.712,50
19		03.37.43		03.37.43	100	323.612,50
20		03.37.43		03.37.43	100	323.512,50
21		03.37.43		03.37.43	100	323.412,50
22		03.37.43		03.37.43	100	323.312,50
23		03.37.43		03.37.43	100	323.212,50
24		03.37.43		03.37.43	100	323.112,50
25		03.37.43		03.37.43	100	323.012,50
26		03.37.43		03.37.43	100	322.912,50
27		03.37.43		03.37.43	100	322.812,50
28		03.37.43		03.37.43	100	322.712,50
29		03.37.43		03.37.43	100	322.612,50
30		21.36.43		21.36.43	100	323.210,10
31		20.36.43		20.36.43	100	323.110,10
32		20.36.43		20.36.43	100	323.010,10
33		20.36.43		20.36.43	100	322.910,10
34						0
35						0
36						0
37		16.36.43		16.36.43	100	322.810,10
38		16.36.43		16.36.43	100	322.710,10
39		16.36.43		16.36.43	100	322.610,10
40		16.36.43		16.36.43	100	322.510,10

Venteliste 2023 ▾ Intern venteliste ▾ Venteliste 2023 (blivende) ▾ 2023 blivende betalere og Nye ▾