



# BETTER WORLD FASHION

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## Title

Better World Fashion

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## Abstract

This 6th semester Medialogy bachelor project represents a journey from receiving a project proposal from Better World Fashion, to creating and evaluating a conceptual prototype with their users. Better World Fashion, or BWF, is a company that focuses on creating sustainable leather jackets from reusable leather. The proposal asked how implementing material heritage and gamification could extend the product life of a companion app to the jackets. With this, the group set out research and design a conceptual solution. This was later implemented through a use case prototype, that was evaluated with several other Medialogy students and BWF users. From the evaluation it was concluded that the prototype lived up to the success criteria set during the design phase, and that there were indications that the supposed design increases uptake and extends product life.

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Reimer Ivang for meeting with us and inviting us to Forårsmessen. He always seemed ready for answering questions, giving necessary information and contacting users for the evaluation. As well as being very supportive of this project and our ideas. In general, the collaboration with BWF has been fascinating and educative, as well as very inspiring for us.

The students from Medialogy and Architecture and Design who assisted us in the evaluation and gave us precious time even though they were busy themselves. Also to the BWF users who took time out of their calendar to test the app and answer the questionnaires. Special thanks to the dedicated user who showed up and participated in the interview.

# Introduction

This project starts out with a proposal from Better World Fashion. Better World Fashion is a company with a sustainable, business philosophy trying to battle the current ideas of fast fashion and consumption with the use of material heritage. This material heritage can be seen as patina and is integrated into leather jackets to accumulate more value over time instead of the usual opposite. Their proposal was to investigate how to combine a material heritage app and gamification to prolong product life.

Looking more closely at BWF as well as meeting with Reimer Ivang, one of the founders of Better World Fashion, was among the initial steps to understand the proposal better. This also gave an idea of what to research on. Thereafter, scientific research as conducted towards material heritage with focus also on the virtual aspect, gamification, sustainable behaviour and environmental effects and definitions of communities. These areas all gave a broader, scientific background knowledge from which research questions could be formed and design directions set.

The project then investigated how to integrate virtual material heritage and apply game design elements into a mobile application. Five project-defining success criteria was set up around these questions to later evaluate whether the goals had been achieved. This sparked the beginning of a user experience focused, iterative design process ending in a Hi-Fi test to evaluate the current functionality and interaction level. Afterwards, a prototype version was implemented with an emphasis on front end design rather than back end functionality. This focus went hand in hand with the conceptual angles from the proposal and the questions we were trying to answer.

The evaluation of the prototype was structured to give a holistic reflection of the application as well as testing the needed concepts for the Better World Fashion proposal and the research questions. This was done by dividing the evaluation into two parts with different data collection methods. The first based on usability tests and heuristics followed up by some midway changes. Then transitioned into a second phase using semi-structured interview and questionnaire to evaluate design and concept.

Evaluations of the success criteria along with conclusions on both the evaluation process and the project can be found at the end of this report.



# Design Brief



This project began with the presentation the Better World Fashion project proposal. The idea was to re-wear and share leather jackets and to combine this with material heritage, gamification, and the extension of product life. BWF had already developed the first version of an application. The project itself seemed very open-minded, innovative and highly relevant. It also presented the opportunity to work with gamification which already caught interest in previous semesters due to its current relevance and the unique challenges it creates. The project proposal felt very practical and relevant in general, facing real issues that had clear argumentation and thoughts behind it. The combination of the material heritage and gamification would most likely face unique challenges that seemed very fitting with a Medialogy bachelor project. This led to the process of gaining more knowledge about BWF and planning a meeting.

## 1.1 Better World Fashion

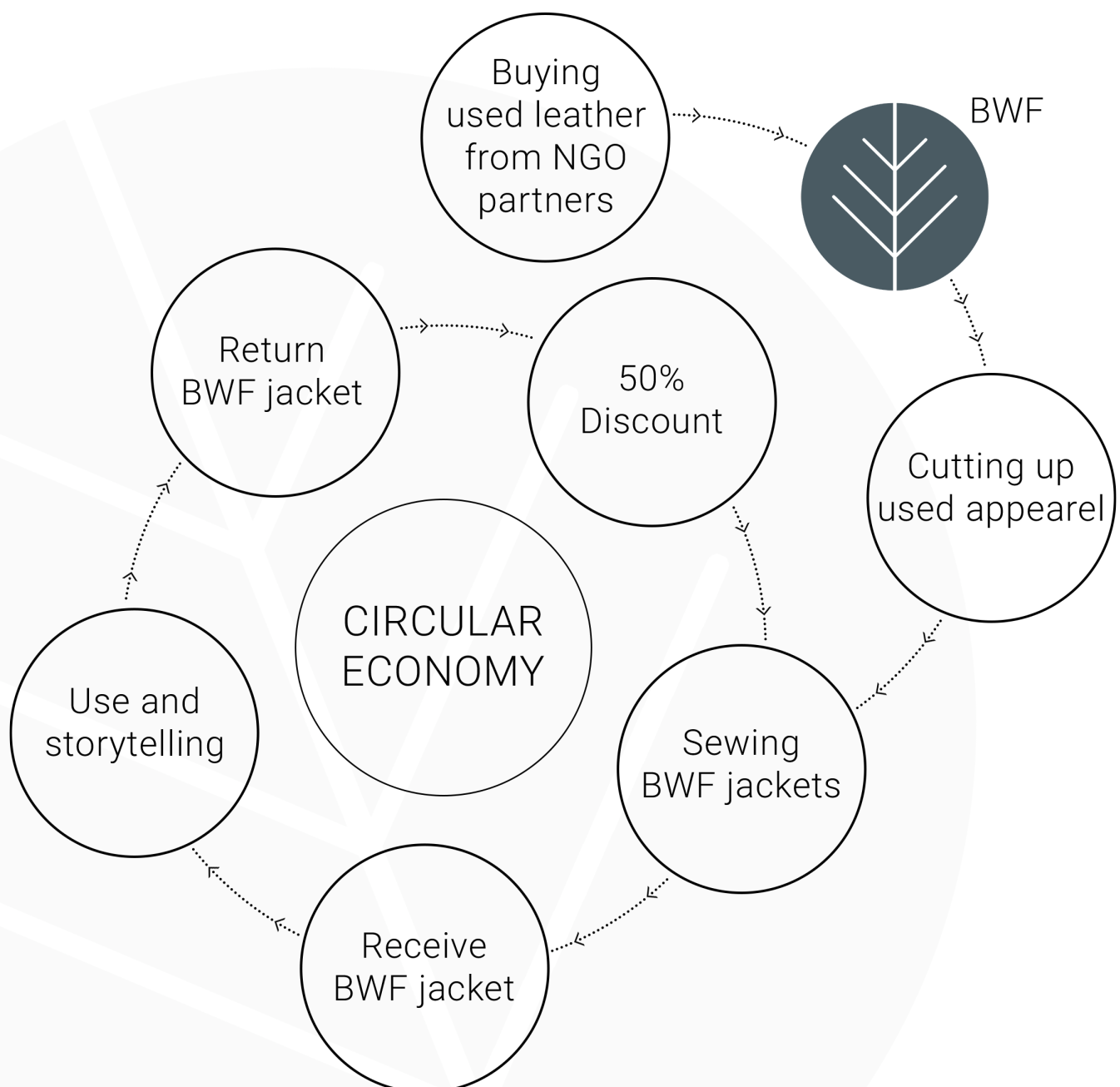
The project proposal was very interesting and therefore research on Better World Fashion (BWF) was conducted. The insight into BWF was gathered from slides and readings from previous presentations and proposals, as well as information from the BWF website and project descriptions sent to us. The information was used to get a better overview of the company:

BWF is trying to battle the idea of “fast fashion” of specifically leather jackets. Leather jacket production is very bad for the environment by dumping the toxic waste on fields which can potentially harm the organisms in the ecosystem as well as polluting the area. The “fast fashion” is also a contributor to a huge waste of clothes in the industry. The “fast fashion” trend is very profitable for the textile business as the consumption has increased by a total 20% since 2000. This has created a throwaway culture among consumers where clothes are discarded after little use. A Danish study found that 80% of the clothing discarded has 75% of its lifespan left and only 7% is recycled. Instead of recycling textile it is incinerated contributing to more pollution. There are no signs on this trend diminishing, contrary it will increase instead. This pressures the industry as there is not enough resources to sustain such a market. Thus, industries who adopt new business models in which recycling is part of it will do better economically and help the environment. This is where BWF is trying to promote such a business model which is based on a circular philosophy rather than a linear one [13].



BWF invests in sustainable material for their leather jackets such as recycled lining and leather. This is done by collecting and redesigning it into a new product from different pieces. This is meant to make better use of the resources without wasting material by discarding it. The reason as to why leather is a good choice as a textile for recycling is that it is very durable and can be reused several times. A leather jacket usually also packs a story. This story is something the consumer brings to the jacket and is intended to be readily available for other consumers. The story behind each jacket will only be greater over time as the jacket can be further recycled and passed on to a greater group of people. The idea is to lease the jacket or buy them back to keep the jackets in circulation to fit with the business model. This makes the story follow the jackets and can potentially increase the value of said jacket. This material heritage is meant to be recorded by the user on an application on the phone for later viewing for the consumer and the story continued for new consumers [13].

## THE BETTER WORLD FASHION WAY





The project proposal had the title: Material Heritage and Gamification. It had the goal of making a better world with re-wearing and sharing leather jackets. This was to be carried out in collaboration with the company Better World Fashion. They had a more concrete proposal:

*How to extend product life by implementing a material heritage APP and gamification?*

The steps they wanted the students to take were first to review the current application and recommend/build required functionality into it. Secondly, to interact with their users and recommend/build gamification functionality to ensure uptake and use.

They promised full access to both technology and users. Furthermore, they had very catchy quotes in their slides like: *Extend product life - save the world!* As well as: *This is pioneering work - help us make it happen!* It indeed seemed very revolutionizing to combine material heritage and gamification, and it felt interesting as well. It was obvious that this proposal had real-life relevance behind it.

## A LOVE STORY...

The jacket you are now holding, is not just another jacket, it's a love story.  
It's a creation from our ideas, and craftsmanship.

It reflects our love for the planet we live on, its animals and you...  
Made from almost 100% recycled materials, this jacket is what we  
give back; and by giving back we hope this will become our legacy.

Each and every jacket comes with its own unique history.  
The scuffs, scars and look is from original wear and tear.  
The places it's been and use it's endured, all creating a unique story,  
giving a feel and look only found in this particular jacket.

Every single part of this jacket is carefully selected to create  
a specific style and look while at the same time minimizing the  
environmental impact.

When you want to renew your look, we encourage you to choose  
another "one-of-a-kind" jacket from Better World Fashion  
and return the used jacket to us for recycling. In that way, you can  
change your look, while helping to protect this world we all share.

Dayana 0018



## 1.2 BWF Application

As a continuation to the research of the BWF company, their app was also studied. A login was given to this project from Reimer Ivang. Even though it was clear from BWF that they wanted this project to tackle the concept from a new angle, with new possibilities and viewpoints, the current app was still a big source of inspiration, but also confirmation on the current design and implementation. Some of the elements within this app seemed very core and defining of the concept, for example information about the individual jacket's experience and journey. As well as information on the environmental benefits of buying the jacket and the characteristics making the jacket unique. The app would be looked at once more when entering the design phase, but it felt natural to look at it initially as well. To fully comprehend what the current solution was.

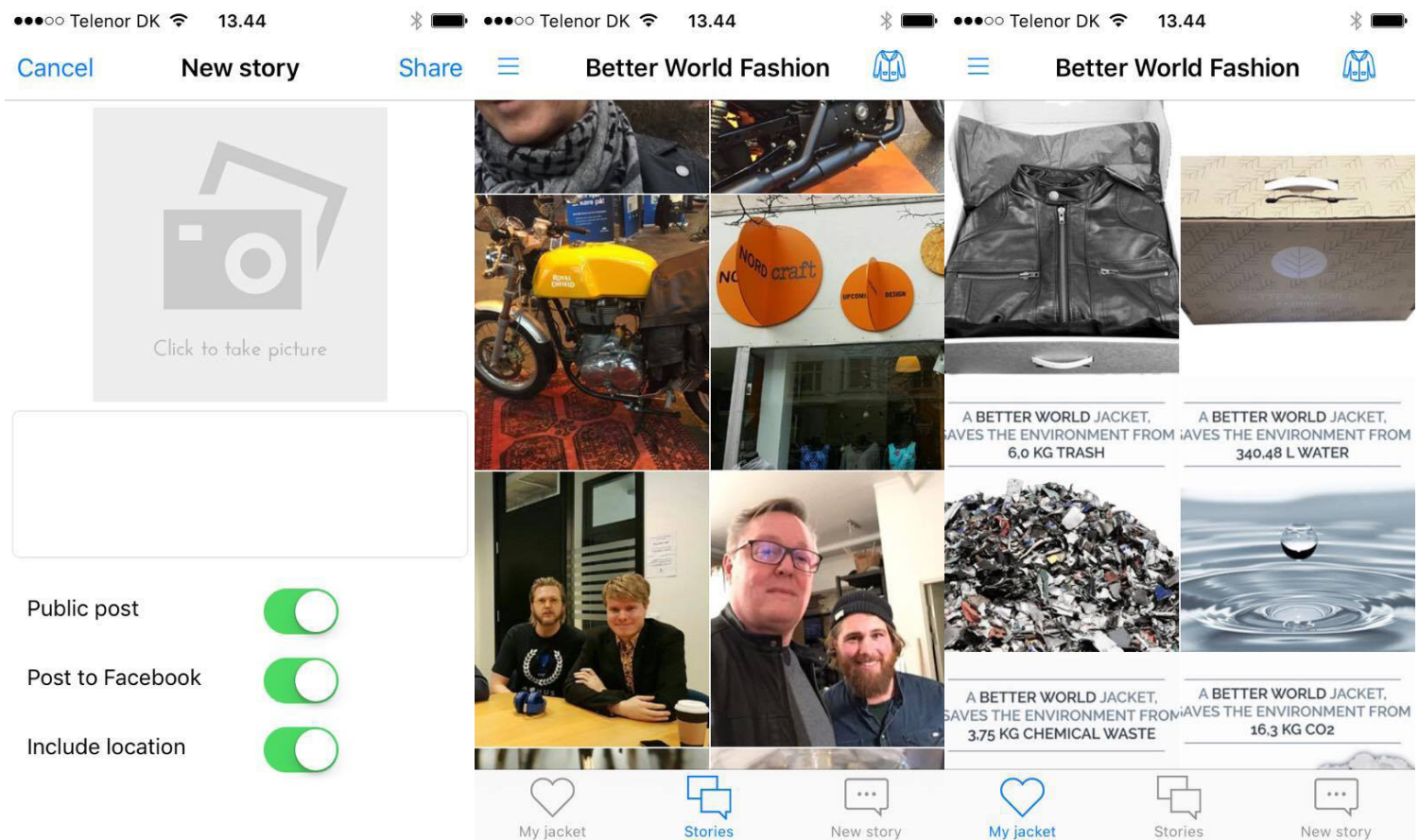
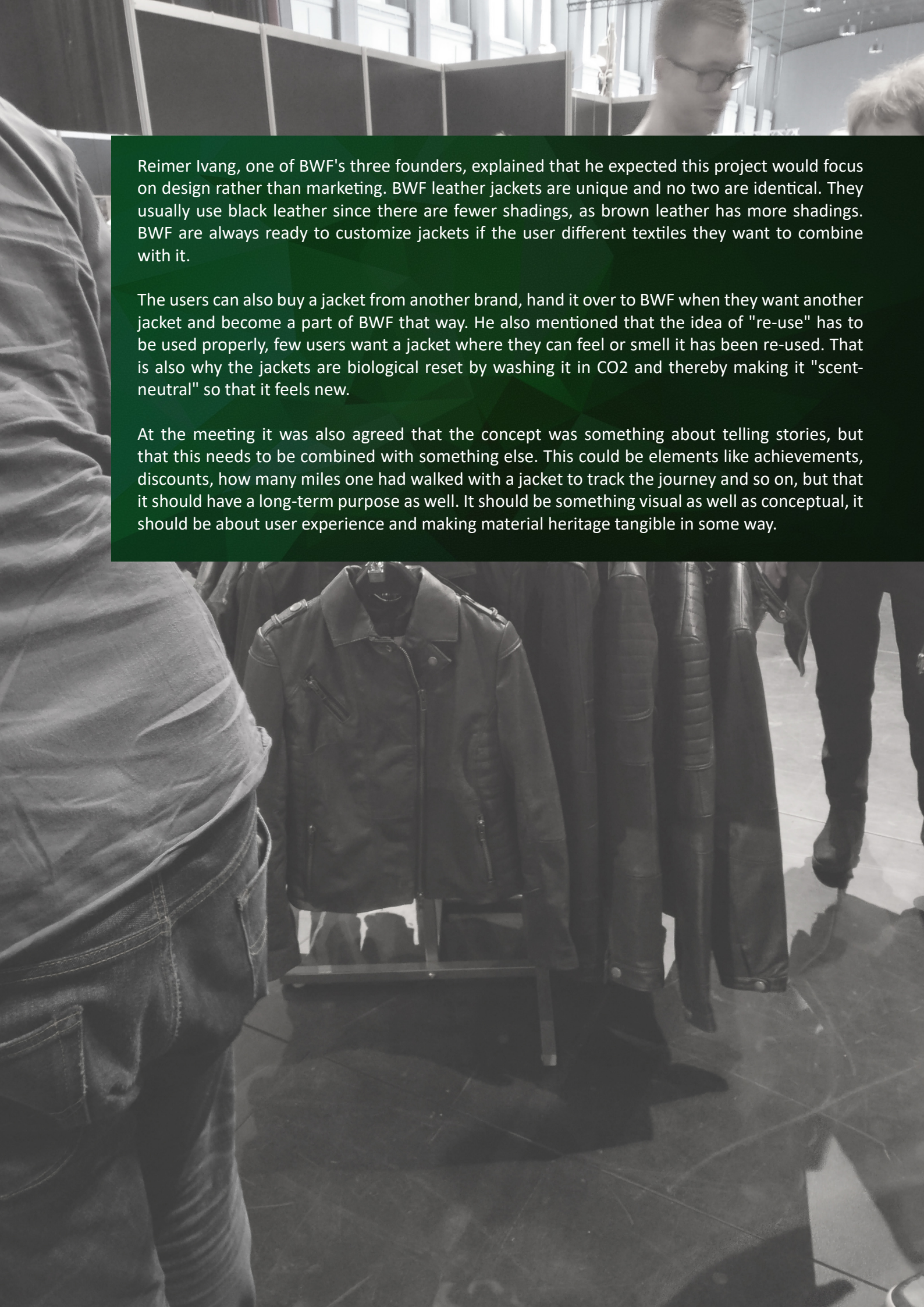


Figure 1.1: Screenshots from the live BWF app that can be found on Google Play for Android or the App Store for iOS. The left shot shows how the user creates a new story in their application allowing them to add a picture and text. It also allows for some adjustment of privacy settings. The middle shot is a view of how the application looks of the feed of other peoples stories. The right shot shows the jackets own personal stories including its origin and environmental benefits.





Reimer Ivang, one of BWF's three founders, explained that he expected this project would focus on design rather than marketing. BWF leather jackets are unique and no two are identical. They usually use black leather since there are fewer shadings, as brown leather has more shadings. BWF are always ready to customize jackets if the user different textiles they want to combine with it.

The users can also buy a jacket from another brand, hand it over to BWF when they want another jacket and become a part of BWF that way. He also mentioned that the idea of "re-use" has to be used properly, few users want a jacket where they can feel or smell it has been re-used. That is also why the jackets are biological reset by washing it in CO<sub>2</sub> and thereby making it "scent-neutral" so that it feels new.

At the meeting it was also agreed that the concept was something about telling stories, but that this needs to be combined with something else. This could be elements like achievements, discounts, how many miles one had walked with a jacket to track the journey and so on, but that it should have a long-term purpose as well. It should be something visual as well as conceptual, it should be about user experience and making material heritage tangible in some way.

## 1.3 Objectives and Goals

The objective of the project is to create a solution that promotes the sharing of virtual material heritage tied to leather jackets. BWF already has an application that allow users to take a picture, add some descriptive text and upload the picture to the app for others to see. However, this is a very barebones implementation, and as mentioned in the project proposal BWF seeks to expand upon the application and the idea of promoting the material heritage of the leather jackets. This is supposed to reinforce the concept of using recycled leather for creating new jackets, as they will be able to carry their heritage with them, even as they are being made into new products.

Trying to improve upon the existing solution, there are three major areas that this project will focus on: Virtual material heritage, community support and gamification.

Virtual material heritage in this project will primarily be allowing the users to share their experiences and stories with their jacket (the object that has the material heritage) with other BWF users, through the means of a companion application. There are many possible ways to share these experiences, such as posting pictures on social media, micro-blogging etc. Thus, identifying which methods serves the solution best will be important.

Community support focuses on building and supporting a community for the users of BWF, by allowing the users to interact with one another. Through a fast ethnographic interview with a leather jacket user it was also hinted that a leather jacket is unique in its ability to both identify yourself and to send certain signals to others. It also seemed natural, in combination with this, to think about the community aspect of the BWF and the BWF app and to research on this. Ensuring some kind of interaction between the users through the app, or at least enable this option in the long run.

One thing the group found through a fast ethnographic interview with a leather jacket user, was that the jacket is used to identify yourself or to send certain signals to others. This idea of identifying yourself with certain ideals is what lies at the core of communities and thus is something that the solution should seek to support as well. An added bonus of this could be that it might help spread the ideals of sustainability which BWF is trying to represent, as they likely will be prevalent within the users of BWF. Lastly, if the community were to be open in nature, it might allow non-BWF users to join and thus spread the ideals the new users.

Lastly, gamification should be used as a way to make the solution as engaging and enticing as possible. In order for users to actually pick up the application and use it regularly, it has to be fun, engaging or in other ways add something to the life of the user. One idea discussed was allowing users to build up some sort of points through interaction with the application and other users, and spend this to customize their own jacket, through badges, customized lining, etc. The hope is that this does not only ensure that users keep using the application, but also makes it easier for new users to jump right in. By not making the environmental sustainability be the major focus but rather the user experience itself, it should hopefully appeal to a more varied audience, making the sustainability a nice bonus for everyone.



# LEJ ELLER KØB EN BÆREDYGTIG JAKKE

Directly after deciding on the BWF proposal and meeting with the supervisor, a rapid interview with a current leather jacket user was planned. A semi-structured approach was used for the interview.

The interview hinted at what users could be looking for when choosing leather jackets instead of other jackets, for example the quality and image it sends. Especially that a leather jacket creates a delicate balance, that it could both smarten one up or even out a certain style.

Also, it opened our eyes to the fact that leather jackets comes in many different forms, designs and shapes and that not everyone is interested in fringes, frayed edges, special designs or zip fasteners. Some people might be looking for classic and pure styled jackets instead. It also showed that the word "re-use" might not be equally appealing to everyone, and that not every user know of the environmental effects when producing leather products.





## 1.4 Target Audience

The primary target audience for the project is the BWF users. Information about the end users were provided by BWF. There is currently approx. 60-70 registered users in the system, but there may be more users than that because the initial users was not registered as the app was not developed back then. Also, it varies greatly whether the users are active on the app or more interested in the jacket alone. It is a ongoing progress, but overall BWF has sold up to among 160 jackets. Their users vary between 20-80 years old, but the biggest section of users are between 30-60 years. It is mostly the 20-45 years old users who are the most interested in the app. It could also be said that the BWF users are interested in the environment and to some degree general sustainability, as they would likely just have bought an ordinary leather jacket otherwise.

The fast ethnographic interview with a leather jacket user hinted at the leather jacket users are very interested in their own image and that the jacket can both lift up and balance out the chosen style. The participant also said that the jackets were expensive and that it is important to choose the right one for you and make it a personal investment. Furthermore, that the jacket was becoming more and more trendy among especially young people, for example students.

However, two secondary audiences could be considered as well. Firstly, those who are environmentally concerned and likes leather but is not currently involved with BWF. These users might easily be persuaded into joining the BWF community, as they already harbor many of the ideals BWF is built upon. It would then be interesting to see if promoting virtual material heritage and building community support would incentivize these users further. If it does, the application could potentially work as a way to recruit new customers.

The other secondary audience would be those who are interested in leather jackets, but does not have a disposition towards environmental sustainability. These users would often not seek out communities such as BWF themselves, but promoting virtual material heritage and gamifying the experience might be something that would connect with them. This could potentially include people in the BWF community that are not particularly interested in the environment, allowing BWF to promote their ideals further than they usually would.

## 1.5 Scope of the Project

The scope of this project is to create a conceptualization of how the proposed solution could be implemented, and evaluate this conceptualization with BWF users. The implemented prototype should not be considered a replacement to the current BWF app, but rather ideas on how to possibly improve the concept. As such, the implementation will be focusing mainly on making a working front end prototype and less on back end functionality.

The BWF's focus on marketing and business models will be excluded in this project as it is not a part of the Medialogy approach and the skill-sets this project is based upon. Also, including this would only hurt the focus of this project as it seeks to conclude on something else. However, the results and conclusions might very well be used in combination or in understanding with BWF's business and marketing knowledge afterwards.

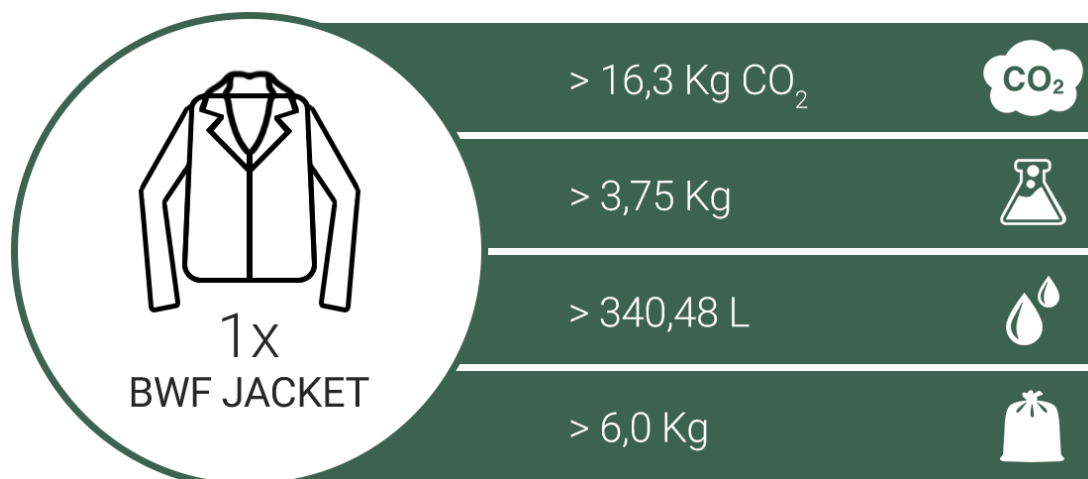
It is clear that the focus on material heritage and gamification needs to be included in this project as these are the guiding points in the proposal and design brief. Gamification is also highly related and relevant to the Medialogy study in the way it correlates with technology and society. Material heritage is connected with user needs and is meant to be applied in a virtual way through the application and is therefore also included. These also pinpoint exactly what this project aims to add to the BFW leather jacket program, and that the Medialogy approach can be used to do accomplish this. There will also be researched on sustainability and environmental issues as well as building a community, especially online, to ensure an understanding of these aspects when moving ahead.

A lot of project work also had to be put into being critical of sources, being scientific, finding the correct research question and conceptualizing ideas without losing the critical angle on the chosen technology and its effect on the community and society. This project would rather have these important processes in mind, and as such excluding certain areas and elements, to then be able to have a different approach and entrance angle than BWF originally had because they also need to keep marketing, economic and business in mind. This also means excluding the focus on working technically and directly with the current application, but instead beginning from a new conceptualization and investigating virtual heritage combined with gamification.

## 1.6 Conclusion on Design Brief

It is clear that the design brief and project proposal generates a lot of unanswered questions along with unknown fields or areas that still have yet to be defined, for example material heritage and gamification. The collaboration also brings forth terms as sustainable behaviour and environmental effects and the application represents elements of building a community. The conclusion of the design brief must therefore be that those areas are the most relevant and need to be looked at in the following chapter. These areas, especially material heritage and gamification, also seems to be building blocks for this project. Having the design brief and collaboration with BWF in mind, it makes the most sense to conduct scientific research on these areas to fully understand them and gain the knowledge necessary to make insightful user interviews with current BWF users. This will also be the starting steps to make new conceptualized designs and ideas. One of the biggest questions in this chapter was how objects could get more value over time by wearing the jacket, especially in a world where everyone seems so persistent on accumulating lost benefit instead. For this project, such questions added relevance as well as interesting research possibilities.

### How much a BWF jackets saves the environment from





# Background Research



The point of background research is to expand on the key points stated in the design brief and beginning of the project. Sufficient information is necessary to provide understanding of the areas for the readers as well as the members of the project. It also provides the essential background context needed to formulate interviews, talking with users, formulating research problems and choosing which points to address. The research is about looking at previous projects, sources and studies to gain background knowledge and to form your own comprehension of the matter.

This chapter is about investigating and researching the most relevant areas introduced by the design brief. Material heritage and gamification are areas chosen to investigate as they were originally part of the project proposal and seems very important for the scope of the project. Secondly, looking into communities and how to define them was deemed necessary as it was brought up many times during the meeting with Reimer Ivang. The BWF application is likewise about users having common ties through the leather jackets, and this added relevance to the community aspect as well. Adding to this importance is the fact that cultural heritage is often defined and understood through social activity and society, with intangible heritage surviving through community recognition. Finally, BWF and the proposal had a strong real-life relevance and connection. The sustainable behaviour felt like one of the biggest reasons for this and therefore it was decided to gain more insight into this.

## 2.1 Academic Approach

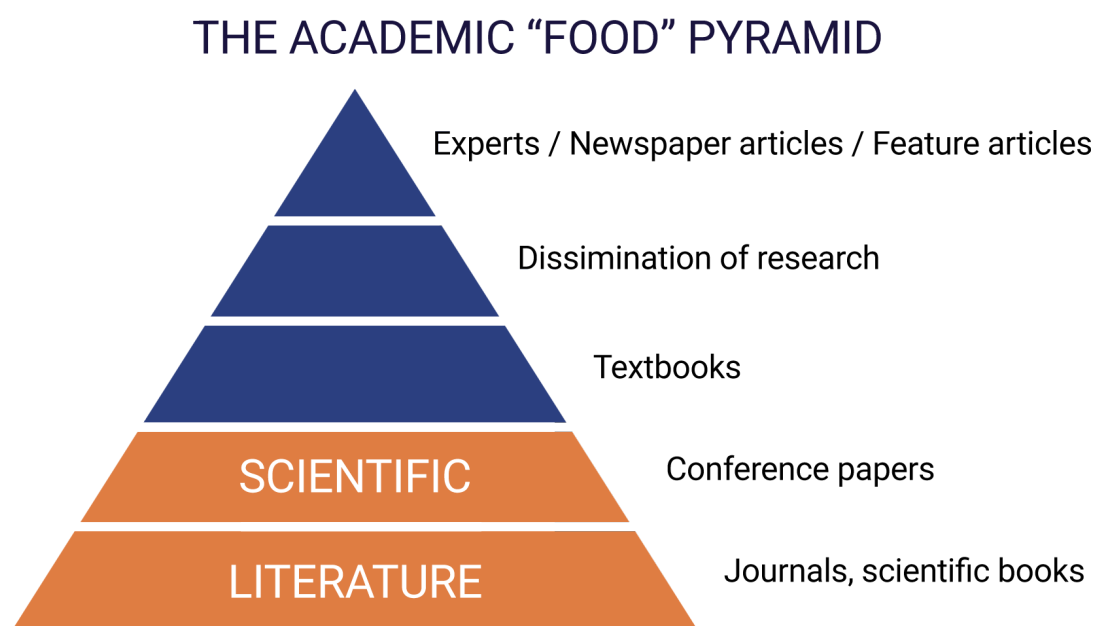


Figure 2.1: A recreated visual example of the different literature available made by Thomas Ryberg.

Research is essential to gain the needed knowledge and scientific insight. Such background research is important for conducting further work and formulating a research question. Due to this, the language in this chapter is going to be very direct, reflecting the academic craftsmanship and only citing scientific literature as seen in Figure 2.1. This means ensuring that the used journal articles are peer-reviewed. Peer-reviewing guarantees a quality of content since the readings have been examined by other researchers before being published. These sources are combined with scientific books and reports from relevant conferences. It is furthermore checked that the listed sources can be found in scientific databases like either ACM Digital Library or AAU's University Library. This is to ensure that the findings are reliable and insightful so that new theories and thoughts can be based upon them. However, examples or pictures are not always found in scientific literature, but are instead used to illustrate what needs to be solidified and exemplified from the scientific literature. Making visual examples of the key points also makes it easier to remember.

## 2.2 Material Heritage

Material heritage originates from cultural heritage, a term of varying use and complex definition. Though, it can be defined as attributes of the past valued in the present for the purpose of carrying it into the future [16]. In different forms and shapes it brings along experiences, memories and values from the past. The term goes all the way back to the period of romanticism, but is often today spoken of as a physical manifestation of time, space and society. This process has left traces and marks of remembrance on the material, thereby giving it material heritage, transmitting its significance through aged or degraded visuals. In other words, cultural heritage gets its meaning from a society and thus the society had a great impact on how the heritage is understood and experienced. That is also why the value of the heritage might vary with the social environment during space and time, and it is shown through materials or in a virtual way. Such material cultural heritage can be divided into immovable and movable. Immovable examples could be locations in nature or buildings aging through time and adding special heritage to it. Movable ones could be jackets, cars or currency having achieved heritage through time and experienced events [16].

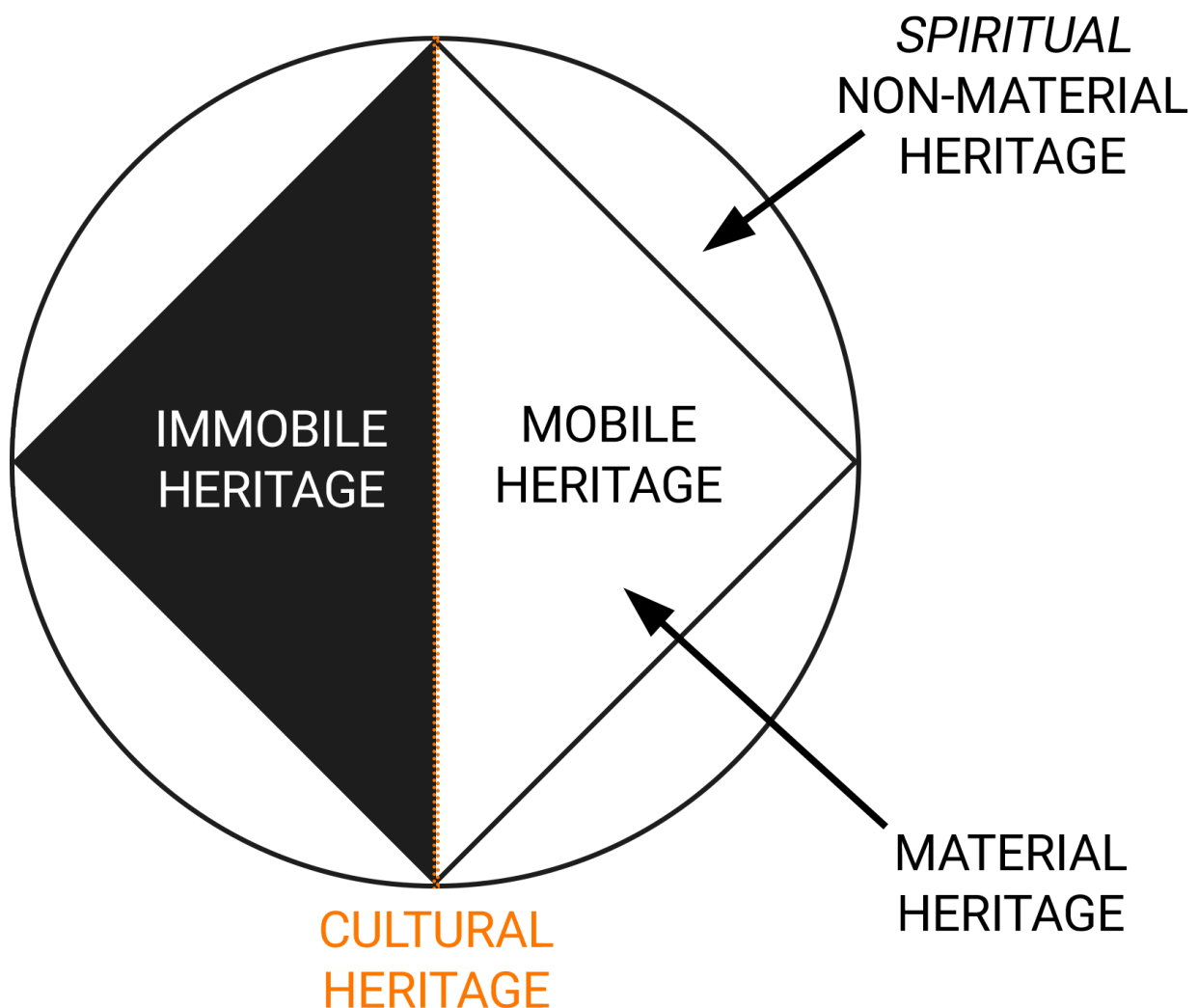


Figure 2.2: A recreated visual example of the different relations of material and non-material cultural heritage, as well as the relation between immovable and movable heritage [16].



The concept can also be explained as tangible and intangible cultural heritage as defined by UNESCO [25]. As said previously with immovable and movable heritage, for example monuments and collections of objects, can be defined as material heritage, but there is also non-material heritage - by UNESCO as intangible heritage. This includes traditions or living expressions which could have been inherited or passed on through ancestors or histories. Examples could be art performing, social practices, festive events, special knowledge or skills, rituals, traditional crafts etc. This description is very fragile, and while as important in understand as tangible heritage, it is more difficult to define and comprehend. As well as tangible and material heritage, intangible heritage is also strongly defined through its community and society, even more than the tangible heritage. This is due to its lack of physical form, therefore relying completely of the recognition and maintenance of the community around it.

Material heritage can also be described as patina; additional values added through traces of age and wear. Such marks represents events, memories, experiences and stories which in some scenarios would increase the material's rarity and value rather than decrease it. Such patina would occur if the users knew of the stories and events, adding meaning to the physical manifestations of age and wear or perhaps even material damage. Such heritage can also be granted through virtual means, granting the material further layers of patina not necessarily detectable in any physical way [16]. These layers could be a specific history, interaction or event making the object special. Virtual heritage could be carried out through an application, website or another software augmenting the object with the needed information. An example of this is the "Tales of Things"-initiative which tries to link the objects and their inherited tales together [6].

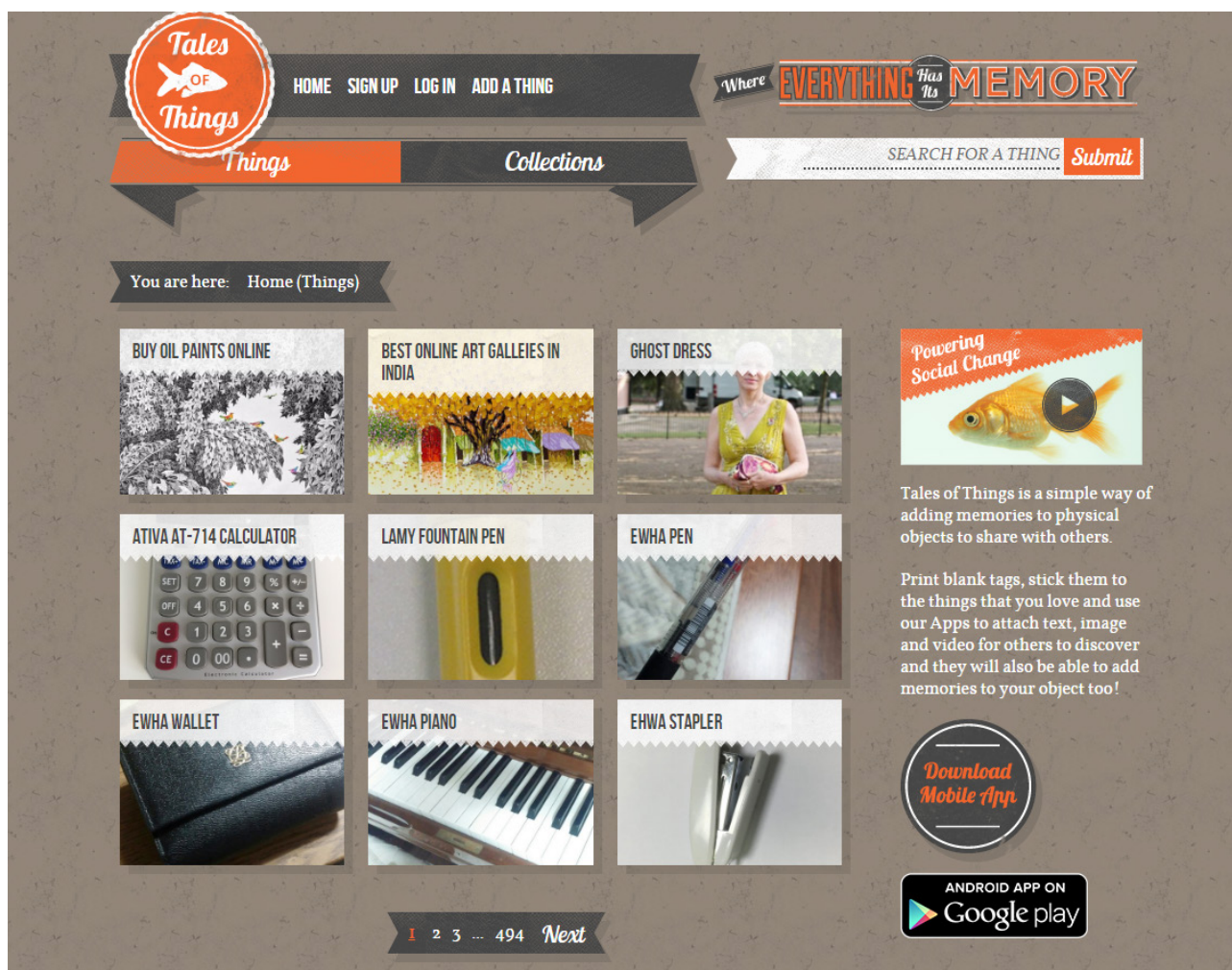


Figure 2.3: How the website "The Tales of Things" looks today, illustrating the different objects and then users can click on them to know the memories and tales shared about the object [6].

The addition of patina adds authenticity to the material, not only according to its origin, but including its memories and changes gathered both in the material and spiritual component throughout its service life. The spiritual component is non-material, but available through interpretation or manifested through words, music or movement. This means that a material or the significance associated with it can have values and messages which for many can be very difficult to explain and understand, but still feels emotionally close. Material and non-material heritage can also in some ways be seen as tying rational and emotional components together [16]. Material heritage can thus be utilized in many ways, for example as storytelling where every constructed material is unique and has its own story, which when communicated to the user will add to its value and let the new user continue the heritage [13]. This way one object can accumulate more value over time than it actually had at the point of its origin, but the gained value would vary depending on the social environment or in other words: Place and time. This added value would, in practice, also depend on whether people want to share their experience and memories with others.



Figure 2.4: A visual display showing how different experiences and events can be added to an object as value and authenticity [9].

## 2.3 Gamification

The concept of gamifying something refers to the usage of game design elements in a non-game context, and it can be integrated into existing industries, products or practices [8]. In other words, you have something that already exists and then you transform it, gamify it, with the addition of game-aspects and game-mechanics. One of the general motivational factors behind this concept is that games can draw in so many people across different nations and cultures with both motivation and engagement. The idea is that the design elements implemented within a game can be used for other purposes as well, for example to develop more engaging and enjoyable interfaces. The common mistake in the process of gamifying something is seeing simple components as badges, levels, points and leaderboards as the sole solution to this transition. To understand gamification as a concept it is important to grasp upon the game design itself, not just its tools. Gamification can be a way for an alternate design process, focusing on design elements meant to enhance the feeling of competence, progress and accomplishment [7].

### Levels of Game Design Elements

Level	Description	Example
Game interface design patterns	Common, successful interaction design components and design solutions for a known problem in a context, including prototypical implementations	Badge, leaderboard, level
Game design patterns and mechanics	Commonly reoccurring parts of the design of a game that concern gameplay	Time constraint, limited resources, turns
Game design principles and heuristics	Evaluative guidelines to approach a design problem or analyze a given design solution	Enduring play, clear goals, variety of game styles
Game models	Conceptual models of the components of games or game experience	MDA; challenge, fantasy, curiosity; game design atoms; CEGE
Game design methods	Game design specific practices and processes	Playtesting, playcentric design, value conscious game design

Figure 2.5: A table of the different levels of game design elements which can be used in process of gamifying something. Each levels bring more complex elements to implement in the design [8].



In recent years, the application of gamification has seen a rapid jump in popularity and it has become a state-of-the-art concept to take inspiration from video games and their designs. Scientifically, it can be seen as research in Human-Computer Interaction and the study of different games in an attempt to locate key elements of design to apply in a given context. There are many different game studies as well as scenarios where you could apply them, and the similarity between a game and a gamified application vary as well. Sometimes, the only difference between these two are found in the designers' intentions and user experiences. At other times, the gamified elements are so carefully implemented that it does not look or feel like a game at all [8]. In other words, designing a game and designing with gamification is not the same, even though some parallels can be drawn between them, and that is also why experiencing a gamified service will not always feel like experiencing a game. A game designer would be looking to design for the purpose of entertainment, while the gamification designer is looking to use game mechanics and elements to motivate change, progression or engagement.

An example of such gamified service could be Treehouse, which is an app simulating a virtual training academy for app developing, code learning and business skills etc. It is meant for beginners to learn valuable skills, but also for professionals looking for advancement. The users can choose from a various design of challenges and progresses and the system is gamified with badges, points, goal tracking and visual proof of the achievements you acquire. The overall design is also always shown in manageable chunks of information, tracking your process and encouraging you to move on [24]. It is a good example of a gamified way to learn coding and getting better at it while being engaged and enjoying the progression.

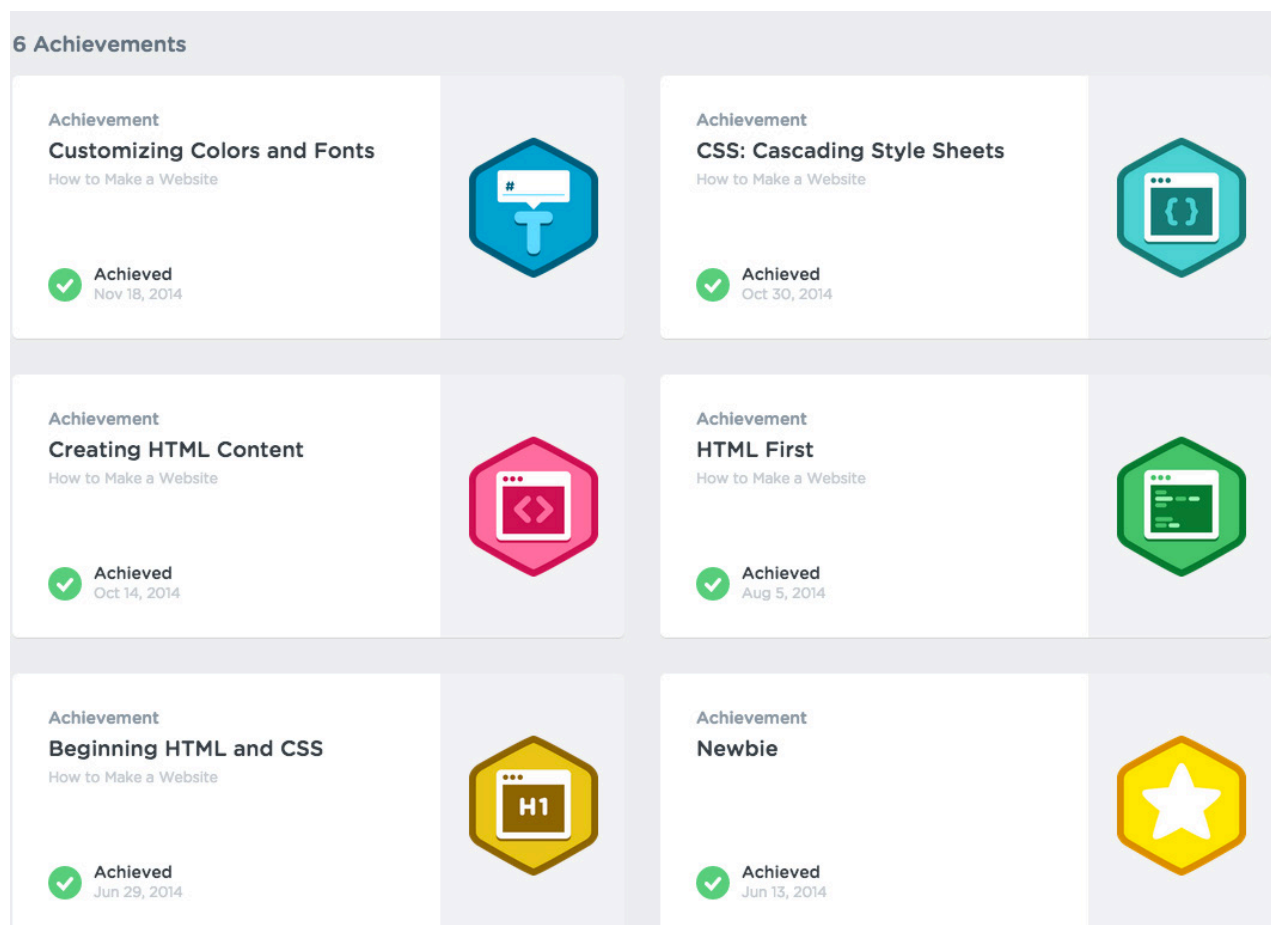


Figure 2.6: An example of how a gamified service not experienced like a game. It showcases the gamified design focusing on engagement and progression. Shows the different badges and achievements that the user has achieved [24].

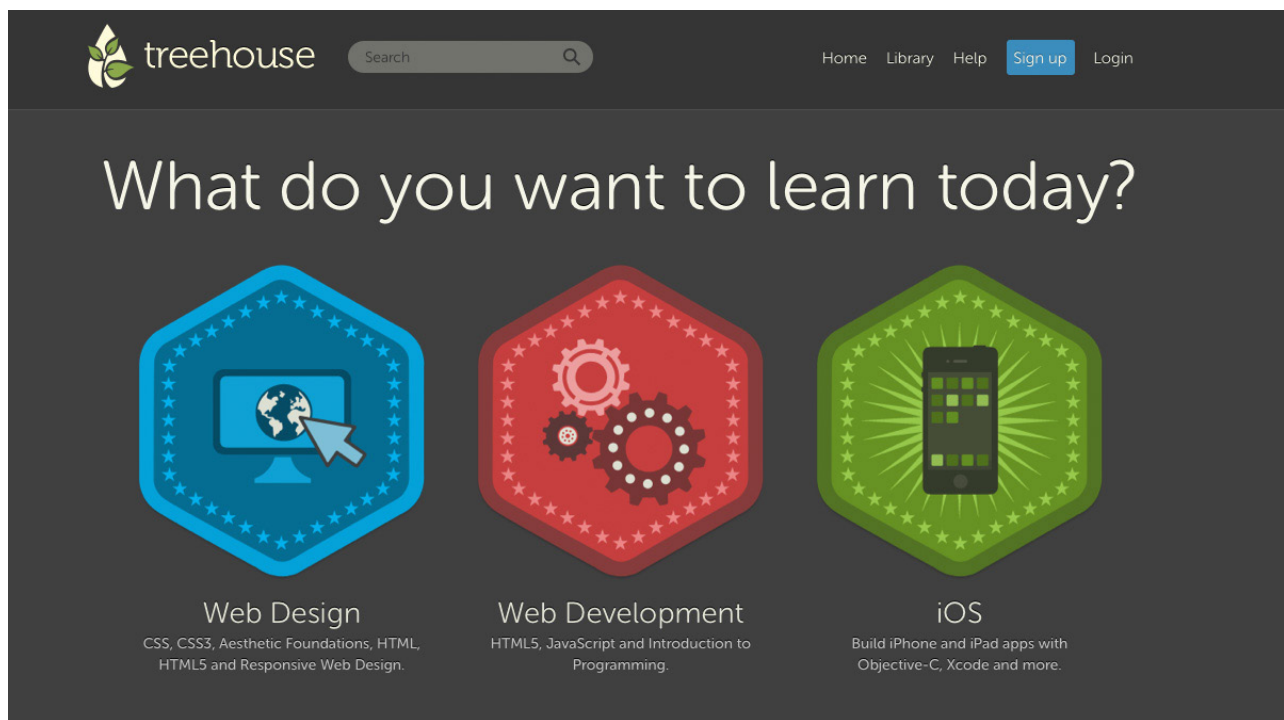


Figure 2.7: An example of how a gamified service experienced like a game. It showcases the gamified design focusing on engagement and progression. Shows the options for learning [24].

Gamification is used more and more often, yet the more in-depth mechanisms of the concept is often not well understood nor well defined [18]. Therefore, a scientific source were found focusing on experiments in this area for the purpose of trying to comprehend it better, to define it. These experiments were conducted on whether simple gamified components, like giving the participants points, had any effect on their motivation. This was combined with a meaningful framing. The results were that points encouraged participants to generate more results, while a purposeful frame inspired the users to take their time and create results with higher quality. The best results, however, were those where both elements had been integrated together. Such combination also led to the biggest increase in quality, although points were awarded according to quantity not quality. The reason why both groups got motivated could be the points giving them a need for competition, while a scientific frame gave a sense of contribution. This said, the intrinsic motivation could also have been predetermined by the individual needs for achievements and competition. This also indicates that some combinations of game design elements might pose a problem due to certain social situations. For some people, a point-system might undermine their interest or ruin the meaningfulness of the task, especially if not combined with other design elements [18].



Figure 2.8: Showcasing Plant Nanny's visual interface and how the user easily can interact with it when drinking water. It also shows one of the examples on how the progression is visualized [11].

An example of gamification designed to add personal progression and motivation could be the application named Plant Nanny. This application is designed to motivate and engage the user in drinking enough water, and this is done by showcasing the effect water can have on your own personal plant. There are a lot of customization tools available as well as progression markers. Progression can be found in both visual geometries, data bars and in the way your plant grows and changes its appearance. By drinking enough water the plant will keep growing until it is fully grown and will then be placed in your garden. This also opens up a more long-term engagement and after the plant is fully grown other plants can be accessed with seeds awarded from the process. Many different plants are available. The application also discourages players when they try to drink too much water all at once [11]. This is also a gamification where the user is not competing with others, but rather with themselves and their own personal progression.



Figure 2.9: An overview of how the user can customize the amount of water normally imbibed during a day. After customizing these defaults the user just clicks on them to synchronize the imbibed amount with the Plant Nanny. Also shows another visual progression example where the user can experience the plant as it grows and changes shape [11].



It is important to remember that not everyone likes competition or takes an interest in playing games. Therefore, some game elements might actually decrease the users' intrinsic motivation, even though the found studies gave no current empirical evidence of this. It has been shown in online experiments that basic game elements such as points, leaderboard and levels can cause a substantial rise in performance. This could be due to a clear connection between the level of effort and points awarded, while leaderboards and levels add goals to compete for. The presence of these basics alone did not affect perceived autonomy, competence or the intrinsic motivation. As such, these basic game elements could preferably be seen as ways to influence the users behavior and effort, but should not be expected to create long-term motivation and engagement on their own [19].

These studies along with those above indicate that the described game components are viable tools to influence behaviour in non-game contexts, but that these components alone are not a sustainable gamification. This also shows a broader room and need for new research and studies. Likewise, there are many other game elements to study and understand beyond those previously tested. It also seems that in some occasions the game elements need to be camouflaged or carefully hidden behind other non-game elements to potentially avoid social or contextual factors. Another solution to this could be to combine gamification with other impactful areas like material heritage and sustainable behaviour to sustain long-term motivation and engagement.



Figure 2.10: A visual and interactive platform supporting a new and gamified way to program the robot [20].

An example of gamification could be OPSORO, which is an open platform for building social robots. The concept of OPSORO is that you start out programming and creating your robot in a visually and interactive way. The user can also choose to write lines of code himself, but there is a gamified platform to use as well. This can both be meant as an introduction to a gradual learning curve for coding, but also just a solution for those who prefer such interactive options. The OPSORO project has also been used to help people with brain injury [20].

OPSORO shows that gamification can be utilized for different purposes, for example making existing areas more interactive, adding visuals to it or aiding a rehabilitation process. This is a more varied example of gamification in use as it is not just about implementing basic gamification-components or designing a game and implementing it in a non-game context. Instead, Opsoro have used in-depth conceptual game-elements and a gamified way of thinking in their layout and mindset. For example, thinking more visually, designing with motivation and engagement as a goal and overall, utilizing game elements to increase the user experience and adding a variety of styles.

## 2.4 Sustainable Behaviour

It is not abnormal to make use of every single kind of resource which can be harvested from one source. Leather usually comes from the by-product of hides from the meat industry. However, the tanning process of hides creates much more by-product and waste compared to the amount of leather produced. About one ton of wet salted hides yields 200kg of leather but over 600kg of solid waste or by-product if a market can be found. In the United States alone, nearly 60,000 tons of chrome shavings are generated each year by the leather industry and approximately ten times more worldwide. Land application for disposal of leather waste are becoming sparse and the cost of transportation and disposal is increasing. It is however possible to recover valuable products from the chrome shavings.

A two-step process can be used to extract the protein from the shavings, producing a technical gelatine and a collagen hydrolysate. The gelatine can be used in cosmetics, adhesives, printing, photography or even as an additive in finishing products from the leather industry. The collagen hydrolysate can be used as a fertilizer or in animal feed additives. The remains of the protein removal process are suitable for use in further tanning processes [17].

However, having a process for reducing the environmental effect should not only help the environment but should also add more benefits. If it is a cost-effective process it is more likely to be invested in. But if it is just to help the environment and it does not reduce the cost of the current waste disposal, it is not very likely to be adopted. According to a paper on promoting sustainable behaviour, having a purely informative program to help change behaviour for the better of the environment is not very effective [4]. A plan to improve energy efficiency in homes included households who were interested in participating in workshops on residential energy conservation did not change behaviour despite significant changes in knowledge and attitude on the subject. Another study interviewed 500 people regarding their responsibility to pick up litter and 94% acknowledged responsibility. However only 2% picked up the litter planted by the researcher. The paper suggests that economic motives strongly influence behaviour. However, just informing the user on the economic advantage was not enough to change their behaviour.

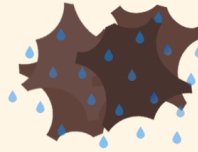
# FROM COW TO LEATHER

MEAT AND RAW HIDE



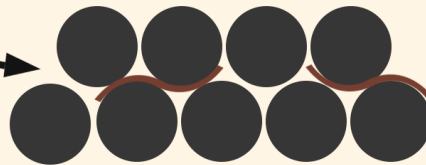
Dehairing and demeating

Desalting and rehydration  
of the raw hide



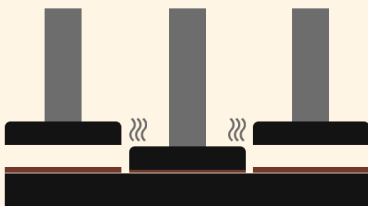
Chromium is added  
to the leather

Squeeze out water  
and decompress



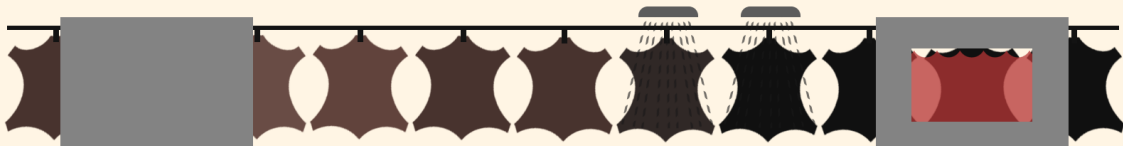
Squeezed and heat stamped

Tanning in a tumbler with oils

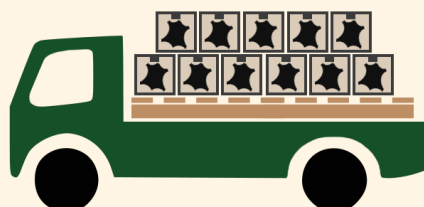
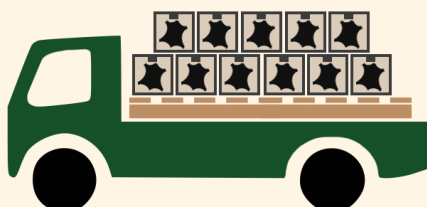


Toglin and hanging

Painter and vaxing



To the market





## 2.5 Defining Communities

In order to develop and design a solution that can help promote virtual material heritage, an important aspect that must be considered is the sense of community involved. People who wear leather jackets are often associating themselves with some kind of communities, and there are many examples of communities that are centered around leather jackets, such as biker clubs or rally racers, where the usage of leather jackets as a way to identify with the community is prevalent. Furthermore, in our world with increasing awareness of climate change and environmental sustainability, a strong sense of community has also started to rise amongst activists and people who are generally concerned with this issue. Thus, understanding what defines communities and how to support them is important to create a solution that engages that user through their community.

Definitions of what defines communities has been discussed for a long time within the social sciences, and many different definitions of the idea exists. One such definition is offered by Michael Koch: “In general a community is a group of people who share some interest, identify with a common idea or more generally belong to a common context. Thus, a community can be seen as a descriptive identity for a set of people.” [14]

Another definition of the concept of communities is: “A community refers to (1) a group of people who, (2) share social interaction and (3) some common ties between themselves and the other members of the group and who, (4) share an area for at least some of the time.” [23]



Figure 2.11: A visual representation of the four aspects of a community.

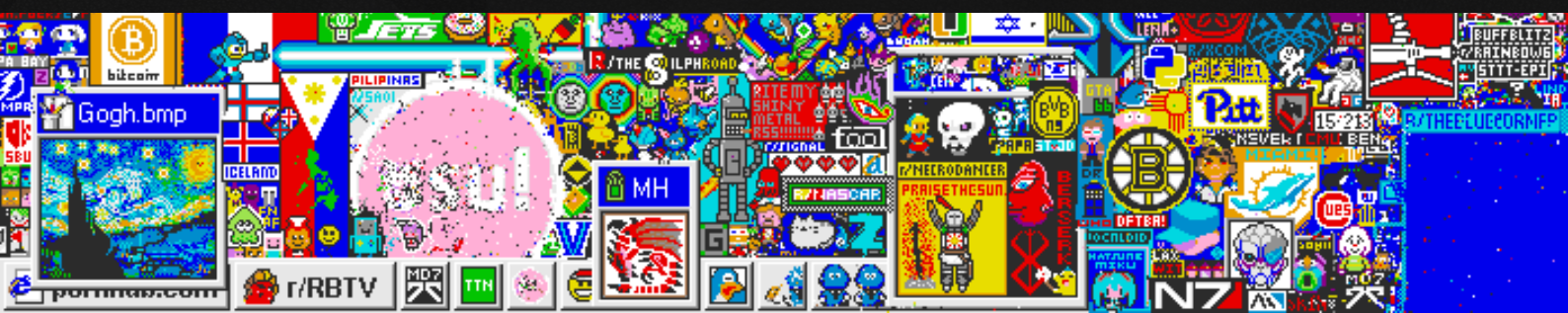
Looking at these two definitions of communities, they have strong similarities: A community requires a group of people that have some common ties with each other, which could be derived from ideas or contexts. Furthermore, as presented in the second definition, members of a community “Share social interaction”, implying that a community is not just a grouping of passive people who simply happen to have interests or ideas in common, but rather the result of people who have something specific in common that interacts with one another.

This is supported by Koch, who states that “Other characterizations highlight the need for mutual collaboration in the community” [14], suggesting that there should not only be interaction within a community, but rather collaboration between the people involved, which should ideally be driven by the goal of mutual gain in one way or another. Many such communities exist today, one very well known example being the internet forum “Reddit” [21], where people post questions or share content with each other, out of interest. Here the goal is to share a specific interest with other people who happens to be interested as well, which is one way of perceiving mutual collaboration.





A creation from the collective community of **Reddit** where each user could place a pixel every 10 minutes to create something together. Over 700.000 individual users participated in painting on a canvas of 1.000.000 pixels. This all went down in the timespan of 72 hours [21].





Another point of interest is the last point mentioned in the second definition, namely that communities need to share an area. How this interacts with digital communities can be perceived in different ways. Koch suggests that “While the demand for a common physical locality is no longer seen necessary, the demand for interaction is still valid.” [14], focusing more on the need for interaction than for actual physical location. On the other hand, the required shared area could simply be considered to be a virtual or online area rather than a physical location [23], which makes sense when considering internet forums such as Reddit or social platforms such as Facebook, that provides a virtual area with clear boundaries for the user. Furthermore, it is suggested that whilst interaction at physical locations are not required, it can be beneficial for communities to incorporate physical interaction in combination with digital interaction in order to strengthen the community [23].

In the scope of this project, the sense of community is seen as a tool to improve engagement and general awareness. Koch mentions that community support and community awareness is important in order to establish and grow communities [14]. He presents two requirements to provide community support: Awareness of the community and a medium for communication. This resonates well with the idea that a community is a group of people who share some common interest or ideas, who have some kind of social interaction with each other (through the medium for communication).

In order to create community support Koch suggests the creation of “Community Mirrors” [16], that helps members of a community to connect with each other. The ideas he presents revolve around stationary interactive surfaces such as large touch screens, but in our current day with smartphones and tablets with constant connection to the internet, these Community Mirrors could also be placed on portable technology rather than stationary, such as the smartphone. Koch presents three aspects that define a Community Mirror:

“awareness of community members, information contributed by community members, and activities in the community information space.” [14]

Once again, this resonates well with the idea of a digital community defined earlier, as it centers around a group of people with similar interest who have some kind of social interaction and collaboration. For this project, it would require designing a solution that allows the users or members of the community to be aware of one another (some form of social networking), that they can share information with each other based on the common interest, e.g. through sharing experiences, and lastly activities in the community space, which could be events that members are participating in, or members seeking out other members to interact with.

Another concept that goes hand in hand with this, is the idea of using consumer vision to promote sustainability. One of the philosophies that BWF is dealing with is exactly that of consumptive acts and the search to substitute these with transformative acts instead. Two professors, Kathryn Relley and Marilyn DeLong, found that Fashion could be one of the tools used to accomplish such a thing, and one way to change the fashion is inside a community, to promote a new consumer vision where fashion is not only about the new, but about shaping a more sustainable future and showcasing your efforts in this area. This does not exclude focuses on appearance at all, but sometimes it is about reworking our clothes and clothing sources. Furthermore, they found that vintage clothing wearers had a higher desire to buy unique clothing products than new clothing wearers. The most frequent complaint about reusing clothes was that the participants hated not knowing where the vintage clothes were coming from and who had used them. As well as the energy and time consumption necessary to buy used clothes [22].



This research could maybe be used in comparison with leather jacket wearers as such products often are of a really high quality standard and can last for a long duration of time. Furthermore, BWF already solved the issue with not knowing where the jacket is coming from because the users are able to track the jacket's story and the jackets are biologically reset when handed back to BWF. BWF also makes it quite easy for the users to acquire the jackets. This would ensure you can reuse the jackets without the negative sides of the act. Finally, the concept of redesign and promoting sustainability is exactly what BWF is trying to achieve as they put a lot of effort into the fashion- and design-part as well. After all, the BWF concept in itself is about being a community where it is fashionable to be sustainable as well as making it affordable and not excluding the design of the jackets.

## 2.6 Concluding on BGR

The section about material heritage shows how it can be used to accumulate value through for example shared stories or visuals in correlation to the founding idea of the BWF. It also showcases examples of other instances having accomplished this, for example "Tales of Things". Also, that there are distinctive differences between tangible and intangible heritage, but that they are all closely altered and defined by communities and the society.

The gamification chapter illustrates how influential the concept can be, but also that there can be many challenges and pitfalls to avoid. The most relate-able one to this project is to avoid making the BWF app a game, but instead using game design elements to add user progression and engagement. Also for users who are not necessarily young or who like games in their spare time. There is also the challenge of ensuring a more long-term engagement and motivation.

The research on what defines a community is vital when designing an app trying to accomplish so, or at least opening the opportunity for such. The users would also need a area to share together (possibly virtually) which could be the app. The results from studies show that vintage wearers have a higher desire to buy and wear unique clothes and that reused clothes was an easier way to vintage clothing than the expensive items found in boutiques. These aspects could perhaps be applied to leather jacket users as there are similarities. Leather jackets are also often quite expensive and BWF especially promotes their jackets with also being very unique and individual.

The research indicates that it should be viable to use material heritage in combination with gamification, and that these could be used within the app. The app would then be not only a way to gain information about your jacket and BWF, but also a means to tying the community together. Actually, finding a solution for this would theoretically not only accumulate value in the object for the next user to obtain it, but for the previous owner as well. This is because the previous user would be able to check-in on the virtual heritage and how it changes and is experienced by the new users within the community.



# Final Problem Statement

With a foundation set by the design brief and background research, it is time to more accurately define what this project sets out to investigate. To do this a problem statement with accommodating success criteria can be made. But before doing so, let us consider what a problem statement actually contains.

A problem statement is a description of what problem or problems the project intends to investigate and try to solve. It includes a description of the actual problem, why it is important to solve and how you would go about doing that. A good way to identify these aspects is to ask 6 simple questions: What, When, Where, Who, Why and How. By incorporating these into the problem statement, it becomes easier to accurately formulate a research question.

Based on this, a problem statement can be broken down into a motivation (why), a vision (what, when, where and who), one or more research questions and some success criteria (how). A research question is a short and concise summary of the entire problem statement, usually no more than one or two sentences long. These questions should represent the essence of what is being investigated in the project.

## 3.1 Motivation

Currently, material heritage is tied to the physical object itself, but the world is changing with many communities operating on digital platforms either in tandem with physical ones or as a total replacement. To accommodate this shift in culture, creating ways of importing material heritage from the physical world to the virtual world will be important to some communities. One such community is BWF and their concept of sustainable leather jackets. The problem here is to find a virtual way to accumulate the material heritage as well as building a community around it.

In a business aspect solving this problem would be a step towards altering the current "fast-fashion" business model where accumulating lost value is the main goal and course of action. Such business philosophy is both hard on the environment, but also alters the mindset people have when designing and producing materials. This problem adds a strong real-life relevance to this motivation.

From the user or consumer aspect this problem would mean a way to share memories and experiences virtually with others who share common ties. As well as making a sustainable way of thinking both beneficially in an economical and personal way.



## 3.2 Vision

The vision of this project is to make a digital solution that tries to combine the aspects of both gamification and material heritage. This solution will be designed specifically with leather jacket users in mind, but could be expanded to encompass other user groups that have relations to some sort of material heritage. Whilst the design might appeal mostly to specific sub-groups of leather jacket users such as BWF customers, elements from the final design should be of use for other audiences as well.

Communities can both be online and offline, and even though there could be natural possibilities for this concept to be utilized offline as well, for example leather jacket users meeting up and getting coffee together, this has not been researched and cannot be stated as of now. Though it can be said that this would be something included in further visions of this project. As of now, the focus relies on the online aspect.

With the technology and theory of subjects such as gamification currently available, it should be realistic to create a functioning solution. Whilst this project focuses on creating a conceptualization, implementing what is presented in this report should be fully possible.

Lastly, in order to try and ensure uptake and engagement from the users, gamification should be used as a tool to do so. By adding progression and other incentives to participate, it should be able to obtain higher uptake. Likewise, gamifying the user experience should engage the users more when using the solution, granting a better user experience and possibly make it easier for new users to approach.

## 3.3 Research Questions

Two questions were created instead of just one to better accommodate the directions undertaken up until this point of the project. We deemed it more viable to test and encapsulate gamification and material heritage along with their individual integration into an app on their own. Starting out with a research question to test how they combine together was an initial thought, but we found that it cut off a lot of necessary user experience feedback. Furthermore, this allows us to focus on the two topics individually, making it easier to answer them in a meaningful way.

Building on what we have presented so far, we can create two research questions that encapsulate the scientific directions of the project:

*How can virtual material heritage become integrated into a smartphone application?*

*How can game design elements be applied to a non-game application to increase uptake and usage?*

This should allow us to focus on the essential parts of the project, when moving into design and implementation, as well as conducting a relevant evaluation around these two questions.

## 3.4 Success Criteria

As the last thing in this chapter, some success criteria should be set up, both to set a direction for the project and for assuring that the goals of the project is fulfilled and that the research questions can be answered. These are our success criteria for this project:

- Have a testable prototype application
- Conducting relevant evaluation(s) on BWF users
- Applying game design elements to the prototype
- Integrating virtual material heritage into the prototype
- Acquire an initial solution for the BWF proposal

They allow us to answer our research questions by having a testable prototype that we can evaluate with BWF users. The prototype will include gamification as well as virtual material elements, so that each of the research questions can be answered, and by focusing on creating an initial solution for the BWF proposal, we try to follow a consistent design path.

It was decided to visit Forårsmessen 2017 in Aalborg Kongres & Kultur Center. This was mainly to meet up with Reimer again and discuss the process of contacting current BWF users. The research chapter had cleared up a lot of questions and unknown areas regarding communities, material heritage and gamification, but getting in contact with users seemed the next step.

Furthermore, the trip to Forårsmessen was about discussing the current application and beginning the process of looking at the code. It was very inspiring to visit BWF's stand and experience their full setup, as well as seeing how people were interested in the jackets and how they were made. Pictures were taken during the visit.





Design



The purpose of this chapter is to conceptualize and iterate on the product. A way of making the visuals interact with the world around it and helping the product achieve its objectives. You get design ideas from thinking, testing and researching as well as collaboration with others. In this chapter, the focus as such is on user experience, studying other similar applications and looking at material design. Following this up with an overall design process of both explanations and visuals. A Hi-Fi test is conducted near the end of the chapter to get feedback.

## 4.1 User Experience

User experience (UX) has become a more and more popular term over the years, becoming so popular that it is actually being called a "buzzword" in the field of human-computer interaction (HCI) by Marc Hassenzahl and Noam Tractinsky [12]. The former educated in social psychology and decision-making, and the latter in information systems engineering. The popularity of the UX focus comes from a decade of technology evolving to a point where interactive systems not only have to be usable and useful, but also appealing and fashionable to the users [12]. The HCI practitioners have become well aware of the limits and disadvantages of an usability focus. In other words, it has to go beyond that of normal functionality and the framework of cognition, amount of errors and user performance when describing or evaluation human-technology interactions [15].

It has to focus on positive psychology and creating quality experiences, explained as a user's experience at the moment it is experienced. It can therefore also sometimes be associated with more vague definitions as "fun" and "pleasure", but is mostly boiled down to the user's interaction with technology and their experience of this [12].

There is not a correct answer of how to ensure a good user experience, because it is not just about an instrumental process, but instead is a more complex and subjective matter. It needs a lot of different perspectives to be understood. It can be understood as a consequence of a user's internal state, characteristic of designed system and the context [12]. One of the reasons why it is so difficult to really describe or fundamentally agree on what UX is, is because it can focus on so many different aspects and methods, for example such as emotion, affection, experience, value, pleasure, fun, impression, etc. [15].

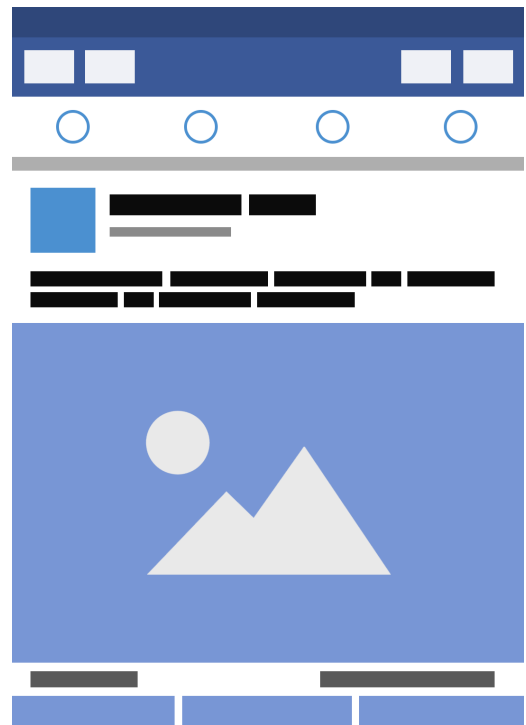
Instead of going too much into the little details and how to define UX, another source, a scientific book from Jennifer Fleming [10], is instead focusing on just organizing the content in a meaningful, logical way with a solid infrastructure to support the users [10]. This makes UX seem more like a continuation of constantly evaluating the link between users and content, to interpret and be iterative about the feedback given from the users. The source is describing it as a "happy marriage" of architecture and interface, a combination of logical structure and visual meaning - not for the developers - but for the users. The source states: "This is what creates a cohesive user experience" [10]. The book is meant to be applied for Web Navigation, but still have content and direction which can be easily mapped to an application. Applications are also dependant on a lot of its interfaces and navigational options. Being aware of the position of elements, the choosing of colors and contrasts, size of icons and other visual relationships.

## 4.2 Similar Applications

In this section the study is focusing on other applications meant for sharing their experiences and stories, such as social media applications, to look at how they designed their navigational options and interfaces.

To please the user so to speak we must create a great UX for the users. While we do not have time to test and evaluate every single element throughout our implementation of our prototype, we can take a look at how other companies have designed and constructed their applications. What we are specifically looking for when going through several examples of applications meant for sharing their experience and stories (such as social media applications) is how the navigation is constructed. Which kind of icons are being used? In which way does the user navigate around the application fast and efficiently using the interface? How is the users story shared and how is it presented to other users? The applications we are looking at are: Facebook, Google+ and Instagram. Each have their own way of navigation and telling the users story yet they are all easy to navigate and understand.

Facebook's mobile application makes use of several ways to navigate. To start off, the very top menu includes three buttons. The very left is to open the camera and a search button and the right buttons are for their chat system. The navigation bar below the menu has four buttons to navigate through your feed, friends, notifications and the drawer. The posts consist of one tile with information in it. The top is reserved for the profile picture with name and the status of the post below (public or private) followed by the text of the post above the image if any. Below the content is the stats of the post which consist of likes, comments and shares. There are three buttons below to like comment and share as well.



Google+ does some very similar things when it comes to the layout and navigation. The left button is for the drawer with several other buttons to navigate around the app and the right button is the search button. The navigation bar is placed in the bottom of the page with also four buttons which goes to home, collections, communities and notifications. Somewhat similar to that of Facebook's navigation bar. The way the post tile is displayed is also very similar to the approach of Facebook. The top is reserved for the profile picture with name and the status to the right of it. Then there is the text of the post followed by the image if any. The stats however also work as buttons in Google+, so the buttons are next to the stats which is likes, comment and shares.



Instagram also shares some navigational and layout features of the two other applications. The top menu has a camera button to open the camera and a button to send private content to friends or groups on the right. Instagram also has a navigation bar in the bottom with five buttons. The buttons are home, search, add image, following/notifications and profile. There is a much bigger focus on the image of the post on Instagram compared to the other apps which has the text content presented before the image. The top of the post tile is once again reserved for profile picture and name. Next up is an image that usually takes up almost the whole screen depending on its portrait size. After the image is the buttons to like, comment and share on the left and the right has a button to add the image to your collection. Next up is the stats of likes right below the buttons followed by the post text. After that is the comment stats and the ability to view them.

All the applications share almost identical ways to navigate the user around in the application by having the buttons almost always present to the user to make it fast and easy. The navigation is also very seamless as they are so similar in design it is easy to assume how you get around in each of them. The thing that changes the most between the application is what the post focuses on. Facebook used to be an almost text only platform and so there is a lot of weight on that part still, having the text of the post in the top before the image similar to that of Google+. However, Instagram has always been a platform for sharing images and such it is natural that the image is presented before the text if any. All these applications also have a big focus on the stats of the posts by including count on likes, comments, shares and views on videos.

The things that we can take from this analysis of the home content of these applications are the navigation and layout features. The navigation from Google+ with the drawer in the top menu could be very useful for the application we intend to make as there is a lot of potential content in the application such as the shop which is not really something any of these applications has. A drawer is very useful as it can include a lot of navigation buttons in one menu and is commonly used in other applications. How the posts are displayed we can either take the text focused approach or the image focused. What we would like to do is both and have the content of the post equally weighted next to each other. This is not something we have seen yet so it could be interesting to try out. As for the stats of the posts we are going to stick with likes and views as we are not interested in creating a social platform for people to communicate to each other but rather share their stories and experiences.



## 4.3 Material Design

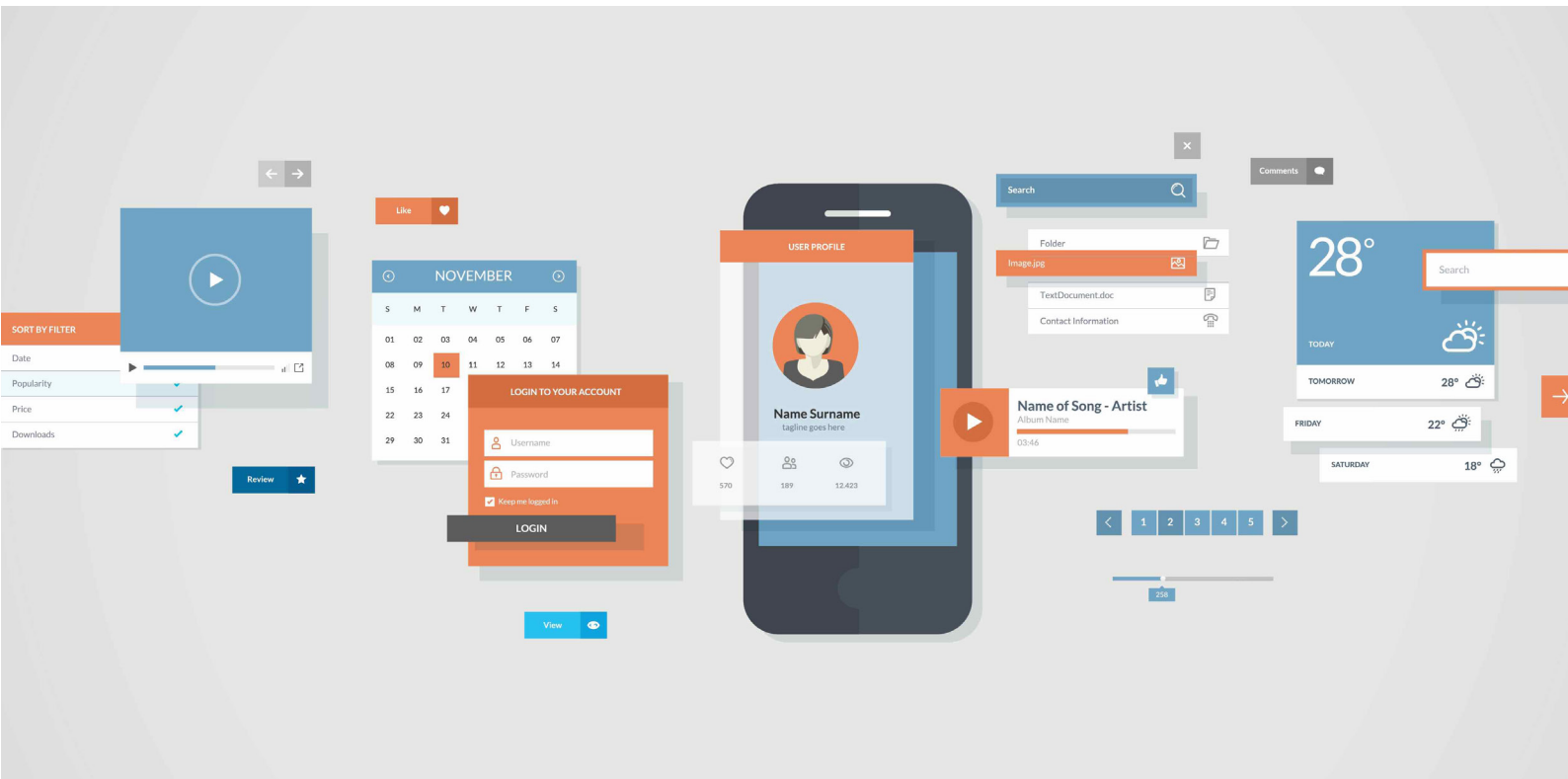


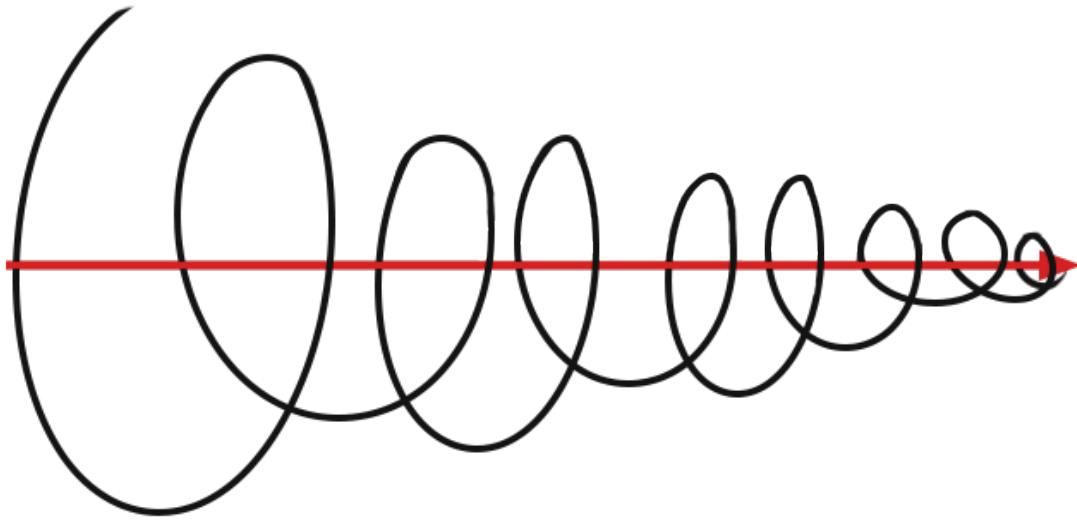
Figure 4.1: An example of elements that are all created on the basics of the design documentation of material design [5].

Material design is a guideline or more commonly known as a visual language that is intended to synthesize the classic principles of good design. Material design is something that is being continuously developed and iterated on over time. The goal of material design is to create this principal that it supports multiple device sizes and platforms as well as input methods. Elements and materials in the layout should make sense and feel natural and not feel messy and complicated. As the word material imply, the fundamentals of light and physics apply. This is key to convey how objects move, interact and exist in space and in relation to each other. Realistic lighting shows seems, divided spaces and indicates moving parts. The edges and surface of the material provides visual cues that the elements are grounded in reality.

This design ideology is based on the fundamental elements of print-based design such as grids, spaces, scales, colors, typography and imagery. This exists to do more than just please the eye. They create meaning and focus. With an emphasis on user actions making core functionality immediately apparent and provides waypoints for the user. Also motion of objects should respect and reinforce the user, the mover. Everything takes place in the same environment. Objects in the environment are presented to the user without breaking the continuity of the experience, even when the objects reorganize or transform. Motion should be meaningful and appropriate to maintain focus and continuity. Feedback is subtle yet clear. Transitions are efficient and coherent.

There are several examples as what to do and what not to do in the documentation made freely available for everyone to follow by Google. We have decided to follow this design documentation for our design phase as they bring up key elements that are very important when it comes to creating a good user experience [2].

## 4.4 Design Process



### Iterative Refinement Process

Figure 4.2: Illustrates the iterative process that constantly is refined and changed. Making several design versions and testing it with the users.

The design process has been one long iterative period of trying to look critically even at little details. The focus has been on user experience and this can be seen in the focus on making it visually appealing and satisfying, changing details to increase this. Furthermore, playing around with different colors to find the best contrast and changing shapes and sizes to find the best scaling. During the process the appearance has been changed every time new feedback was achieved. There has been iterative focus on both visual architecture of the app-sections and navigational options and interfaces. This section will provide visuals and small descriptions of the design process and explanations of the changes, while the up-to-date implementation will be displayed in a later chapter.

## 4.4.1 Early Sketching

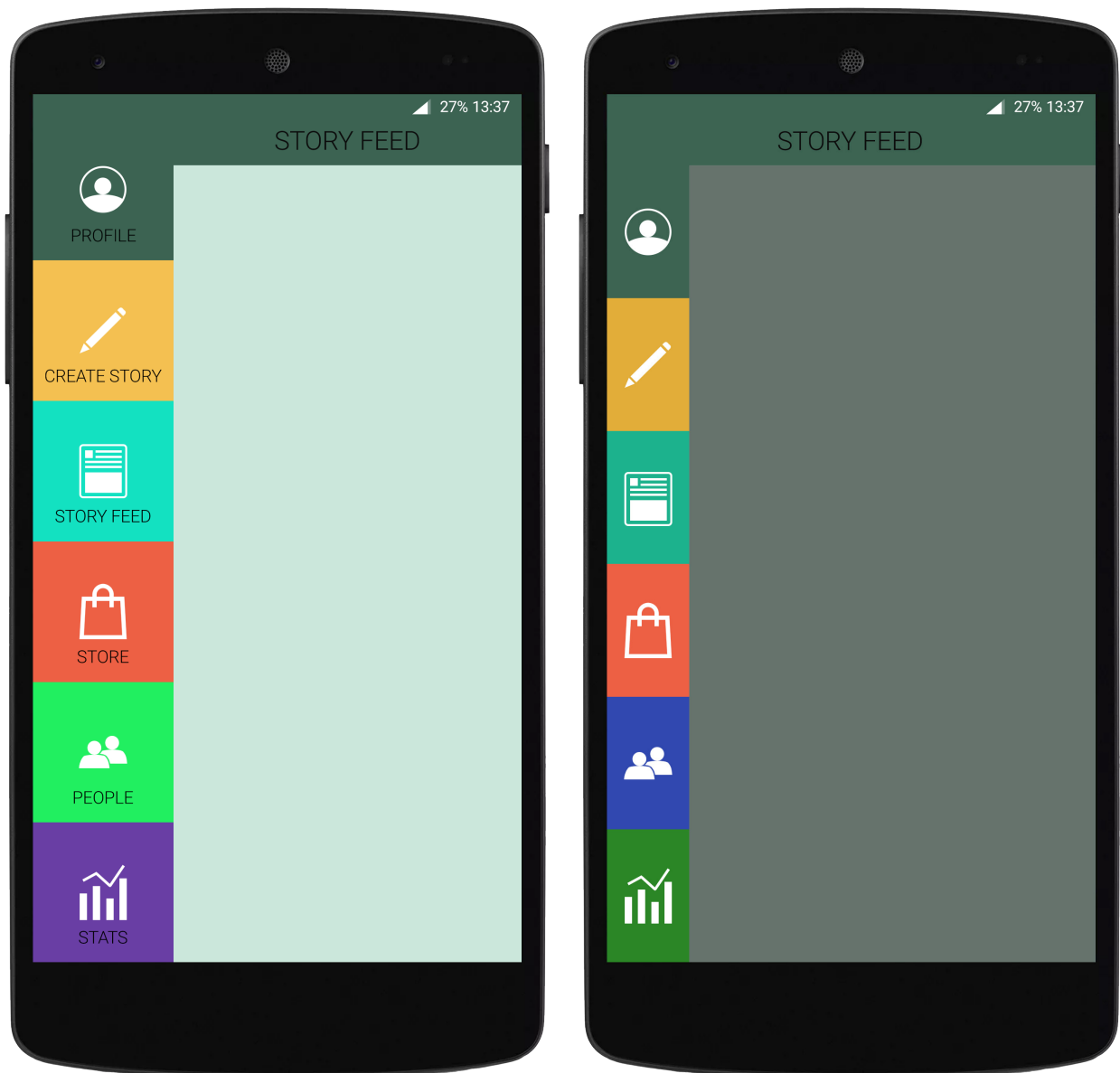


Figure 4.3: Showcases two different early iterations of the app interface. It is very basic and very early thoughts, but illustrates how different colors were tried out as well as trying text versus no text and the size of menu-buttons.

The initial idea of different colors mapping different menu-buttons seemed decent, but no matter how this was designed it always looked silly and disturbing for the eyes. Perhaps a solution for this could have been to ensure colors in more similar tones and shades, but the idea was scrapped as it also did not feel in line with BWF and BWF's concept and theme. Though, these early ideas showed that it was way better with text combined with icons as icons themselves should not be relied upon. There is a difference between having understandable and recognizable icons, and having to only rely on these icons.



## 4.4.2 Lo-Fi Sketching

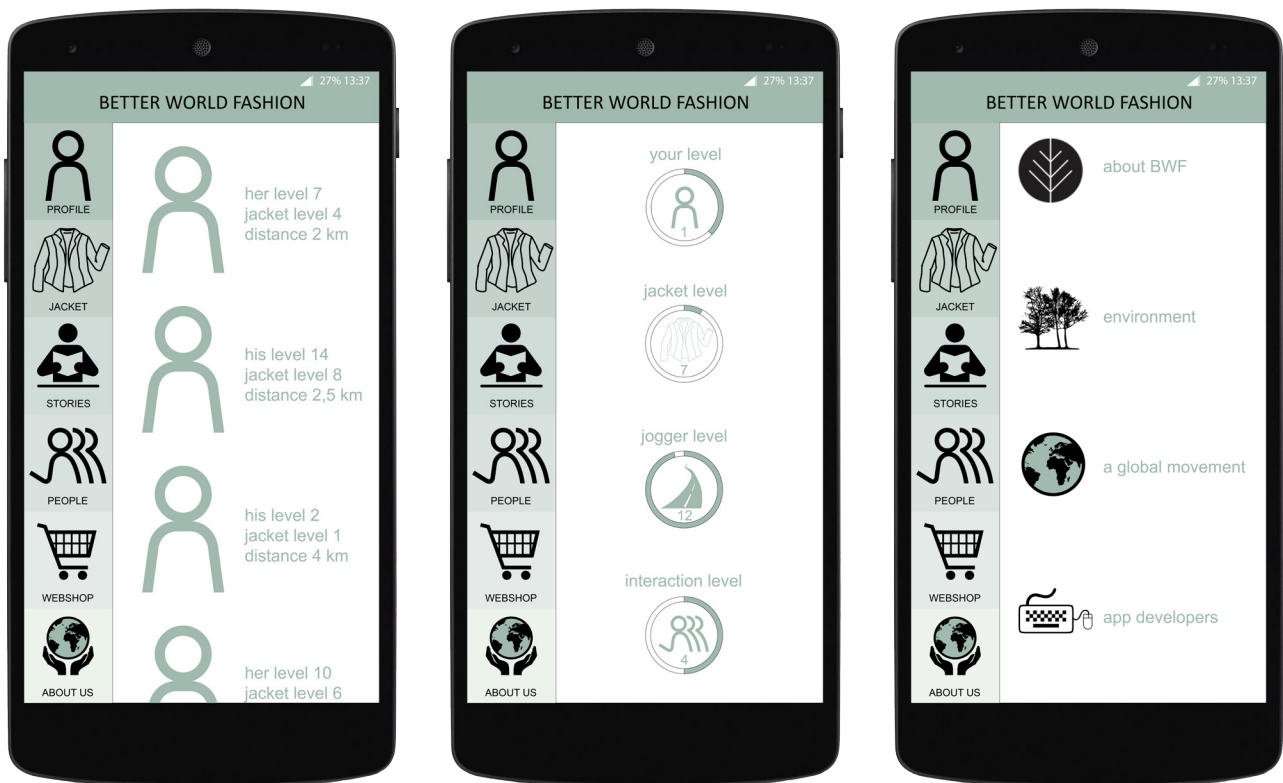


Figure 4.4: Shows some early sketchings on concept ideas for a possible Lo-Fi test. The colors are kept in a more neutral tone, actually being created from color shades found on the BWF-website. This was also the beginning of other concepts like showing nearby users, badges and levels.

As seen here in Figure 4.4, the colors were scrapped, but the colors in this example still did not feel right. The shades were more visually appealing to look at and was less disturbing for the eyes, but the overall design became very weak and non-dynamic. It felt like a very old visual design and something you would get tired of looking at. It felt suitable for a Lo-Fi test, but not for being implemented in a technical prototype. The ideas for the Lo-Fi test was early visuals of how to showcase information about BWF, giving the users gamified feedback and progress tracking and some possible online interaction. The iterative process of finding understandable and recognizable pictograms was initialized.

## 4.4.3 Early Hi-Fi Iterations

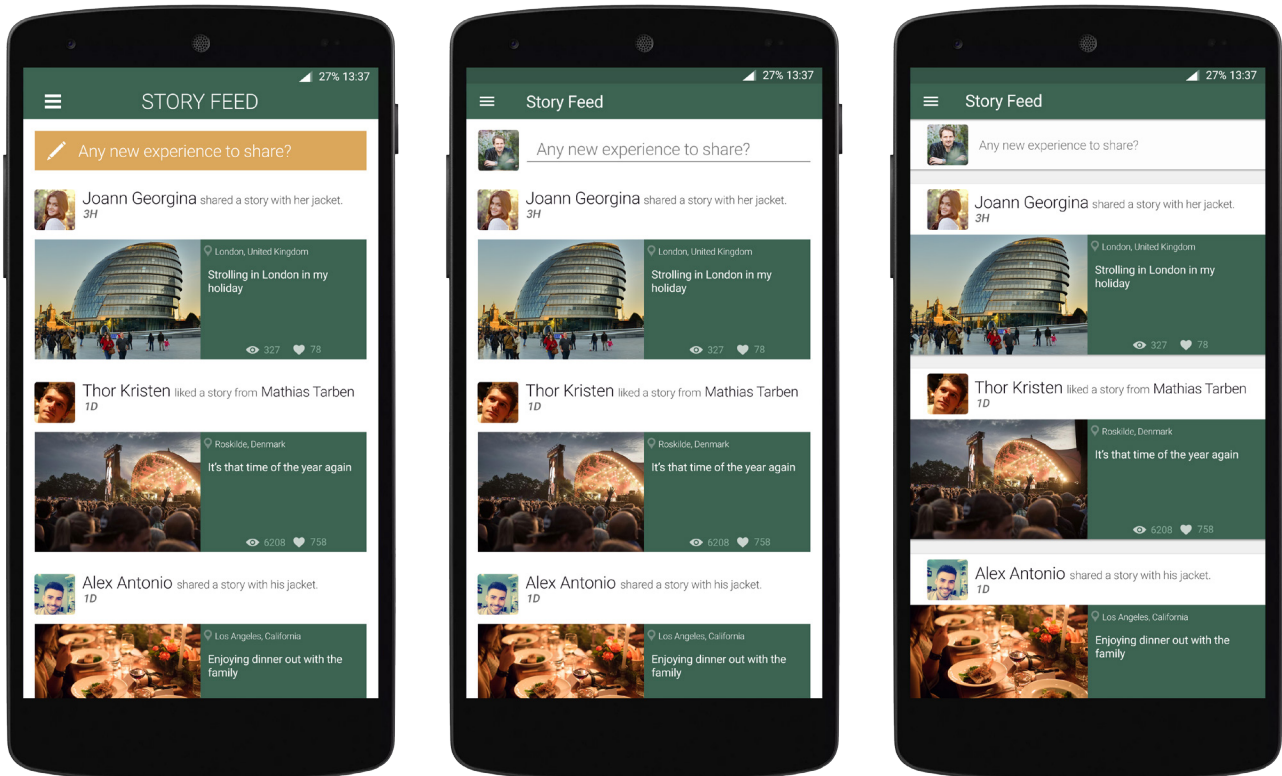


Figure 4.5: Shows the process leading up to the Hi-Fi tests. These were some early pre-Hi-Fi sketches focusing on how to design the "story feed" section of the app. The first two images are testing out different ideas, where the third image was the iteration leading up to the actual Hi-Fi.

The Lo-Fi test was cancelled and instead made into a Hi-Fi test which is not usually the human-computer interaction way of doing this, but the Lo-Fi did not feel necessary when taking into consideration where in the process the project currently was. Deciding on a Hi-Fi for the technology push alone is a bad design decision, but this was not the reason. Instead, the desire was to reach a higher functionality to test out true user interaction with the app iteration and to get feedback on the current system instead of risking more awkward, slowly-driven paper-based simulations. Also taking into consideration that the Hi-Fi was not a high cost implementation and it felt very natural to use the invisionapp to attain the needed functionality to test out the conceptual basics of the current iteration. Finally, the project was not in need of exploring many different alternatives, but instead to test and ensure that the conceptual decisions made sense and that the focus on user experience was maintained.

First of all, the idea of having all the menu-buttons on the left side at all time was scrapped. This was because the menu became bigger than first anticipated as the webshop and other elements were included in the iterations. Keeping all the menu-buttons forced on the left side of the screen felt very awkward and were not user-friendly in its use of the screen display. When comparing to this new menu design, the previous design felt very clunky and inefficient.

The first two iterations above are trying out whether the press-able story-button should be more neutral integrated or colorful to make its detection easier. The strong color felt very disturbing visually and the final iteration became the third option. Here, text and title is smaller and fits better into the visuals. The stories below are also broader so that their size and scaling feels more natural and fits the screen room better. The story-button is kept very natural and fitting in with the rest of the design.

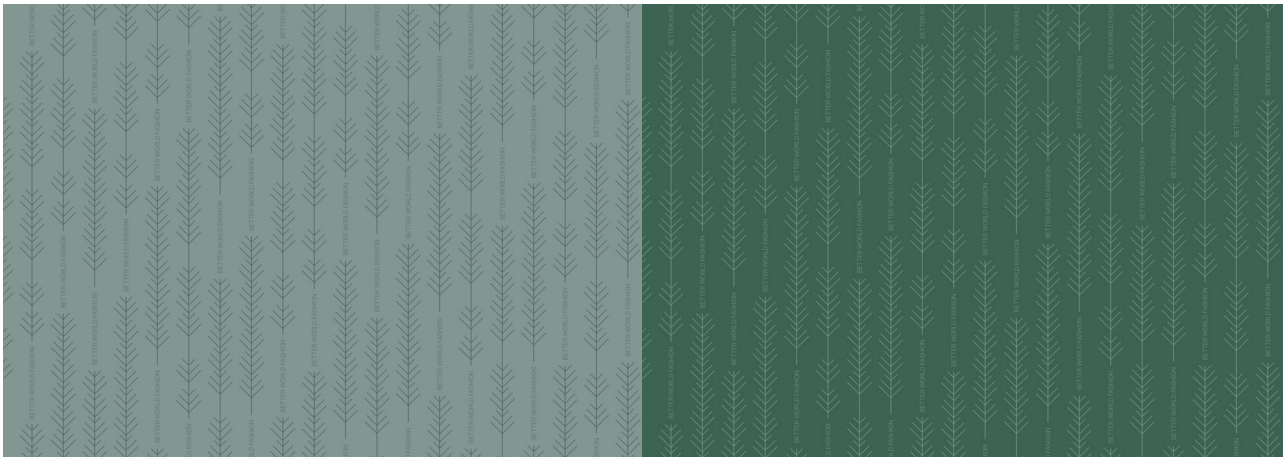


Figure 4.6: Examples of how different color shades of green were considered when iterating the background colors.

Another process was to decide on a backdrop color and the main choices seemed between these two examples. Like the iterations for the Lo-Fi tests the more lighter version of the color were very calm and neutral, but again felt very weak and non-dynamic. The green backdrop also correlated strongly with the feeling of nature, sustainability and environment. It mapped better with the theme behind BWF.

#### 4.4.4 Actual Hi-Fi Iterations

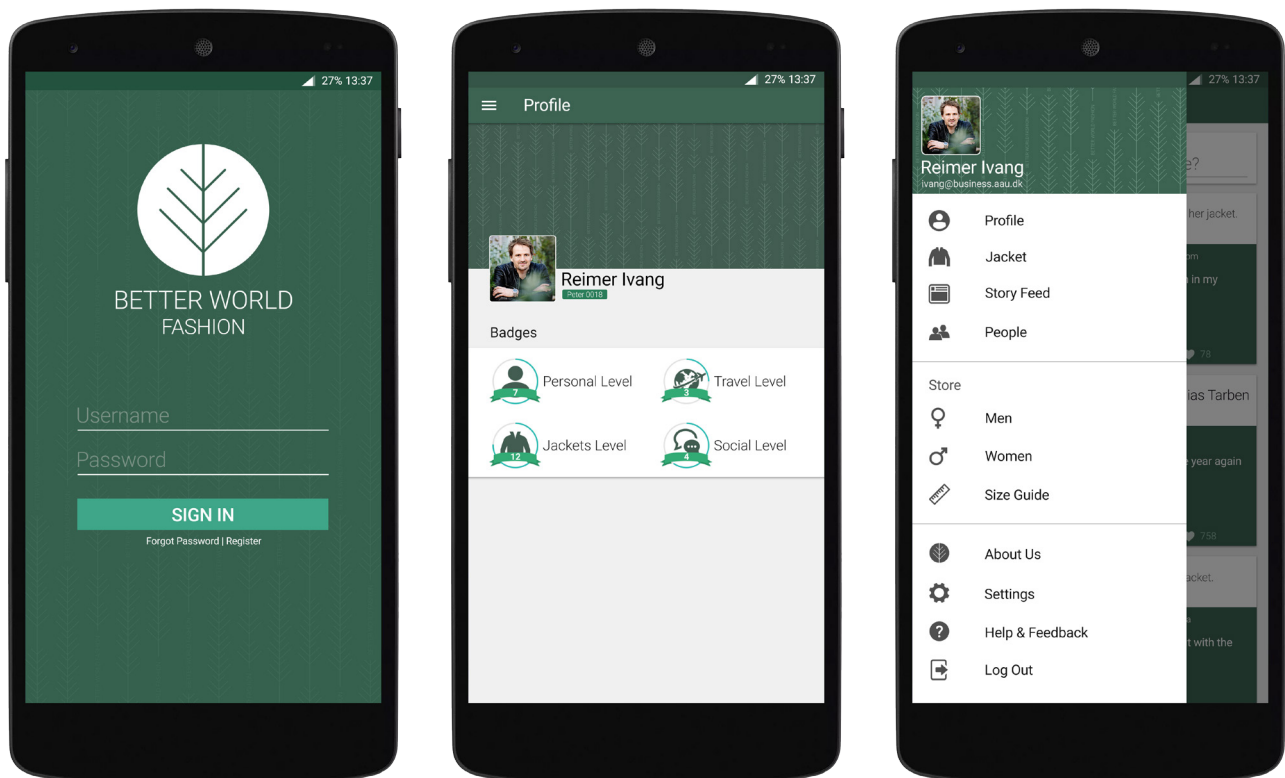


Figure 4.7: Illustrates the design used for the Hi-Fi tests. To the left is the login screen, In the middle, showcasing the profile iteration with card element. To the right is the jacket which is similar to the profile.



In Figure 4.7 are some of the iterations used in the Hi-Fi tests and they also showcases how the new menu was designed. It was divided into three parts. The first part being the often-used sections important to the BWF concept, then the webshop section and the info and settings section in the bottom. The menu was not taking up all the screen room, but instead showing that it was just a menu being activated by pressing the menu-button in the upper-left corner. The other iteration is of the profile section displaying the four badges and their corresponding levels. The badges and their pictograms have been updated since the Lo-Fi iterations to better match their content. The names were also changed to better fit this as well.

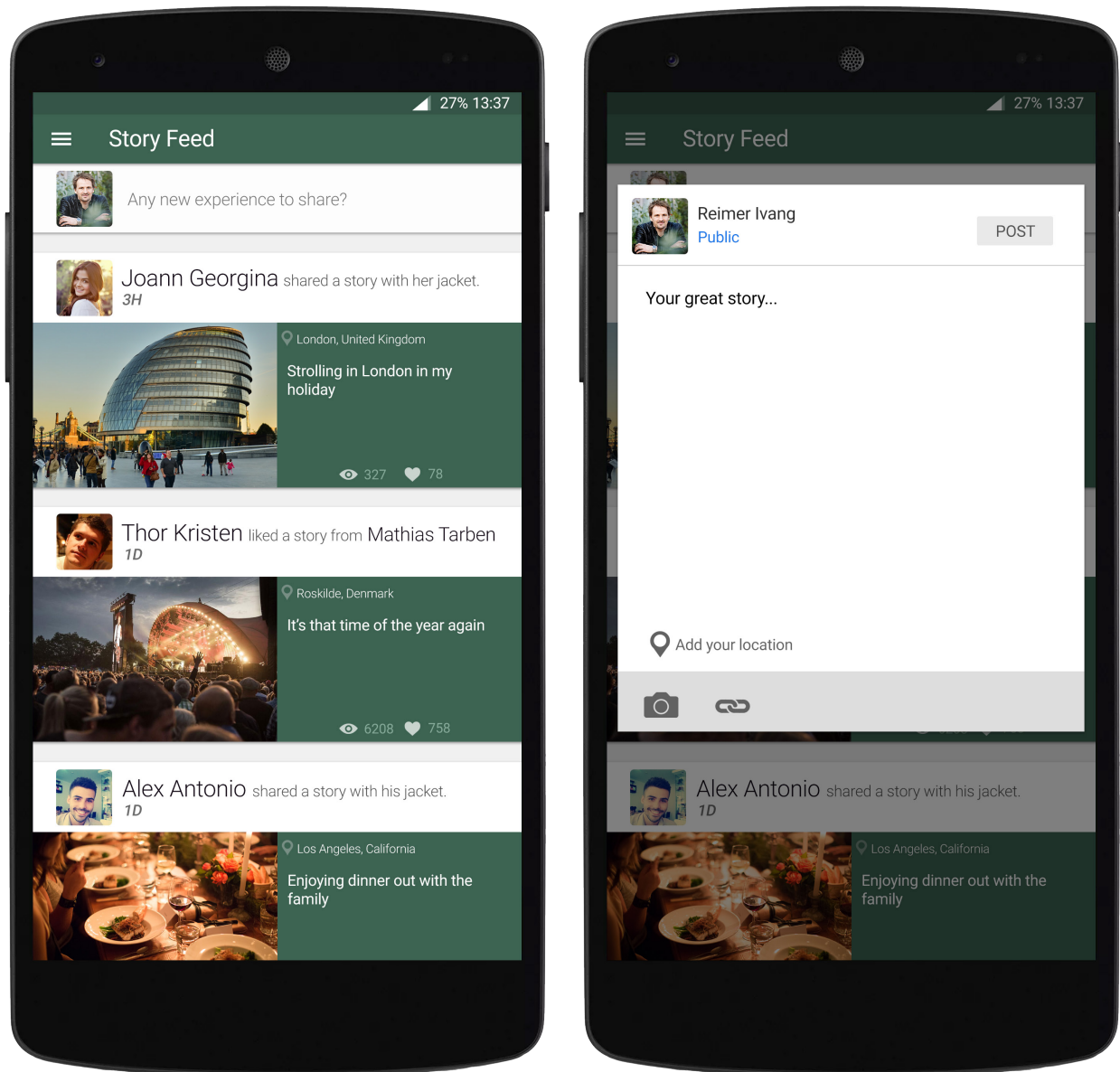


Figure 4.8: Illustrates the design used for the Hi-Fi tests. To the left, showcasing story feed section. To the right, showing pop-up design of the story-post feature.

Figure 4.8 also iterations used in the Hi-Fi tests. The first showcasing the design of the story feed section where the different stories can be seen and you can post your own as well. You are able to see where other stories has been posed as well as the online interaction by the community regarding this particular story. The other picture shows the pop-up design of the story-post feature. Also, the gamified badges have been changed since the Lo-Fi sketches to better reflect its meaning and describing what the badge is about. It is very important that the pictograms are understandable and recognizable.

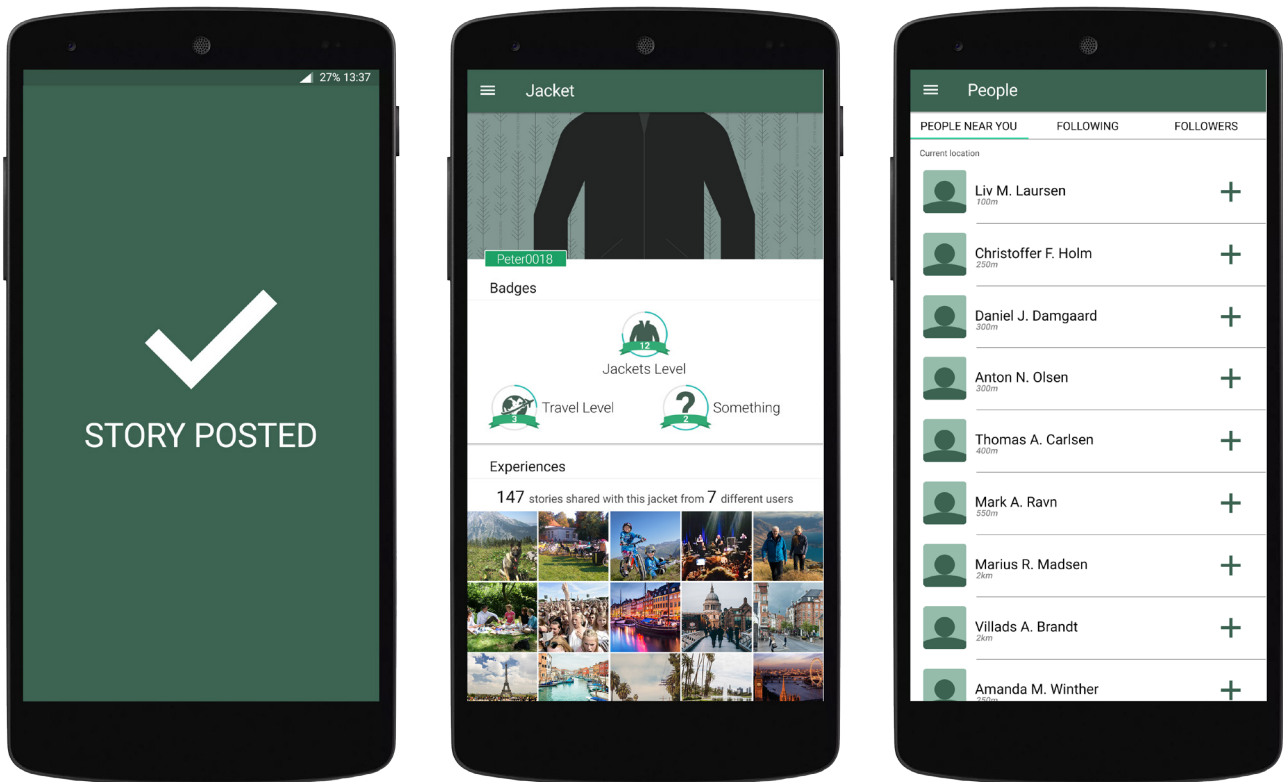


Figure 4.9: Animation shown during the Hi-Fi tests when following another user or posting a story. In the middle, showing the drawer iteration divided into three parts inspired by the documentation on material design. On the right is the people page

The animation preview still in Figure 4.9 were implemented within the Hi-Fi tests in the inversionapp software to give the user feedback when carrying out the given tasks. It was to ensure that the users knew the task was completed. The color designs were kept in balance with the previous ones. The text changes based on the action you did, in this case there was another when you posted your story and it would say "STORY POSTED." There is also the jacket profile which is very similar to that of the profile by also being able to earn badges. There is also the experiences that has been shared with the jacket collected as a tile on the screen. The people screen is intended to help other users find people of similar interest when it comes to sharing a story and follow other people. There is an indication for people near you with the closest sorted to the top. Then there is people you are already following and who is following you.

## 4.4.5 Post Hi-Fi Iterations

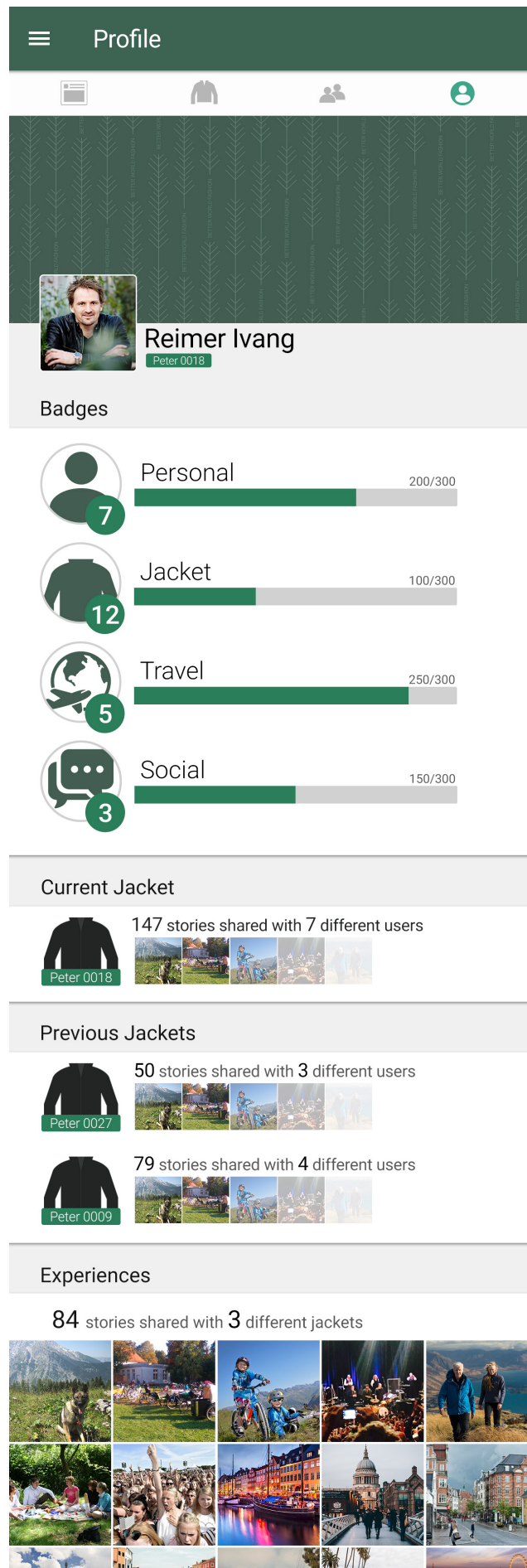
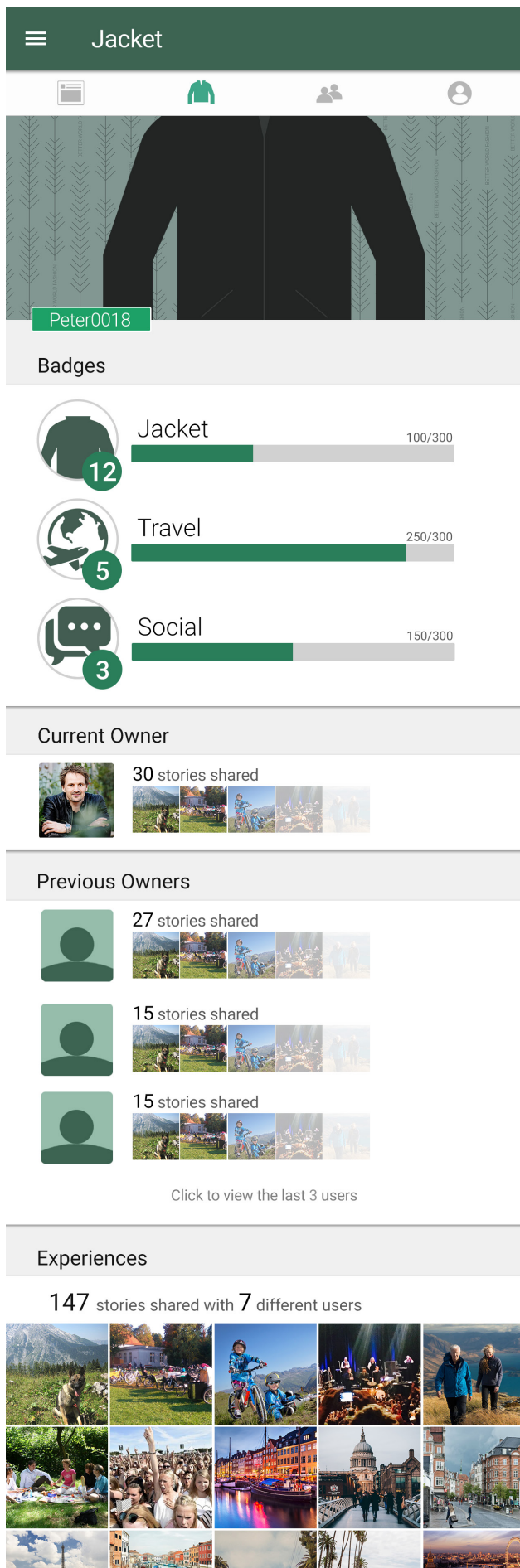


Figure 4.10: Illustrates the design iterations made after the Hi-Fi tests and based on the feedback given during the tests. To the left, showing the jacket section. To the right, showcasing the profile section.



These new design iterations as seen in Figure 4.10 were made from the feedback and results achieved throughout the Hi-Fi tests. New additions are the quick-navigation options in the upper part of the screen to increase the user experience and give them faster means of navigations, especially for the most-used parts of the app. Furthermore, the three badges inside the jacket section were displayed differently in a triangle formation. The profile section featured the same quick-navigation, but had none further design changes.

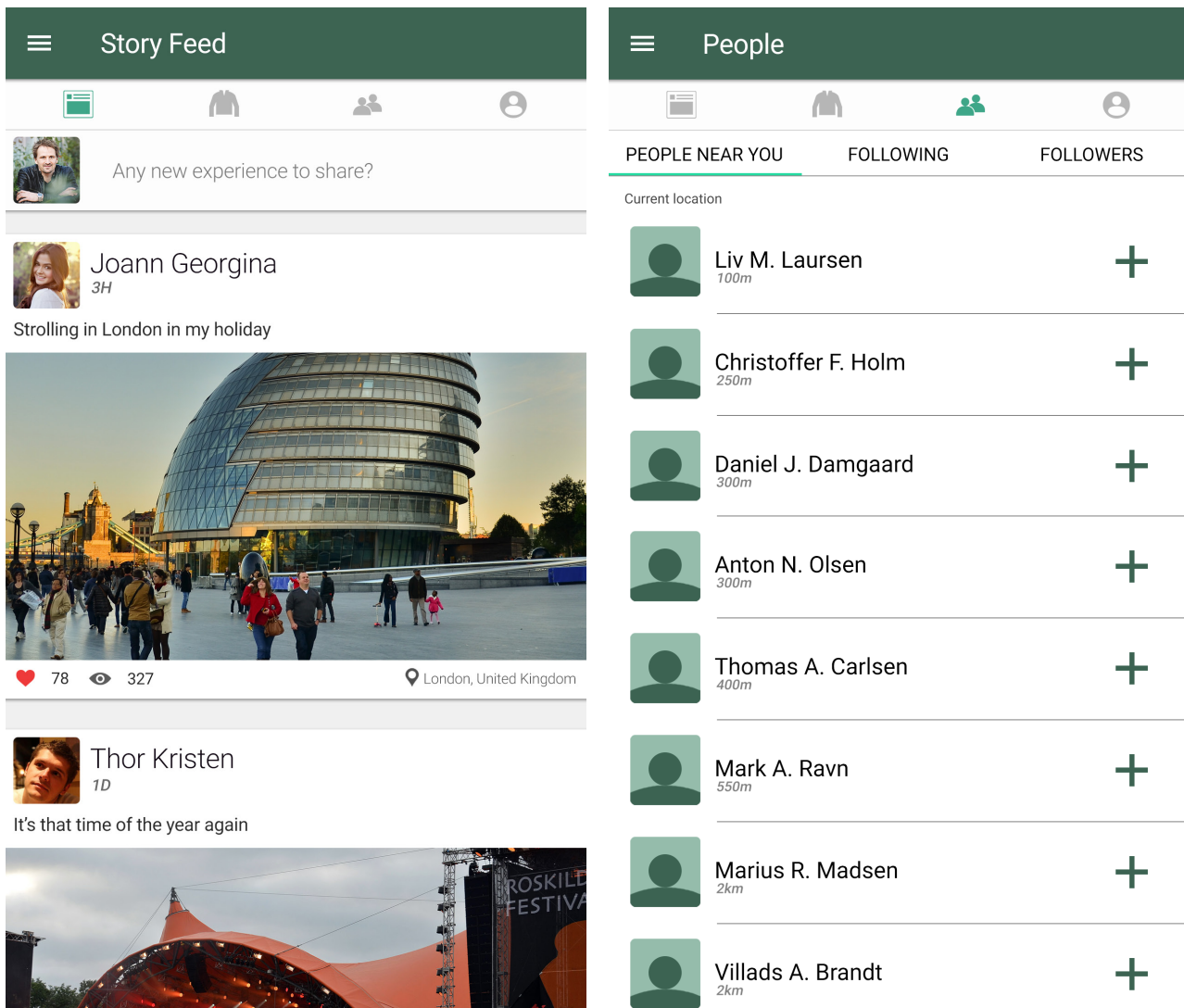


Figure 4.11: Illustrates the design iterations made after the Hi-Fi tests and based on the feedback given during the tests. To the left, showing the story feed section. To the right, showcasing the people-section.

Two other examples in Figure 4.11 of the new iterations made after the Hi-Fi tests. The first image is of the story feed section with the new quick-navigation as well as not showing the full picture and having the story-information below the image to allow the users to focus on the picture. After all, the pictures are the main part of the visual stories and a big deal towards the virtual material heritage. The new iteration was also using the space better and scaled more efficiently. The story feed section was also not filled with different inputs both when users shared or liked a story, but instead only included posted stories for others to browse. The people section also got the new navigation bar.

## 4.4.6 Main Design Sections

The post Hi-Fi design can mainly be divided into six sections or activities: Log in, Story feed, Profile, Jacket, People and Menu. These six sections will briefly be described below.

**Log in**, seen in Figure 4.7, is the first section the users see and this is where they enter their username and password to get entrance. The log in is designed with BWF's logo in white which goes well together with the green background. The green background actually also has BWF's logo going downwards as lines, but they are faded out to not disturb the eyes or take too much focus. The green background is the one also used in other sections. The sign in bar has a different green color than the rest so users easily notice it.

**Story feed**, seen in Figure 4.11, is the second section that users will see. They will enter this section after logging in. This is chosen as the second section because it is seen as the "home" segment of the design. This is where the users can browse through others stories, like them and post your own. This is probably the most-used activity inside the app and therefore this section is very important and is a major part of the BWF-concept. The section has undergone many iterative changes, mostly with different ideas to best show the upper "post-your-story" area as well as showcasing the pictures and information in the best possible way.

**Profile**, seen in Figure 4.10, is where the profile picture is shown as well as the profile name and jacket-tag. There are four badges, showing your overall personal activity, your jackets experiences, your travel activity and social activity. This is the central section of personal information divided into four segments: The badges, the current jacket, previous jackets and gathered experiences. This section is too long to show in the screen at the same time and therefore the user needs to scroll downwards. The colors go hand in hand with the rest of the design. There is information, but only the necessary information that needs to be given.

**Jacket**, seen in Figure 4.10, is similar to the profile activity, but is also different in the way that it is centred about the jacket instead of the profile. The importance in this lies in the BWF-concept where it is essential to be able to transcend the jacket into something more, to accumulate more value over time and also be able to give it to others when the time is ready. Therefore, the jacket is in focus and the fact that this jacket might have been owned by other user's as well. This is reflected in the design and in the information given. The jacket activity is about the specific jacket and its visual life.

**People**, seen in Figure 4.11, this is a part of an experimental and new concept of creating a sense of an online community and in some way being able to interact with each other. This is somehow reflected in the current design, but was also a design choice to open up for this possibility in future iterations and implementations yet to come. In the current iteration, users can follow and unfollow each other, as well as check who is following you and who you are following. It is based on the criteria of how close users are to your own location, because there is the earlier described idea of perhaps being able to meet up or building a sense of community. A lot of ideas still flow in the air about this specific activity, and also how to reflect that the focus is on the jackets and therefore not like other social apps.

**Menu**, seen in Figure 4.7, acts as the bridge between the other sections. It is all connected through the icon in the upper left corner and by clicking this the users navigate to the menu-section. The activity in this section is about choosing the new section the user wants to navigate to and then pressing the correct icon. Each icon in the menu is tied together with the design inside the corresponding section to specifically give the users the natural feeling of mapping the menu-icon and its section together. It is also through this section that the users are able to log themselves out of the app.

## 4.5 Hi-Fi Test

The tests were carried out to evaluate a higher functionality and interaction level than what a Lo-Fi test could perform. Giving the participants an actual chance to interact with a mock-up of the prototype iteration without making a high cost Hi-Fi because the invisionapp made it very natural and easy to implement. It was mainly about showing the visual concepts of the current design iteration, getting feedback on the used icons, navigational interface, design, color designs, etc. A Lo-Fi test had been better if it was meant to explore different alternatives, but the focus in this test was to ensure conceptual decisions were in the correct direction and that the focus on user experience was maintained. A Hi-Fi test would show a more realistic picture of the current iteration and illustrating the current reality of the app.

### 4.5.1 Screenshots

The screenshots below is for showcasing some of the different steps undertaken when completing the tasks given to the participants during the Hi-Fi tests. The screenshots are taken from the invisionapp website used to conduct the Hi-Fi tests. Further visual iterations of the design process can be found in the Design Process-section.

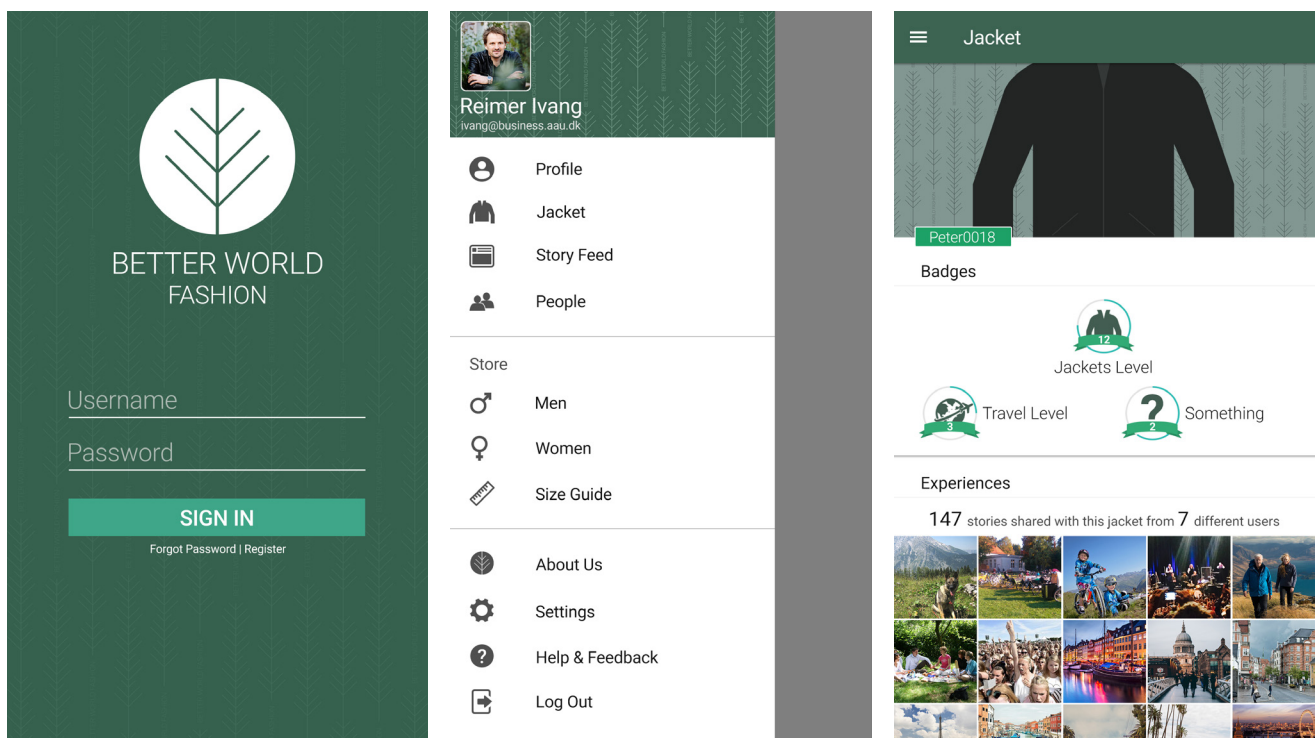


Figure 4.12: To the left, the log in screen when opening the app. In the middle, the menu section navigated to after pressing the menu-button at the upper-left side of the screen. To the right, the jacket section showcasing the levels and badges.



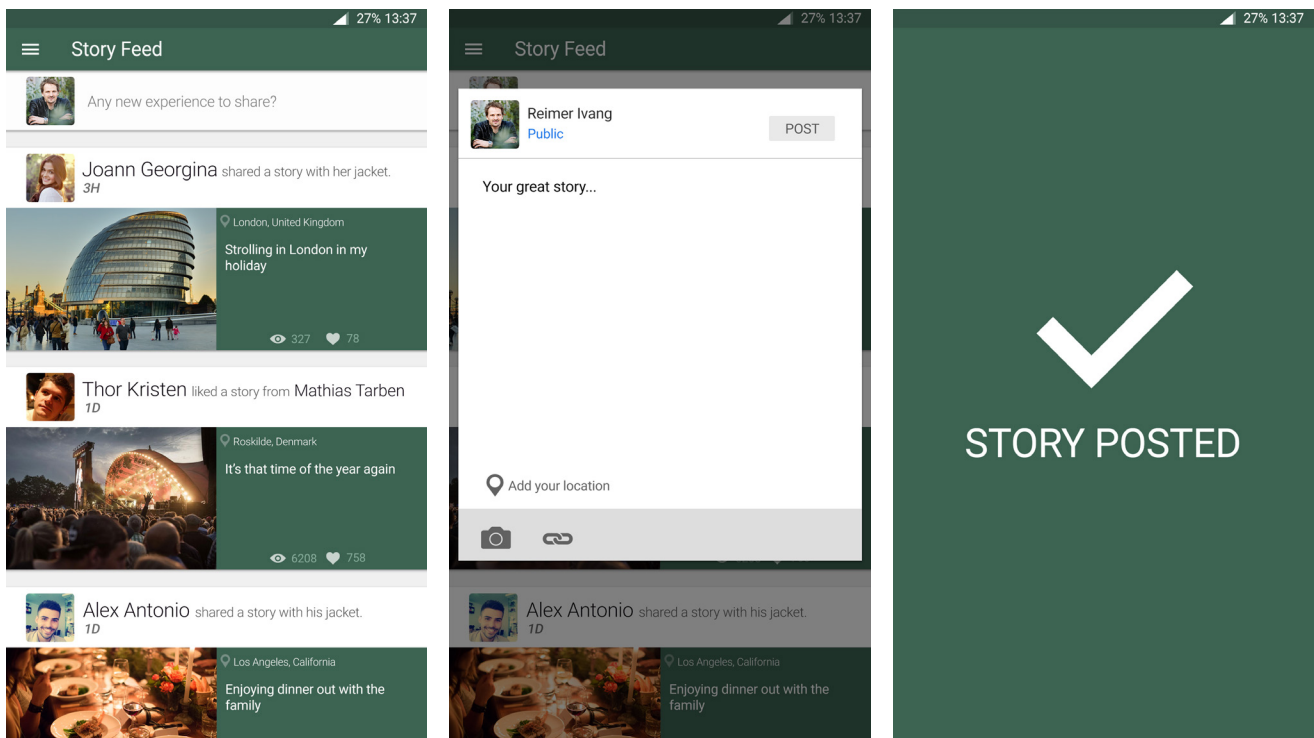


Figure 4.11: To the left, the story feed section also explained in the design process chapter. In the middle, the pop-up display allowing users to post a story. To the right, the feedback animation when the story is posted.

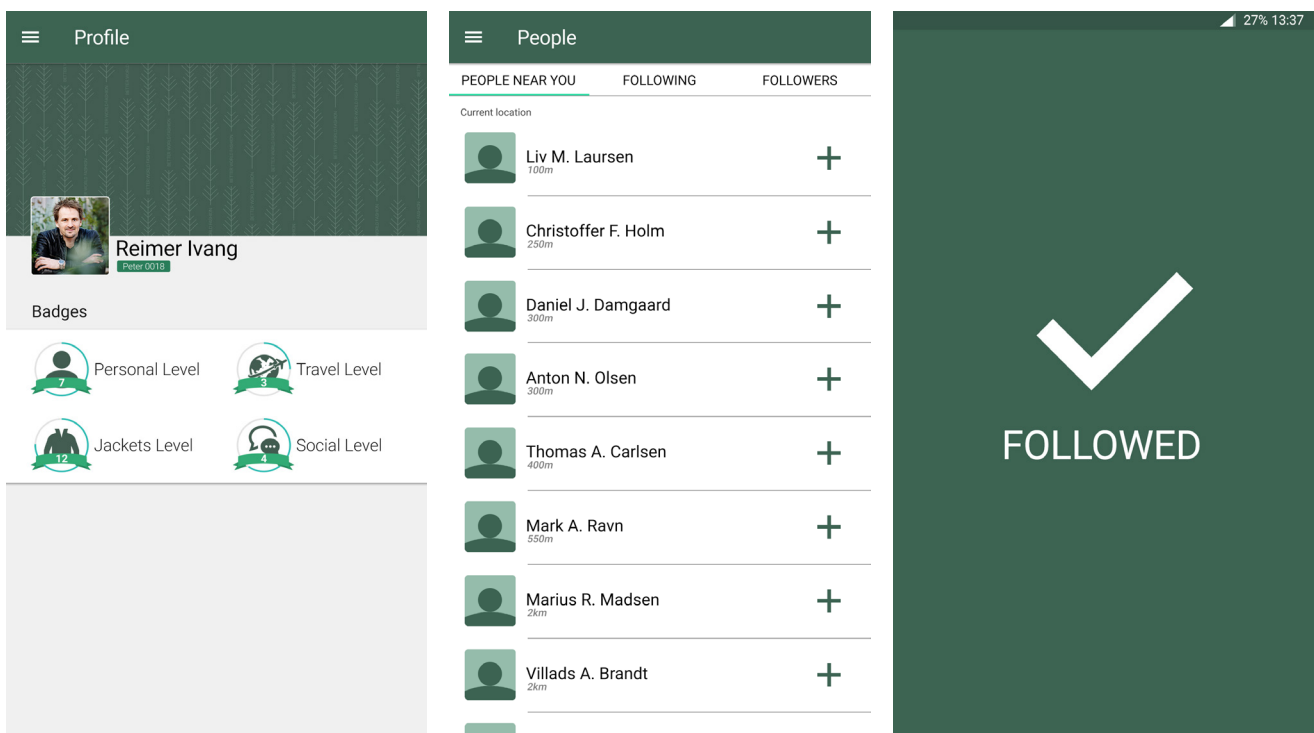


Figure 4.12: To the left, the profile section showing the levels and badges of the user. As well as their chosen profile picture, name and jacket tag. In the middle, the people section allowing users to follow and unfollow users. To the right, the feedback animation when the chosen user is successfully followed.

## 4.5.2 Participants

The participants were chosen from studies inside the Create-building in Aalborg University. Four participants from the Medialogy study and one from the Architecture and Design study. In similarity it was important that both these studies had knowledge and education regarding design and user experience in different variations. This was important so that they could critically analyze the Hi-Fi iteration corresponding to their expected standards and according to their scientific knowledge and state-of-the-art understanding. For example, it was obvious that the Medialogy students focused more on navigation and gamification, whereof the Architecture and Design student went more in-depth with the design and visual choices.

## 4.5.3 Procedure

The Hi-Fi was implemented by the usage of the invisionapp software from their website. The pictures needed for the Hi-Fi was created and edited in photoshop. The five participants were given the same briefing to ensure the same walkthrough and that they gave feedback based on the same initial condition and knowledge. The briefing was written down on a paper to ensure this. The briefing included instructing the participants to imagine sitting down with their own smartphone, trying to navigate how they normally do and how it comes natural to them. As well as trying to "think aloud" during the test whether it was thoughts, critics, praises, surprises or questions. Especially, if something was different than what they had expected.

- Press "sign in"
- Check your jacket and its levels
- Post a new story for today
- Check your badges and levels
- Go to the list of other BWF-users and follow the nearest user
- Log out of your profile

Above are the six tasks which were read aloud for participants as they completed them one by one. The tasks were designed to ensure a full walkthrough of the current Hi-Fi iteration and thereby granting the participants the necessary knowledge to evaluate on. The following questions were also the same for each participant.

- What did you think about the used icons and pictograms?
- Did the navigation and the interface make sense to you?
- Did you like the design?
- Did you like the choice of colors?
- Do you have any other questions or comments?

The tests themselves were carried out on a smartphone from one of the project's members. This was important as the pictures were implemented into the invisionapp software to specifically fit this smartphone's screen and would perhaps be too small or too big on other phones. One of the evaluators were controlling the camera on a tripod and making sure the technology were functioning correctly as well as fixing any errors that were to occur. The other evaluator were responsible for the briefing, asking questions, guiding the participants through the tests and taking notes.

Here is the link to the updated version of the Hi-Fi on invisionapp's software. Be aware that the updated version means having implemented new iterations based on the feedback and results:

<https://invis.io/TZBF0FBS3>

## 4.5.4 Results

The quotes and the results are from taking notes during the Hi-Fi tests as well as watching the video recordings afterwards. The quotes are translated from danish to english as the Hi-Fi tests were conducted in the native language of the participants. The Hi-Fi test with the Design and Architecture student was not recorded, but only resulted in note-taking.

The participants all agreed that the **pictograms and icons** used in the Hi-Fi test were easy to understand and recognize. Only one icon was unknown to them:

- "The icons were on point and they made good sense to me"
- "The only icon I do not recognize is "about us", but I guess that it is the logo of the company"
- "I recognized the menu-button as I have seen it many times before"
- "The icons make good sense when compared to what I am used to see"

**The navigational options** also felt very user-friendly and natural for the participants. Different participants came up with different solutions for this like quick-navigation in the form of new buttons, but also swipe-mechanics to navigate more like in Snapchat.

- "You have all the icons in the menu and they fit well together. There are some short descriptions and it is very easy to navigate from here"
- "You start in the story feed, and from here there should be some shortcuts to, for example, the profile section"
- "It is never nice as a user to be forced to press twice to go somewhere. Like, it is not necessarily equal to a bad user experience, but it is just making the whole process more troublesome"
- "The menu-button is the only way to navigate through the app"
- "I like that the menu is divided into three different parts"

The participants liked the **overall design** of the Hi-Fi iteration, especially praising the simplicity and modern layout of the app. The participant from Architecture and Design felt the current design was very Scandinavian. This said, there were also some new proposals for changes as well as few issues.

- "Some of the stories could be chained more together so it looks a bit more like one fluent object instead of separated objects"
- "I like the space between the different stories"
- "It is pretty to look at"
- "Why are the liked and posted stories equally highlighted?"
- "It seems that liked stories should be smaller or less significant than posted ones"

They all generally felt it was a good color design and that they did not grow tired of looking at it.

- "I actually don't really have an opinion on the color design, but the color scheme is fine"
- "The chosen colors seem to have a good contrast with each other"
- "It could be nice if the users could customize their own theme color. Then the profile would be more "personal" and that is often a good thing"
- "You chose good colors to use and they are consistent throughout the app, it's really nice to see that"



One topic that was brought up by most of the participants, while not being in the questions, was the difference of the **jacket and profile** section. Here, the participant from Architecture and Design also said that the profile section was a bit lackluster, and that she expected, and used Facebook as an example, a more broad overview of the users stories and progress recapped inside the profile section.

- "It is actually good that they are separated because I guess the content of the jacket section will vary depending on the jacket"
- "There should be more content inside the profile section, for example my own stories and experiences"
- "A good idea inside the jacket section could be to show the previous jackets"
- "The jacket section seems rather empty in itself and a lot of content in it is also in the profile section it seems"
- "The profile should be more like a profile. More personal information"

The final topic brought up by the participants themselves was the gamified element of **levels and badges** in the Hi-Fi iteration.

- "Leveling is a tricky concept... cause a number is just a number if there is nothing to compare it with, for example a scale or goal to relate to"
- "Sometimes it is a good concept to add references like divisions, leagues, so that your level means more than just a level. Some way to categorize it"
- "If the levels are infinite the difference between levels become very small and loses its meaning. Keep the levels within low digits and have a maximum cap on the levels"
- "An idea could be to make the first levels easy to reach and then make it harder afterwards so that casual users also get the feeling of progressing, but it is dangerous to make the last levels too difficult to reach as it will ruin the user experience for many"
- "Interaction between a high-level user and low-level user should also be on your mind. There should always be some kind of focus on this aspect as it can be very important for such a system"
- "It could be dangerous for a new user to get a max-level jacket as their own goal would then be irrelevant, so maybe there should be some kind of soft-reset by the new user so that they can see the jacket's previous level, but also progress on the jacket himself"
- "I think that the badges should be different from low level to high level. They should be more decorated in a way. I would expect that"

## 4.6 Concluding on Design

The user experience research showed that it is not just about the users learning the system or efficiency and performance, but instead about how they experience the meeting with the technology, with the prototype. This design phase has put a lot of emphasis on constantly iterating this and designing for a positive experience towards the users. The user's internal state cannot be altered or foreseen, but a lot can be done to think about the context of use and the design characteristics. This emphasis can also be seen in the study of similar applications and their design. Focusing on their choice of navigation, feedback to the users and usage of icons.

Furthermore, focusing on the material design and how to ensure a visual language, principles of a good design. To look at elements like grids, spaces, colors, typography and imagery, while applying this knowledge and focus not only once, but iteratively throughout the design process. Changing the iterations to both fit well with the BWF-concept and the continuity of experience. This process tries to showcase the progress of both listening to internal critics, discussions, newly gained knowledge on similar designs and studies as well as the important feedback from participants in the Hi-Fi tests. Tests that also led to new navigational and visual changes before moving on to the implementation.



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Implementation

The purpose of the prototype is to have a proof of concept that can be tested with users, in order to evaluate the two research questions. Thus, the prototype does not need to have full back end functionality, as it is not required to test the concept of the design and it goes beyond the scope of this project.

That however means that the front end of the prototype needs to closely resemble and demonstrate the ideas presented in the design chapter, so that they can be evaluated later. Specifically, it is important that the prototype present itself as a finished product even though it is not, to facilitate the evaluation. To ensure this, we set up the following minimum implementation requirements for the implementation.

## 5.1 Minimum Implementation Requirements

As mentioned above, it is important to reflect the ideas and concepts presented in chapter 4 through the implementation, so that they can be evaluated. To do this, the prototype have to include:

- Sharing virtual material heritage by sharing stories and experiences between users.
- Representations of other users' stories and experiences.
- A system for connecting with other BWF users, to illustrate the idea of community building.
- Gamification elements built into the previous requirements, which promotes interaction with the application. Specifically, an experience system that rewards the users with experience when they perform actions that are essential for the application, such as sharing new stories and connecting with other users.
- The prototype must function on the majority of android devices, so that it can be evaluated in the relevant setting. Preferably, it should be accessible through Google play, to facilitate the evaluation.
- If possible, that application should function on Apple devices as well, in order to reach a more varied group of testers.

These requirements will serve as a guideline for the implementation. Once they are fulfilled, we will be able to evaluate the concept of our design, through which we can try to answer the two research questions.

But before delving into the implemented features, we will take a look at the platform and tools used for developing the prototype.

## 5.2 Platform and Tools Used

As we had decided to keep the option for testing on Apple-devices open, we chose to implement the application in Unity. Unity is a cross-platform engine that can be used for creating games and non-games alike. One of the strengths of working with Unity, is the relative ease of deploying builds to different platforms. In unity, everything is written in JavaScript or C# (which we used), and when deploying to different platforms Unity handles the wrapping and compatibility automatically, leaving developers time to focus on implementing features rather than solving how to implement for multiple platforms.

Furthermore, the group also has experience with Unity from previous semesters, making it ideal in terms of learning process. Since the time frame of the project is rather limited, this seemed an important factor when deciding what platform to use.

Together with Unity, a visual scripting add-on called Playmaker was used. Playmaker is a visual state machine language that allows for quick and easy implementation by reducing the amount of code that needs to be manually written. A state machine (also known as a finite state machine) is a virtual machine that is always in one state, out of a total of finite states. Changing between states is called a transition, and can occur as a result of completing actions or external output.

Playmaker uses visual state machines as building blocks, which both makes it easy to couple together new functionality as well as giving a good overview of the code itself. Each state machine can carry out any number of actions, that can be accessed from the action library. These actions includes almost any functionality that can be written in scripts within Unity, and new communitymade actions can be imported into Unity in case you need something specific that is not already there.

Playmaker uses transition to move from state to state, which can be called upon completion of a state or as a result of many different actions. Transitions can either be local within the finite state machine (FSM), or global, moving between FSMs. Since most of the coding needed to implement the prototype was of a basic nature (enabling(disabling objects, updating text and images etc.) Playmaker proved to be an easy way to quickly implement the required features.



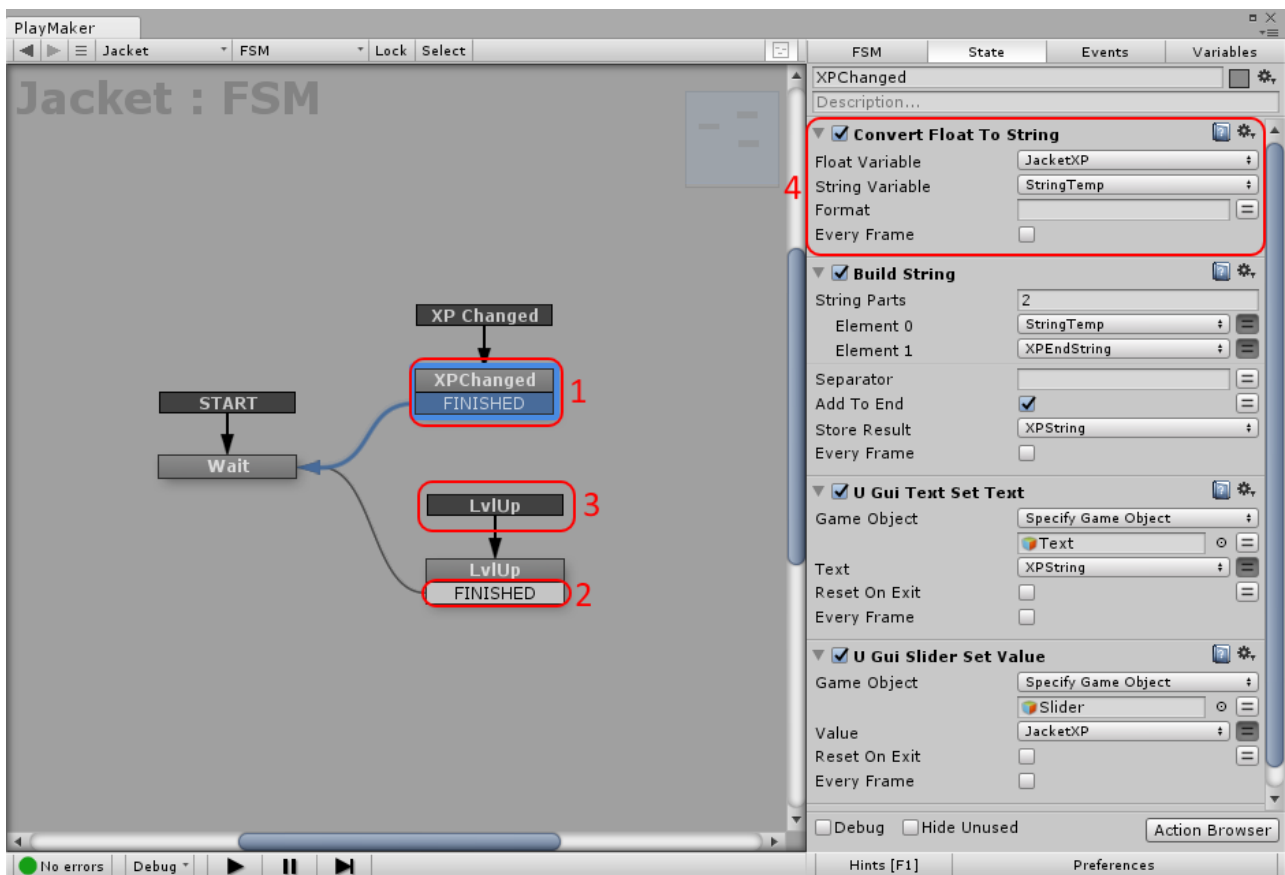


Figure 5.1: An example of a Playmaker FSM. 1: A state. 2: A transition. 3: A global transition. 4: An action.

Having decided on the platform and tools we were going to use, we started developing the prototype.

## 5.3 Implemented Features

The prototype has 6 main activities implemented: Log in, Story feed, Profile, Jacket, People and Menu. We will take an in-depth look at each of these to get an understanding of how the prototype functions.

### 5.3.1 Log In

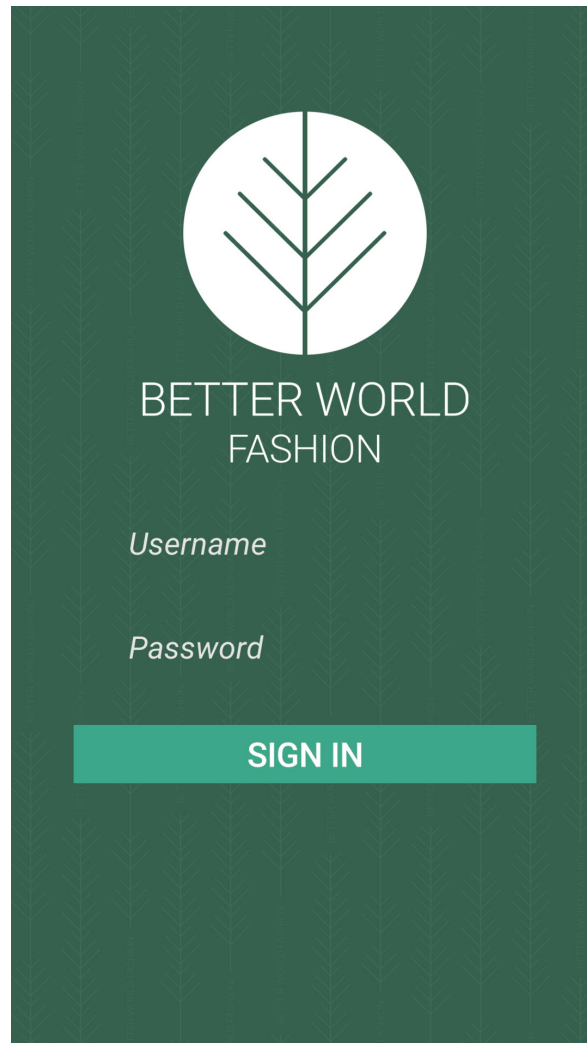


Figure 5.2: The log in screen of the prototype. The user can input username and password to log in.

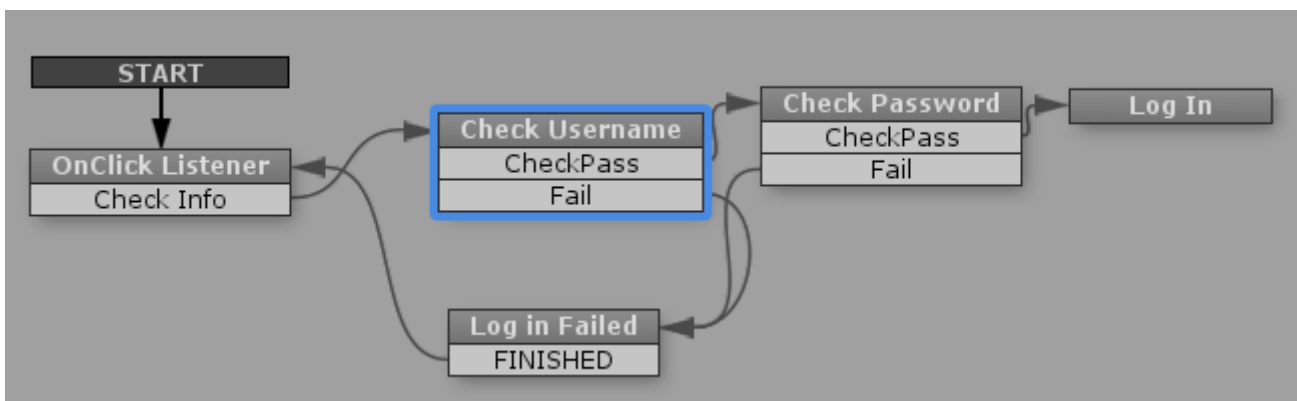


Figure 5.3: The FSM that checks the username and password supplied when the user presses sign in. If they are correct, the user is directed to the Story Feed.

The log in screen is the first screen that the user will be presented with after opening the application. The log in screen has two input fields (Username and Password) and a button that can be interacted with. The relevant information can be typed into the input fields upon touching them, and when pressing the button a FSM will check if the supplied username and password is correct as seen in Figure 5.3.

If either the username or password fails the check, a small text field beneath the Sign In button will activate, telling the user that the information is incorrect, and that they should try again. If both the username and password are correct, the user will be directed to the Story Feed screen, by disabling the log in screen and activating the story feed screen.

## 5.3.2 Story Feed

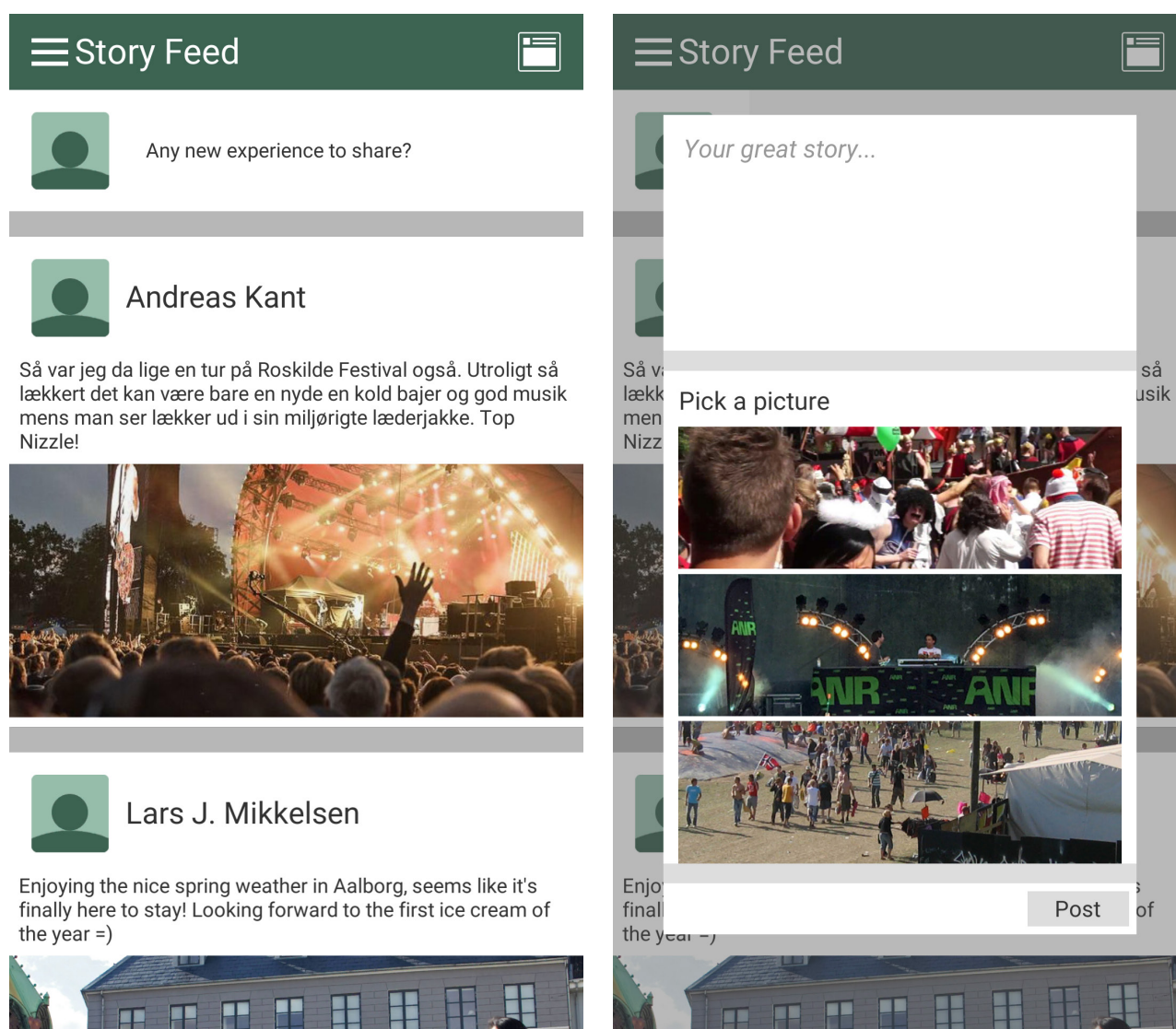


Figure 5.4: On the left is the Story Feed screen of the application. Here the user can create and share new stories as well as look at other users' stories. on the left is the New Post pnael. Here the user can write a new story to a picture and post it into the story feed.



On the Story Feed screen the user can see a top panel which tells the user where he or she is. The user can touch the menu icon (three white horizontal stripes) or the name of the current location next to it to open up the menu. Lastly, the user can touch the story feed icon in the right side of the top panel to return to the story feed screen (does nothing if the user is already there).

Below this, the user can see his or her profile picture, which currently is a placeholder, and a button that allows the user to share new stories if they press it. This opens up a new panel covering the screen, from which the user can create and share a new story.

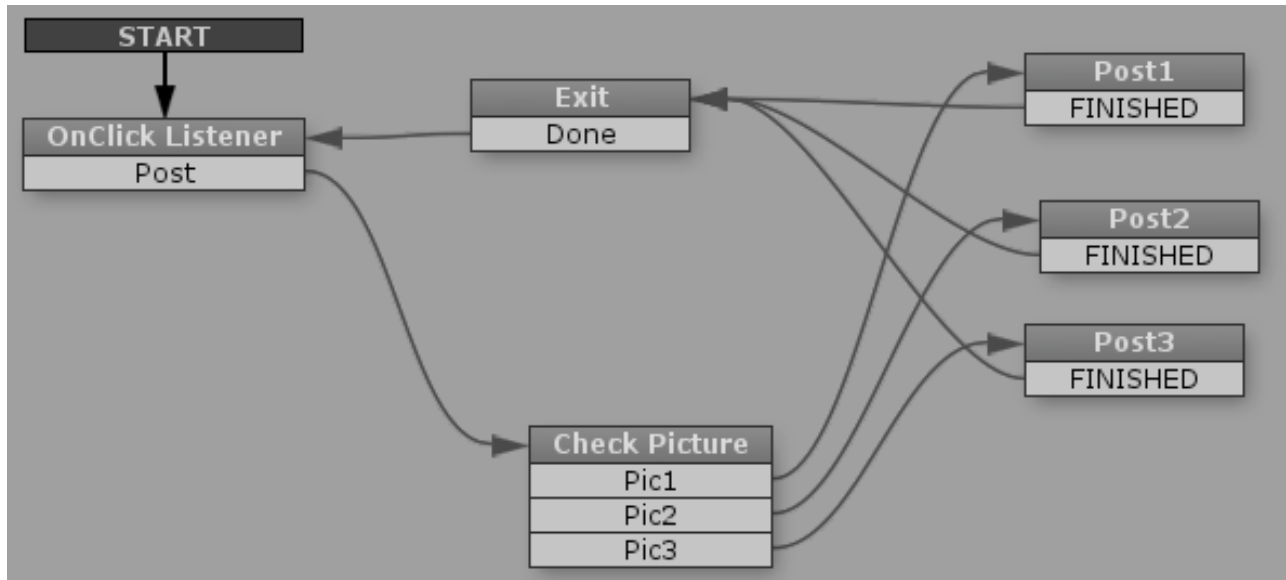


Figure 5.5: The FSM controlling the New Post Panel. It copies what the user has written in the input field, checks what picture they have chosen, and activates anew post based on this.

The new story panel consists of an input field at the top where the user can write their story, the option to pick a picture and a button that posts the story to the story feed. The structure for the FSM controlling the new story panel can be seen in Figure 5.5. Ideally the user should be able to either pick a picture from their gallery on the smartphone or take a new picture with the camera, but due to difficulties with Unity accessing the gallery and camera of the smartphone, this work around solution where the user can pick between three pictures were designed. This will be discussed further in Limitations.

The last thing that can be found on the story feed is the actual story feed, which consists of a scroll field populated with posts. The scroll field allows the user to navigate between posts in the same manner as most social media applications does today by scrolling in the vertical direction. Each post contains a profile picture and corresponding name, the story itself and an accompanying picture.

### 5.3.3 Drawer

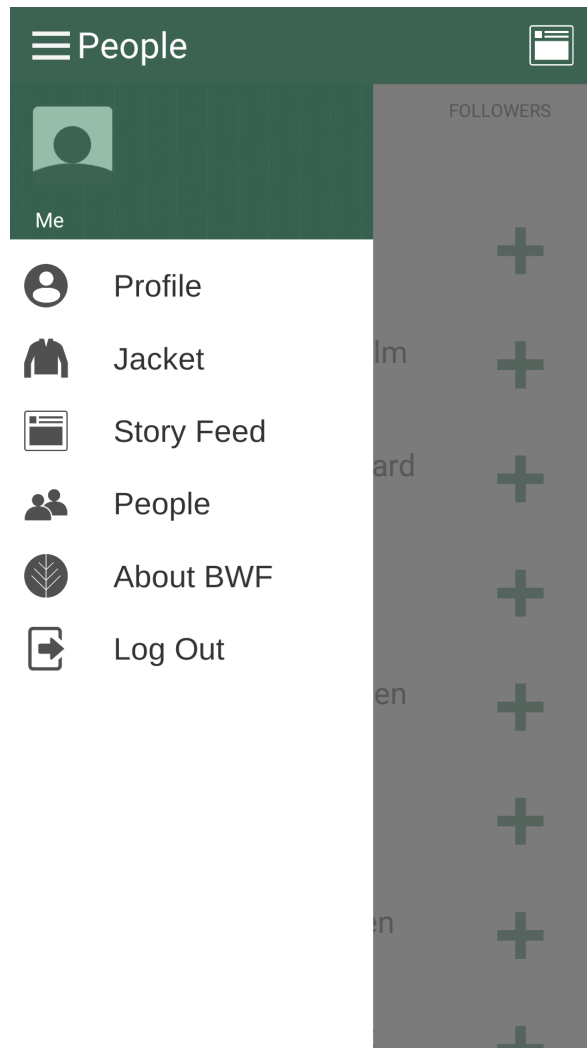


Figure 5.6: The drawer of the application. This is an overlay that appears when clicking the drawer button in the top panel, and can be used for navigation.

The Drawer allows the User to navigate between the different screens of the application. It works as an overlay to the active screen, which can be seen slightly grayed-out to the right of the menu. Touching the grayed-out area or hitting the return button of the smartphone will close the menu again. The buttons can be used to navigate to the different areas of the application by touching them. This functions by using the built in `OnClick()` method that Unity uses for all buttons, by making it activating the desired screen and disabling all other screens. Clicking the log out button will close the menu and activate another overlay, asking if the user wants to log out and giving them a yes and a no button.

Currently, the About BWF button does not lead anywhere, as there was not time to implement it before the evaluation.

## 5.3.4 Profile

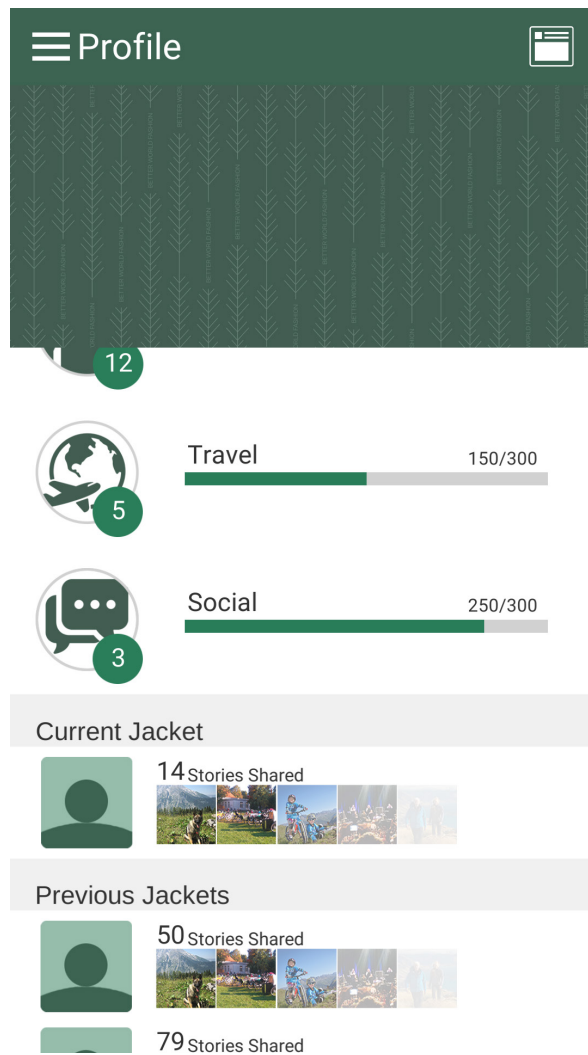


Figure 5.7: The profile screen of the application. Here the user can track their level progress and see their old stories.

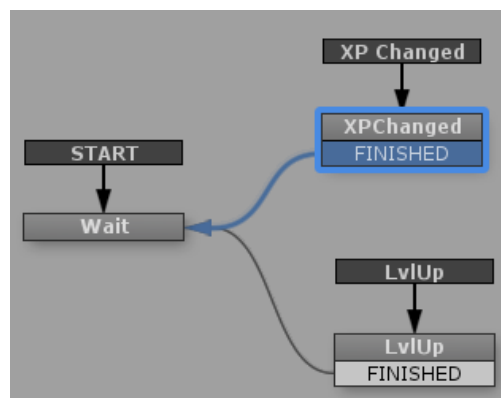


Figure 5.8: The FSM controlling one of the badges. It updates the level number and status bar with text when XPChanged or LvlUp is called.



The profile screen shows the user their level badges, as well as their current and previous jacket, and the stories tied to these jackets. The level badges show the level the user has acquired in each of four categories: Personal, Jacket, Travel and Social. The current level can be seen in the small green circle on the badges. The user can accumulate experience in each of these categories by Posting new stories, looking at other peoples' stories and following new people. Doing this adds an amount of experience in the relevant category, which can be seen in the progress bar next to the level badge. This updates dynamically whenever the user gets more experience. Upon reaching 300 experience, the user advances one level, keeping any leftover experience they had acquired. The structure for the FSM controlling this can be seen in Figure 5.7.

The current Jacket, Previous Jackets and the stories attached to them are currently only placeholders, put there to represent the features that would be available in the future.

### 5.3.5 Jacket

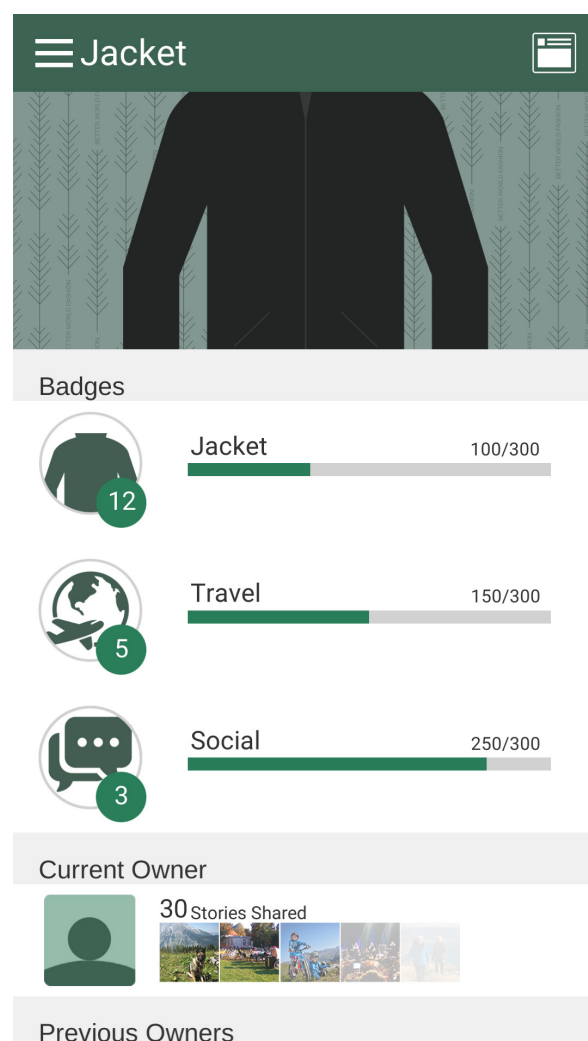


Figure 5.9: The Jacket screen of the application. Similar to the Profile screen, the user can track levels and stories related to their current and older jackets.

The Jacket screen is similar to the profile screen. It showcases the level badges relevant to the jacket, as well as the current owner, previous owners and the stories they have attached to the jacket. Like with the current jacket and previous jackets on the profile page, the current owner and previous owners are placeholders placed to represent planned features. The main difference between the profile and the jacket page, is that on the jacket page you are able to view the stories that have been attached to this specific jacket by previous owners, whereas on the profile you were able to view stories you had previously attached to other jackets you have owned.

## 5.3.6 People

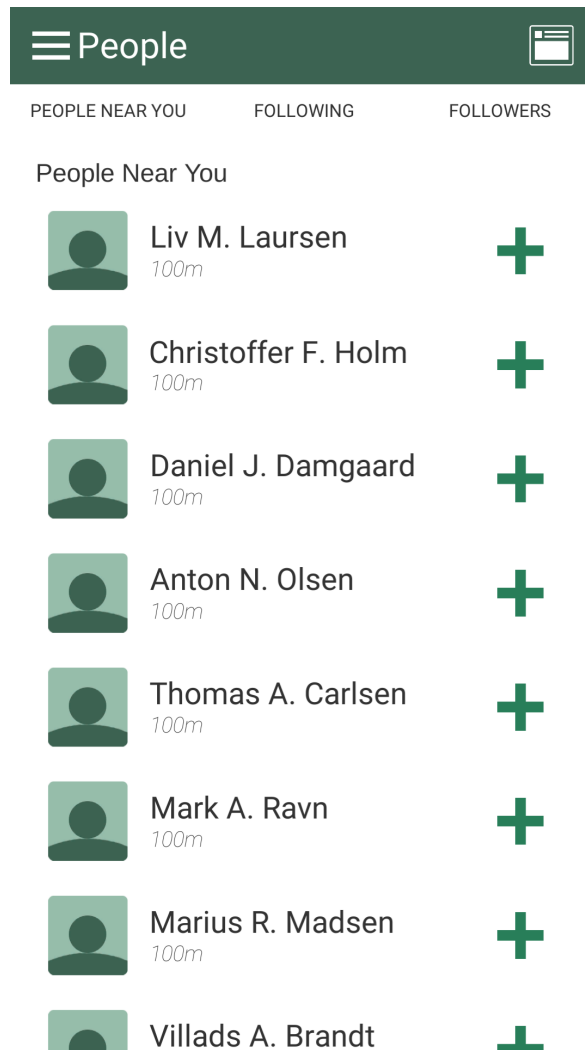


Figure 5.10: The People screen of the application. Here the user can connect with other placeholder users by clicking the + button.

On the People screen, you can see other BWF users that are near you (People Near you), people you are following and people that are following you. Here you can connect with people that are near you, which currently only shows that you are now connected and rewards a small amount of experience.

## 5.3.7 Deployment

The full application was deployed on android devices through the Google Play Store, allowing participants in the evaluation to download it onto their own devices. It was however not possible to get ready for Apple devices in time for the evaluation due to the time required to get approved for the App Store. In the next chapter, we will discuss this as well as other limitations of the current implementation.

## 5.4 Limitations

Although most of the minimum implementation requirements have been met, it has not been without limitations. Specifically there has been some issues with Unity and the android platform, as well as getting to release a build for Apple devices. Here we will take a closer look on some of these limitations, what caused them and how they could be resolved.

First off, whilst Unity seemed to be a good choice of platform when we set out to develop the application, it has turned out along the way that it is not well optimized for creating non-game applications for mobile devices. The UI system which is used for all of the implementation of the prototype, whilst it works for developing to mobile platforms, is more oriented towards platforms such as the PC. In hindsight, it would probably have been a good idea to consider another platform, such as Android Studio or Xamarin for implementation.

Which leads us to the next limitation of the implementation. Integration between Unity and mobile platforms such as Android and IOS is not particularly extensive, making it difficult to access some of the native functionality of the mobile devices. It was especially difficult to access the mobile gallery or camera of the mobile device through unity, as it would require to either buy or create a new plugin for unity to access these. This however was not within the scope of the project, and was abandoned. Another workaround would be to create a camera application within the prototype that could use the camera to take a picture (but using Unity rather than the native camera application), but once again this falls outside of the scope of the project. This is why the current implementation only allows for creating posts with one of three pre-determined pictures available, as it was the closest representation of taking a picture that we could implement within the scope of the project.

Other native mobile functionality such as usage of the return button on the mobile device needs to be manually programmed for all conceivable actions as well. This is fairly simple for basic actions such as closing the menu, but takes a fair amount of time to implement when it comes to returning the last active screen and keeping a queue of these for repeated presses of the return button. Overall, this is easier to work with on platforms such as Android studio, which adds another reason that we should have considered using a different platform than unity.

Lastly, we were not able to deploy the application for apple devices in time, as the review time for launching an application on the App Store was too long to get the application approved in time for the evaluation. This is regrettable, but deploying for IOS devices was something we knew we might not be able to do in time.





Evaluation

This chapter will be divided into an evaluation plan to make it possible to gauge the evaluation process. The evaluation itself is split into three evaluation directions being concept, usability and design. The first section will be the usability tests focusing on user interface design heuristics by Nielsen and Molich [26]. The second section will be focusing on the interview(s) conducted on BWF-users to evaluate concept and design. The third section will then be about the questionnaires on BWF-users again evaluating concept and design. These evaluations are followed by individual sections presenting the results and a meta analysis with the purpose of looking at the prototype in a more holistic way.

## 6.1 Evaluation Plan

In this evaluation the focus was on the reality of having a functioning prototype as a result of following the development loop, but it is not a completed, finished app. The prototype was created through a UX focused design phase and was never meant to be a redesign of the current BWF-app, but instead a new approach. It was very important regarding the collaboration with BWF to test out these integrated concepts as well as the quality of the prototype, and therefore the evaluation will be focusing on this.

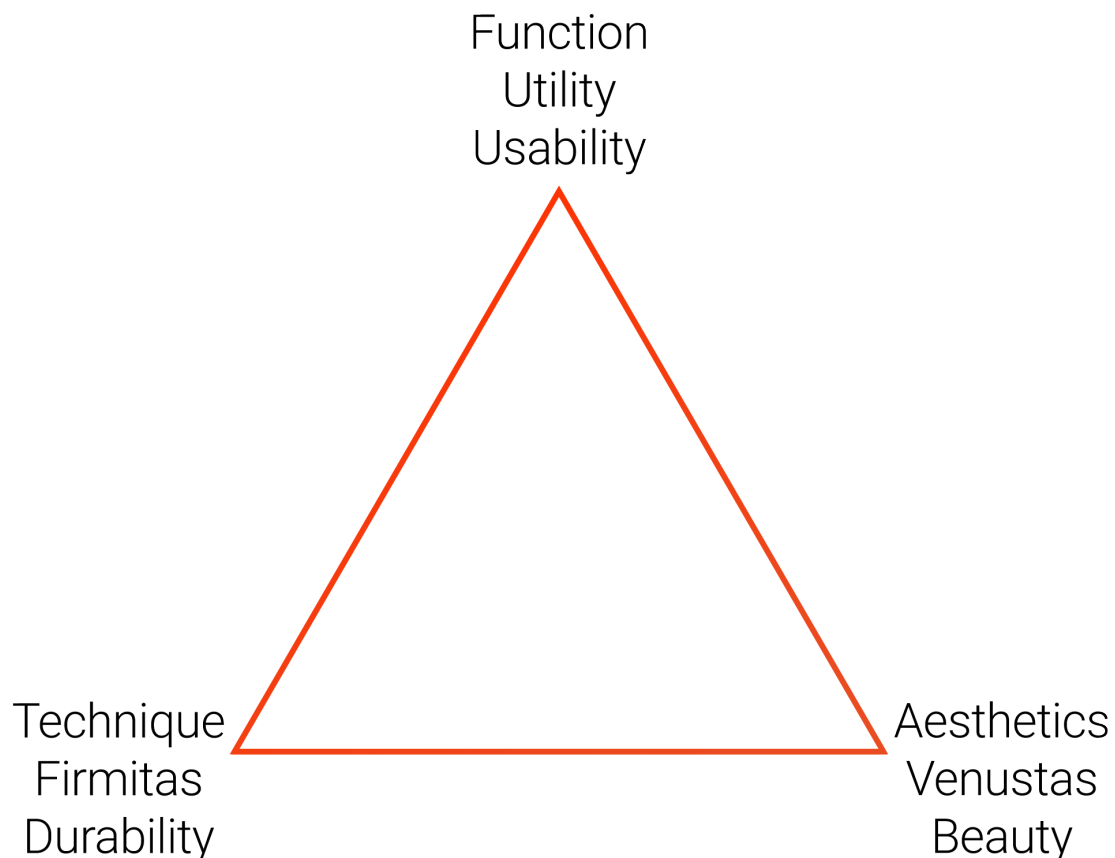
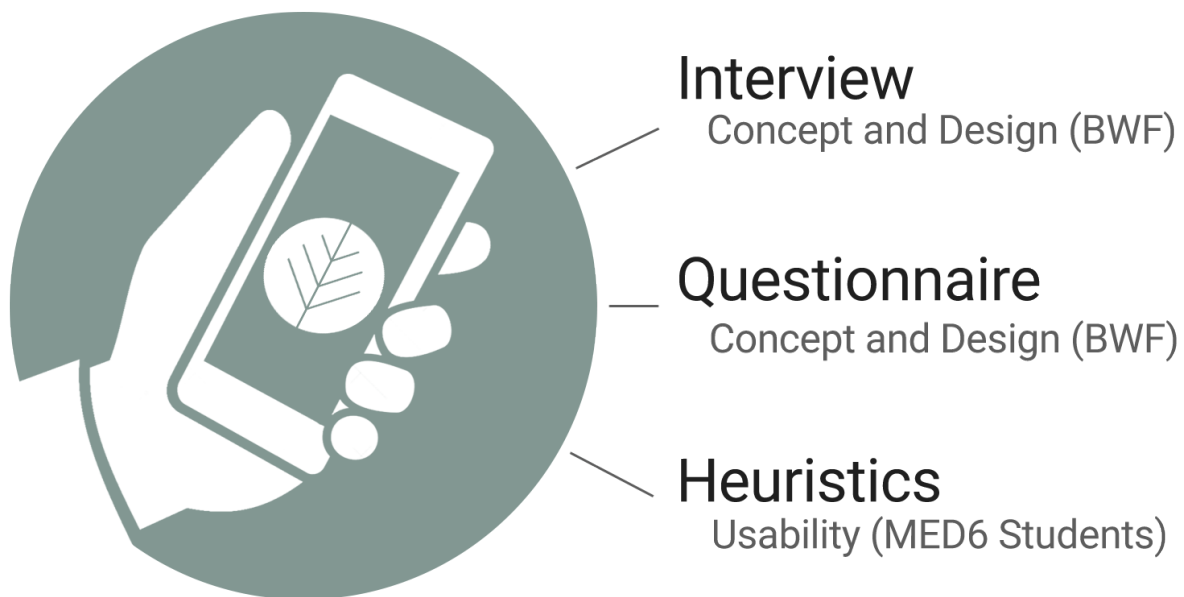


Figure 6.1: Recreation of the illustration of what good architecture is defined as [3].

To accommodate this the best the evaluation will be divided into three different stages focusing on different aspects of testing what the prototype is made of. This idea was achieved through a similar criteria idea from Architecture, namely that a structure must exhibit the three qualities of firmitas, utilitas, venustas – that is, it must be solid, useful, beautiful [1]. Translated to HCI-language it was understood as concept, usability and design.

The concept was important to answer on the research questions and as a product of the collaboration with BWF. The usability is a key element when developing instead of redesigning because one needs to assure that such requirements are met. Also, if the wider context and future work would be to advance further into the material heritage and gamification, usability would be a necessary factor to ensure early on. Design is for the user experience focus.

The usability testing on Medialogy students would be the first step to take on, resulting in a quick evaluating bootcamp afterwards to implement some of the feedback before conducting tests on design and concept. These two evaluations would be carried out through two strategies, though both are qualitative to focus on understanding, opinions and motivations rather than numerical data and statistics. The first strategy would be to conduct a semi-structured interview on 1-2 BWF-users centred around concept and design questions. A semi-structured method to have the ability of follow-up questions and following the flow of the evaluation. The second strategy would be to send out questionnaires to the BWF-users who had shown interest in helping this project with its evaluation. The questionnaires would focus on concept and design questions as well.



## 6.2 Usability Test

To carry out this usability test experts were needed and here Medialogy students were chosen. Medialogy students are not experts as such, but instead they are receiving instruction on design and implementation in a HCI focused study programme and are frequent users of digital technologies such as app systems. This means that they can be expected to be well-rounded in such tests and are in fact used to look at these specific standards as many groups in Medialogy utilize each other for testing, especially with experience in applications and such systems. According to the Heuristic Evaluation guide [26], which has been used as a stepping stone in this process, it is suggested to find 3-5 participants and that they should not be end users. For this evaluation four Medialogy students were chosen. There are ten heuristics to choose from and it is advised to only choose those which fits well with the product and making sure that the heuristics does not conflict with each other. Few of the heuristics were also changed to better fit the prototype and its content.



## 6.2.1 Procedure and Structure

To ensure not biasing any of the participants the briefings were standardized and written down on a paper. This way they all received the same instructions. There were two briefings, one initial focusing a brief introduction to the project, what BWF was about, the concepts within the app as well as a guideline of what the current prototype could do and what was not yet implemented. This was to ensure the participants would not spend unnecessary time on trying out a feature that did not yet work, taking focus away from the test itself. The first briefing phase would be followed by the first evaluation phase giving the participants the time to use the app freely. The paper with this information would remain in front of them on the table.

After this, there would be a second briefing introducing them to the chosen eight heuristics, listed on the next page, as well as a short explanation for each heuristic. Then the second evaluation phase would emphasize on using the app while pinpointing which heuristic currently evaluating on. To finish the process off there was a debriefing phase. This was mainly a discussion with the individual participants about the evaluated heuristics to both give them a second chance to rule out "false alarms" and change opinions underway, but also to ask them for solutions for the problems they found. A more in-depth guide of the usability test can be found in the appendix Section 9.2.

The usability was summative, where the participant's goal was to evaluate how well the prototype met the heuristics placed in front of them. They were focusing on evaluating the prototype against this set of criteria and explaining it in context while using the app throughout the test. This was done to see how the prototype would fare against the usability goals of the user interface design heuristics.

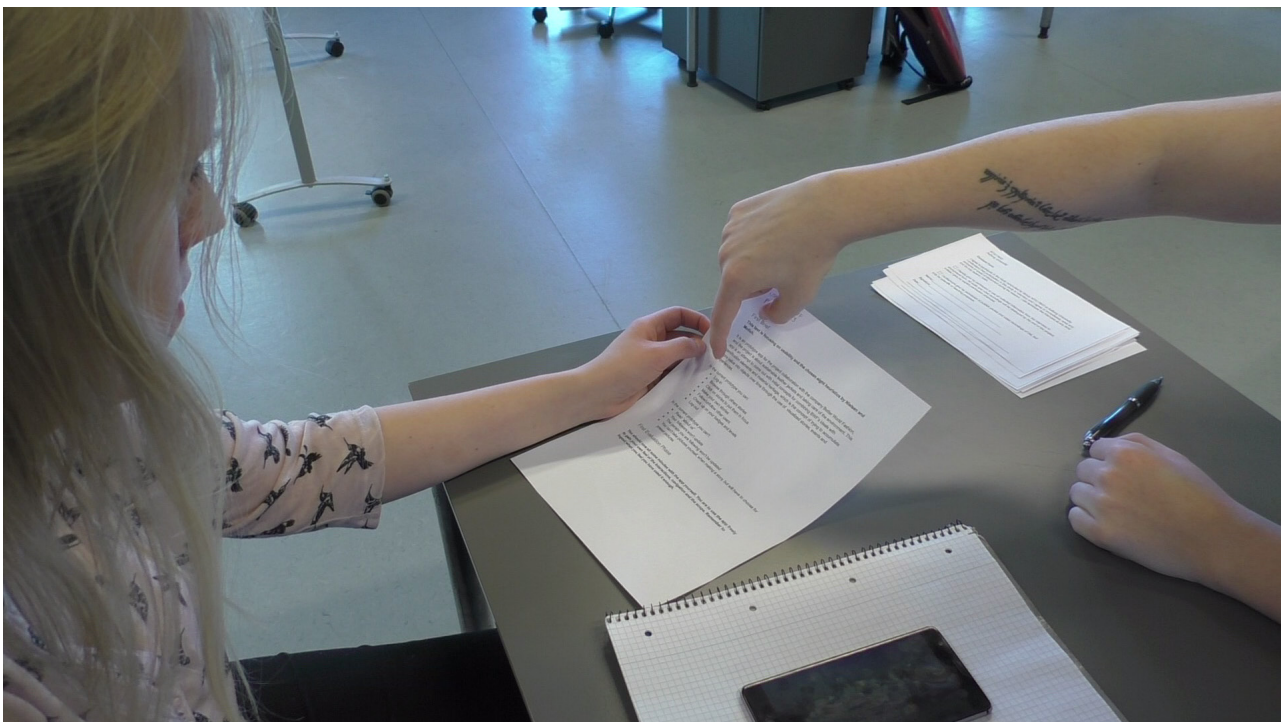


Figure 6.2: Showing an example of how the participants were handed over papers that would remain in front of them. One of these papers including the eight heuristics.



Figure 6.3: Showcasing how the participants were "thinking aloud" and explaining their thoughts and proposed solutions.

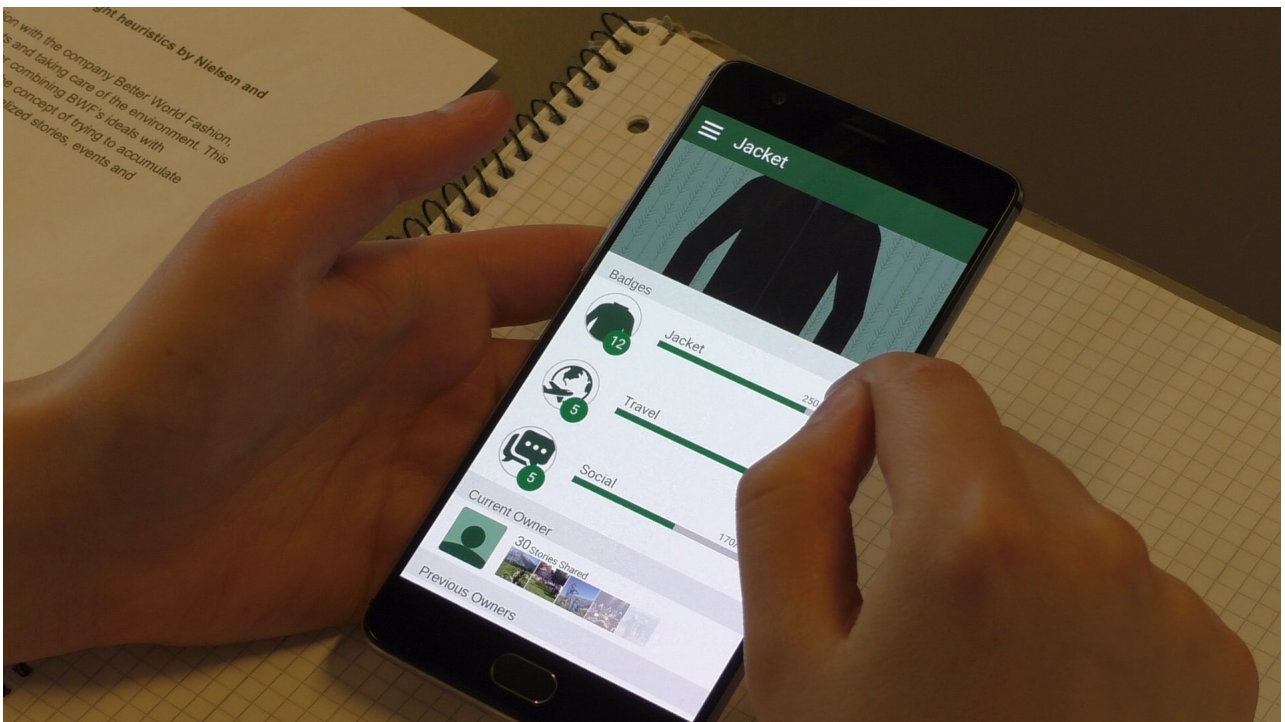


Figure 6.4: Showing one of the participants using the prototype during the usability test.

The list of chosen heuristics can be seen below. They originate from Nielsen and Molich's established list of guidelines [26], but are accordingly to the guide changed to fit better with the actual prototype as well as cut down to eight principles. For example, "recognition rather than recall" and "help users recognize, diagnose and recover from errors" did not feel as important and relevant as the rest. The current scale of the prototype would not really provide that big of cognitive load as well as require that level of troubleshooting.

- Visibility - That you feel you are informed about what is currently happening, what is about to happen and what it is you are seeing on the screen.
- Match between real world and system world - The language, icons/pictograms and visuals are mirrored to what the users would find in the real world which also helps them understand it. Presenting information in logical order and what the users were expecting to get from the app. It reduces their cognitive strain and make the system easier to use.
- User control and freedom - To offer the users the ability to backtrack steps and undo/redo steps.
- Consistency and standards - That the used terminology and graphics are maintained through the app and is not varying in appearance and/or meaning. For example, that one icon that represent something does not suddenly represent something else.
- Errors - That the errors are kept to a minimum and a level where they are within the user's expertise.
- Flexibility and efficiency of use - That there are both options for standard navigation and quicker navigation, and generally that the app feels efficient to use/navigate and suit the needs.
- Aesthetic and minimalist design - Keep the information clutter to a minimum. The display must be reduced to only necessary information for the current task and it should be clear and visible.
- Help and documentation - Ideally, the users should navigate and use the app without documentation, help or tutorials. If the users need help, make sure it is easily achieved and worded in a way that is logical to them.

## 6.2.2 Results

Regarding the **visibility**, a participant evaluated that "it looked good, good colors, big pictures, really spot-on focus on showing where the different users had been with their stories. Showing it with images instead of words". Another one also said: "Instead of it being pure text, it is a good idea to show it visually where they have been. So they can see it". "I would like to have more knowledge about the color choice, for example to be able to change it" was also something a third participant said regarding visibility. Generally, three participants expressed that they understood what was happening on the screen and informed correctly about this, with the fourth participant having issues with the storyposting both not telling her how many characters she could write in the post as well as letting her keep using the keyboard even after a maximum seemed to have been reached. She called out for a timestamp to show when others stories were posted, because as she said: "I actually do not know if these stories were posted last year or just now".

One participant specifically pointed out that there needed to be some kind of feedback to the user when he or she received experience points for doing something. In addition, it was also observed by the evaluators that all four participants intuitively pressed on the badges expecting some kind of thing to happen. One participant explained this as "I expected to get some kind of information on the different badges and how to achieve them when clicking on them".



The pictures in the story feed were also enlarged and tilted once pressed. Three out of the four participants mentioned this and they all said that this was something they did not want the phone to automatically, but that "the phone should only tilt the image once the user decided to do this manually". Although all four participants wondered what would happen if it was a profile-picture which would not look good when tilted that way, and also how such a picture would look like in its preview form. "I like how it is now, but it would need to be more like Facebook if the picture is a profile-ish kind of image. Then the preview should "cut" into the picture in a rectangle-shape".

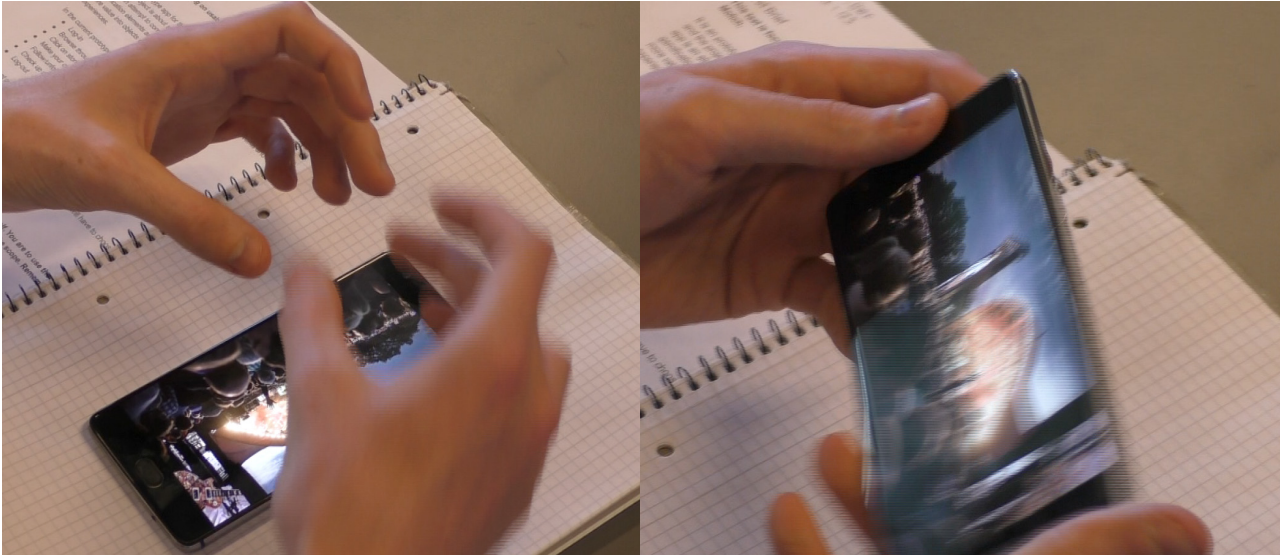


Figure 6.5: From the usability test, a participant showing how the picture should not tilt by itself, but instead showing the picture in the bottom half and the text in the upper half. Afterwards showing that the picture should only tilt when manually turning the phone.

In the **match between the real world and the system world** the participants all agreed that they had all seen the icons beforehand and had experience with them. "It is something everybody would understand, we recognize them for example the logout and such. You also have your own icons, like the jacket and such, but they fit well in together with the rest. It has a good flow". The only lack found here was the home-button having a mismatch as a participant said "it did not lead me to where I expected it to lead me, or what I would expect from the word "home"". One participant also felt that the name "personal level" was misleading as she expected it to be about filling out her own personal data. "If it is about what you say then it should be named "activity level" instead of "personal level"".

The **user control and freedom** had some issues as the participants was not able to edit or delete their stories. All participant mentioned this as an issue, but three of them thought you should both be able to delete and edit the stories. The fourth instead said that editing in itself is enough, and he used the example that "imagine if you misspelled something horrible or that the auto-correct mechanic turned it into something totally wrong or embarrassing. That would be a very bad user experience and unacceptable if the user could not change it. There could just be an "edited tag" on the picture afterwards". The integrated return-button or go-back-button on the smartphone was also not functioning together with the prototype.

Regarding the **consistency and standards** all participants agreed that the content belonged well together and was easy to understand. The content was consistent throughout the app and never varying in its standards. "No, I do not find any inconsistencies," a participant said after thoughtfully going through the app. "There is a consistency through the whole app, with colors and everything", another said.

There were some **errors** when using the prototype. First of all, the menu-button had a too small hitbox as it took many tries to click on it. Secondly, one of the preset histories that could be chosen from did not function properly. Thirdly, participants were still able to scroll and click on the prototype's other sections while being in the menu. This caused bugs and issues. A solution would be to lock the menu. Finally, the stories did not seem to update in the order they were posted, but instead in a fixed preset order.

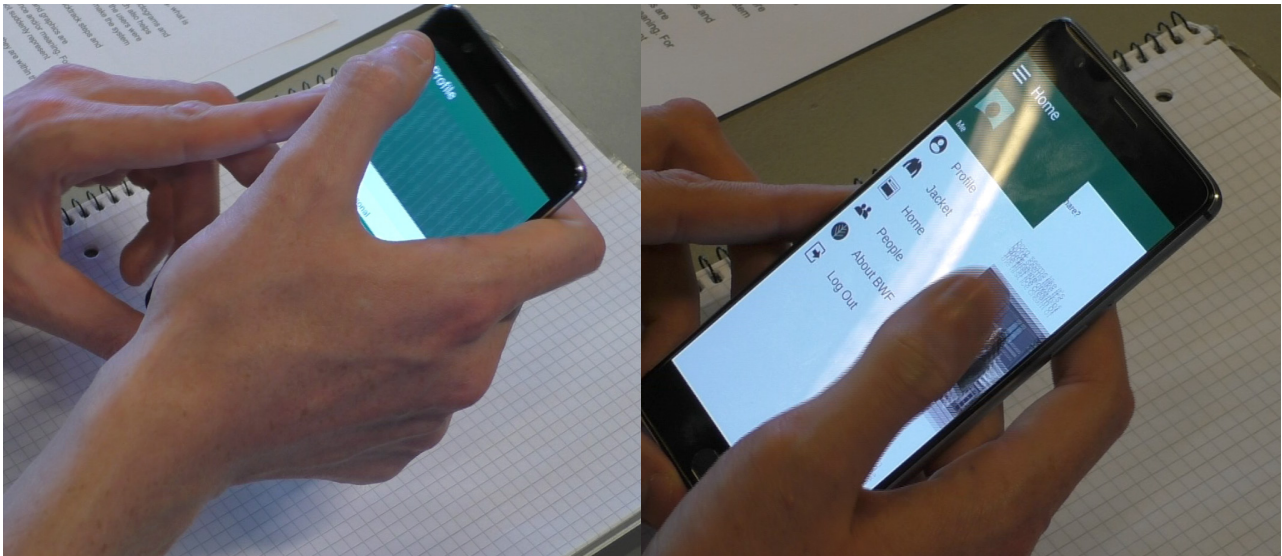


Figure 6.6: From the usability test, on the left illustrating how the participants had to press the menu-button many times for it to react, because the hitbox was too small. "You can just increase its hitbox," a participant said, "there is nothing else up there". And on the right a participant showing how he was still able to scroll down on the background while being in the menu at the same time.

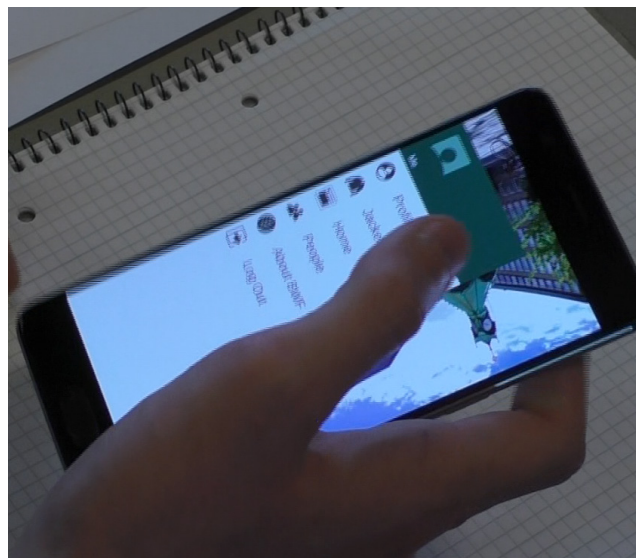


Figure 6.7: From the usability test, a participant showing how the menu bugged out and was able to accidentally enlarge a picture behind the menu when it was not intended.

The **flexibility and efficiency of use** was also evaluated. None of the participants had direct problems with the current navigations, for example with saying "people are very much used to this menu-button", but they all proposed some kind of additional navigational additions, meant as quick-navigations to combine with the current system. Two participants described this due to "not only having one way into a section, but that users who keep using this system gets a quicker way to do this" and the other: "When the users become super-users of the system they would often want to navigate quickly into a specific section." The two proposed additions to the current system were for quick-navigation to most-used sections or a swipe-system. Two participants also added that the menu-border was too difficult to detect and it should have a more defined area or frame. Finally, one participant thought that "the users should always be able to press home by some kind of quick-navigation. It could be in the upper right corner".



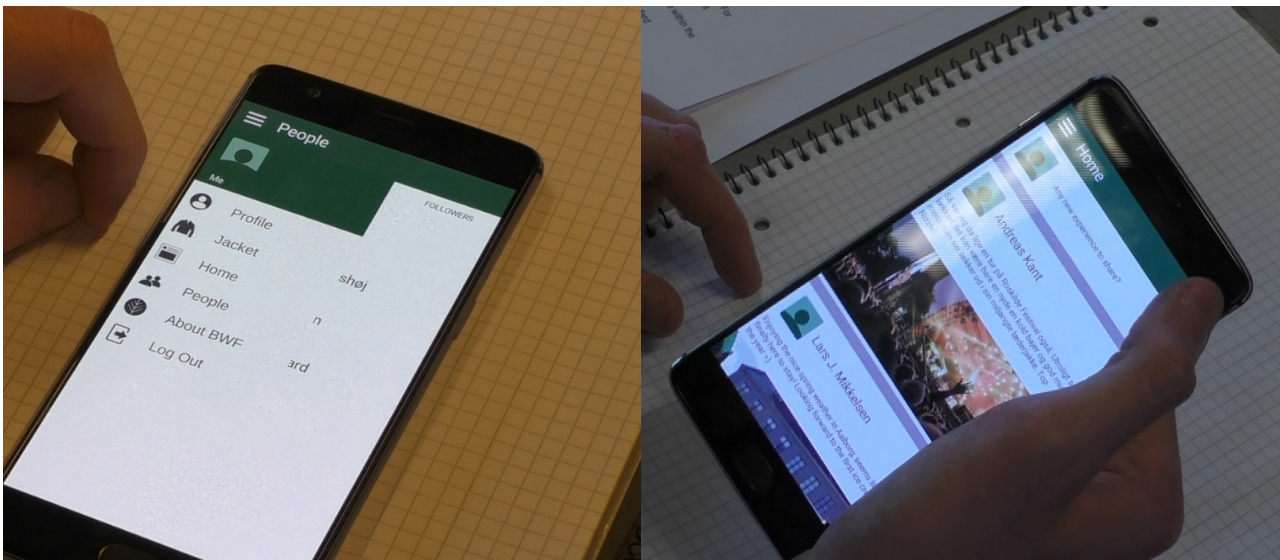


Figure 6.8: From the usability test, on the left a participant is illustrating how the menu border and the background is difficult to distinguish from each other because of the same white color. On the right a participant is showing how the quick-navigation to home would fit perfectly in the upper right corner. This position would be easy to press by the users when using one hand.

Regarding the **aesthetic and minimalistic design** the participants all agreed that it felt very suitable and that they got the information they needed without being overloaded. They described it as "suitable without too much information", "I get the information I need" and "it depends on how much other people are writing in their stories, but there are no functions and ads flowing everywhere". Two participants added that only the menu felt a bit "cluttered". With one participant suggesting "people should be able to write what they want and how much they want, but that the story feed would only show a preview of it. You would then have the "read more" option by clicking on it".

The **help and documentation** part was generally very straightforward, but two participants pointed out the need for more feedback regarding the experience part and how to achieve it.

As **additional feedback** from the test two participants felt that the top graphic of the profile page took too much space on the screen. He did mention afterwards, however, that it was "okay for it to be there if it became some kind of customizable cover and it also looks like there is going to be some kind of profile picture, but that it should become smaller once the user started to scroll down".

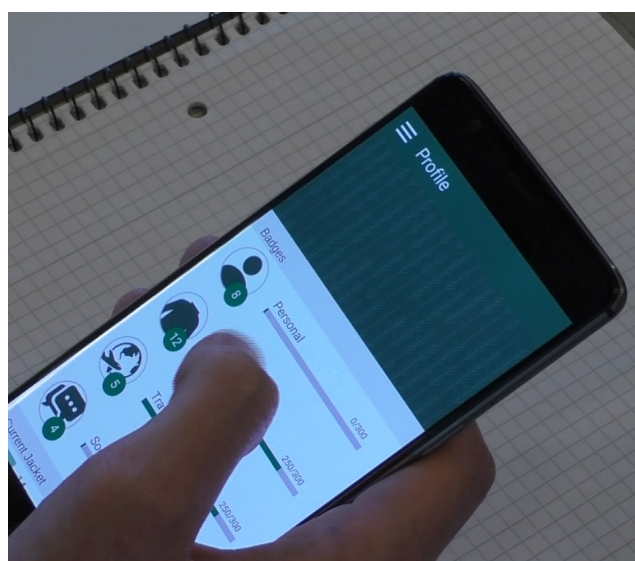


Figure 6.9: From the usability test, illustrating how the user found the top graphic to large and that it did not become smaller once he scrolled down.



Another piece of feedback was that one participant evaluated the current follow-system. He said: "Right now it seems that I get xp from following, but that I do not lose xp from unfollowing, which means that I right now actually just can enter that section, follow and then unfollow everybody to grind the xp gain". He added: "Especially if I only go for the xp gain. Perhaps instead some bonus of keep following people, like some offline meetings to get bonus xp".

## 6.2.3 Conclusion

- The visibility and feedback level was lacking in the story feed, but generally everybody felt the app was understandable in regards to its informative level and what was happening on the screen.
- Participants seemed to be pressing a lot of icons, like badges and user profiles, expecting something to happen.
- Especially the badges seemed to need some more information as participants were confused about their meaning and how to achieve them.
- The icons and pictograms were easy to understand and recognize.
- The menu had several issues with both the button being too difficult to press and the home-section being mistakable.
- Participants wanted at least some way to edit posted stories, some wanted to be able to delete them as well.
- The prototype was very consistent in its standards and its usage of icons and visuals.
- There were errors and bugs demanding a fix.
- The prototype needed some additional navigation options, emphasising on quick-navigation.
- The design was evaluated as simplistic and with user-friendly amounts of information.
- No additional tutorial or documentation was needed for the prototype if only some kind of xp-feedback was implemented.

## 6.3 Midway Changes

A small technical bootcamp was made between the usability tests and the beginning of the concept and design tests. This was to get some time to fix some of the errors and iterate some of the solutions from the usability tests.

Here is the list of changes made in this bootcamp:

- XP notifications.
- Info on badges when pressing on them.
- Story Feed Button implemented in upper-right corner as a quick-navigation to this section.
- Renaming "home" to "story feed".
- Making the menu-button hitbox larger .
- Making sure the integrated return-button works on the smartphone.
- Fixed the menu interaction so that it would exit automatically when pressing something in the background.
- Fixed the issue where you could scroll on the background while being in the menu.

## 6.4 Interview

Regarding the interview the interest was solely in evaluating the two subjects, design and concept. This was to be done by asking 1-2 BWF-users questions to attain not just answers, but understanding of the underlying reasons for these answers. Also, to find out their opinions and motivations towards the prototype and its design and concept. A list was given by Reimer Ivang with the content of ten BWF-users that wanted to assist this evaluation phase. A initial wave of emails were sent out to each one of them, as well as three other BWF-users that a fellow student had sent us, to tell them about the evaluation and whether they wanted to assist with an interview or online evaluation. The process went as following:

- Thirteen mails were send out.
- Ten responded to these initial emails.
- One said that she did not have time for any evaluation.
- Seven others were ready for online evaluation, but one of them said he was very busy and might not have the time.
- The ninth said she had the time for an interview as well as questionnaire.
- The last replied that she had time for an interview, but she wanted to evaluate before the prototype was ready and afterwards did not reply in time to set up another date. She was therefore send a questionnaire evaluation as backup.

The BWF-user who had replied that she had time for an interview was one of the contacts sent to us by a fellow student. A interview date was set up and she agreed to meet us at the Create building.

## 6.4.1 Procedure and Structure

A semi-structured interview was chosen for the evaluation to add room for follow-up questions as well as tailoring the procedure to the specific participant. Having these follow-up opportunities meant the interviewer could continue with more specific questions depending on the participants responses. This would increase the chance of really getting to understand underlying reasons and opinions, as this would be difficult to otherwise plan ahead of time with a structured interview. If other goals had been present, for example being able to compare many different interviews with each other, a semi-structured one would not have been the best solution, but in this situation it would be beneficial to focus on a more versatile and fluent conversation. Really making this interview a two-way communication instead of one-way.

The interview was filled with a lot of open-ended questions making space for spontaneous directions, and if it was a closed question (requiring a yes/no answer) a "why is that?" or "how can that be?" was prepared as follow-ups. Other follow-ups could be "What did that happen?", "Could you tell me more about that?" and "Why exactly do you feel that?" or simply utilizing a more silent strategy by nodding. If the flow of the conversation was good it would be enough to simply keep encouraging the participant to continue by saying "yes, I see". If the flow was bad a way to solve it could be to repeat the last subject "I see, so you did that. What then?". The questions were kept in a tone and language that the participant would understand, for example saying badges and levels instead of gamified elements as well as transferred value instead of material heritage.

The participant was first given some tries to use the app freely. This was to ensure that the participant could get a sense of the app before starting the interview. The participant chose when to stop unless it took more than ten minutes. If this was the case the evaluator would tell the participant to logout and launch the app from scratch thereby starting the interview as well. The participant could use the app during the interview to able to show examples and pinpoint what he/she was talking about. The overall structure can be found in appendix Section 9.3.



Figure 6.10: From the interview, showing the participant using the prototype.



## 6.4.2 Results

The quotes are translated from danish to english as the participant chose to do the interview in danish. All video content is therefore also in danish and needs to be translated for this report.

Before the interview started the user had 5-10 minutes to **use the app freely**. During this section, the participant expressed that "I actually already like this layout better than BWF's current" and "it has to be easy to use or else people won't use it". She asked whether the people-section was showing people near your location. When we told she was correct, she replied: "That's really cool!" and later "I like the idea". She mentioned the experience concept and mentioned that "it will be catchy for young people". After some time she said: "I actually really like the app. It is really easy to use ... Yeah, I actually really like the app". She noticed that the stories, when clicked, tilted to fill the whole screen. She had some thoughts about this as she thought many would take selfies instead: "Many of my pictures may actually be selfies, only one of them is of the jacket". Such pictures would not fit well when tilted and stretched out to fit the screen.

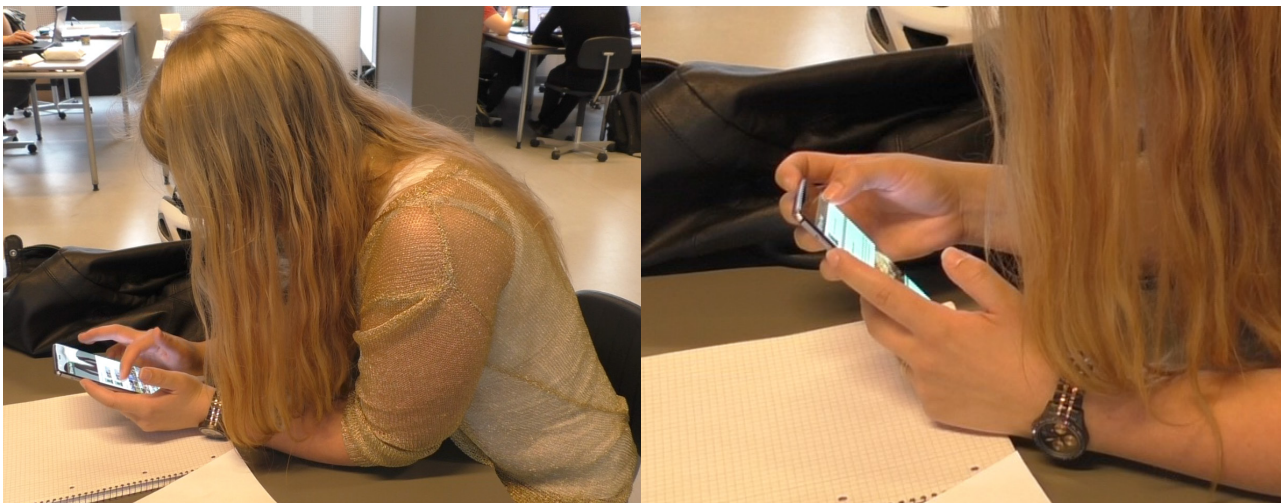


Figure 6.11: From the interview, on the left trying to click on the profiles inside the jacket section expecting something to happen. On the right the participant trying to click on the quick-navigation icon in the upper right corner to post a story. She thought this was the way to do it until the interviewer illustrated how to press the white post-field below it.

In the **warm up** part the participant said she started using the current BWF app when she got her login: "I really want to contribute to this and I love the idea behind it. I think it is a good idea to motivate young people because we love social media and talking about ourselves". When asked about the biggest difference she said: "Definitely the layout. This (prototype) seems ... perhaps more professional? If you can say that? It has a prettier layout. The other app is, what do you say, a bit to conservative?". The thing she liked the best about the prototype was the badges: "It appeals to me and I would like to achieve them, to try them". She could not really come up with the worst thing about the prototype.

In **the design** part, she explained how she liked the green color design: "It may sound funny, but this is about sustainability and it goes well with that color ... that is a detail I think about." Regarding the overall design she felt it easy to navigate: "It was easy to use, it did not take long to know how to use it and it was not difficult". She later added: "The green color is saying like 'we are sustainable' while the blue (the current app) says something different in my eyes". The icons were understandable and logical: "They are logical which again makes it easy to use". The information when clicking on the badges were also not to much: "For example, when I clicked on the badges it was like 'what is this?', but I was not confused about how I got there and when I start reading it the explanation is there and it is nice".

Regarding **the concept** part, when asked if liked the new concepts she answered: "I actually really do like it very well - these badges - like, they appeal to me like a young person and I think ... It is already also trendy to have a leather jacket, but they are not cheap, I mean these jackets". She thought it will appeal to young customers better because of this prototype: "I think this app will reduce the average age a lot more than the current one". She was therefore asked about the older users and if it would create a problem: "At first, no I don't think so. Most will ignore it, but of course there will also be some who still think it would be fun. There are still people in that age who would like to realize themselves, meet new people and the app is making this possible".

The participant said she would for sure grab her phone and post a story during a concert: "Also because, one day or another my jacket will be torn and they would get it back. And then I would like, when I buy my new jacket, to see what that jacket has been through - likewise I would like to give this (my own experiences) to somebody else as well. This is also the general concept of it all and I think that it is very cool". She explained that she would not need to delete stories after posting them because: "Stories that I post are already considered". She thought the badges and levels would motivate her to use the app even more than before: "I think so, yeah, because I would try to be the best and my competitive gene would appear, for sure".

Towards the concept idea of awarding gameplay with real-life physical objects like patches and lining-designs, the participant was open-minded: "I actually like the idea, but I, myself, would find it different to put a patch on my jacket, because I already like it how it looks now, but again, I know that somebody would want to do this and it is nice to get a award for using the app. It would also motivate people to use it, probably". When asked about the idea of meeting other BWF-users through a future iteration of the app: "It could be kinda cool to meet others that also understand why to spend so much money on a jacket".

Finally, in **the ending** of the interview the participant said she would prefer to use the new app compared to the current: "I think I would choose this one. Like, I already like the design more," and "I would really like to try getting the badges!". When asked if she had anything to comment or ask about, she brought up the topic of Facebook, Twitter and Instagram and how you could re-post and share images and pictures from one software to other software's. "In the old app you could post to Facebook, I lack the option to post it on other places at once, for example Twitter and Instagram as well".

### 6.4.3 Conclusion

- The layout is easy and understandable
- The app is especially catchy for young people
- It is a good idea to motivate young people because they really like social media and to talk about themselves
- The green color design goes well with sustainability and BWF
- The icons are logical, recognizable and understandable
- The badges and levels is a really good concept and would add more motivation and engagement
- The badges and levels would add a competitive mindset
- Older users would ignore the badges, but some would also embrace them
- The current picture-tilting is a problem because many will be taking selfies instead
- Open-minded to the idea of real-life rewards and meeting with other BWF-users
- Generally prefer this prototype to the current BWF-app
- Would like some way to post pictures on other social media

## 6.5 Questionnaires

The initial recruitment sequence was the same as the one described in the chapter above, the nine participants who had answered were contacted regarding making an online evaluation. The reason to choose these nine, instead of just contacting everybody on the list, was that these nine had replied back that they had the time and that they wanted to help this evaluation whilst the others had been silent. Contacting the three that had not answered the first wave was chosen as a potential backup solution. After some time where only one of the nine had answered, emails were also sent out to those three, giving them a last call to answer the questionnaire. This was chosen to increase the odds of receiving more answers. In the end, three answers were received from the participants. However, three participants replied back that they did not have an android phone and could therefore not test the current prototype.

### 6.5.1 Procedure and Structure

The emails sent to the participants started thanking them for their agreement to help out this evaluation and supporting this project's attempt to come up with new ideas and concepts for the BWF project. The email told the participants that there were three main elements inside the mail: The guideline to the online evaluation, a link to the prototype on Google Play and a link for the questionnaire to be filled out afterwards. The mail did not describe the project or the goals as the initial wave of emails had already touched this focus and the focus of this wave should be on the online evaluation. Then the email clarified that the prototype could only be tested on Android systems and continued to illustrate the guideline:

- Download the prototype BWF-app from Google Play and use it for approx. 5-10 minutes
- If anything bugs out or fails to work while using the app just "logout" to close it down and open it again
- Here is the information to log in:
- **Username: BWF**
- **Password: 123**
- <https://play.google.com/store/apps/details?id=com.BWFtest.BWFDemoApp&hl=da>
- After having used the app, please navigate to the questionnaire, answer it and send it
- <https://docs.google.com/forms/d/e/1FAIpQLSc0nOeGRp-MEQHto9t--i8F12OwygPRqGHT81nwxJ5ifvLw2g/viewform?c=0&w=1https://docs.google.com/forms/d/e/1FAIpQLSc0nOeGRp-MEQHto9t--i8F12OwygPRqGHT81nwxJ5ifvLw2g/viewform?c=0&w=1>
- Thanks so much for your help in this evaluation!

The questionnaire itself can be seen in appendix Section 9.4. The general structure was divided into five sections: Introduction stage of general information, a warm-up stage of simple questions introducing the method used, a design focused section, a concept focused section and an ending section asking final questions as well as giving the participants an opportunity to comment.



## 6.5.2 Sentence Completion method

The sentence completion is a UX method meant to be applied after the users have tried out the system, in this case the prototype. Then the participants are given a set of beginnings of sentences and it is then up to the participants to complete them how they want. The beginnings are meant to trigger ideas and opinions especially in a questionnaire which is usually a very strict form and not giving the users the chance to express themselves freely. This also makes the questionnaire even more qualitative and similar to the interview as can be. Another benefit is that this method does not completely rely on providing the right options as other questionnaires do.

## 6.5.3 Results

The direct results can be found in the appendix Section 9.5.

The participants were respectively 24, 27 and 38 years old and consisted of two males and one female. In terms of recognition they are mentioned throughout the results-section as the following:

- 24 year old female is categorized as the first participant
- 27 year old male as the second participant
- 38 year old male being the third participant

They did not agree on the biggest difference between the current BWF app and this prototype. With the first writing it was the appearance and badges while the second wrote it was that he could not upload a picture of his jacket. The third meant it was more user friendly and easy to navigate while frustrated that the return-button on Android did not bring him back. The first participant meant the best thing about the prototype was the addition of badges, while the worst element was the pictures being longitudinal. They needed to be more selfie-friendly. The second and third agreed that the best thing about the prototype was that it was easy to navigate and use. The second did not know what the worst thing should be and the third meant it was that the return command did not work.

Entering **the design part** the first participant liked the design and described it as professional, signalling that BWF was indeed sustainable. She also described the color design as correlating well with this theme. The second described it as "good" and the color design as "satisfying", while the third again focused on it was easy to navigate and use - maybe with some more room for "feel good wanna stick around themes". The third also meant the color design was too conservative and not utilizing warm colors enough making him feel "welcome and wanting to stick around". He further wrote: "Since BWF is an e-commerce, I would expect any digital communications should give me that feeling like walking in a shop that's cosy. Not the "buy and get out" feel ...". They all agreed that the icons and pictograms were good, the information-level was appropriate and the design harmony good.

In **the concept part** the first and second participant wrote that the concept was good with the first adding that it was "better than the current app". The third wrote that it was "nice", but that it could exploit the power of artisan design opportunities better. He elaborated: "I mean given state of the art sustainable practices, BWF is one of the artisan and sustainable brands. The app should make me feel that... ". When put in the context of a concert with their favourite band the first two participants would want to use the app to take a picture. The third wrote he would enjoy the concert and only take a picture if he felt "really compelled" to share it with others. All three generally like the concept of telling a jacket's story and showing "a whole jacket's lifetime". They described it as a "good idea" and "appealing".

Regarding the levels and badges, the first participant wrote that it activated her competitive gene and that she was hoping for it to be implemented in BWF's app. The second noticed that he was levelling up, but neither him or the third had anything else to write about it. When asked about the future concept of transcending in-game badges into real-life rewards the first participant really liked it and wrote "it would get me to use the app more". The second felt it was unnecessary. They all wrote that jackets with high levels and badges would have an affect on them when buying a new jacket. With the first stating that she would be really tempted to buy the one with the most badges, and the second writing that "he would appreciate the jacket even more". The third would want to buy the one with most badges as well, but if it fitted his personality as well.

The two first participants liked the concept of combining gamification with material heritage. With the first mentioning the competitive gene again and the second focusing on "the value of it". The third participant did not understand the question about the real-life awards as well as the one about attempting to mix game design elements with the accumulation of more value.

The first participant wrote that she "for sure" would use this prototype, the second wrote "not so often" and the third wrote that he would do so, but only if it underwent some considerable improvements. They all felt that this prototype would increase their usage of the BWF app, but the third added that this was only if it "offered him other incentives and reason to interact with the app". He elaborated: "I wear clothes not to brag about them. I mean I am not a cheerleader of any other company which make stuff. However, it's about how the company draws my attention to interact and engage with it".

## 6.5.4 Conclusion

It needs to be mentioned in the conclusion of the results that one of the participants in the questionnaires is the one from the interview as well.

The information regarding age and gender could be important in the future as BWF themselves stated that it mostly was users between 20-45 years who were interested in the app. Also, it could be important to look at whether the prototype affected the genders differently, for example with the badges and levels as well as the idea of users meeting offline.

It was also quite obvious through the questionnaire that the evaluation likely was dealing with three very different kind of users. A young user focusing on the gamification and selfies, embracing the new concept of the prototype. A bit older user finding the new elements valuable and good enough, but not focusing that much on the badges as well as being more hesitant towards the future concepts of gamifying real-life rewards, saying it was unnecessary. Finally, an older user evaluating the prototype from a more professional, in-depth view. He comes up with several issues and proposals for elements to change. For example, the design needing to be more "warm" and "welcoming" and the current state not exploiting enough possibilities. He is more critical towards the current prototype in the sense that he comes up with several good and well-made elements, but that he needs to see more in his mentioned directions before being motivated to engage more with it. Also specifically stating that: "Yes, (I would use it) but after some considerable improvements".

Other important results were that all three users had used the current BWF app. They all three felt that this prototype was easy to navigate and understand. They also wrote that there was not too much information on the screen. One participant felt the design was "OK", another "good" and the last "Pretty and professional". Two of the participants liked the colors, whereas the third felt them to be cold and conservative. They were all prepared to use the app although one of them wanted improvements first. Finally, even though some did not have much to say about the badges and levels, they all wrote they would be affected by a jacket with high levels and badges when buying a new one.

## 6.6 Discussion

The youngest and the oldest user seem the most connected to the BWF concept, but in two different ways. The first by finding leather jackets trendy as well as wanting to be competitive towards other users and show off her jacket. The older user takes a direct opposite angle to this, stating that for him it is not about showing his clothes or cheer-leading for a company, but about drawing his attention to interact and engage with something. Clearly, the younger user is drawn by the interaction and engagement of the badges and levels, but the other user is not finding this sufficient.

This also goes well with the interview where the participant said the badges and levels mostly would be for younger users while only some older users would find it engaging. The older user's focus is more towards the image of BWF, their role as "artisan and sustainable brand" expecting this to be clearly reflected on the app and its concept. Stating that the current prototype did not make him feel this, which seems understandable when this prototype's focus was on implementing gamified elements and integrating material heritage through the app. However, it would always be an issue if users of the app did not think it reflected their view of what BWF stands for.

The participants also have different opinions on the colors, actually again some direct opposite evaluations. The younger participant finds the color design "professional" and "representative of the BWF's sustainable image". Actually adding that she finds the current BWF app design somehow conservative with the blue colors compared to the prototype. Whilst the older user clearly sees it from another, and perhaps more technical, perspective stating that he finds the prototype's color design conservative and "not warm and welcoming". This is clearly a difference of opinion and is very difficult to conclude on without more participants. This said, the younger male participant also described the color design as "satisfying" and "good" so it varies depending on either age or perhaps which technical and academic background they have. This can be seen in the way the older user shows of a different level of knowledge in the design-area as well as having different standards.



A scientific breakthrough as such was not the purpose of this project instead it was to conduct holistic tests on the prototype and the concepts asked to investigate by BWF, but still being sceptical of ones own scientific proof is important. The idea behind such a scientific method is to ensure the reliability and validity of the evaluation. Reliability means having repeatable and not one-of findings whilst validity in short terms means obtaining the results which was intended.

In this evaluation, many of the evaluation steps have been written down and followed consistently to ensure not biasing, for example the briefings, procedures and structures. Still, human judgement remains as well conversational rhythms in the evaluation that makes it difficult to ensure others would get the same results even under the same conditions. Likewise, it cannot be excluded that unknown factors like age, gender or educational background could affect how users evaluated the prototype. A lot of research has been conducted to know what to ask about and what to investigate, but there has been no such "active" actions as control groups or randomizations in this evaluation. Instead the evaluation has been divided into three different ways of collecting data to see if the same results were achieved, as well as trying to document the process.

## 6.7 Conclusion of Evaluation

The usability test indicated a very understandable and user-friendly app that was easy to use. The icons and pictograms were logical, recognizable and understandable. The main thing seemed to participants pressing on a lot of elements, like profiles and badges, expecting something to happen. Also, there were errors and bugs to fix. Furthermore, the story feed had some lacking in visibility and it was a mistake to rename the "story feed" to "home". The prototype needed more navigational options and more emphasis on experience points feedback.

In the midway bootcamp a lot of these things were either solved or changed, for example with XP notifications and info on badges when pressing on them. The errors and bugs were fixed and hitboxes enlarged to make it more user-friendly. The menu was also locked so that users could not scroll while being in the menu. With these changes the next evaluation phase was carried out with interview and questionnaires.

The interview and questionnaires solidified many of the elements from the usability test. For example, the end users evaluated the prototype as understandable, easy-to-use and they liked the icons. The information on the screen was also not to much. They all agreed that jackets with higher levels and badges would affect decisions when buying a new jacket, even though there was disagreement in the more in-depth motivation of the the badges and levels. This was primarily between the two younger users and an older user. This was also seen in the design and color evaluation, where the two younger users liked it whilst the older user meant there was room for some changes. They also disagreed regarding the concept of transcending in-game badges into real-life rewards, but they all seemed to agree that writing a jacket's story, showing this visually and passing it on to others was a good and appealing concept.







# Discussion & Conclusion



In this chapter, we are going to discuss the findings we have made during the project. We will look at how well we lived up the success criteria that we set along with the final problem statement, and what ideas we have for future work that can be done both specifically tied to this proof of concept and more generally.

## 7.1 Evaluation Success Criteria

In this chapter there will be a brief walk-through of the success criteria as well as whether and how they were achieved.

This project succeeded in **having a testable prototype application**, which could be downloaded from Google Play and used by the usability participants as well as end users. It was tested over three different data collection methods and the prototype had some bugs and errors in the usability test especially, but that was also what that specific evaluation was for. To root out bad user experiences, experts were recruited for that test. Whilst it would have been preferable to be able to test on more platforms than just android, it served well enough to conduct an evaluation due to android's large market share.

**Relevant evaluations** were conducted both by the usability tests, semi-structured interviews and sending out questionnaires using the sentence completion method. All three tests resulted in relevant information that could be used in future work. This said, the amounts of participants in the design and concept evaluations were not enough to make any clear conclusions, so one could argue the success criteria is partially achieved.

**Applying game design elements to the prototype** was achieved mainly through the levels and badges, but also in the design emphasis on progression and engagement. Since this project only focused on making a proof of concept, the gamification elements are all of a basic nature.

**Integrating virtual material heritage into the prototype** was achieved by letting the users upload pictures of their jackets and their experiences with these as well as building a system and community around these stories and experiences. Both these "digital storylines" of a jacket's collected experiences as well as its corresponding levels and badges from previous owners are inherited virtually into the jacket itself.

The criteria to **acquire an initial solution for the BWF proposal** is also achieved. The project proposal from BWF was: *How to extend product life by implementing a material heritage APP and gamification?* This has been achieved by creating a prototype application with material heritage in its virtual form as well as gamified additions that together, according to the evaluation, indeed seems to extend the usage of the app as well adding extra value to the jackets. The scientific proof of the evaluation itself might not be high enough to say this for certain, but the results from the end users indicates a correct direction.

In this chapter, we are going to discuss the findings we have made during the project. We will look at how well we lived up the success criteria that we set along with the final problem statement, and what ideas we have for future work that can be done both specifically tied to this proof of concept and more generally.

## 7.2 Future Work

There were other features and concepts brought to the table during both the creative stages of the design phase as well as later on in the evaluation process. These features and concepts will be explained below. This section will also include thoughts of what to be implemented and researched upon in future work.

A concept brought to the table from almost the beginning of researching on communities and how to define them was the idea of offline meetings. This idea was also discussed during the initial meeting with Reimer Ivang, who thought it would be an interesting idea. The example in the meeting was staged as two users being in an airport. As always you have a lot of sparetime in an airport so perhaps the BWF app could make a notification that there was a nearby user to meet up with. This would give both an experience with their jackets to take pictures of as well as gaining experience points. To accomplish this more studies should be conducted towards offline communities and how to administrate offline meetings. Having this option open as a future implementation was also one of the reasons for designing the people-section in the prototype where users could see nearby users and follow/unfollow them. The concept was also mentioned during the evaluation where a participant noted that the follow/unfollow system would make more sense if users could actually meet up offline.

Creating and designing more badges was also something that would add more diversity and content to the app. This would go hand in hand with conducting more studies towards the badges and how to take the next step. Having badges related to users activity was chosen to emphasise on progress and long-term engagement, but there could also be other ideas to test. One idea was to design more personal badges achieved through a different kind of activity, adding a more unique element to it. For example, the social badge can be achieved by following a lot of users and - perhaps in the future - meeting up with them offline. This could be viewed as repetitive activity for some users, although studies would need to be conducted to back this up. Personal badges would instead be about having achieved something more unique, for example being at Roskilde Festival, skydiving or scaling a mountain with the leather jacket. These unique experiences could also perhaps be better transitioned into real-life rewards like design linings looking like Roskilde Festival or Preikestolen in Norway etc.

The webshop and design hereof was something not focused on in this project, but was indeed on the concept table. There were ideas for designing a webshop emphasising on the jackets and showing them off in a fashion show kind of way. For example, the jacket appearing on the screen and then the users could turn it and twist it to see it from every angle. The concept would then be to either swipe left or swipe right depending on whether you liked the jacket or not. Furthermore, this webshop idea contained the badges and levels as well having these included onto the jacket's information. The users would then be able to evaluate both the jacket on its design, the corresponding badges and perhaps unique reward-choices that followed with it, like patches or linings.

Generally, more research should be conducted towards gamification and especially how to affect older users and users not automatically engaged by progression and competition alone. The feeling of personal achievement like the above concept of more unique badges could be one way to do this. The gamification seems the better topic to study further as it had more question marks and unclear evaluations than the virtual material heritage part. However, the first step to take in future work would probably be to also focus on getting a more precise evaluation on a larger scale and thereafter going back to the iterative process of enhancing the design.

## 7.3 Conclusion

The first thing we are going to consider, is how well we can answer the BWF project proposal, which were the original foundation of this project:

*How to extend product life by implementing a material heritage APP and gamification?*

In order to answer the proposal, we can divide it into two sections: Implementing material heritage and gamification into an application and using this to extend product life of said application.

The first part is contained within our research questions, so to answer this part of the proposal, we will look how well we answered the research questions:

*How can virtual material heritage become integrated into a smartphone application?*

To answer this question, we have designed a concept where user can create and share their stories and experiences tied to their jackets through the application. These stories can contain images and text, and are tied to jacket itself, even when the jacket gets a new owner or is remade into new jackets. This allows the users to access the heritage of their jackets through the application, and even sharing it with other users in the community.

*How can game design elements be applied to a non-game application to increase uptake and usage?*

To answer this question, we have implemented a progression system that incentivizes certain activities such as adding new stories to your jacket, or connecting with other BWF users. This is done by rewarding experience when taking the aforementioned actions, allowing users to progress in 4 different categories. This system can and should be expanded with rewards, such as unique badges in the different categories, or real life customization options for your jacket. Users responded well to this concept, and indicated interest towards engaging with the system.

The second part of the project proposal, extending product life, has been hinted at several times during the evaluation. The participants seemed eager to pick up the new application, and whilst this does not constitute definitive proof that the new design will extend product life, it does suggest a trend. Furthermore, a foundation has been laid to support community interaction, which could further help engage users when using the application. Combined with the evidence that both gamification and community can increase engagement (at least within a younger audience), we believe that it would be possible to extend product life with the new design.

To summarize: We believe that we have designed and demonstrated a proof of concept of how virtual material heritage and gamification of leather jackets can be integrated in a smartphone application. Furthermore, there are indications that the proposed design could increase uptake and extend product life, but it would be wise to investigate this aspect further in future work.



## 7.3.1 Final Words

Through this project, we have had the chance to work together with BWF, focusing on creating a conceptual solution for a real and meaningful problem in a university learning environment. Working like this has been an unique learning experience, where we have been able to work with interesting concepts such as material heritage and gamification. The real-life relevance of the project has been a great motivation throughout the project, and the cooperation with BWF has been an interesting look into a different field than we are used to working with.

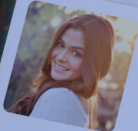
This is our take on a Medialogy bachelor project, and we hope you have enjoyed reading it as much as we have making it.



## Story Feed

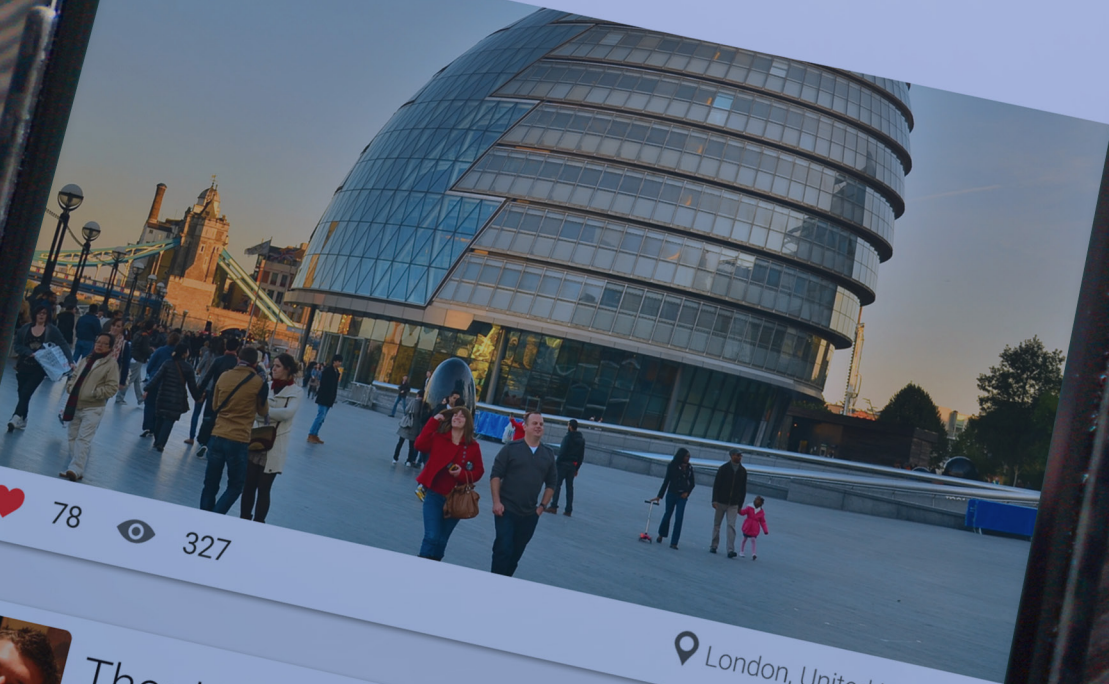


Any new experience to share?



Joann Georgina  
3H

Strolling in London in my holiday



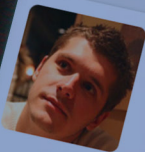
78



327



London, United Kingdom



Thor Kristen  
1D

It's that time of the year again





# 8

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# 9

## Appendix

## 9.1 Consent Form

MTA17643  
Aalborg University

### Consent Form

I agree to participate in the study conducted by Group MTA17643 at Aalborg University. I understand that participation in this study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session. I can terminate the interview at any time and for any reason I wish.

☐ I hereby give my permission to use all collected information from the interview in anonymised form. All audio and video recordings will be destroyed by the end of the project, unless I give my explicit permission otherwise.

☐ I furthermore give my permission to publish photos and video recordings of me, but only for scientific or teaching purposes.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Figure 9.1: Showing the consent form used in the tests.



## 9.2 Usability Test Structure

### 9.2.1 First Brief

In the current prototype you can:

- Log-in
- Browse through others stories
- Click on stories to put them in focus
- Make your own stories
- Follow/unfollow other users
- Check up on your badges and levels
- Check your experience progress
- Log-out

In the current prototype you can't:

- Read “about us”
- Your followers won't update
- The person you are following won't be updated
- You can't take pictures yourself, when making a story, but will have to choose for preset pictures
- You cannot interact with pictures or profile picture inside “jacket” or “profile”
- You cannot click on other profiles
- Check your experience progress
- Log-out

### 9.2.2 First Evaluation Phase

You should now sit some minutes with the app yourself. You are to use the app freely to gain your own feel of the interactions, navigation and the scope. Remember to logout when you feel you have used it enough.

## 9.2.3 Second Brief

You should now sit some minutes with the app yourself. You are to use the app freely to gain your own feel of the interactions, navigation and the scope. Remember to logout when you feel you have used it enough.

- Visibility - That you feel you are informed about what is currently happening, what is about to happen and what it is you are seeing on the screen.
- Match between real world and system world - The language, icons/pictograms and visuals are mirrored to what the users would find in the real world which also helps them understand it. Presenting information in logical order and what the users were expecting to get from the app. It reduces their cognitive strain and make the system easier to use.
- User control and freedom - To offer the users the ability to backtrack steps and undo/redo steps.
- Consistency and standards - That the used terminology and graphics are maintained through the app and is not varying in appearance and/or meaning. For example, that one icon that represent something does not suddenly represent something else.
- Errors - That the errors are kept to a minimum and a level where they are within the user's expertise.
- Flexibility and efficiency of use - That there are both options for standard navigation and quicker navigation, and generally that the app feels efficient to use/navigate and suit the needs.
- Aesthetic and minimalist design - Keep the information clutter to a minimum. The display must be reduced to only necessary information for the current task and it should be clear and visible.
- Help and documentation - Ideally, the users should navigate and use the app without documentation, help or tutorials. If the users need help, make sure it is easily achieved and worded in a way that is logical to them.

## 9.2.4 Second Evaluation Phase

This time, use the app, but try to evaluate the different heuristics as you go through the app.

## 9.2.5 Debriefing

Discuss and ask about the evaluated heuristics. Ask the evaluator about their evaluation to give them the chance to change their opinion and rule out “false alarms” during the conversation. Also, ask them to come up with proposals for solutions to the problems.

## 9.3 Semi-structured Interview

### 9.3.1 Warm-up

Have you tried out the current BWF app?

(If yes) What major changes did you notice between the current BWF-app and this prototype?

Are you interested in using the current BWF-app when you buy one of their jackets? (And why?)

What did you like best about the prototype app?

What did you like the least about the prototype app?

### 9.3.2 Design

What are your views on the general design of the prototype app?

How do you feel about the color design in the prototype app?

What are your views on the icons used in the prototype app?

Did you recognize them?

Did you understand them?

Did you generally feel it was easy to read and understand what was happening on the screen?

- If yes, then why?

What do you think about the balance and harmony of the prototype app?

For example, is it disturbing or relaxing to look at?

### 9.3.3 Concept

What are your views on the general concept of this prototype app?

Imagine you are at your favourite band's concert, would you pick up the phone and take a picture with your leather jacket to share a story?

Would the badges and levels motivate you to use the app?

If yes, then why?

How would you feel about being able transition levels and badges ingame to real-life rewards like extra discounts or patches to put on your jacket?

What are your views on connecting the jacket with visuals and memories so that its new owner can continue the story?

Do you agree on this?

Do you think it increases its value?



If you were to buy a new BWF jacket, would you be more likely to choose a jacket with a lot of visual stories and memories?

If yes, then why?

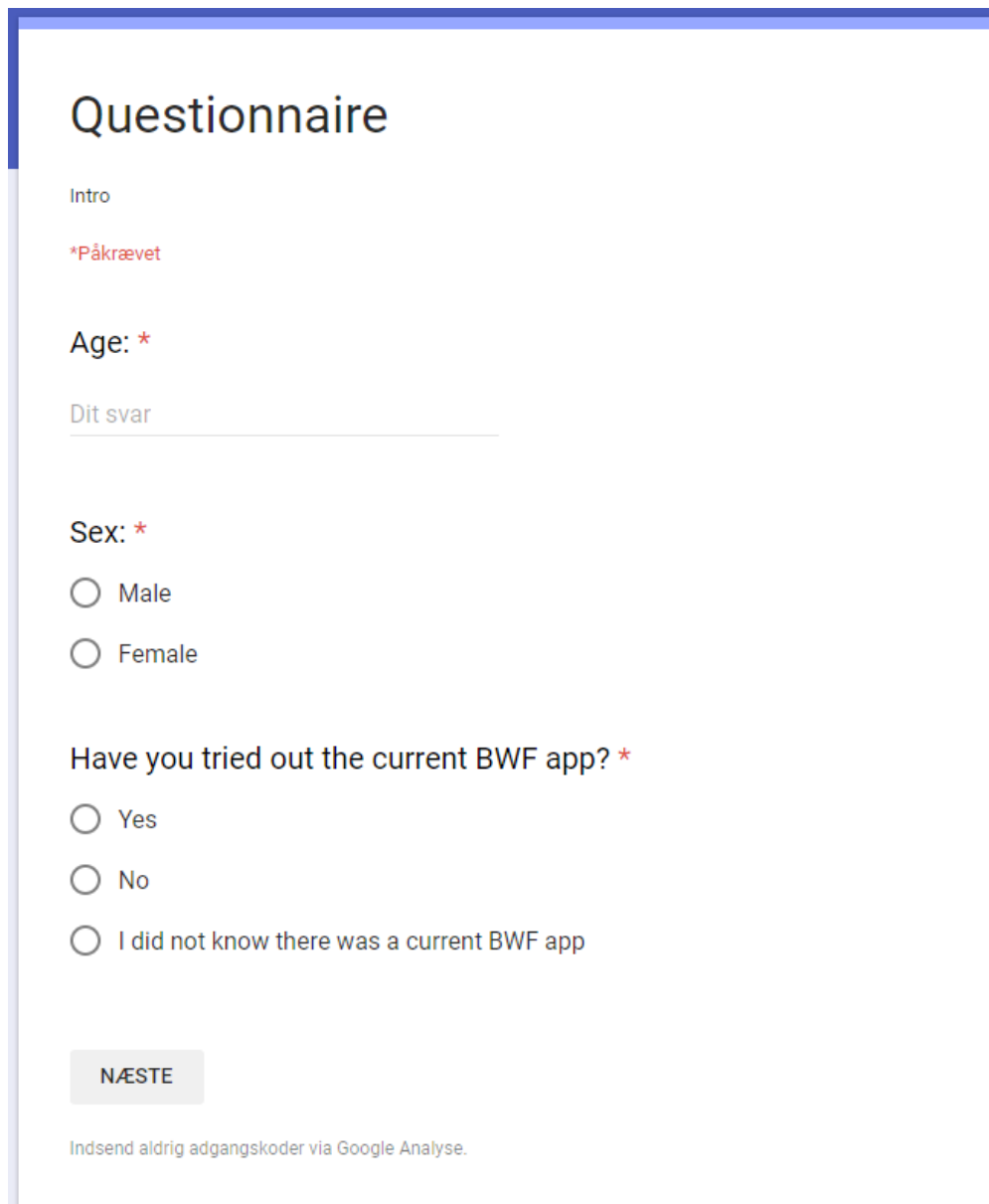
What are your views on trying to combine this with rewards, levels and badges to increase the transferred value even more?

## 9.3.4 Ending

Would you use this prototype app (perhaps with more implementation) when buying a BWF-jacket?

Do you have any additional comments or questions?

## 9.4 Questionnaire



The image shows a digital questionnaire form with a blue border. The title 'Questionnaire' is at the top in a large, bold, black font. Below the title, the word 'Intro' is written in a smaller, grey font. A red asterisk is followed by the text '\*Påkrævet' (Required). The first question is 'Age: \*' in bold black text. Below it is a text input field with the placeholder text 'Dit svar' (Your answer) in grey. The second question is 'Sex: \*' in bold black text. Below it are two radio button options: 'Male' and 'Female'. The third question is 'Have you tried out the current BWF app? \*' in bold black text. Below it are three radio button options: 'Yes', 'No', and 'I did not know there was a current BWF app'. At the bottom of the form is a grey button with the text 'NÆSTE' (Next) in black. Below the button, in a small grey font, is the text 'Indsend aldrig adgangskoder via Google Analyse.'

Questionnaire

Intro

\*Påkrævet

Age: \*

Dit svar

Sex: \*

☐ Male

☐ Female

Have you tried out the current BWF app? \*

☐ Yes

☐ No

☐ I did not know there was a current BWF app

NÆSTE

Indsend aldrig adgangskoder via Google Analyse.

Figure 9.2: Illustrating the intro of the questionnaire. This section is starting out very slowly being easy for the participants to fill out.

# Questionnaire

\*Påkrævet

## Sentence Completion

General - We start a sentence for you and you must complete it with your own words and evaluation

(If you have tried the current BWF app) The biggest difference between the current BWF app and this prototype is ...

Dit svar

The best thing about this prototype app was ... \*

Dit svar

The worst thing about this prototype app was ... \*

Dit svar

TILBAGE NÆSTE

Indsend aldrig adgangskoder via Google Analyse.

Figure 9.3: This is the first section with the sentence completion method and is therefore used as a warm-up section to introduce this method. As well as giving the participants some questions to get used to it.

# Questionnaire

\*Påkrævet

## Sentence Completion

Design Section

The appearance of the design is ... \*

Dit svar

When I look at the color design, I think that ... \*

Dit svar

My thoughts on the used icons (pictograms) in this prototype are ... \*

Dit svar

Generally, I think that the amount of information on the screen was ... \*

Dit svar

Generally, I think that the harmony and visual consistency in the app was ... \*

Dit svar

TILBAGE NÆSTE

Figure 9.4: This section of the questionnaire focuses on the design part, one of the three main parts of the evaluation chapter.

# Questionnaire

\*Påkrævet

## Sentence Completion

Concept Section

My views on the concept in this prototype is that ... \*

Dit svar

I am at a concert. My favorite band is playing. I remember that you just installed the new BWF app and that the phone is in my pocket, I would ... \*

Dit svar

When I noticed the badges and levels, I felt that ... \*

Dit svar

If I was told about the further concept of being able to transition levels and badges ingame to real-life rewards like extra discounts, patches and lining to design your jacket with, I would feel ... \*

Dit svar

The concept of telling a jacket's story and showing it visually is ... \*

Dit svar

When I am about to buy a new BWF jacket, and I notice that some of the jackets already have high levels and a lot of badges on the app, I would ... \*

Dit svar

The concept of combining game design elements with the attempt to accumulate more value in a object over time (the jacket) is ... \*

Dit svar

TILBAGE

NÆSTE

Indsend aldrig adgangskoder via Google Analyse.

Figure 9.5: This section of the questionnaire focuses on the concept part, and is arguable one of the more difficult sections to fill out. It is also one of the last ones and the participants should have gotten used to the sentence completion by now.



## Questionnaire

\*Påkrævet

### Questionnaire

Final

Would you use this prototype app (in a finished version)? \*

Dit svar

Would this prototype app (in a finished version) increase your usage of the BWF-app? \*

Dit svar

Further comments?

Dit svar

TILBAGE SEND

Indsend aldrig adgangskoder via Google Analyse.

Figure 9.6: Is the last part of the questionnaire and meant to ask to some final questions as well as giving the participants a chance to comment.

## 9.5 Questionnaire Results

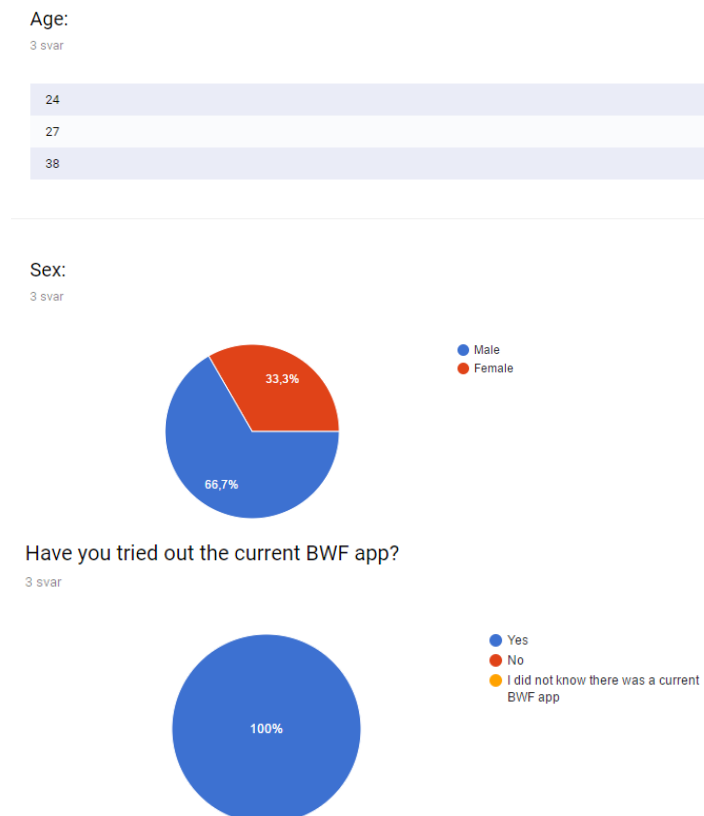


Figure 9.7: Showing the results from the intro section of the questionnaire.

(If you have tried the current BWF app) The biggest difference between the current BWF app and this prototype is ...

3 svar

Udseendet og muligheden for badges

i can't upload My own story

I tried it out one of the latest android. Very user friendly, easy to navigate. Why is it that the return command/button bringing me back. Also, why is it that whenever I tap the "About BWF" tab it takes me to users/ BWF community?

The best thing about this prototype app was ...

3 svar

Muligheden for badges

Easy navigating

Easy to use and navigate. OK app design. Could use some happy/warm/feel good themes.

The worst thing about this prototype app was ...

3 svar

Billederne var mere aflange. Jeg mangler at de er mere selfie venlige

I Don't know

The return command is irritating on android. It's does not bring me back to where I came from.

Figure 9.8: Showing the results from the warm-up section of the questionnaire.

The appearance of the design is ...

3 svar

Flot, professionelt, roligt, signalerer at de er miljøvenlige

Good

Easy to use and navigate. Room to be playful with feel good wanna stick around themes

When I look at the color design, I think that ...

3 svar

Den signalerer at de er miljøvenlige

Satisfisfully

It's conservative for my taste. Why not play around with warm colours which makes me feel welcome and stick around for a while? Since BWF is an e-commerce, I would expect any digital communications should give me that feeling like walking in a shop that's cosy. Not the "buy and and get out" feel...

My thoughts on the used icons (pictograms) in this prototype are ...

3 svar

Ok

Ok

Gode, de viser det de skal uden at forvirre.

Generally, I think that the amount of information on the screen was ...

3 svar

Passende, det var vejledende der hvor der var behov

Enough

Nice- not suffocating

Generally, I think that the harmony and visual consistency in the app was ...

3 svar

Godt

Good

Consistent and somewhat harmonious depending on how you perceive harmony

Figure 9.9: Showing the results from the design section of the questionnaire.

My views on the concept in this prototype is that ...

3 svar

Godt, BWFs koncept skinner tydeligt igennem. Faktisk bedre end deres nuværende app.

Good enough

Nice but could exploit the power of artisan design opportunities. I mean given state of the art sustainable practices, BWF is one of the artisan and sustainable brands. The app should make me feel that...

I am at a concert. My favorite band is playing. I remember that you just installed the new BWF app and that the phone is in my pocket, I would ...

3 svar

Tage et billede og poste på app'en

Take a picture of My Jacket

Enjoy the concert and share my experience if I feel really compelled to share that moment with someone else

When I noticed the badges and levels, I felt that ...

3 svar

Mit konkurrencegen trak lidt i mig og jeg håber det er noget der kommer i deres app

I was leveling up

---

If I was told about the further concept of being able to transition levels and badges ingame to real-life rewards like extra discounts, patches and lining to design your jacket with, I would feel ...

3 svar

Det ville være fedt og få mig til at bruge app'en mere

Unnesacary

I don't get what you mean.

The concept of telling a jacket's story and showing it visually is ...

3 svar

En virkelig god idé og noget af det der gjorde at jeg valgte at købe den

Showing a whole jacket's lifetime

Appealing

When I am about to buy a new BWF jacket, and I notice that some of the jackets already have high levels and a lot of badges on the app, I would ...

3 svar

Jeg ville være mere fristet til at købe jakken med de høje levels

Apprieciate the jacket better

Want to buy it if it suited my personality

The concept of combining game design elements with the attempt to accumulate more value in a object over time (the jacket) is ...

3 svar

Det er fedt! Og mit konkurrencegen vil som sagt virkelig komme frem

More valueble

What do you mean?

Figure 9.10: Showing the results from the concept section of the questionnaire.

Would you use this prototype app (in a finished version)?

3 svar

Det er jeg helt sikker på at jeg vill!

Not so often

Yes, but after some considerable improvements to the app.

Would this prototype app (in a finished version) increase your usage of the BWF-app?

3 svar

Det ville den helt sikkert

Yes

Yes but only if it offered me other incentives and reason to interact with App. I wear clothes not to brag about them. I mean I am not a cheerleader of any other company which make stuff. However, it's about how the company draws my attention to interact and engage with it

Further comments?

1 svar

I har lavet et fedt stykke arbejde! :)

Figure 9.11: Showing the results from the ending section of the questionnaire.