Gamification in Workforce Management Systems
A thesis researching if gamification can be implemented in a professional workplace system

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Abstract
As the competition for software grows companies are searching for methods of keeping users interested and engaged with their solutions. One such method called gamification uses elements from games to increase motivation and engagement. As gamification is usually found in consumer-focused environments this thesis sought to research if gamification could be successfully incorporated into a professional environment. Researching and interviewing users and hypothesizing ideas resulted in potential solutions which were then visualized in interactive prototypes. Testing these prototypes showed results indicating that gamification could have positive effects on motivation and engagement for users completing their goals in a professional environment. As the results show that gamification could have beneficial effects this could indicate that it is a method worth looking more into for companies wanting to increase their users’ motivation and engagement.
Contents

1 Introduction 4
  1.1 Goals .................................................. 4
  1.2 Caspeco software ........................................ 5
  1.3 Scope ..................................................... 7

2 Theory 8
  2.1 Gamification .............................................. 8
  2.2 Designing with gamification ............................. 9
    2.2.1 Goals ............................................... 9
    2.2.2 Social connections ................................. 10
    2.2.3 Flow theory ......................................... 11
  2.3 Design methods and tools ................................ 13
    2.3.1 Design method ....................................... 13
    2.3.2 Low-fidelity ......................................... 14
    2.3.3 High-fidelity ......................................... 15
    2.3.4 Figma .................................................. 15

3 Related work 16
  3.1 Superhuman ............................................... 16
  3.2 Disney .................................................... 17

4 Method 18

5 Theorizing phase 18
  5.1 Interviews ............................................... 18
  5.2 Studying litterature ..................................... 19
  5.3 Assumptions .............................................. 21

6 Hypothesis phase 22

7 Prototyping Phase 25
  7.1 Low-fidelity prototypes .................................. 26
  7.2 First iteration .......................................... 27
    7.2.1 Review of first iteration ............................ 28
  7.3 Second iteration ........................................ 30
    7.3.1 Review of second iteration ........................... 32
  7.4 High-fidelity prototypes ................................ 33
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 Third iteration</td>
<td>34</td>
</tr>
<tr>
<td>7.6 User testing</td>
<td>37</td>
</tr>
<tr>
<td>7.6.1 Testing</td>
<td>37</td>
</tr>
<tr>
<td>7.6.2 Semi structured interviews</td>
<td>38</td>
</tr>
<tr>
<td>8 Discussion</td>
<td>41</td>
</tr>
<tr>
<td>8.1 Discovering Gamification</td>
<td>41</td>
</tr>
<tr>
<td>8.2 Design method and interviews</td>
<td>43</td>
</tr>
<tr>
<td>8.3 Prototyping, Figma and user test evaluation</td>
<td>44</td>
</tr>
<tr>
<td>8.4 Research Questions</td>
<td>45</td>
</tr>
<tr>
<td>9 Conclusions</td>
<td>47</td>
</tr>
<tr>
<td>10 References</td>
<td>48</td>
</tr>
</tbody>
</table>
1 Introduction

With the increasing quantity of software companies offering their applications to customers, companies need to keep their users interested with their products. The demand for motivating and engaging solutions has driven the need for new and exciting design ideas to be introduced. One of these ideas is a method called gamification. Gamification is the idea of giving a user a similar experience of playing games in a non-game environment. This game experience is created by introducing different game elements into these non-game environments. These elements can vary from more simple feedback systems such as the progress bar giving users direct feedback which is used by LinkedIn[11] or making use of rewarding users external rewards such as points and achievements such as in Duolingo[17]. The idea of gamification was first brought up in the early 2000s but has grown more popular during the second half of 2010[8]. Companies are becoming more interested in the idea of implementing gamification to increase users engagement which has led to its popularity rising each year. The international market size of gamification was 2018 5.5 billion dollars and reached 7.17 billion in 2019.[23] which indicates that this could potentially be a method worth researching.

Caspeco is a company that focuses on creating fast and easy-to-use software to help companies in the hospitality industry. The hospitality industry includes industries such as restaurants and hotels. Caspeco provides systems for companies in this industry to help them run their businesses smarter and increase their profitability by providing easier solutions to tasks than what the standard solution offers. As there is a lack of gamified solutions present in their professional environments Caspeco now wants to study if gamification could somehow be incorporated into their current systems to increase their users motivation and engagement.

1.1 Goals

The purpose of this thesis is to help contribute to the continuous development of the system Caspeco has created by researching the idea of gamification and studying if it can be incorporated to have a beneficial effect on user motivation. These are the points that Caspeco raised that they find of interest and want to be researched during this thesis:
Can gamification be designed for a professional application?
What is important to think about when implementing gamification?
Experiment with gameful designs and prototypes and evaluate these.

The goal is therefore to research gamification as a method and then creating prototypes and evaluating these to see if gamification had any desired results.

1.2 Caspeco software

Caspeco provides software solutions for restaurants and hotels with the intent of making processes easier and faster which has beneficial effects on efficiency. Their software is a platform that focuses on simplifying systems such as cash registering and booking by providing smarter and more efficient methods than the usual ones. Caspeco offers four systems where each of them have their own specific functionalities. These four systems are called PoS (which stands for Point of Sale), staff management, booking, and analysis.[3] These systems are added on top of the base version of the platform based on what on the specific needs for each company. The goal of making these four systems separate is to make each system adapted for each specific company so that they do not have to pay for functionalities they will not use. When a company wants to use Caspecos platform they contact Caspeco so that a plan of what systems this specific company might want. The systems chosen are then added to their specific variant of the platform. Caspecos current platform is called Caspeco Cloud.

Caspeco cloud is available as both application at the app store and also as a web-based tool that can be accessed with any browser. The purpose of having both an application and a web-based tool is due to each of them being more suited for specific user groups which need different access to the features that are provided. Some of the base features which can be accessed by both the app and web tool and do not need any added systems are:

- Scheduling. Schedules can be created by administrators and set schedules can then later be seen by users such as employees.
- A communication system. People can communicate with each other using Caspeco cloud by sending messages to each other.
• Reading and posting news. Caspeco and the company using the system can send the news to every person connected to the system.

All of these features do not require a large screen and can therefore potentially be more quickly accessed in the application using a phone. Employees such as cooks and waiters usually only require these features which makes the application more suitable to be used by this user group.

Other than these features there are also the four systems such as booking or PoS which all add even more features to the platform. These features are mostly used by the user group called admins and employers. In this report, the system’s personnel management and analysis are the ones that are highlighted. This is because these were the systems that were available in the test system that the author had access to. These two systems add more features such as:

• An employee management feature. One can access each individual employee and see their information such as where they live and their contact information. Features such as an overview of everyone’s working hours are added here.

• A salary system that simplifies the process of handing out salaries to employees. This feature requires all the information in the management list to be correctly done.

• Reports such as outcome details for the company can be created so that the company can get a better overview.

• Charts and other forms of analysis of the company’s outcome or other information can be accessed. One can for example compare their outcomes to that of all other companies in the same town.

As the features presented might require a larger screen for users to use properly these are mostly interacted with using the web-based version of Caspeco cloud, as opposed to the application. An overview of the current design of this webpage can be seen in figure 1. These features can only be accessed by having the required authorization such as being an admin. The features are intended to be used by employers and administrators rather than employees. The admin roles are added to only specific people at the beginning, as the platform has to be tailor-made for each specific company
by Caspeco. Some of these features might require a larger screen to be used more easily which leads to the web tool being used more by employers and admins rather than employees. Some of these features, such as "Personal" and "Air", which are features from the personnel management and the analyzing systems, can be seen in the taskbar at the left side of figure 1.

1.3 Scope

The scope for this bachelor thesis will only focus on the users that primarily use the web-based version of the system and only two of the four systems that they provide, as these were the ones available for the author to use. These two systems are the staff management and the analysis systems.

There will be no actual implementations of the design that is proposed at the end due to lack of time. The ideas made will be presented as interactive prototypes and nothing more.

There will also not be any actual user studies done as there was no real users available during this time. This limitation impacted how well the results could be evaluated.
2 Theory

2.1 Gamification

Playing games is a natural activity for us humans as we have been doing it for the past thousand years. The history of games dates back to the roots of humans becoming mankind. We play games because they are fun and enjoyable, which is the polar opposite of mandatory boring work. The best games can easily catch the full attention of players and make them oblivious to distracting elements around them. They will become so focused on the game that they might feel a loss of self-consciousness and completely forget the time. This is what Csikszentmihalyi calls the feeling of flow, and it is “the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it”[6]. Today work and fun are becoming more and more entangled as we strive toward making work less tedious. Games and methods used by games have started to move away from just being used for games and into areas where you usually do not encounter them. Using techniques and elements from games is called gamification and it is usually described as the process of introducing game design elements into a non-game environment to increase user motivation and engagement. While this description implies that everything applied using gamification must be similar to things from games, Huotari and Hamari think that the goal of gamification should be the most important thing[11]. Making sure that the resulting experience of a system feels like a game. The goal of gamification is to motivate and engage a user to complete their goals. If the design solution to some problem is good, then these user goals will also align with the company’s goals.

There is no clear methods of how one implements gamified elements into these non-game environments in the best way. Still, it has become a very popular method as the logic is quite clear and easy to follow. People like to play games and if the experience of playing games could be introduced to usually boring activities, then they might be more fun. Making something fun is not always the case either and LinkedIn’s gamification is proof of that. LinkedIn has added gamification to their profile creation page where one will have a progress bar[11]. This feedback motivates users into completing their profile entirely which fulfills both user and company goals without relying on it being fun per se.
This is only one example where a company has successfully designed its software using gamification. Gamification has already been introduced into a number of different sectors including consumer-focused, education, and health where consumer-focused is the most common[12]. While a large number of companies are ready to jump on the train and implement game design into their systems most of them are not getting it right according to Burke[2]. Marketing has sold gamification as a magical solution that will improve and fix any problem one might have, and this is simply not true. Burke explains that reward systems and gamification are different as the rewards system motivates by compensating users while gamification instead engages the user on an emotional level[2]. As the two are still quite similar it is not always easy to differentiate between them.

2.2 Designing with gamification

Using elements taken from games to motivate users to complete mundane tasks can then be done in a multiple of different ways. The most common way of implementing gamification into a software solution is to add one or more of the most popular game elements. Some ideas of implementations would be to add leaderboards, achievements and badges which would then provide a user some extrinsic rewards for completing tasks. This focus on extrinsic rewards is the most popular and easy to implement strategy but also the one that is most prone to lead to failure. Not only can extrinsic rewards cause harm, they can even lessen the intrinsic motivation from tasks[19]. Intrinsic motivation is the opposite of what extrinsic motivation is. In extrinsic motivation the motivation comes from the rewards that the completion of tasks gives. In intrinsic motivation the motivation comes from the task being motivating instead[13].

When one wants to try to implement the motivating factors from games into everyday software one must keep in mind some of the most important factors which are goals, socialization and flow.

2.2.1 Goals

Gamification is at its core a design method where the users and their goals is the most important part. When implementing gamification one must first make a thorough investigation into what underlying goals exist in the setting. Laying out and understanding user goals is the first and one of the
most important steps of implementing gamification. Defining these goals is essential when researching if gamification is the right solution to a problem at hand [2]. Burke has laid out three steps that one needs to first study when trying to figure out if gamification is a good idea. The three steps are:

1. Define business goals
2. Define target audience
3. Define audience goals

Defining business goals are essential when designing something for a business. The business needs to be able to have some goal to be fulfilled in order for the designed solution to have any meaning at all. After this one need to define the targeted audience. When designing some software that someone will use it is essential to know what types of people are going to use the product in the first place. A designed software intended for educating young children might look very different to an educating system intended for older adults. Lastly one needs to find what goals this targeted audience have using the software. If there is some goal that they have that can relate to the goals of the business, then there is potential for gamification to have some effect[2].

2.2.2 Social connections

As stated earlier, users might become more motivated to do some tasks if the task itself has some intrinsic motivation instead of extrinsic ones. Elements such as points, badges and leaderboards are often used as motivational tools. These tools might work to temporarily increase a user's motivation but might have impact if these are then later removed. This was illustrated in an experiment where children were tasked of drawing pictures[15]. Those who were given rewards for their drawings only drew because they were rewarded for it and later stopped drawing when not given rewards. The pictures drawn by kids that were rewarded were also shown to be done with less quality than those who did not draw for some reward. One explanation is that extrinsic rewards might diminish intrinsic motivation from some tasks when provided extrinsic ones. By not rewarding users with extrinsic rewards but instead focusing on intrinsic ones the tasks might become more motivating long-term.

One extrinsic motivational tool that is often used in gamified designs is
leaderboards. It is an easy way of connecting users socially and motivates them to complete tasks by introducing a feeling of competition between them. Social interaction is one useful motivating tool if done correctly. In an article using gamification and social interaction to motivate students they hypothesized that by letting users sense the presence of students this can lead to a sense of connection which will positively impact the level of engagement[1]. Giving users a sense of connection with other users, using tools such as profile pictures or message boards, could then in theory give users more motivation as they feel more engaged by feeling the social connection. If social connection could be integrated without having to rely on extrinsic motivation it could introduce more motivation and engagement for the users.

2.2.3 Flow theory

One of the factors that are important to think about when implementing gamification should be to try to create a system where the feeling of flow can be achieved. Flow can be described as the mental state one finds themselves in when completely absorbed in a certain activity for a certain time. Mihaly Csikszentmihalyi is the one that popularized the concept, and he describes flow as “a state of concentration so focused that it amounts to absolute absorption in an activity.”[6]. Flow is something that a lot of people can relate to having experienced at least once. This usually takes place in forms of play or also under certain conditions in other activities as well, but is not always there. People often describes flow as the time where action and awareness merge and self-consciousness disappear where one is aware of their actions but not of the awareness itself[5, p.138]

So how does one experience flow? For flow to be achieved the attention needs to be focused on a limited stimulus field[5, p.139]. Therefore games and sports are quite well designed for achieving flow as in both of these the player must center their attention on the situation and have a limited stimulus field.

Flow also seems to occur only when people face tasks that they find are within their ability to perform.[5, p.138] Using this knowledge, we can gather that in order to achieve flow one must both first have the skills required to complete some well-specified tasks but also need to have their attention centered on
this certain task. By providing a game with specified challenges and rules one could then create a scenario where flow is possible to be achieved.

The question now is if it would be possible to recreate scenarios where flow can appear in a workplace scenario. If this state of flow could be recreated in a workplace scenario, then this could contribute to increasing employee productivity and happiness. Flow does not follow when one performs a task that is easy and has no rules. Flow comes from performing tasks that one finds difficult but having the skills they require to solve them. One needs to find a certain structure of activities where the skill level matches the level of challenge presented and this will then promote flow [5, p.146]. Csikszentmihalyi proposed a now popular model that describes the interaction that someone has with his environment, see figure 2.


The model presents a situation where a person will have some opportunities that they need to act on while also having a sense of their own competence in that specific area. Using the figure one can see that if a person gets too many challenges that they feel are too difficult for their ability, then a feeling of anxiety will arise. Looking at the other side of the graph we can see that anxiety can emerge in the opposite scenario as well. If challenges appear that
a person feels are too below their level of expertise, then feelings of anxiety might also emerge. In order to avoid these scenarios, the optimal path is to find the difficulty level of challenges where they align with the skill level of the user. If a scenario is created where a user has both the skill and challenge level aligning properly, then according to this model flow could appear. For flow to appear one important factor is to create a scenario where a user’s skill level must be matched with the difficulty of the task provided.

2.3 Design methods and tools

2.3.1 Design method

To design for a good user experience, one could utilize the many different design methods that are tested and used by companies. In most methods found it is the responsibility of the designer to make sure that user needs are found and designed correctly during the whole process. Letting designers carry this responsibility could lose some of the opportunities for designers using these methods to act more creatively and use their specific expertise. In this thesis, the method of choice is not one of the more common ones. Laaksoharju describes in his thesis a method he calls the Theory of use which is intended to help designers by letting them focus more on the creative aspects of designing for users[16]. In this method, users are not simply seen as an object of study but by instead presenting the users as the subject that the designer is studying the design will become more user-centered. It helps designers by removing some of the responsibility for guessing users’ needs and goals. This is done by letting users assess and falsify the thoughts and assumptions that the designers have about them. In this thesis, the method has been simplified into three steps:
Finding a meaningful idea
In order to design something meaningful there must exist a problem that needs some sort of solution. It can be hard to find these problems as they can sometimes be things that we are not aware of. If a problem is found, then one can take it into the next step.

Theorizing
The idea now has to be specified and qualities of a good solution can be created. The best way of doing this is discussing these qualities and assessments with users so that the designer can get a better understanding of the problem they need to solve. Assumptions and similar thoughts are discussed during interviews or workshops with users so that they can help falsify misunderstood ones. The main responsibility in this step for designers is to form an understanding about the problem that they need to solve. How the problem is going to be solved is up for the designer to figure out themselves where this process helps them instead figure out the why.

Hypothesising
After gaining a better understanding of why the problem needs to be solved, the designer can now begin to hypothesize ideas of solutions. Falsifying these ideas can give the designer an overview if their understanding of the problem and users is correct or not. It is likely that assumptions made about users could be wrong, which means that the qualities and assumptions needs to be revisited. Prototyping is also a part of hypothesizing, and these are also discussed with users.

2.3.2 Low-fidelity
When designing prototypes one can use different methods of doing so. At the beginning of a prototyping phase, designers can start with a low fidelity, or lo-fi, prototype. A low fidelity prototype is meant to simply be a sketch of some kind which can give a user a sense of what a final product might include [22]. This could then enable designers to test the prototype without having to worry about testers focusing on details. The advantage of starting off with a low fidelity prototype is that it is cheap and easy to make. After ideas are made about what a final product might include one can create a low fidelity prototype and let users test it to see if these ideas give desired results. As these are quick and easy to make, changing them does not require
a lot of time or effort. It might be hard to change ideas or elements if there is already a lot of money and time invested into it.

Furthermore, designers have more opportunities to work and be more creative with ideas that they present to the users. Designers do not have to commit to a single idea and can focus on testing multiple ones instead. If a high-fidelity prototype is created early, instead of a low-fidelity one, a designer might feel more reluctant to change and explore different solutions. Though one can not only stay using low fidelity and must at some point focus on one or a few chosen ideas to take into the high-fidelity stage.

2.3.3 High-fidelity

The next step after a low-fidelity prototype for some design idea is to make it into a high-fidelity one. This is the prototype that is meant to showcase in detail how the final product will look when completed into a finalized product. In software, these are often created using design software to replicate a working system. As an example, if a low-fidelity prototype is done with paper and pen, then a high-fidelity prototype could be done in HTML and JavaScript. As these types of prototypes are close to a final product, testing could result in even more telling information from users testing them, as a high-fidelity prototype offers more realistic interaction to the tester. The downside of creating a high-fidelity prototype is that it takes much more time, money, and effort to create it, compared to a low-fidelity one. This can lead to it being expensive in the form of resources. Larger changes at this stage could cost a lot more. If a design idea is taken directly to a high-fidelity prototype it might make it quite hard to make important changes that could have been detected if a low-fidelity one was created and tested beforehand.

2.3.4 Figma

Figma is the design tool chosen for the prototyping phase of this thesis. Figma allows designers to more easily create design interfaces that can showcase ideas. When designing high-fidelity prototypes, Figma can be used to create interactive frames. These frames can then be used to illustrate user flow in the prototype[9].

15
3 Related work

3.1 Superhuman

Rewards often lie at the center of many gamified solutions in order to raise user motivation. Introducing these extrinsic rewards, as they are called, does not always yield positive results, as it might even have the opposite reaction by devaluing the activity [4]. Superhuman is a company that decided to accelerate the speed of handling emails. They did this by introducing a product called Superhuman, which is an emailing client whose primary goal is making handling emails feel fast and enjoyable[21]. For a mailing client to feel enjoyable they needed to change the design from the standard way it is usually done. Mailing clients often bring the feeling of work and boredom and they wanted to instead introduce a feeling of fun and enjoyment. They decided to introduce game design elements as a way of making the user feel more enjoyment using the client. They concluded that when offering extrinsic rewards after completing some task, people often complete the task just for the reward and not the experience itself. By instead focusing on intrinsic motivation, people more often do tasks because they find the specific task satisfying or interesting. With the clear goal of focusing more on intrinsic motivation, they wanted to make the experience of handling emails fun by introducing game design elements to introduce the same experience one gets when playing games. The goal presented in Superhuman is for users to finish all mails in their inboxes. In order to complete this goal with an added optional challenge they want you to complete your inbox as fast as possible. They introduced a control system that allows a user to use key bindings to expedite the process of going through each mail. Making a user have the potential to experience flow and creating an environment that encourages the feeling of flow to appear is also important. When one selects a mail to read, they can only see that one, which removes distractions from the user. You can then use the key bindings they teach you over time to increase your performance. As you learn more key bindings you want to use this knowledge to complete your tasks even faster. Becoming faster and using your knowledge matches the challenge of reading emails as fast as possible which can then promote the feeling of flow[20]. Looking at what superhuman has achieved and how this was done, one can use this as a good example of how to introduce enjoyable game elements into a professional environment without relying on cheap extrinsic rewards such as points, leaderboards, and
badges.

3.2 Disney

Gamification could give employees more enjoyment and motivation at work. Although something that is often overseen is the potential negative effects that gamification might introduce. At Disney’s hotel in California, a scoring system was implemented to engage their employees [18]. Each individual got points for each successful task they performed on time. One could track not only their own points but everyone else’s as well on large monitors set up all over the hotel. What this ended up doing was raising the stress levels to such a high level that breaks were skipped in favor of getting more points. Those at the top of the scoreboard wanted to stay there in order to impress their employers. At the bottom people were constantly scared of losing their jobs. Gamification in this case resulted in over motivating employees to the point of stress and even physical harm as the number of workplace injuries got higher as a result.[10] Disney’s example of bad gamification gives us a good indication of how one must always look at what consequences one could get when implementing gamification.

It’s hard to find a simple solution for Disney’s attempt to motivate users by introducing gamification in the form of public leaderboards. Just looking at their performance ranked against their coworkers caused people stress and other forms of psychological and even physical harm. Informing the employees of the reason behind this gamification leaderboard would not resolve the issue of harming them. If they are informed that the reason behind the leaderboard is to identify poor performers it will not remove the potential humiliation that it might cause them. Even if the reason is to not identify poor performers employees might still wonder why the company would implement it in the first place and can still cause the company harm. The moral failing in the Disney gamification case lies in the designers ignoring the possibility that a new competitive setting could cause harm in social contexts. Wan Kim and Werbach writes that even if the tasks in Disney’s game are not harmful per se the potential harm comes from the socially interpreted impact on their real-world job status[14]. Workers are in this context pushed to feel inadequate to their coworkers and even some of them feeling at constant risk of losing their job. A gamification designer should consider both direct
and indirect harm that a gamified solution might cause players. Designers must keep these potential harms in mind when designing and should try to anticipate the potential social risks that a game might have outside of its playing field. If it is reasonable to assume that a gamified solution might cause players or others harm in any way, it would be reasonable to say that the designer should at least bear some of the responsibility for this.

4 Method

The task of designing a gamified solution for Caspeco got divided into four key sections where each section has its own goals as stated in the design method. Dividing the process also gave a clearer view for the author of what type of work had to be done at each specific point in time. Each section is meant to be used as a basis for the next and the results are finalized in a final prototype in the building phase. The building phase completes the work as the final prototype and research questions raised by the company have at this point been answered.

5 Theorizing phase

5.1 Interviews

The first task of implementing gamification was to find the business and audience goals present in the Caspeco software. Semi-structured interviews were used as a method to both gain knowledge about these goals and also about how the system works and what some of the current flaws of the system were. As the author did not have any real users available the author had to improvise. It was decided that the support staff working at Caspeco should be the ones to be interviewed, as they had knowledge both about the system and common issues that users had. By talking to users daily, these were the closest contact the author would have to real users. These interviews were set to be 40 minutes long and some questions were made in beforehand to give some structure to the procedure but were otherwise improvised. These questions were:
• What is the most common question asked when users call?

• Is there some commonly asked question that you feel should be obvious but is not?

• Is there some part of the system where you feel right now is less clear or that even you do not fully understand?

• If a user comments about the systems, what do they usually say?

Each question would often be the starting point for larger conversations which would also give more follow-up questions. After asking these more specific questions, the interviews were concluded with a segment where they got to talk about the system in more detail and explain how the system worked. This was done as a way of letting the author gain more knowledge about how the system worked in more detail. The results from these interviews were then used to get a basis for what overlapping business and audience goals could be focused upon. Caspeco wanted to make their software more motivating to work with, which could then make more companies interested to work with them. Users did also not always complete the tasks required for the system to work properly, which might then lead to them not using the software at all.

5.2 Studying litterature

When designing a solution using some method, the designer must also have a good grasp of said method. Researching gamification and how one applies it in a professional setting was a key component and one of the research goals set at the beginning. As gamification can have negative consequences if not integrated properly into some software solutions, it was quite important to grasp the concept better. Gamification was therefore researched for the reason of understanding how to use it properly in a workplace environment. The literature study was done using literature databases online using search terms such as ”gamification” combined with ”professional environment”. Articles such as ”The Lens of Intrinsic Skill Atoms” were found which describes a method of implementing gamification[7]. Researching these articles there were two major takeaways. One must find better material about what actually makes gamification motivating and there had to be more research on the theory of
flow and intrinsic motivation. More research using literature databases was then used using this new knowledge, but this time words such as "flow" and "gamification motivation" were used instead. This new research gave way to even more articles and even books such as "Gamify" by Burke Burke[2]. At a first glance, most texts found about gamification highlights points and badges as the way of implementing gamification. After doing even more research there were more and more texts that highlighted the bad parts of extrinsic motivational tools. It was then decided that an environment using gamification should focus on intrinsic motivational tools over the more popular extrinsic ones. After gaining this new knowledge about intrinsic motivation it was tied together with the theory of flow as these matched quite well. Finding a balance between skill and challenge, having a juicy feedback system, and relieving the user of distracting elements are some of the key points that were highlighted during this phase.
5.3 Assumptions

As the system was quite large and had a lot of different functionalities, the work had to be narrowed down somewhat in order for the author to be able to have any meaningful progress with the limited time available. As the home screen is the first thing a user sees when they enter the system, it was decided to be a good representation of the whole system. An example of how this homepage looks in the current version of Caspeco cloud can be seen in figure 1

Using the knowledge gained from the interviews about the system and its users, some assumptions had now been made and put into a list. The final list of assumption made was as follows:

- The target users of Caspeco cloud are mostly administrators such as employers and payroll managers.
- Users have employees who needs to have their information stored. This information is then used for the employee management system.
- Users become overwhelmed by Caspecos wide variety of functionalities which could make it hard to start.
- Users have a wide variety of skill levels when entering Caspeco cloud.
- Payroll managing is hard to understand without proper training.
- Not every user of Caspeco cloud has had practice of payroll managing.
- People want to have a quick way of seeing the most important tasks and information that need to be completed.
- People become angry and frustrated when completing tasks that they feel are over-complicated.
- People want solutions to problems to be quick and easy.
- People are more motivated to solve a task that matches their individual skill level.
• People would rather call support than reading through manuals or watching videos as these can be tedious and not offer the direct solution to the problem at hand.

• Users are not finding results analyzing to that interesting of a feature.

• Using numbers as a means of addressing people makes them less personalized.

• Tasks that need to be done can be both too easy and too hard to do.

• People do not read Caspeco news as they are not that interested about them even if they could be important.

• Presenting a large number of tasks that need to be done can be demotivating.

Using the knowledge gained from the research section about gamification together with the assumptions about the system it was all then brought into the hypothesis phase.

6 Hypothesis phase

Hypothesizing ideas using the assumptions and knowledge learned about gamification was the focus of the hypothesis phase. In order to create good hypotheses, the assumptions made in the theorizing phase were used to create qualities of a good solution. In this phase, the author could be quite free and creative which allowed for more ideas and qualities to be made. All of these would then be discussed and falsified in case they did not match up to user needs or goals. These qualities are statements that every solution later presented has the goal to fulfill. If a solution is presented that does not fulfill any of these qualities, then it can be deemed a not very good solution. When an idea comes up that does fulfill at least some of these ideas then that idea could be worth looking more into. The qualities made are stated as follows:

• Inform user of important tasks that needs to be completed for the rest of the system to work. Information that employees need to fill out, scheduling changes and holiday handling are some of these.
Motivate and engage users to complete important tasks that need to be completed for the system to work properly.

Motivate users to read Caspeco and internal company news.

You should be able to understand the functionalities of the page without a salary background.

Give the user a sense of connecting and socializing with the employees

After the literature studying and comparing other cases using extrinsic and intrinsic motivation the author had decided to focus more on intrinsic motivation in this case. These qualities and assumptions made which could be used to create a new homepage for Caspeco were then discussed. At the end of the discussion, it was agreed that these were all correctly made statements that could work in creating a design if the problem was correctly stated. Later on it was decided that qualities such as motivating to read news should be removed as this quality does not have anything to do with the user goals set out earlier.

After the interviews, the new knowledge gained about gamification and the qualities made it was now possible to predict as to what user and business goals would overlap. The two goals that did fit this goal were the business goal and the user goal of finishing important tasks which are needed for the system to work properly stated in the interviewing section. As these goals are very similar for both the company and users, they could be combined to find a solution that would both benefit the company and the user. If users felt more motivated to finish tasks that must be completed for the system to work properly both users and the company would benefit. These are then the goals that one can work upon to make the system more motivating. The business wants to make people more motivated to complete tasks because this could lead to more customers. The users that want to use all the different functionalities also want to be more motivated to complete the necessary tasks. As stated in the interview section it was therefore decided that the focused goal was to make users more motivated to complete the most important tasks that the system needs to function properly.

Using the overlying main goal of making users more motivated to complete tasks, the assumptions made, the qualities of a good solution, and the examples some ideas were starting to appear. These ideas had to then go through
the qualities of a good solution that had been made. If the idea passed some of the qualities, then it was determined that it was an idea worth looking more into. Presenting hypotheses is done to both see if something could be a good idea and to break bad assumptions and qualities made earlier. As the primary objective of the report is to incorporate gamification while solving these issues an overlying thought for these ideas was to promote an environment where flow can appear. Iterating over these ideas was then later done together with employees as Caspeco. Some of the ideas that were brought up and later used for the prototyping phase in order for users to be more motivated to complete tasks were:

- Users should not have to look at a long list of every task available when starting the software. Having a long list of tasks can be directly demotivating. Instead, present a smaller list of tasks that is more manageable for a user to complete. This way would both inform the user and could motivate them more in completing them. This idea could be represented with a taskbar that will be filled up with daily tasks one needs to complete.

- Using numbers representing people is not directly giving a feeling of connection to employees. The socializing and connection goal would then be represented in the design. Using profile pictures and names instead of a number is one idea of a solution.

- The progress the user makes should be presented in some form to let the user know that they are on the right track. This would help with the motivating quality.

- When completing important tasks, the user should be removed from other distracting elements that are presented on the home screen.

- Users are not using the result analyzing tools available. If this is made in an environment where flow might appear it might be users might be more motivated to look at these tools.

- News is an important part where Caspeco wants users to actually read their news. If this can be incorporated into the list of the task idea, then users might be more motivated to look at the news.
• Users should have a sense of connection other than just showing profile pictures. Information such as upcoming birthdays could be highlighted and presented to the user.

These were the ideas that passed the qualities of a good solution made in earlier sections. As all of these could potentially be good ideas it was decided to try implementing them all combined as many as possible into the prototype. An example of an idea that did not pass the qualities check would be the idea of adding profile information about employees to the homepage. A clearer example of this would be to add information such as gender and location directly under a profile page. As this information is not that important in this scenario the only quality it comes close to achieving is the last quality. It was decided that this idea does not achieve the quality and the idea was then removed. After iterating over a large number of ideas the final ones were then taken into the prototyping phase.

7 Prototyping Phase

Using digital software the author could now start to build prototypes to showcase the hypotheses made in the earlier phase. There is a large variety of tools that can be used to design iterative interfaces and in this thesis, Figma was chosen. As there was a lack of time it was decided that this software would be used for even earlier low-fidelity prototypes instead of alternatives such as paper-and-pen ones. Because of the lack of experience working with Figma, this process also took more time than was previously planned.

Starting off these prototypes would be done in a low-fidelity fashion and the best ideas would be taken and towards the end of this phase be transformed into a high-fidelity prototype. Each iteration made in the lo-fi prototype group had the same goal which is to experiment and implement ideas that achieve the qualities of a good solution made earlier. The difference between them comes down to what other ideas and qualities of a good solution they strive to achieve.

In the high fidelity prototype, the ideas and elements chosen were now deemed good enough and now the focus lay more on designing the user interface in such a way so that users could interact with the ideas. Each iteration every but the last one had some type of reviewing done to
decide which parts worked and which did not. This was to make sure that the ideas that were used in the last phase were only the ones that would have the most beneficial impact.

7.1 Low-fidelity prototypes

The most important goal for prototypes made in this section was to showcase the ideas made in the hypothesis phase in a prototype. This would then give the designer an example look at how these ideas would be implemented in a professional environment. This overview would then allow the designer to iterate over these ideas until a satisfactory design and choice of ideas were made which would then be taken into the high fidelity phase.

It was decided that the most important feature that the design should include was an easy way to handle a smaller number of tasks. This meant that the prototype had to have some part of its homepage dedicated to showing a smaller chunk of tasks that users would not feel demotivated in completing. The number of tasks that should be shown should be large enough that tasks are done at a good rate, but never exceed the amount which gives the user a feeling of demotivating. It was decided that the number of tasks shown should start off with five tasks where the amount could be changed later.

Giving the user a sense of connection with their employees or coworkers is a large part that could potentially motivate them to work in this environment. Showing profile pictures, using real names, and highlighting some upcoming events might give a user a sense of connection that they might otherwise miss out on. As a feeling of social connection can give a user a stronger sense of engagement this was thought of as very important.

One last focus would be to implement some analyzing features that would provide users with a way of interacting and motivating them. One idea for this was to implement a feature where users could set their own result goals. This would then work as a sort of game where they could feel more motivated into completing their own set goals.
7.2 First iteration

Figure 3: First prototype home screen. Tasks with feedback and employee information are at the top half. Analyzing tools and information are towards the bottom half.

Now it was time to design the first iteration of a prototype using these ideas. As stated previously the most important feature that should be included was to make the tasks more motivating to complete. This was done by showing only five tasks at a time when a user connects to the system. These tasks were then connected to a circular progress bar at the top of the tasks. This provides instantaneous feedback to the user and motivates them to finish their tasks, and this can be seen in the top left of the white part of the home screen.

Making sure that users felt more of a connection to their employees or coworkers was done by adding profile pictures, names, and two separate panels. Each panel has its sole purpose to show the user some information regarding these people. In this case, the first panel is both used as a way of giving the user a more socializing connection but also to inform them that the tasks they have done have achieved something. These panels can be seen in the top right of
the white part of the home screen in figure 3.

Figure 4: First prototype analyzing tool. Users can add their predictions in the highlighted bar

It was also decided at this point of time that, if possible, the prototype should also try to make users more motivated to make use of the analyzing features that Caspeco provides. Making analyzing more motivating was done by providing users with an environment where flow could hopefully be achieved. Making this part of the prototype have a balance between challenge and skill while also removing unnecessary distractions while completing the task was the focus of this part. This was done in an attempt to try to facilitate an environment where flow could arise for the user and can be seen in figure 4.

7.2.1 Review of first iteration

The first iteration was quickly reviewed by mostly the author himself as the designers at Caspeco were not available. As presented in the design method
one should continuously iterate over qualities and assumptions even during this phase. By going back and comparing to what the actual assumptions, goals, and qualities for a good solution were, it was decided that this iteration focused too much on an irrelevant feature. It was earlier assumed that the users of Caspeco cloud were not very interested in the analyzing systems that Caspeco provided. Neither were these systems very important for the rest of the system to work properly. It was then decided that for the next iteration of a prototype, the analyzing feature would be removed, which would open the home page for more important features. This feature could also make it harder for users not having a salary background to easily start using the system, which was one of the qualities. Some more work on the actual visual design of the website could be looked upon. As an example, it was thought that the white color used in the background of the homepage could have a more vibrant color. As this is not a very important element of the design and especially the low-fidelity phase, this was put at the end of the list of elements to be implemented. The task section was thought of as a good idea and was decided that it should stay for the next iteration.

Another thing that would be changed in the next iteration was that there are a lot more different types of tasks that should be showcased. In the current systems, there exist more tasks that are not only dedicated to accepting and declining employees. Another type of task that could be present would be employees asking for time off. These tasks would then come with their own problems that would have to be addressed later.

There should also exist a quick and easy way of completing these tasks directly on the homepage in order for the user to clearly see the feedback bar progressing when completing tasks. One idea that came to mind here was to simply add buttons for accepting or declining these tasks. This would then allow the user to complete tasks quickly and directly on the homepage.

The sections showcasing upcoming birthdays and other types of information were thought of as giving the user a positive social connection, so it was decided that this feature should stay for the next iteration.

Providing the user with feedback for completing tasks is an important feature of this prototype. An idea that came up in this review was that one could in some way combine this feedback with the task section of the web page.

One feature that was felt as missing from the current system was to be able
to quickly access a page where the information regarding which employees had filled out their information or not. It was decided that this idea should be implemented but only if there was enough time available. If there was a lack of time then this idea would not be implemented and instead mentioned for future implementations.

All of these ideas and decisions were then brought back to the drawing board and the process of creating a second iteration of a prototype could now begin.

### 7.3 Second iteration

#### Figure 5: The second iteration of a low-fidelity prototype made during the prototyping phase

Using the knowledge gained in the first iteration to create a better version was the goal of the second iteration. The second iteration sought to use elements that were thought of as good and better or entirely remove the parts
that did not provide anything or harmed the prototype. The first action that was taken was the removal of the analyzing section of the home screen as it was thought of as not aligning with the rest of the goals and qualities. This part was removed and instead replaced primarily by a news reading section. This section was present in the current version of Caspeco cloud but not in the first iteration. After reviewing the first iteration it was decided that the news should take its place as that was an important feature that Caspeco wants to keep quickly accessible by users. The first thought was to add this functionality into the tasks section of the web page as this could potentially motivate users to read more news. It was later decided that this was not going to be implemented as the specific quality of "Motivate users to read Caspeco and internal company news." was revisited. As this quality was discussed a bit it was made clear that this quality of a good solution was centered on achieving a company goal rather than a user goal. As this quality was falsified it was removed from the list of qualities and the idea for this feature was scrapped. News is still an important tool for the business though so it was decided that this feature should still be incorporated into the prototype in the same fashion as it is implemented in the current software. A news bar was then added under the task section.

The feedback system from the first iteration was in this iteration incorporated into the task section itself which then gave room to a welcoming message for the user at the top. The taskbar itself was also modified to now incorporate a larger number of different tasks. As shown in figure 5 one can see that there were now employee and schedule tasks which are named "personal" and "pass-uppgifter" accordingly. These two types of tasks were separated with a black line to clearly separate that these two types of tasks were different. There were also buttons added to each task so that the user could more easily progress and get feedback from the bar on top. When a new employee wants to be added to the system the admin must first accept or decline them. This was now easily done directly on the home page with the accept and decline buttons added to the employee tasks in the prototype. As scheduling tasks are hard to solve without seeing the whole schedule, a button was added, which if pressed, would put the user in the scheduling part of the application. As the scheduling was not a part of the focus of this work, this was not intended to be very interactive in the prototype. The feedback system in this version was the same as in the first iteration. When a task was completed, the feedback bar would progress which would then, in
theory, motivate the user to complete all tasks.

Finally, there were some more sections added, which were primarily focused on giving the user an even stronger feeling of a social connection to their employees, but also some that could give an employer some good information. In these new sections, one could now see both the end date and holidays of employees. Both of these sections can add a more social connection feeling to the user, but also have a good separate reason for existing. An employer might want to know that there are going to be some employees on holiday in the week for example. These functionalities are not existent in the current version of Caspeco cloud and are not specifically part of the assumptions and qualities, but they were thought of as having a good enough functionality, so they were allowed to stay in the prototype. There was also an added text that states “Se anställda” using a blue font in the top left section of the web page. This text acts as a button which was made because of Caspeco wanting quick access to showcasing employee information to the user. Specifically showing which employees had not filled in their profile completely. This page was not made as the author wanted to review this functionality before committing to designing a whole new page.

7.3.1 Review of second iteration

Reviewing the second iteration of the web page was mainly done by the author and the thesis reviewer. Most of the features that were made were thought of as done well and were fulfilling their intended functionality. It was decided that some features could be missing from the prototype and that could be added. The task page was not specifying if the tasks had to be done at a specific date or not which could confuse the user. The reason why only showing five tasks instead of the list of all of them could also potentially confuse the user. It was then decided that the tasks shown in the taskbar would be daily tasks. These tasks would be meant to be completed daily which would in the long run make sure that the user would complete all tasks. If these tasks were meant to be done daily, then there should also be some sort of functionality to delay a task if the user feels that they do not want to finish the task on that particular day. As an example, the user might want to wait and gain more knowledge before deciding if to accept the application. Separating the two different types of tasks with a black line could potentially
be confusing for the user, so it was decided that all types of tasks should be combined into a single list of tasks instead. One of these different tasks that could be present in the taskbar that had to be more looked into was a holiday acceptance task. When an employee wants to have a holiday, an employer must accept this time off. An employer should be notified in some way if two or more employees are requesting to go on holiday during the same time period. If multiple people go on holiday during the same period, this could potentially cause business problems. This meant that the final prototype should consider this and have some sort of warning and holiday planer which could make these decisions easier for employers. These suggestions for new functionalities were then added to the assumptions and qualities of a good solution as they were deemed important enough.

Having a large red button displayed beside every accept button was also discussed during this phase. It was decided that this large red button could be intimidating and that users could then be intimidated away from pressing it. It was decided that this button should only be shown when a person is absolutely sure that they do wish to decline an application.

It was decided that the news and social connection parts of the web page were good enough and fulfilled their intended functionality which would allow them to stay as they were for the next iteration. All of these suggestions and ideas were then brought into the final section of the prototyping phase with the intention of designing a high-fidelity prototype.

7.4 High-fidelity prototypes

The high-fidelity section was dedicated to improving and finalizing the now-created low-fidelity prototype. This prototype would then later be tested by the same support staff in user tests which would then show the author the results if gamification could have beneficial effects. This phase would mainly be focused on making the current sections of the low fidelity prototype more interactive intended for these tests to give as good results as possible. There were also some ideas of changes and added functionality brought in from the earlier iteration which would have to be addressed.
7.5 Third iteration

Implementing the ideas from the earlier iteration had to be done at the start of this phase. The work of implementing these ideas would then be combined with improving and adding more interaction to the overall design of the prototype to make it into a high-fidelity one. Some of the ideas that were brought into this design from the previous one were first the removal of the decline button from the home page. The location of this button was changed into a task description page which can be seen in figure 7. This new page can be accessed by clicking on one of the tasks about accepting a new employee. Most of the time these applications would be accepted and it is only in special cases where they will be declined. Removing this button from the home screen makes the task then easier to accomplish by the user.
Replacing the decline button there was now instead of a delay button in the form of a clock added. This button can then be used to delay tasks in the case where a user cannot decide on a particular day what the decision should be. Delaying tasks should not be something that can be done forever as these tasks need to be completed at some point. To combat infinite delaying a notification was added when one has been delayed too many times. This notification will tell the user that they cannot delay the task anymore and that it needs to be completed today which can be seen by the red circled exclamation mark in the third task presented.
There was also work done to incorporate the new type of task into the taskbar. At first glance, a holiday request task should not have been that hard to implement into the current prototype, but it was a more problematic task than it first seemed. This is because these types of tasks should be able to inform a user when holidays of multiple employees are planned for the same dates. If these tasks are blindly accepted by the employer this could potentially cause the company a lot of trouble when multiple employees are going on holiday at the same time. In order to combat this scenario, there was a whole new system added to let employers get an overview of currently planned holidays. On the homepage, there was now some more notifications added (see figure 6). If two or more employees are requesting a holiday on the same date, one notification will be shown in the taskbar indicating that there are two or more planned holidays for the same date. To solve this the employer needs to go into the new holiday planner page where they can in more detail accept or decline these holidays. This new holiday planner can be seen in figure 8 and shows where the employer can plan these holidays. This is also done in a separate pop-up page featuring profile pictures and removing distractions in order for the user to be able to completely focus on the task ahead. This can then facilitate the presence of flow to appear in the environment.
Together with all of these elements the prototype was also made much more interactive. For example, one could now press the accept button on the home screen and the results would then present to the user as shown in figure 6. Each task had its own description page, and each news story could also be interacted with. The ”se anställda” button could also be pressed to access a page where every employee and the status of their profile could be shown to the user. With all of these new interactions and features, it was now time to test them using user testing to see if the outcome would match up with the expectations.

7.6 User testing

User testing was done to see if users’ reactions to the added features would be beneficial or harmful. These tests were planned to be 45 minutes long and were conducted by the author. The test was semi-structured, and 30 minutes were planned to let users test the system on their own. Testing would not be structured, and the method was to simply let the user play around with the system while asking them to talk about the thoughts they were having while interacting with the prototype. After the testing, a semi-structured interview was held for around 15 minutes but depending on the feedback these interviews could be longer.

The user group chosen for these user tests was the same group of support staff that was interviewed at the beginning as the author did not have access to real users of the current system. A total amount of five people were interviewed where three people which included three males and two females. They were chosen because they were the closest to real users that the author had access to. These people were not presented with the overall goal of the prototype which is to improve motivation using gamification features. They were simply told to test the functionalities presented in the prototype and report their thoughts to the author.

7.6.1 Testing

During the testing of the system, the users were asked to talk out loud about the elements of the prototype as they interacted with it. When pressing a button, they were asked to beforehand describe what they thought that the button would do. As completing tasks was the focus of the prototype
this is where most of the interaction was held. Users could quite easily
detect the feedback bar that was added and concluded from that that the
tasks under were connected to it. They could also quite easily complete
each task that was set for them by both using the task description page and
also just pressing the accept button in the home screen. Most users had
trouble understanding the functionality of the delay button from just seeing it
and it had to be explained after the tests during the interviews which
indicate that the button should indicate its functionality in a better way.
There were also some troubles understanding the schedules shown in the
holiday planner functionality. Most users could complete the holiday tasks
shown but some users did understand how this could be used by employers
to ease the process using the schedules shown under them. There were also
many comments regarding the lack of showing employees’ profile status which
could be accessed by pressing the ”se antällda” button. As many had trouble
finding this page this could then indicate that this button might not be the
most optimal solution for this task.

7.6.2 Semi structured interviews

After letting users test the system on their own, there were some questions
asked. These interviews were semi-structured as there were some questions
planned but the conversations were allowed to differ from these planned ques-
tions. Follow-up questions were also asked if it was decided that more feed-
back was needed. Some of the questions here were not specifically asked but
answers to most of these overlying questions were given during these discus-
sions:

What did you like or enjoy from this prototype?
The most common answer to this question was the added profile pictures
and the quick way of completing important tasks directly on the home page.
Having some tasks appear directly when you access the prototype and be-
ing able to quickly complete them was very much liked. It was a common
comment that the added profile pictures added a bit more life to the system
as it shows the user directly that they are working with real people. The
added feature of having a quick holiday planner directly on the home page
was also mostly liked by the testers but they wanted it to present the data
better. Many people also liked getting direct feedback when completing tasks
by having the feedback bar present.
Was there something that you did not like?
Not all of the people present for these user tests did have a direct answer to this question. Some commented about how the completed tasks stay present on the home screen after being completed. They thought that these tasks should be removed to give more of a satisfactorily feeling when the list is then empty after completing all of them. Some of them commented about the functionality of the delay button and that it should be more descriptive. When asked more about the button a few commented that they thought it was not a very useful feature to be present. Some of them also did not enjoy that they had to access the task description page in order to decline tasks as it became a bit tedious.

Was there something that you felt was too complicated or hard to find?
Most answers to this question were about the holiday planner feature as most of them found the holiday scheduler hard to understand. Most of them commented that they understood the thought behind it but that it should add more descriptions about specific dates. They also commented that they wanted to have some feature where they could click on already accepted holidays and see their descriptions in more detail. Many of the testers wanted this feature as they felt it was missing from this prototype. Another feature that many wanted to have from the current system that they did not find in the prototype was the page showing employee profile status. They wanted to be able to quickly see if employees had filled in their information completely and if not send them some kind of notification to do so. This feature was present by accessing the page by clicking the ”se anställda” button. As not everyone found this feature at all this could implicate that it should have been designed to be more easily accessed or even added these tasks into the taskbar directly as these are important tasks.

Did you feel more motivated to complete tasks?
The consensus here was that the added functionalities of feedback bars improved the motivation for users to complete the tasks. Providing direct feedback to the user when completing each task felt rewarding, which motivated them to complete every task shown. Presenting only a handful of tasks were also thought of as a very good idea as it limited the feeling of anxiety that could arise when presented with instead a long list of tasks. Having a system of completing a smaller set of daily tasks instead of the alternative
was highly liked. In addition to these thoughts about the task systems they also enjoyed being able to see the profile pictures of every employee directly in the home page. Some of the support staff told the author that the implementation of these pictures connected them more to the user which made them feel even more motivated to complete the tasks they were connected to.

Was there something that made you feel less motivated to complete tasks?
The only real answer that were given to this question was given in the form of tasks not being removed from the task bar. One tester did not enjoy them staying around and found it to be a bit annoying, which could then lead to less motivation to complete the tasks.

8 Discussion

This chapter aims at discussing the different areas of the report including a discussion about gamification and how the research behind it affected the rest of the work. Different obstacles are discussed like how there was no connection to actual users and how that might impact the results. Finally, the discussion is concluded with a list of each research question that was presented at the beginning of the report and the answers that were found during the process.

8.1 Discovering Gamification

Gamification is quite a broad subject and that became quite obvious during the research phase where gamification was researched. Entering this phase, the author thought that an almost sufficient amount of research on this subject had already been done during previous work on the subject. After some time researching the subject, it became obvious that this was not the case as more information revealed that many of the things that were thought of as obvious things were not so obvious after all. There is an infinite possible way of implementing gamified elements into the software. Even within specific fields such as healthcare and education, there are many different ways of implementing it and it can be quite tricky to find the best suited for each specific case. Therefore there had to be more research done on the effects of real-world examples where gamified elements had been implemented and
what specific elements caused these effects. In the literature found during research on gamification, it was often highlighted as giving positive results in motivating users. It was often unclear, if these results actually came from these introduced gamified elements as there was not always something to compare the results to. As the results can be quite unclear, it became even more difficult to research and assess what parts of gamification would be suited to introduce in Caspeco’s software. As gamification can be incoherent, it can be quite hard to generalize the results. There are some articles that try to create guidelines as to how gamification should be included, but as these were also very different from each other, it was decided to not use these. It was instead decided to research the most popular elements of gamification that were used. Leaderboards, points, and badges came up time and time again which should have indicated that these are elements worth looking more into. But as more research was done it was shown that these extrinsic motivational tools have a darker side to them. These elements can have a reversing effect, making people even less motivated to complete tasks instead of motivating them. These results show that gamification is not always combined with positive results. There are times, such as in the Disney example, where inclusions of gamification can in real world scenarios give way to disastrous results. It was discussed in the related work Disney chapter that it should be the designer’s responsibility to create designs that will not cause any harm to users or others. As extrinsic methods both could cause harm and also make users feel less motivated it was decided that alternative methods such as flow and a focus on goals that focus more on intrinsic motivation should be researched instead. Intrinsic motivational methods seemed to have more consistently positive results and have fewer risks of harming users attached to them. The author still had to be cautious about using these methods, as they are in no way guaranteed to not lead to harmful results. To be sure that the Disney case would not be replicated in this scenario, there was a large focus on users and their goals throughout the whole process by using the design method of Theory of use. In the earlier sections, it was made sure that the user goals and needs were understood as well as possible so that those could be taken into the prototyping phase later on. To make sure that these ideas were indeed as close as possible they were constantly challenged throughout. Even during the prototyping phase ideas such as news being a good quality of a solution were challenged and later removed because it was more of a business goal rather than a user goal.
8.2 Design method and interviews

Design methods often use user tests and interaction with real future or current users to give the designer a good view of what the users want. In gamification specifically, Burke describes that a designer needs to know what goals the users have before making any attempts of designing solutions\cite{2}. Researching users and finding their goals and struggles with Caspeco cloud became an early priority. As the design method used in this thesis is made for designers to have to rely less on their own decisions about user needs, users had to be interviewed so that they could give their thoughts and opinions throughout. Interviewing real users and letting them correct and falsify ideas and theories during the whole process would have been a more correct way of implementing the Theory of use method.

It was during the initial phases of the work the author was told by Caspeco that they could not provide any real users for interviewing. As these interviews are a vital step in designing software, it would become very hard not having these interviews. They are needed to assess user goals for both the method and gamification as a whole. As the method of choice relied on interacting with users, there had to be some sort of compromise so that the method could still be used. Real users were replaced with the support staff at Caspeco during this work, as they were deemed to be the closest to real users that could be accessed by the author. The interviews they participated in did have a great positive impact on the whole process as these interviews helped falsify assessments about users and their needs both during the early and late parts of the work. They could also provide some of the issues that many people reported with the current version of the system. The interviews helped the author grasp the users’ goal had for the system but also gave the author a better understanding of how the system worked. Unfortunately, it was still very hard to gain a grasp of the goals that real users might have as there was no availability to speak to them directly. If these interviews had been done with real users, this could drastically have changed the outcome of this work as these goals could have been better specified. They could have also helped falsify the ideas that the author made so that the final product would benefit them as much as possible. It is likely that the goals and assumptions of users made are not completely correct as to what users’ real goals and needs actually are. Although the interviews with the support staff did give good enough results that the work could continue the lack of users’ goals and views of the system impacted the rest of the work. If real users
would have been available, the assumptions and qualities of a good solution
could have been evaluated more thoroughly to get a result that would match
real user goals better.

The lack of users also became apparent in the later stages of the work, as
the user tests were being done. If real users had been present at these tests,
it could have been decided here if the goals set by the author match the
real goals of the user. As this was not the case, it is very hard to land in a
conclusion that the design is successful.

8.3 Prototyping, Figma and user test evaluation

The earlier prototypes made in this work had the one goal of letting the au-
thor gain more knowledge about what elements worked and which did not.
Each prototype was made in Figma and was then presented for review. Ev-
ery prototype designed fulfilled this one goal, as every prototype made the
author knowledgeable about something new that was not thought of before-
hand. As the last iteration gave results that indicate that the users would be
more motivated to complete the tasks it can be summarized that the goal of
the work was fulfilled. One thing that could have been done differently would
be that the first iterations should have been done on paper and pen. Instead,
it was chosen to skip these and jump directly into Figma. If done on paper
and pen there could have potentially been even more ideas discussed. This
could then have led to entirely different results. As these prototypes were
not low fidelity, it made the author more hesitant to make larger changes to
the ideas.
If more time was given, the final prototype could have been made with soft-
ware such as HTML instead of Figma which could potentially have given an
even more realistic and interactive final product.

Summarizing the results from the final user tests, with the support staff
at Caspeco, gave a message that the final prototype did what it was set out
to do. According to the supporting staff, these new gamification features
would probably give a user more motivation to complete their goals. Most
comments asking for improvements or disliked parts of the prototype were
more centered towards the design of the prototype or adding or changing fea-
tures so that they were easier to understand or find, instead of the features
being bad per se. An example of a disliked feature was tasked staying on the
home page after completion, which could then be changed in future work. One can then conclude that the implementation of gamification features into the system would mostly have beneficial effects on motivation and engagement.

As discussed earlier, it can be hard to make this conclusion as these were not real users interviewed but only as close to real users as the author had access to. One needs to keep in mind that the support staff at Caspeco cloud could also be a bit biased, as they are clearly in favor of their software being very good. These results have to therefore be taken with a bit of caution in mind.

Finally, there could have been a need of introducing more elements that could promote a feeling of flow in the software. Particularly in elements that add some more challenge to a user. Adding some balance to the user’s skill level and the presented challenge is one of the largest elements in promoting a feeling of flow (described in the flow section). In the resulting prototype, there is a clear lack of challenging tasks, and this is because of the narrowing down section. As it was decided that the focus should be to motivate users to complete the tasks shown on the home screen, it was quite hard to come up with an idea that fulfills this flow element. Introducing challenging elements just to make the task harder is also not a good solution, which resulted in the final product focusing more on removing distractions and adding social elements such as profile pictures instead. If more prototypes had been done early, maybe there could have been some solution presented that could have connected the skill level to the challenge level better.

If more challenging tasks could match users’ skill levels, the probability of flow appearing in this environment could increase drastically.

### 8.4 Research Questions

**Can gamification be designed for a professional application?**

Gamification can be designed for professional environments, but one needs to be careful when implementing it. Simply introducing a leaderboard system can give disastrous results as presented in the Disney case. It can also give really good results such as in the Superhuman example. While designing a gamified solution it is important to make sure that users’ goals and business goals are aligned and that both can be fulfilled at the same time. This can then create a motivating environment that could benefit both users and businesses alike. The results from the tests of a prototype using gamified features
conducted during this work show that it would have beneficial effects on user motivation. These results must though be taken with caution, as gamification needs to have the correct user goals present to create a motivating environment and no real users were interviewed and tested during this work.

**What is important to think about when implementing gamification?**

User goals and needs have to be one of the top priorities when designing for gamification, as designing without these in mind can lead to negative consequences. While designing, the designer need to be aware of the risks that are involved with introducing motivational tools into some software. They need to understand that they are the ones responsible for the positional harm that could come with introducing these gamified elements. Even if these things are kept in mind, it is still not an easy task to create a motivational environment. Simply adding points, badges, and leaderboards, could result in having the complete opposite reaction than what was wanted. Users can feel even less motivated to complete tasks and will only do them to gain some extrinsic reward. If a user then do not get or do not want these rewards, users might stop doing the tasks altogether. Therefore, a designer should focus more on intrinsic rewards when creating gamified solutions. Superhuman is an example of this where they made reading emails more motivating by introducing fun elements into the activity itself. This is best achieved by focusing on goals, flow, and social connection. Making sure that user goals are met is crucial in making the task motivating. Finally, social connections are one of the most motivating feelings that there are. Making people feel a sense of connection to those they are working with can greatly improve their sense of motivation. All of these elements can, if the user goals line up properly, be combined into a motivational environment for users.

In order to implement all of these motivational and engaging elements, one needs to have a good understanding of what the users’ goals and needs are. Letting users be a part of the design process and helping falsify incorrect assessments of what users needs can let designers be more creative and focus more on implementing these gamified elements.
9 Conclusions

The goal of this thesis was to research if gamification could be incorporated into professional software to increase user motivation. The work started with a theorizing phase where interviews and literature studies were done to gain more knowledge about the subject and Caspeco’s software. Hypothesizing was then done to combine the knowledge from the studies together with the knowledge about the system to come up with design ideas. These ideas were then made into prototypes, from low fidelity ones to much more interactive high-fidelity prototypes, showcasing all of the elements and functionalities thought off in the earlier phases.

Reading other studies about the concept of gamification resulted in the decision that gamified elements that focused on extrinsic motivation carried too many risks as many of these could, if done even slightly incorrectly, cause literal harm to users. It was also made clear that the user should always be in the center when designing and that their goals need to match up with the business goals in order to create good gamification.

As there were no real users to interview during this work, they got replaced by the support staff at Caspeco. During the final user test, it became evident that the support staff liked the added motivational elements, and the only comments were about changing icons or adding functionality. One can then conclude from these tests that gamification can indeed be implemented into a professional environment when users’ goals and needs are satisfied. Using elements focusing more on intrinsic motivation can create an environment where the motivation and engagement come from the activities themselves instead of the rewards they might give.

As gamification can indeed be implemented, if done correctly, in a professional environment, Caspeco could now take this information and put it to use in the future. As the design made in this work is more of a hypothetical solution to a problem that might not be correctly made due to not having contact with real users, Caspeco would have to remake the design process if they want to create a gamified solution that is suited for real users. If real users would be interviewed during the whole design process, they could help falsify assumptions and qualities and help them create a final gamified solution that directly satisfies real user goals and needs, which could then help their motivation and engagement.
10 References


