Designing a closing experience for a Lost and Found service

How to digitally say thank you?

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ABSTRACT

The current Lost and Found service Finderoo does not provide a proper closing experience. Research has shown that the closing experience is one of the salient items of an experience to be memorised. Other factors include the peak of the experience and chronology. Those moments have an influence on the memorability, which a person later uses to evaluate the experience. This study aims to determine how a closing experience for a Lost and Found service might be designed. The closing experience in this research is defined as the last part of the main service (where the service purpose happens); before the post-service moment in which users evaluate on their experiences.

The current Lost and Found service and competitors were reviewed. A theoretical review of experiences, closing experiences, memorability, evaluation, gratitude and reciprocity showed a lack of research on closing experiences within (service) design. This knowledge gap has been addressed through the use of a Research Through Design method. Based on a pre-study of the current Finderoo service and a brainstorm, a concept was created and visualised. A test of the prototype which included enactment was then done with 14 participants. The final concept included a reciprocal act in which the owner can thank the finder for his effort by sending a personal message and gift. The results indicate that the new closing experience is perceived as positive, and leaves most participants in a more positive state than without this service extension. Further research is recommended regarding closing experiences in (service) design, as it has a substantial impact on the perceived experience.
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1 Tack så mycket & Bedankt translate to thank you in respectively Swedish and Dutch
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1. **INTRODUCTION**

*This chapter provides an introduction, introduces research questions, and ends with an outline of this chapter. Subchapter 1.1 will provide a background and motivation for the theme of a Lost and Found service. Subchapter 1.2 will introduce and discuss the research questions for this thesis. Subchapter 1.3 will discuss the scope of this research. Finally, subchapter 1.4 will provide an outline of the next chapters.*

1.1. **Background and motivation**

*The status and limitations of the current service will be explained, and the theme of “closing experiences” will be introduced. This chapter will end with a description of unforeseen ethnographic research.*

**Losing items and a solution: Finderoo**

Every day, people lose items. On public transport, in public spaces, and many other possible locations. The Dutch Railway company Nederlandse Spoorwegen (NS) wrote about items that were lost in their trains, and the variety of those items: from identification documents to backpacks, and from wallets to a prosthetic leg (NOS, 2015). Many items are not reunited with their owners within three months.

The company Finderoo offers a (currently existing) service where people can mark their personal items with a sticker. This sticker contains an alphabetical code, QR-code, and web address. If an item has been found, the finder can reach the owner anonymously through the website and mention where it was left to be retrieved.

**Societal relevance**

Through the existing service, people are motivated to help each other. This is a current relevant theme, as we tend to be more individualistic than ever before in our society, and individual autonomy plays an increasing role in defining our individual, philosophic, economic and social viewpoints (Stickdorn, Schneider, Andrews & Lawrence, 2011).

People live their own lives and tend to be less aware of their fellow citizens. The effort of a finder to reunite the item with its owner can be seen as a good deed and can result in a ‘good feeling’ for both the finder and owner. It is relevant to stress this act of doing good – and motivate people to do the same again.
Designing a more impactful ending experience

The current experience of Finderoo ends abruptly. After the item was left or retrieved, there is no contact with the service or between the users. In the past, the team behind Finderoo has had ideas to design a closing experience, with the goal of making the experience of returning the item more impactful and more memorable for both the finder and owner, and increasing the likability of sharing the experience. Those were the provided design goals.

A former idea of the team has been the implementation of a charity in the closing experience. A finder could then receive a finder’s reward, which is donated to a charity in the name of the finder. This has not been implemented further, however, shows that there are openings to change the closing experience of the Finderoo service.

Designing a closing experience for this Lost and Found service also raises the question of how important a closing experience can be for a service. The purpose of this research is to find out which factors are influential on the closing experience, specifically of a Lost and Found service, and what the importance of that closing experience is. The memorability of the experience is also included in this statement, as it is what people bring with them from an experience.

Several design examples of closing experiences will be presented in connection to the Finderoo service. The former presented idea of including charities in this closing experience is an option that might be viable. However, it will not restrict the research to the involvement of charities or the transfer of a reward at the end of the experience.

Unforeseen ethnographic research

For this project, there was no ethnographic research planned. However, during a travel from The Netherlands to Sweden, I have lost my reusable water bottle – most likely on the bus to the airport. I had not lost anything since years – as I always double check if I took my belongings with me. Losing the water bottle (with a low financial value) had a big emotional impact. I had used the reusable water bottle for more than four years – took it with me on every holiday – and drank from it almost every day. I used it in all my different homes (Germany, The Netherlands and Sweden) – and liked the design. The bottle had emotional value.

As soon as I discovered the loss of the bottle, I contacted the bus company. I called them – and explained that I exactly knew on which bus I left it. The operator told me she was unable to contact the bus driver – and that I had to check a special website (https://ilost.co/org/arriva-nederland) where they would register found items within three days. I was worried that the finder would just throw it away – as it was an old
bottle with little value. When I checked the website, I saw that there were more water bottles registered – which was a relief.

However, I was not content with the operator’s answer. I went to the bus stop, as the same line runs every 15 minutes. I explained the story – and the next driver offered me that he would have a look at the buses back in my hometown. If he would find it, he would leave it at the public transport desk on our train station – my mother would later that day check if it was left there. After some hours, she told me that it had not been left there.

I felt worried and stressed. I asked myself if I ever would be reunited with my bottle? I blamed myself how this could happen to me, losing something, etc. For the next days, I regularly visited the website. It did not result in any match. Now, at the end of the thesis writing, the bottle was still not found. Still, I think about the bottle – hoping that I might find it during one of my future bus travels.

The above-mentioned story happened in the 8th week of the project – at 40% of the project. It has been a huge motivation however, and allowed me to understand the users better. By losing this item myself, I experienced the different emotional states that a user can go through.
1.2. Research questions

In this subchapter, the research questions are introduced and discussed.

Research questions:

How might the closing experience of a Lost and Found service be designed?

a. What is the current status of the design of Lost and Found services?

b. Given earlier research, what are the elements and principles of a closing experience that should be considered in design?

c. How might the elements and principles of a closing experience be implemented in the design of the Lost and Found service?

d. What are the experiences users have with the proposed design for the Lost and Found service?

Review of research questions

Main research question

How might a closing experience of a Lost and Found service be designed?

The main research question describes the scope of this research. The closing experience is a specific moment of a user experience that has not been researched in the field of (service) design. Therefore, I find it interesting to explore this specific moment.

The Lost and Found service that is mentioned in the research question is more specifically Finderoo, a Lost and Found service that currently is missing a closing experience.

Finally, the research question mentions design, as that is the aim of this research: designing a new closing experience. In order to get to this design, the answers to several sub-questions are needed. The sub-questions are presented below.
Subquestion A

What is the current status of the design of Lost and Found services?

This research question is aimed at the pre-study and has two main purposes. First, it is important to get to know the current service. As I am designing for this service, the background and former design decisions need to be known in order to create a representable improvement.

Secondly, the research will not only result in an understanding of the current service. It will give an understanding of the overarching experiences that people go through when losing items – and returning them. Seeing the process from a higher level can be beneficial in the creation of new ideas.

Subquestion B

Given earlier research, what are the elements and principles of a closing experience that should be considered in design?

This research question ties to the neglected area of closing experiences in design. A theoretical framework is presented here, focusing on the elements and principles of closing experiences. Relevant areas will be reviewed, and the applicability to the (service) design field will be considered.

Subquestion C

How might the elements and principles of a closing experience be implemented in the design of the Lost and Found service?

User research and using multiple design techniques will be used in this step, in order to translate the research findings from research question B into possible design solutions.

Subquestion D

What are the experiences users have with the proposed design for the Lost and Found service?

The last subquestion has a purpose of testing the design of the new Lost and Found service. The issues will be looked upon, and the factual user experiences will be compared to the designed experience.
1.3. Scope of research

In this subchapter, the specific moment of the closing experience will be explained. The scope of this research will also be presented, as it can be applicable to any service.

Any existing service (e.g. a flight, hotel booking, or dentist visit) consists of a pre-service period, service period, and post-service period (Stickdorn & Schwarzenberger, 2016). During the pre-service period, the customer sets its expectations. The service period consists of the actual service, which the purpose of the service is created for. The post-service involves a reflection on the experiences.

The closing experience is the last ‘touch point’ where people use the service before reflecting on the service period, and determine if the pre-service period expectations were met. My particular interest is on the closing experience of the service body (Figure 1), before the post-service.

![Figure 1: Visualisation of the research interest of a research process.](image)

The closing experience is often understood as the moment in which the service contacts the user again: in emails, users are asked to complete surveys, or receive ‘special offers’. I do not define those moments as the closing experience: they do not contribute to the main purpose of the service. For surveys, they actively ask users to reflect on their experience – a characteristic of the post-service process.

In this research, the closing experience will be researched and designed for the Lost and Found service Finderoo. However, the theories and findings on closing experiences that are found within the research can be applied to any service.
1.4. Outline

This chapter presents the structure of this thesis and describes the bridges between the different chapters.

The thesis starts with a theoretical framework that is presented in chapter two. This theoretical perspective first introduces the characteristics of experiences, followed by a service perspective on experiences, and finally closing experiences. This leads to a review of evaluative methods that people apply to their experiences. Gratitude and reciprocity are also reviewed in the theory chapter, as they are relevant to a Lost and Found service. Design consequences conclude the theoretical framework.

The third and fourth chapter (method and result) describe the design process and follow the same chapter structure. The method chapter describes what has been planned to do in order to answer the research questions. The result chapter shows what has been done: the results of the planned activities, and eventual changes from the planning. The method chapter has two additional chapters: a chapter that introduces the Research Through Design method that is used for this thesis, and ends with a chapter on research ethics and validation.

Both the method and result chapter start with the pre-study. The pre-study describes the current status of the Lost and Found service, and puts it in a perspective to other (relevant) services and theories. The Low-Fidelity Prototype is presented after and builds on the research of the pre-study. The Low-Fidelity Prototype aims to create a concept for a new closing experience. The High-Fidelity Prototype that is presented afterwards translates this concept into visual designs. The visual designs form the base for the user test that was done. The user test aims to discuss the usability end experience of the closing experience.

Finally, the conclusion and discussion chapter is presented. The research questions will be answered here, and the results will be connected to the theoretical framework. Methodological biases will be described, followed by recommendations for future research. A concluding statement ends this thesis.
2. THEORY

This chapter introduces the theoretical framework. Characteristics of an experience, a service perspective on one, and closing experiences are discussed in chapter 2.1. Chapter 2.2. provides a perspective on the evaluation of an experience. In chapter 2.3, the theories of gratitude and reciprocity are discussed. Which design consequences the literature has is finally presented in chapter 2.4.

2.1. Experiences

Everything we do on a day is a factual experience: we do something, and reflect on it. This subchapter first introduces the characteristics of an experience (2.1.1), and connects this to a service perspective on experiences (2.1.2). Finally, closing experiences are described (2.1.3).

2.1.1. Characteristics of an experience

“Practical contact with and observation of facts or events” and “an event or occurrence which leaves an impression on someone” are definitions for an experience in the Oxford Dictionary of English (2010). A specific definition for a user experience is also existing – as that is what this thesis is built on: “the user's perceptions and responses that result from the use and/or anticipated use of a system, product or service.” (ISO).

All definitions share a common principle: something creates a new perception. It does not mean that there is only one sort of experience: Forlizzi and Battarbee (2004) describe three types. First, experience describes the constant stream of “self-talk” that happens with product interaction. Second, an experience is described as an articulated or named stream that has a beginning and end, and inspires behavioural and emotional change. Third, co-experience is explained as a stream that creates meaning and emotion together through the product use. For the latter, social and physical contexts are emphasised, as that is where the sense-making of experiences is happening.

This social context is important – as a service includes multiple actors. The social aspect of an experience is further highlighted by Wright and McCarthy (2010). They mention that sharing an experience means that both participants have a common history, which serves as a common ground to create stories, and relationships can be built from. Wright and McCarthy also stress the importance of seeing an experience...
from a holistic perspective and provide an ecological metaphor. An experience is seen as an organism that is tightly involved in reciprocal interactions with an environment. Buchenau and Suri (2000) also state the importance of seeing an experience from a holistic perspective. I see this as an important takeaway for any design project: the connection to its surroundings should be clear.

Factors of an experience

An experience consists of several building blocks and factors that create an experience. Buchenau and Suri (2000) describe an experience as a complex interplay between feelings, intellect, emotions, behaviour and the physical environment. Forlizzi and Battarbee (2004, p. 264) highlight the importance of emotions within an experience: “Emotion is at the heart of any human experience, and an essential component of user-product interactions and user experience”. According to them, emotions shape our plans, the procedures to execute the plans, and evaluate the outcomes.

The importance of emotions within an experience can be linked to a model of human needs, of which Maslow’s (1943) Hierarchy of Needs is one of the earliest examples of. A more modern theory is formed by the Self-Determination Theory (Ryan & Deci, 2000). A person has three main human needs that must be fulfilled in order to feel happy: Autonomy, Competence and Relatedness. Creating an experience in such a way that human needs are fulfilled can be seen as an important factor for success in an experience.

Experiences are further important as they have an impact on customer loyalty and customer satisfaction. Garrett (2006) and Jordan (1998) describe that people with delightful experiences are more willing to buy the next product from the same company. Chitturi, Raghunathan and Mahajan (2008) add to this phenomenon by also recognising an increased likability of word to mouth and repurchase intentions and more loyal customers.

2.1.2. Service perspective on experiences

In the preceding chapter, the ISO definition of a user experience described a service as one of the things a user can do to in order to get new perceptions. I also stress the importance of a service: any service unconditionally leads to an experience. A service perspective, therefore, is relevant to experiences.

A service is a process that consists of interactions between a customer and a service to deliver a solution to the customer’s problems and needs. Those interactions can happen
between humans, humans and machines, and even between machines (Koivisto, 2009; Stickdorn et al., 2011). Holmlid (2012) mentions that a service can consist of many ‘sub-services’ with a specific start and end, and calls those service-ellipses. If one service ellipse closes, it allows the next service ellipse to start.

It is important to stress the role of the user in the service. Services are ongoing processes where the user is part of creating the value, and the user has an effect on the service he perceives (Holmlid, 2009; Koivisto, 2009). I suggest that, even though there might be a standard track that every customer goes through in a service, the customer has a significant impact on how he/she goes through the steps and which experience is created.

**Building blocks of a service**

There are several perspectives on the components of a service. Stickdorn and Schwarzenberger (2016) describe that all services have a pre-defined structure, consisting of a pre-service period, service period, and post-service period. During the pre-service period, the customer sets its expectations. The service period consists of the actual service, which the purpose of the service is created for. The post-service period involves a reflection on the experiences.

Clark (1996) writes about a joint activity rather than a service. I find it relevant however, as a service includes multiple actors too. Clark divides a joint activity in an entry, body and exit. For a joint activity, he mentions six conditions: there should be participants, roles, actions, timing, commitment and grounding. I would say that Clark’s joint activity takes place in the service period, as that is where the entry and exit of the service happen.

Finally, Grönroos (2015) describes two main aspects of a service: a Core Service, and Auxiliary Service. The Core Service includes the primary need of the customer and is the reason for a company to be on the market. The Auxiliary Service includes services that enable and enhance the Core Service, e.g. to differentiate from competitors.

It is useful to get an understanding of the building blocks of a service, in order to understand in which stages the experience takes place. Later, salient moments within these stages will be discussed.
2.1.3. Closing experiences

Any experience has a beginning and an end (Forlizzi & Battarbee, 2004), and Dewey (1934) describes that “Every integral experience moves towards a close, as it ceases only when the energies active in it have done their proper work”. A service also moves towards a close – and ends ‘officially’ when the actor has reached the purpose of the service. This can be connected to the distinction between a service body (actual service) and post-service (reflective stage). As defined previously, I see the closing experience as the last moment of the service period – before reflecting on it.

A neglected research area within design

A (service) design perspective has been neglected on the closing of an experience in the literature that was found in this research. Mostly, the closing experience was referred to as the reflective moment after using the service, and focused on evaluations and customer satisfaction. Research on closing experiences and the ‘end of an experience’ was mostly found within the social sciences. Authors stated the importance of closing experiences, but did not translate this into design examples. I suggest that the insights on the closings of experiences also are applicable to the field of service design. This subchapter discusses literature from the social sciences, that later will be used for the creation of a design for the Lost and Found service.

Evidence of closure

A closing experience should provide evidence to users of the closure. Three evidence principles exist (Clark, 1996). First, validity is important, as the evidence of success must be reliable and interpretable. Second, the economy of effort describes the effort that a person needs to take to receive the evidence – the less effort to reach that – the better. Lastly, timeliness describes the importance of the closure of an action before starting with a new one.

If people are involved in a joint activity, Clark mentions that all participants strive for a mutual belief that they have succeeded well enough for current purposes.

Clark (1996) also describes how people can take different routes towards the closure, and have different perspectives on when they have reached the closure. The principle of least effort describes the agents’ try to minimise the effort in doing what they are striving for. The principle of opportunistic closure describes the fact that agents consider an action complete as soon as they have sufficient evidence for their purpose. Holistic Evidence is seen as the evidence that if a whole is finished, all the sub-parts also have been succeeded.
People reflect on their experiences. Wright and McCarthy (2007, p. 106) state that “People seem to have a strong need to express and make sense of their experience, do this in many different ways, and never finish it off”. This reflection forms the base of the evaluation, but is biased by the memorability. In this chapter, the theory of memorability and evaluations are introduced. Biases of those evaluations are presented after, including a peak-end rule and chronological influence.

Memorising and evaluating

To understand how we evaluate experiences, it is important to provide an introduction to how we memorise events. Kahneman (2010) argues that there are two selves that both have an impact on how we memorise events. First, the *experiencing self* is seen as the self that lives in the present, knows the present, and can relive the past. Second, the *remembering self* keeps score and maintains the story of our life. The latter is the storyteller of our life and bases its story on the memories that we have. In chronological order, this means that the memory tells an experience, and those experiences lead to a story. Time is the biggest difference between the experiencing self and remembering self. Kahneman further describes that a one-week holiday at the beach is the same for the remembering self as a two-week holiday: there are no new distinct memories added.

Norman (2013) describes three stages that we evaluate our experiences in. First, we *perceive* what has happened in the world, then we try to *make sense of it*, and finally *reflect* by comparing what happened with what was wanted. The reflective level is important for the memorability of the service, and according to Norman, also the home of conscious cognition. That is where deep understanding develops, and where reasoning and conscious design-making take place. The circumstances, actions and outcomes are evaluated in this reflection.

This reflection connects to Koivisto’s work (2009): when users are evaluating their experience, they are making a comparison between the expectations they had before, and the experiences they actually had. That leads to confirmation or disconfirmation. Koivisto further mentions that basic, performance and excitement factors differ in their levels of expectations, and therefore influence the overall satisfaction. He describes this as the perceived holistic service quality. Performance factors are described in the Augmented Service Offering Model (Grönroos, 2015), and include the accessibility of the service, interaction with the service organisation, and customer participation.
Evaluation bias

Our evaluation is based on memories of past experiences. We have difficulties remembering all the details of those experiences, which introduces systematic biases into those evaluations (Norman, 2009; Hsee & Hastie, 2006). This bias is also acknowledged by Kahneman (2010), who sees the difference in time between two selves as the reason for this, and Norman (2009) who calls it the distancing effect: events are remembered differently when actors achieve distance from them, whether the distance is time or space.

Kujala et al. (2011) stress the importance of those reconstructed memories, even though those might be biased. It is only those reconstructed memories that are shared with others, and guide the future behaviour of the individual (Norman, 2009; Karapanos, Martens & Hassenzahl, 2009).

Norman (2013) adds an important factor of reflections: they result in highly protracted emotions. Protracted emotions last longer than the immediate period of usage, and forms the base of us recommending a product to others (or discouraging one to others).

Users influence their experiences (both during and afterwards) in order to reflect differently on them. Mitchell, Thompson, Peterson and Cronk (1997) identify two ways that people do so. First, Rosy prospection describes the tendency for people to anticipate more favourably to events than they actually experience them at the time of their occurrence. Second, Rosy retrospection describes the tendency for people to more fondly remember events in the past than they felt about the same event at the time of its occurrence.

People also try to create a better ending by influencing their actions during the experience; a positive ending improves their objective happiness (Fredrickson, 2000). Ross and Simonson (1991) see the preference of happy endings in the integration or segregation of events during the evaluation afterwards. People evaluate their experience in such a way, that there is a positive end. They provide a car-damaging example: Mr A’s car was damaged for 200$ in a parking lot. He had also won 25$ in the office football pool. This person was less upset than Mr B: his car was damaged for 175$ in a parking lot. Mr A segregated the two events and ended with the 25$ surprise: a happy ending.
Evaluative influence of the peak-end rule

We reflect on all our experiences – all day long. So do users. Reflections are graded and then stored in the form of likes and dislikes (Kahneman, 2000). According to Ariely and Carmon (2000), do users not evaluate their experience by combining the intensity of their experience into an average. Users only take a few defining features of the experience (so-called gestalt characteristics), which they combine into one overall summary evaluation. The salient factors are described as the most intense state (peak), and the final state (end) of the experience. Tully and Meyvis (2016) confirm the existence of this peak and end rule, and add that the evaluations can be predicted based on the peak and end intensity of the experience.

Fredrickson (2000, p. 591), describes endings as the dramatic increase in certainty: the ending provides people with “one route to knowing – with great confidence – what their global impressions really are”. He also gives a design suggestion regarding the peak and end: “optimising these moments should have a larger pay-off than efforts spent optimising other moments” (Fredrickson, 2000, p. 599) This theory is highly useful for the design of an experience: the peak and the final moment should deserve extra attention, as they play a large role in the evaluation of the experience.

The end effect has been re-examined by Tully and Meyvis (2016), who found that the ending only had a disproportionate impact if it had specific additional properties (e.g. a particular meaning), or if people were led to believe that they should evaluate an experience based on its structure.

Tully and Meyvis (2016) also describe the boundaries of the end effect. If the service was expected to continue, the end did not have a disproportionate impact. If the experience was complex and consisted of qualitatively distinct components, the end effect was also not visible.

Chronology

Ariely and Zaubermann (2000, p.221) add the following to the importance of the end: “In addition, the rate of change at the initial part of the experience, the maximum and final intensities, and the duration of the experience were also found to play an important role in the overall evaluations. In sum, such characteristics of experiences over time (i.e. trend, maximum, and final intensities) have been shown to have a positive impact on overall evaluations such that an increase in any of them increases overall evaluations.”
The way how experiences develop over time (in other words; the chronology) has a large impact on their overall evaluation (Ariely & Zaubermann, 2000). A sequence that increased over time (2,3,4,5,6) was experienced as more intense than one that did not change over time (4,4,4,4,4). Patterns with increasing final trends (both up and down & up) were evaluated higher, whereas patterns that had decreasing final trends (both down and up & down) were evaluated lower.

Ariely and Carmon (2000) and Kahneman (2000) conclude that the inclusion of an unneeded initial low point in the experience could benefit the overall evaluation: it would allow an increasing trend to happen towards the end. Magnini, Ford, Markowski and Honeycutt (2007) also mention the influence of this low point (a service failure): after a non-intentional low point, the customers’ awareness of new actions is heightened. If this low point is solved properly according to the customer, its evaluations might be more positive than if there had never been any low point: the service recovery paradox.

I can see the validity of the low point, as it creates an increasing trend towards the end. It however raises ethical questions – it is wishful to add low points in experiences?

Ariely and Carmon (2000) and Kahneman (2000) stress that it might not be advisable to add this low point if there is a risk of the user aborting the experience prematurely. Including this (non-)intentional low point in an experience is also not recommended by McCollough, Berry and Yadav (2000). They see a lower customer satisfaction after a service failure and recovery, than in the case of an error-free service. In their research, this means that the increasing trend has not been valid – even though this trend has been validated by other researches.

Finally, users try to influence the chronology of their experience: they prefer a happy ending. People prefer to arrange sequences in such a way that the positive event happens last, and rate those experiences as more favourably (Ross & Simonson, 1991; Fredrickson, 2000, Tully & Meyvis, 2016). Ross and Simonson (1991) provide the social norm that it is better to experience the bad before the good as one of the arguments for this preference.
2.3. Gratitude and reciprocity

The theories of gratitude and reciprocity are very relevant to the design of the Lost and Found service. Owners like to extend their gratitude to the finder, and compensate for the psychological debt that they have towards the finder through reciprocal acts. Gratitude is introduced first, followed by reciprocity.

Gratitude

Bartlett & DeSteno (2006, p. 319) define gratitude as “the positive emotion one feels when another person has intentionally given, or attempted to give, one something of value”, based on their readings of McCullough et al. and McCullough and Tsan.

Research indicates that gratitude is important to people, and being grateful appears to be a highly valued trait (Gallup, as cited in Watkins, Woodward, Stone and Kolts, 2003, p. 449). Watkins et al. mention that “gratitude promotes happiness by enhancing one’s experience of positive events, by enhancing adaptive coping to negative events, by enhancing encoding and retrieval of positive events, by enhancing one’s social network or by preventing or mitigating depression. Investigations into these proposed mechanisms should provide valuable information for the understanding of happiness”.

McCullough, Kilpatrick, Emmons and Larson (2001) describe three functions to gratitude as morally relevant. First, it is a moral barometer that responds to the perception that one has been the beneficiary of another person’s moral actions. Second, it is a moral motive function: it motivates the grateful person prosaically toward the benefactor and other people. Third, it is a moral reinforcer function: it encourages benefactors to behave morally in the future.

Bartlett and DeSteno (2006) validate that gratitude, as opposed to simple reciprocity norms, drove helping behaviour. Those gratitude functions to encourage an individual to reciprocate a favour were even expected if such reciprocation would be costly to the individual.

I suggest that gratitude is a relevant theme for a Lost and Found service, as returning an item to an (anonymous) item owner and vice versa involves gratefulness.
Reciprocity

It is important to distinguish the effect of gratitude from reciprocity, which is the awareness that one should repay another person who has provided assistance (Bartlett & DeSteno, 2006). Falk and Fischbacher (2006) see reciprocity as a way for people to reward kind actions and punish unkind ones. They also stress the importance of the intention underlying the action, and the human-feeling: subjects behaved differently if the actions of reciprocity came from real persons compared to actions from a random device.

Gouldner (1960, p.171) stresses the importance of distinguishing the concepts of complementary and reciprocity, and cites Westermarck: “to requite a benefit, or to be grateful to him who bestows it, is probably everywhere, at least under certain circumstances, regarded as a duty”. I see this as a relevant theme in the current society: reciprocal actions now seem to be “fantastic and irregular”, where these were regarded as a duty before. I still see the importance of naming the action in a special way, as it improves the perceived emotions.

How large this reciprocal action should be is explained as “roughly equivalent” to what had been received. This can be in the form of heteromorphic reciprocity (different items, but similar value), or homeomorphic reciprocity (items are the same) (Gouldner, 1960).

Fehr and Gächter (2000) state the uninvited favours are likely to create feelings of indebtedness obliging many people to repay the psychological debt. They cite Cialdini (1993), who explains this phenomenon through free sampling in supermarkets: people receive a small portion, and feel a psychological debt to buy the product. This psychological debt can also be applied to the factor of returning an item: the owner feels a psychological debt, as the finder has put in the effort to retrieve the item.

I suggest that reciprocity is a relevant theme for a Lost and Found service, as it can be expected that the owner has a psychological debt towards the finder, which initiates a reciprocal action.
2.4. Design consequences

The theoretical framework as presented in the preceding chapters has led to design principles. Amongst other principles, does this chapter some “takeaways” from the literature research. This list is therefore not complete.

A first design consequence is introduced by Jordan (2003), who argues that designing for pleasure is as important as usability. Pleasure brings enjoyment, delight and gratification, and contributes to emotions, hedonistic and practical benefits in design. Especially the Socio-Pleasure is interesting regarding experiences, as it describes that rewarding feelings are connected to being social: “Humans are social animals and thrive when being able to meaningfully connect with people that are significant to them” (Gkouskos, 2016, p. 18). Pleasure can also come from small service gestures, that Koivisto (2009) mentions as big influencers. For my design, pleasurability will be seen as an important factor.

Designing for pleasure connects to gift-giving. In the first design brief, a charity donation in the finder’s name was mentioned. Gift-giving seems to be an interesting technique to bring pleasure to people and to make them reflect on their experience. Taylor and Harper (2002) write about gift-giving: the complete process of sending and receiving a gift, and the wrapping in which it was received, is a salient feature of an experience. It shows that the sender of the gift cares enough about the recipient to send a personal gift; it is pleasurable to get this confirmation as the recipient. As a design condition, I see gift-giving as a possible design solution.

Wright and McCarthy (2010) describe that the designer should design the conditions for an experience that builds on people’s past and current experience, can be understood in terms of their past and current experience, and allow those people to transform their current environment in ways that will positively enhance or transform their future experiences. Those conditions are very relevant to the design of a Lost and Found service.

The importance of diversity in an experience is stressed by Kahneman (2010): only through diversity in experiences (to distinguish between them), people can memorise an event. As a design consequence, the experience should include factors that make this experience ‘unique’ and distinct from other experiences returning an item. A gift, as previously mentioned, would be an example of creating diversity in a scenario.
Finally, another design consequence was mentioned in the preceding chapters. Experiences have certain moments that are more influential on the evaluation than other moments. Ariely and Zauberman (2000) mention the trend of an experience, its rate of change, and the maximum and final intensities as the most important patterns of the experience. Regarding the end of the experience, Koivisto (2009) mentions that a customer journey can be prolonged at the beginning or the end – with even creating new service moments. Also with the new service moment, the experience must come to fruition or at least feel that it is a natural end (Wright & McCarthy, 2007). Those salient moments will be designed with special care.
3. **METHOD**

This chapter provides a methodological background of the activities that were performed in this thesis. The results of those activities are presented in the succeeding chapter. The first subchapter 3.1. describes the underlying research approach that was used in this thesis: Research Through Design. Subchapter 3.2 presents the pre-study. The creation phase is highlighted in subchapter 3.3 and subdivided between a Low-Fidelity prototype and High-Fidelity prototype. Subchapter 3.4 discusses the test approach and is followed by the research ethics and validation in subchapter 3.5.

3.1. **Research Through Design**

Within this thesis, the Research Through Design approach was used. This subchapter describes the characteristics of the RtD approach and its influences on this process.

Research through Design is explained as “design activities that play a formative role in the generation of knowledge (...) that depend on the professional skills of designers such as gaining actionable understanding of a complex situation, framing and reframing it, and iteratively developing prototypes that address it. The designerly contribution (...) consists of the development of a prototype (or artefact) that could be mistaken for a ‘product’, and that plays a central role in the knowledge-generating process” (Stappers & Giaccardi, 2017).

This research project has been inspired by a Research through Design (RtD) approach. Through the creation of the prototype for the Lost and Found service, that was iterated several times, knowledge has been created. The creation of the prototype has been valuable, as the current research was rather limited around closing experiences, which means that a purely theoretical research study would have led to limited results.

The literature research was an inspiration to create a prototype. Through the creation of the prototype and the evaluation, knowledge contributions could be made regarding the question of how the closing experience of a Lost and Found service might be designed.
3.2. Pre-Study

The pre-study includes the analysis of the current status of the service, a perspective on competitors offering similar services, and experiences regarding gratitude and reciprocity.

Current service

There is a current service of the Lost and Found service: Finderoo. To familiarise myself with the current service I have received access to documents that were used during the creation of the first version of Finderoo (such as a user flow, purposes, etc.). I also have had conversations with colleagues that have been involved in the creation of Finderoo. The second purpose of this research step has been the discussion of the current flaws of the service. Those were discovered through conversations with colleagues, and visualised as an effect map.

Several products were created in order to visualise the working of the current service: a customer journey, storybraid, personas, and an effect map.

Customer Journey Map

The customer journey map (CJM) was based on the currently available materials and interviews, and had the purpose of seeing the different actions that users go through in relation to each other. The CJMs are representing a typical user that goes through the service. The CJM I created included both the chronological touchpoints with the service, as the experience curve.

A CJM is explained as “A structured visualisation of a service user’s experience. The touchpoints where users interact with the service are often used in order to construct a “journey” – an engaging story based upon their experience. This story details their service interactions and accompanying emotions” by Stickdorn et al. (2011, p.158).

An experience curve was included in the CJM, also known as a UX curve. Kujala et al. (2011) describe this phenomenon as a method to reconstruct the experience over time. The UX curve is particularly described as a technique to retrospectively report how and why the user’s experience changes over time. Even though the retrospective perspective over time is less important in this stage, it was mainly interesting as it uses a minimal representation technique to visualise the user’s emotions: a curve that moves upward for a positive experience, and downward for a negative experience.
Two CJMs were created to represent both users: one for the item owner, and one for the finder. The design of the CJM was inspired by Stickdorn et al. (2011) and my previous experience with making CJMs.

**Storybraid**

The Lost and Found service included multiple actors that were dependent on each other: without the counterpart, the service goal of retrieving a lost item could not be completed. To highlight the collaborations between actors, a storybraid was created. Holmlid (2018) describes a storybraid as “a technique that aids during design work in multi-actor service systems”.

The storybraid was created based on Holmlid’s article and the previously created CJMs that described the chronological order of activities. It describes the typical user that was understood through currently available materials and interviews.

**Personas**

Visualising the users of the service has several benefits according to Stickdorn et al. (2011 p.178): “effective personas can shift the focus away from abstract demographics, and towards the wants and needs of real people” and “personas embody the real-world perceptions surrounding a company’s service”. For those reasons, and as the personas could be helpful in the following stages (such as brainstorming), two personas were created that represented the two actors of the service. The stories were fictive but based on the chronological order that was presented in the CJM, and on interviews with colleagues/relatives.

The description of a persona according to Stickdorn et al. (2011), and personal experience with the creation of personas were used in order to create them.

**Effect map**

This thesis project has originated from a demand for an improved experience with Finderoo. An effect map is explained as “a strategic planning technique (...) It provides focus for delivery by putting deliverables in the context of impacts they are supposed to achieve” (Adzic & Bisset, 2012, p.1). The main purpose was to visualise the ‘flaws’ of the current design, and provide design directions.

In order to do so, I have spoken to colleagues that had been involved with Finderoo. I have also spoken to people that had no previous experience with Finderoo, to find out what people would do in general upon the loss/finding of an item. This information would also be useful for the concept creation phase.
The effect map was created based on the techniques provided by Adzic and Bisset (2012), Angner (2015), and through feedback and a mini-lecture from colleagues that had experience with the creation of effect maps.

**Competitors**

The Lost and Found service that was researched has several competitors in the field. To get a sense of the decisions that were made for Finderoo – and how it compares to other similar services, there has been a limited review of competitors.

The competitors were selected through two methods. First, some competitors analyses were available in the received documentation of Finderoo. The documentation was read through, and the websites were consulted. Secondly, I have performed an online search on the keywords “Lost and Found service”, and picked similar services.

The competitors were reviewed with two questions in mind. (1) How could the item be retrieved, and (2) Was there any exchange of a thank you? The service end was reviewed with special care.

**Gratitude and Reciprocity**

To get a sense of what people would do when someone would return their lost item, a web-search was performed. Different (non-scientific) websites such as fora, question-websites, blogs and news articles were consulted. Besides a web search, people without previous knowledge of Finderoo were also interviewed. The main purpose was to find out how people would work with reciprocity after an item loss, and how one could share his gratitude.
3.3. Prototypes

The methods of the pre-study have resulted in springboards for design openings that are presented in this chapter: the creation of a Low-Fidelity and High-Fidelity prototype. The Low-Fidelity Prototype had a focus on the concept; the High-Fidelity Prototype was focused on the visualisation of the concept.

3.3.1. Low-Fidelity prototype

Several products were made in order to create a concept. First, a brainstorming session was organised with colleagues to explore different directions. Then, concepts were created, which were presented in the next workshop. This led to the creation of one final concept.

Brainstorming session

A first brainstorming session was organised in order to gather ideas. The purpose of this session was to explore design opportunities for the closing experience.

Preparation

The session was prepared in three ways. First, participants were needed for the workshop. Secondly, the procedure of the brainstorm needed to be created. Lastly, the materials needed to be prepared.

The participants were found rather easily as colleague-designers within the company were asked to participate.

The procedure of the brainstorm was based on Liedtka’s and Ogilvie’s (2011) recommendations. Their chapter started by giving four reasons “Why people hate brainstorming”. This was useful, as it stressed what needed to be done in order to prevent that from happening.

Liedtka and Ogilvie present seven steps to create a meaningful brainstorming session, as presented in Table 1. The fifth step was given extra attention in my brainstorm, as it was one of the “risks” why people did not enjoy brainstorming. Liedtka and Ogilvie (2011, p. 106) describe a good trigger question as “a question that defines the box you are playing in and focuses attention on a specific aspect”. I would like to highlight two methods that are useful with trigger questions: blue cards and contra-logic.
Blue cards were introduced by Gryskiewicz (as cited in Liedtka & Ogilvie, 2011). Everyone would receive the same trigger question, and within three minutes, everyone would silently write down ideas on post-its. After those three minutes, all post-it ideas are presented to the group. Then, there should be another three-minute iteration with the same trigger question. This method was proven to result in three times as many ideas compared to traditional brainstorming.

Secondly, contra-logic had been recognised as a very useful technique. Liedtka and Ogilvie (2011) mention that there is a “dominant logic” within every service: the service characteristics, such as a restaurant with [a] a fixed location, [b] indoor seating, [c] fresh and local food, [d] a waiter bringing food, and [e] customers paying after dining. By changing who does what, or by contradicting a service element, new ideas could be gathered (i.e. a restaurant that moves becomes a food-truck, or without the waiter, it becomes a self-service restaurant). Contradicting elements was also a possibility for the Lost and Found service.
Trigger questions I created were questions that defined the scope and focused on a specific element. Trigger questions were also created outside of the Finderoo service, such as metaphors to certain actions (e.g. thanking a friend for a good deed).

The brainstorm procedure was then designed. First, the participants were introduced into the theme/service by presenting the storybraid, CJM, Effect map and personas. The working of Finderoo was also shown. In the following steps, participants would gather ideas through blue cards, other ideas and contra-logic. Later, there would be time for a general discussion.

To prepare for the brainstorm, the pre-study materials (Storybraid/CJM/Effect map/Personas) had to be printed, and trigger- and contra-logic questions were created. As a backup, if the discussion would not be as fruitful, I created a list of “research facts” from the theoretical framework that could be used as discussion starters.

**Analysis**

During the brainstorming session, ideas were written down on post-its and categorised per trigger question. The audio was recorded during the session, and notes were taken.

Per trigger question, post-its were categorised and redundancies merged (but counted). A brief analysis was run on every trigger question, where patterns and similar opinions were found. The general discussion was analysed in a similar way. A brief reflection on the brainstorming session concluded this step.

**Creation of concepts**

Liedtka and Ogilvie (2011) present the “Chili Table”, a technique to transform the brainstorm results into concepts. It starts by assembling the “key ingredients” that are needed; I gathered the analysed brainstorming results. In the next step, all the different ingredients were reviewed: redundancies were removed, and themes and connections were found.

Based on those results, I created four themes that would be used as anchors for concepts. “The chili was made” by creating concepts within the four different themes. This led to four concepts that had a different approach to the problems that users experienced.
Concept presentation

The purpose of this concept presentation was to gather feedback on the concepts and receive suggestions to merge the ideas into one concept.

Preparation

First, the participants were found. It was aimed for to have the same participants as in the brainstorming session, as they did not need any introduction into the theme, and hopefully had thought about the ideas that we had talked about in the session.

The session was prepared by designing the four different concepts in an understandable way. The main points of the concept were presented on an A4 paper, and introduced a ‘customer journey’ of the concept: which steps were needed to be taken to reach the final solution?

Execution

The four ideas were presented. They were explained and then put on the table. This led to a discussion on the specific prototypes, later links were discussed between the different prototypes. A beginning was made with combining different elements into one prototype.

Analysis

The feedback that was gathered in this session was categorised into concept-specific feedback, and general feedback/ideas. This was beneficial for the next step, where concepts had to be merged into one prototype.

The final concept

The main purpose of this Low-Fidelity Prototype was to express the concept and working of the newly designed service, and therefore a focus was put on the service working of the Low-Fidelity Prototype, rather than visual designs.

The concept consisted of three anchors: (1) the chronological process that the users went through, (2) the collaboration between users, and (3) concept idea. This was all visualised in a drawing.

A brief informal discussion of the Low-Fidelity Prototype was held within a university meeting and with colleagues. This led to a small iteration in the prototype.
3.3.2. High-Fidelity prototype

The High-Fidelity Prototype had the purpose of visualising the new concept in such a way, that it would be viable to run a user test with the new prototype. The High-Fidelity Prototype was created in two stages: a new Customer Journey Map was created to present the extended service, and secondly, the designs were created.

**New Customer Journey Map and storybraid**

The new Customer Journey Maps (CJM) had the purpose of expressing the new service extension to the current CJMs. The new actions were added for both users in the CJM and, in the Storybraid to address the multi-actor perspective. Both CJMs represent the journey as *the designed service*: how the typical user would go through the service.

**Visual designs**

Stappers and Giaccardi (2017) describe that “*a prototype can be used as a stimulus in the testing of an overarching theory*” – which is very relevant to my research. The High-Fidelity Prototype is created for Finderoo and shows the closing experience for this specific product. However, through this understanding, the overarching theory of a closing experience could be researched.

The concept that was presented as the Low-Fidelity Prototype formed the base of the creation of the visual designs. The concept consisted of a chronological order of events, for both participants. Every event was translated into one or multiple screen-sketches.

The sketches were later used to create visual designs. The current design elements from Finderoo were used as a base, however, the colour palette was inverted. Finally, the designs were made interactive (as a clickable prototype), so that a test could be run.
3.4. Test

This chapter describes a methodological approach of the user test, that is based on the High-Fidelity Prototype. The methods of iterative testing and qualitative content analysis are also described here.

Test purposes

An experience can emerge on different levels: the how-level, the what-level, and the why-level, according to Hassenzahl (2010). The how-level includes sensorial aspects, the what- and why-level focus on emotional meaning (respectively personal and societal). This test was aimed at perceived usability (how-level) and experience (what- and why-level).

Usability was a purpose of the test as it is an important factor: if unclear, people will have difficulties finishing their tasks; they might not even reach the designed state. Jordan (2003) argues that designing for pleasure is as important as usability. This leads to the second purpose of the test: finding out what experience people have, and how they reflect on one. This was useful to know in order to see if users would end their experience more positive than with the current ending.

Test content

The created concept is a service extension that prolongs the current customer journey. As was mentioned in the theory chapter, is it important to not see an experience as an isolated happening, however, as holistic (Wright & McCarthy, 2010; Buchenau and Suri, 2000). Testing the closing experience that I had designed could not happen in isolation from the preceding steps of the service. Especially, as the complete experience involves emotional factors that the closing experience builds upon. Therefore, I have chosen to walk through the complete service during the test.

Several methods were combined in order to develop a testing scenario that fitted the purpose of usability testing, experience testing, and included the complete service scenario. The interview-based tasks, moderated usability testing, enactment, guided interview questions, product reaction cards and finally the UX curve that are used in this test will be discussed here.
Interview-based tasks

Creating a real scenario for the user to test has been prioritised. The importance of a tailored experience in a qualitative user test was stressed by Peyrichoux (2008): it contributes to a test where participants are more immersed in, and leads to a better understanding of emotions. This, as the participant is then striving for a good outcome as he can relate to it. For a task that the user has no affection with, the focus will be on completing the task as fast as possible. Spool (2006) writes that “Passion on a subject changes how participants invest in usability test tasks. That change can have profound effects on the results and the recommendations produced by the team”.

To create a tailored experience, Peyrichoux (2008) mentions recruiting passionate users and creating realistic tasks as key points. She adds other options to strive for a tailored experience: providing content that is meaningful to the participant, content that the user is passionate about, using real data, and finding the correct context of use.

Spool (2006) introduces interview-based tasks to create a tailored scenario. A participant is interviewed before, and tasks are tailored to make it as interesting as possible for the participant. This is what will be done for my test: users will be interviewed before the test, and the story will be personalised for them.

Moderated usability testing

Usability testing is defined as “the activity that focuses on observing users working with a product, performing tasks that are real and meaningful to them” (Barnum, 2010, p.13). My test has been inspired by moderated usability testing: users were guided by providing them with tasks, whilst I was observing them.

Usability testing was done for two reasons. First, as the usability of the service needed to be researched, second as it was a great way to go through the scenario of the service: it would lead to insights in the experience too. The usability testing took place during the enactment of the service.

Enactment

Enactment is useful to provide users with a real scenario. To enact the tailored scenario, multiple enactment techniques were combined, so-called ongoing external representations (Blomkvist & Segelström, 2013). The used enactment methods were a desktop walkthrough, role-play, and service staging.

The desktop walkthrough is mentioned by Blomkvist, Fjuk, and Sayapina (2016, p.155) as “a collaboratively constructed miniature of a service, and of which a set of artefacts (e.g. LEGO®) is used in the construction”. The method of desktop walkthrough in this
research included a small prop (a box) that was used to represent the lost item with a Finderoo sticker on it. However, the enactment of the service did not happen in a miniature environment, but in a room-sized environment.

Role-playing is described as the “practice of group physical and spatial pretend where individuals deliberately assume a character role in a constructed scene with, or without, props” by Simsarian (2003, p.1012). He mentions the advantages of role-playing: teams get a mutual understanding of the experience, and the context is experienced well. For my research, this is very relevant: it is important for all parties to understand the experience and relive the past experience they had by enacting it. The context of the stage in which an interaction happens is also relevant, as some steps need to be postponed to a later moment in another context.

Finally, service staging is mentioned as a technique in which locations are physically built, including props that support the immersion in the experience, and then is enacted (Blomkvist & Segelström, 2014). My test included the creation of semi-physical locations within a room (a place where the item was lost/found and one where it was left/picked up), and those locations were actively used in the enactment.

**Guided interview questions**

Guided interview questions were prepared to look back at the test that users had gone through. Questions both focused on specific tasks that were given (e.g. how did you feel when you could do this), and on the overarching theory of the Lost and Found service’s closing experience (e.g. what if there would not have been any closure). This interview had the purpose of finding out the participant’s thoughts on the what-level and why-level (Hassenzahl, 2010).

**Product reaction cards**

To measure the desirability of a design and its aesthetic value, product reaction cards were designed (Benedek & Miner, 2002). The participant received a list/stack of terms that can describe a design, both negative, neutral and positive. The original list contained 118 options, however, was brought back to 40. This was recommended as it makes it easier for participants to select their options (Moran, 2016). Because of the limited amount of participants, it would be beneficial for the analysis as there possibly would be more overlap in answers.
UX Curve
A UX curve can be seen from two perspectives. First, a UX curve is a visualisation of the emotions that a user goes through when interacting with a service. Such a line is usually drawn in combination with a Customer Journey Map, and expresses negative, neutral, or positive emotions. Secondly, a UX curve can be used as a method to evaluate an experience over time (Kujala et al., 2011).

The UX curve in my research had a purpose of assessing if there was an increasing trend towards the end, finding the peak and end of the presented concept, and seeing which elements were memorised and which not. A higher peak at the end compared to the moment where the service would initially end, would confirm the usefulness of the design suggestion.

Participants & preparation
In order to find passionate users and create a tailored scenario, the following work has been done. First, two groups of participants were recruited. One group included people that had lost an item in the recent past (max. 6 months), so they would be able to relate their emotional feelings from that moment into the test scenario. The other group included participants that had found an item in the past. Both groups would be present at the test at the same moment: there would be one item owner, and one finder that together would play through the scenario.

Second, the tailored scenario had to be created. The participants that had lost an item were briefly asked during the recruiting what their lost item was, and what happened. This allowed me to prepare the visuals with their item (e.g. an image of their wallet), and prepare ‘the locations’. The scenario was made even more tailored on-scene, when the participants would do a task-based interview.

Further preparations for the test included the creation of a clickable prototype, which was done using Sketch. Materials had to be printed (such as the product reaction cards). A gift for participation (a sticker sheet of Finderoo) also had to be prepared. This gift was not mentioned before, in order to get more passionate users (rather than users who want to claim a gift).
Test procedure

Here, an outline of the test procedure is described. The complete test protocol is attached as an appendix.

First, participants were introduced to the test. The purpose of the test and the roles of the participants were explained. At the start of the test, a task-based interview was done. The participants had to tell their story of losing an item or finding one. It introduced all participants into the story that would be enacted. The introduction was concluded by presenting the schedule and introducing the current service by showing the stickers, application, and usage.

Then, the enactment and usability testing started. A user received a task, and had to move through the room to ‘locations’, and do something with the item. Every task led to the use of the app/website, which was part of the usability testing.

The interview with both participants followed, and both specific questions regarding the app and general questions were asked. Notes were taken throughout the interview, and audio was recorded. After the interview, the product reaction cards were presented; participants were allowed to select the five words that were most applicable to their experience of the design.

At the end of the test, every participant was asked to draw a UX curve for his role, to express his emotions through the experience. Then, the test was finished and users received a small gift in the form of a sticker sheet of Finderoo so that they could use the service themselves.

One week after the last test, participants were contacted to draw the UX curve again, and digitally send it to me. This task was not announced during the test, to make the UX curve as realistic as possible. By sending the UX curve assignment 1-2 week(s) later, the memorability of the service and retrospective evaluations could be checked.

Iterative testing

The tests with participants took place in the time span of 1.5 weeks. In between the tests, there was a possibility to run a brief analysis on the expressions of participants. The main focus of those brief analyses was on usability issues and negative/neutral experiences. Both were important. The usability issues could hinder the participant to reach his goal; the experience issues could lead to participants not reaching the designed service.
For this, the Rapid Iterative Testing and Evaluation (RITE) method was used (Medlock, Wixon, Terrano, Romero & Fulton, 2002): a method to make changes to the design as soon as a problem has been identified and a solution is available. This method describes four categories in which usability issues are classified:
(1) Issues that have an obvious cause and obvious solution, quick implementation,
(2) Issues that have an obvious cause and obvious solution, no quick implementation,
(3) Issues that have no obvious cause and no obvious solution,
(4) Issues due to other factors.

In between the tests, I have focused on issues in the first and second category. By doing this, every iterated user test would be more realistic towards the ending scenario.

Content analysis

During all the interviews, notes were taken of the sayings of participants and their emotional reactions. As a back-up for salient moments, the audio was recorded. All notes were transcribed into a digital text file and categorised per question. Salient issues were directly separated to be treated by the RITE method.

The transcribed data was analysed through a method that is inspired by a qualitative content analysis. Characteristics of methods from Graneheim and Lundman (2004), and Patton (2005) were used. Graneheim and Lundman describe a method where interview data is narrowed down from a meaning unit to a condensed meaning unit, and finally a code. Those codes can then be combined into sub-categories, and are part of an overarching category and theory. Patton describes a process in which the data is organised into patterns, themes and categories. He then describes how those results can be interpreted through comparisons, causes, consequences and relationships.

This compares well to affinity diagramming, also known as the KJ method (Scupin, 1997). This is a well-known method within the field of design, where content is sorted into groups, which are labelled into themes. Doing this, a clear overview of issues arises per group. Usually this method is used after a brainstorm that led to a stack of post-its, however, the underlying concept also works for an analysis of a user test. Affinity diagramming has been another inspiration to my content analysis.

Due to the iterative testing, the qualitative content analysis became more complex: every test had been different due to design changes. An element that had an influence on the first test session might have been changed, leading to a different outcome for the second test. This was considered in the analysis of the test. The analysis has been categorised per step of the prototype and focuses on the experience of the particular
step. If there would be both a negative and positive experience for the same step, it will be mentioned that there has been an iteration on the element.

The analysis started with the interview questions. A specific question was taken, and all answers to this specific question were compared. This led to similarities and salient findings. They were highlighted and noted. This has been done for all interview questions, and results consisted of both literal expressions and emotional expressions. The results then were presented per anchor of the concept: reporting an item as lost, reporting an item as found, sending a message and gift, and receiving a message and gift.

The Product Reaction Cards were then analysed. First, the answers were divided between the two participant groups: they both had run the test from a different perspective, presumably leading to different experiences. Afterwards, it was counted how often a characteristic was mentioned.

The UX curves were drawn at two moments: the first UX curve during the test, and another 1-2 weeks later. A distinction was made between the finder's UX curve and the owner's. Both UX curves were analysed with the same factors: was there an increasing trend towards the end, was the endpoint higher than with the current service ending, what was the experienced end, and what was the highlight of the service according to users. The UX curve that was drawn after the service (1-2 weeks later) was analysed with one additional factor: did people memorise their experience as how it was designed, and did they still end their experience with an increasing trend? It was not possible to do an individual comparison between the first drawn and second drawn UX curve, as not all participants had completed both.
3.5. Research ethics

This thesis work is written within a company (Usify), whilst working on a specific product (Finderoo). However, the research has been executed independent and impartial and has never been interfered by decisions made by the company.

Striving for reliability in the research has been done in two ways. First, there have been multiple reviews with my supervisor and examiner in order to execute my research in a proper way with deliberate methods. Second, all data was gathered, analysed and presented in a transparent way.

The participants that have been relevant in this thesis work were acquired voluntarily. Their participation was confirmed through a verbal consent. They were explained that they were taking part in this research, what the purpose of the research was, and what their roles would be. They were explained their rights of cancelling at any moment that they would feel uncomfortable doing a task. During all sessions that involved participants, it was stressed that there were no expectations and no right or wrong answers.

Participants of the user test received a small gift. This was not mentioned beforehand: participants had no expectations of a gift and could not feel as if they 'needed to deliver' qualitative content in order to receive the gift.

The confidentiality and anonymity of research respondents has been guaranteed by not naming results individually, or where needed, only for their role (e.g. Item Owner or Finder). Some participants have been included in this thesis with a picture of them – this was explicitly asked and permission was granted to use their photographs.
4. RESULT

All the material in this chapter is based on the methodological approach that was presented in the preceding chapter. Subchapter 4.1. will show the results of the pre-study. The prototypes (both the Low-Fidelity Prototype and High-Fidelity Prototype) will be presented in chapter 4.2. Finally, chapter 4.3 describes the test and its outcomes.

4.1. Pre-study

The current product, competitors and relevant theories were researched which led to the creation of a Customer Journey Map, a Storybraid, Personas, and an Effect Map. Later, a benchmarking was performed and reciprocal motivations of people were discussed.

Current service

Finderoo is at the time of writing (May 2019) a service that is up-and-running. Sticker sheets can be ordered and items can be marked with stickers. In case of an item loss, the finder can report the item as ‘found’ through the app or website. On his turn, the owner then receives a message that the item can be picked up (Figure 2).

Figure 2: The current service: a sticker is scanned (left), which leads to a webpage. The finder fills in a report (middle), which is sent to the owner (right).
Customer Journey Map

The Customer Journey Map (CJM) shows the different stages and activities that the typical user goes through, and is based on the interviews and currently available materials. Both CJMs (for the owner and finder) visualise time on the x-axis, and the customer’s experience on the y-axis (the higher, the more content the user is).

![Customer Journey Map of the item owner](image)

Figure 3 describes the CJM for an item owner who is registered with the current service. The service entry consists of receiving the sticker sheet and downloading the application. The registration process consists of a registration in the app or through SMS, and requires the user to attach stickers to physical items. Through the app, those stickers can be connected to a specific item.

The succeeding steps only happen if an item was lost – otherwise this part is never executed. If an item was found (needs a finder, see below), the owner receives a notification through multiple channels. The ‘finding report’ then can be accessed. Once the owner has moved himself to the location where the item was left, he can retrieve the item, and select a ‘got it back’ button in the app. The service ends when the item was retrieved.

The emotional experience is visualised as following: upon the service entry, the user is enthusiastic. As steps have to be performed, the user gets slightly stressed. When the item was found, the user reaches the peak of the experience. Retrieving the item physically replays this delighting moment. As the owner does not know anything about the finder, the service experience quickly decreases and ends.
The CJM of the finder (Figure 4) starts with the discovery of an item, which is scanned. This brings the finder to the website, where the item can be registered. Upon sending the report, he sees an automated “thank you message” on screen. The service ends here.

The emotional experience starts neutral. As the item is being registered and left, the finder is more delighted of doing a good deed. Leaving the item at the store is the highlight of the service. Afterwards, the finder is left confused: it is not known if the item will be actually be retrieved by the owner, and thus the usefulness of the finder’s action is unknown.

Both customer journeys provide a structured chronological visualisation of the service, connected with the experienced emotions.

**Storybraid**

The storybraid (Figure 5) shows the events users go through, and connect actions of actors to each other. The blue boxes represent an item owner, the green ones a finder.

The owner registers for the service, retrieves the stickers, and registers the items in the app. If an item was lost, the finder might find the item. The finder will register the item through the QR code, and bring it to a location. The owner receives this notification, and picks the item up at the location. Purposely, the last steps of the storybraid are blurred. It should highlight the fact that there is nothing happening there – but that there is room for an extension of the service.

---

*Figure 4: The Customer Journey map of the finder of an item*
The experience curve is missing in this visualisation, something that can be considered as important in UX design: strong emotions demand extra careful attention in the design (both during the emotional experience and to see the consequences holistically). In a future version, this could be implemented through e.g. the use of icons (such as an asterisk for events with a strong emotion).

The storybraid adds another perspective to the CJM by offering a multi-user perspective in one view. The connections and dependencies of different users get highlighted in this way.

**Personas**

Two personas were created. The first persona (Figure 6) represents the item owner who lost his camera. The second persona (Figure 7) represents the finder.

Both personas follow the same structure. Both personas include general data (such as a name, age, job description and hobbies) that make the persona more realistic. Both personas also describe their story of losing or finding an item. A final state of the person was also described.

*Figure 5: The Storybraid. Blue represents an item owner, green the item finder.*
The Owner, Jonathan (Figure 6), found out the item loss immediately, but felt relieved because of having the Finderoo sticker on his item. After retrieving his item, he wonders whom the ‘nice person’ is that registered his item – he was not able to find out who this person was.

Jonathan is a waiter in an evening restaurant, 30 kilometers from his home. He only works during the evenings – during daytime he usually is free. Jonathan enjoys nature – and enjoys going out in the nature during daytime. As it was a sunny day, he brought his fancy camera with him for the hike. He had had the camera for three years, and liked it.

For the hike, he needed to travel by a commuter train and bus. As he had to wait for 30 minutes, he decided to walk to the park next to the train station, and sat on a bench in the sun. Then, he lost track of the time - his train was leaving in a few minutes.

He had to run fast to catch his commuter train. In his hurry, he forgot his camera from the bench in the park. He found it out directly when he sat down on the train, but was too late to get out of the train. He got out on the first station to go back to Linköping to search for it.

He had marked the item with a Finderoo sticker, which would make it easier for a finder to return. The camera was insured against loss and theft, but as he had nice pictures on it (and really liked the camera), he was hoping to get it back.

His first thought was that the chance was big that it might be stolen.

Already within 10 minutes, Jonathan received a message from the app. Someone had found his camera! He opened the message, and found that he could pick it up at the Pressbyrån in Linköping. He would arrive there within 10 minutes, so he was excited.

At Pressbyrån he explained his story, and got his camera back. He wanted to thank the finder, but did now know anything about him or her. He felt a bit ungrateful for this, but could not change it. Anyhow, he had received his camera back!

Figure 6: Persona of an item owner. Image used with permission.
Amilia, acting as the finder in Figure 7, mentions that she takes an effort to return the camera based on intrinsic values: she had been in similar situations before, and would have liked other people to return her item as well. After a few minutes waiting for the owner, she took it, and brought it to a secure place. After leaving it at Pressbyrån, she started wondering if the owner would have retrieved his camera. Was her work useless – or did the owner retrieve his item?

![Amilia Johansson](image-url)

<table>
<thead>
<tr>
<th>Amilia Johansson</th>
<th>Age: 36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found the camera</td>
<td>Hobbies:</td>
</tr>
<tr>
<td></td>
<td>- Cycling</td>
</tr>
<tr>
<td></td>
<td>- Gardening</td>
</tr>
<tr>
<td></td>
<td>Job: Naprapath</td>
</tr>
<tr>
<td></td>
<td>Has two dogs</td>
</tr>
</tbody>
</table>

Amilia has two dogs that she really likes. She has to go out with them often, as they are very active ones. A small walk is just not sufficient. She has found a special tool to connect the dog to her bike, so she usually goes out with her bike and dogs at the same time.

She was cycling through the park, when she saw something shimmering on a bench: it was a fancy camera. Amilia had lost many things in the past – and could imagine how the owner would feel. She stayed with the object for five minutes, to see if the owner would come back.

The owner of the camera did not show up within a few minutes, so she decided to pick it up and bring it to the police station – she was on her cycle and it wouldn’t take her too long.

Then she saw the finderoo sticker, and decided to register the camera as lost. She could put in a location where she would bring it, and then decided to leave it with the closest store: a pressbyrån at the train station. She went in, told them that she found a camera nearby, and sent in the report on Finderoo’s website.

A day after, she was wondering if the owner had already retrieved his camera. She didn’t know – but she just kept thinking that it at least was a nice gesture of her, bringing the camera somewhere. She would have been glad if someone did the same for her.

Figure 7: Persona of an item finder. Image used with permission.
Effect Map

The effect map is presented in Figure 8 and visualises the Why (Purpose), Who (Target audience), What (Use goal), and How (Actions) of the current service and its desired outcome. It highlights the shortcomings of the current service and introduces possible actions.

The Why consists of the purpose that was discussed in the design brief: increasing the service impact, and spreading the word. Those were valid for both target audiences (Who): the finder and item owner. The finder wanted to know if the item was picked up, and receive some “karma credits” for that (a confirmation of doing a good thing). Actions to do so consisted of notifying the finder of an item pick-up, receiving information about the retrieval, and confirming the good deed. The owner had a wish of expressing gratitude, and reciprocating the finder’s effort. This could be done through extending thanks to the finder.

In the What level, some boxes have an extra note (HOW?). This is done as those are the main questions that need to be answered for the creation of the prototype.

Figure 8: The created Effect map
Competitors

Three competitors were available through provided documentation of the current service, four other businesses were found through a web search on Lost and Found services. They were analysed by two pre-defined questions. The competitors will not be mentioned individually, but the results were categorised per question. Examples of competitors were Dynotags, Return.me and Findercodes.

How could the item be retrieved?

Most of the reviewed competitors work with a tag/sticker that had a special code. A found item needs to be registered on the company’s website, whereafter a retrieval can be set up. Some services allow the finder and owner to have direct contact with each other, anonymously or not. They can then set up an exchange of the item. Other services did not provide any messaging option between the finder and owner, but set up a process in which the finder can send the item to the owner through the service.

Was there any exchange of a thank you?

The reviewed services do not mention this step in detail. Some services do mention a(n anonymous) text messaging functionality between a finder and owner, and thus provide an option to thank the finder through a message. Some services allow the owner to send an anonymous reward to the finder in the form of a monetary transaction, e.g. through PayPal. Other services do send a reward themselves: the reward then comes from the company, and not from the owner.

Gratitude and Reciprocity

Through a web search, and some informal conversations with family/relatives/friends/colleagues, the motivations and reasonings behind people returning a lost item were researched. Some web examples are presented in Figure 9.

As a finder, people mentioned that they did not want a reward for returning an item: it was a ‘normal’ thing to bring the item back to the owner, or at least, do effort in order to get the item back to the owner. Their motivation was that they would like the same to happen to them, also known as the Golden Rule: treat others as one’s self would wish to be treated.

If people were in the role of item owner, they actually did want to show gratitude by offering a finder’s reward. Some mentioned that the law obliged this – others just felt that they wanted to thank the finder for the kindness. This changed if the finder was actively asking for a reward for his services. Some could understand this, others would report this person to the police.
I used to take the bus from Eastern Pennsylvania every Sunday evening back to NYC for school.

Once, at the bus terminal, I found a wallet. The wallet had the guy’s ID, his credit cards, and a fat wad of cash (a couple hundred dollars). It also, fortunately, had one of his business cards.

I sent him an email when I got back to the city, and asked him if I should return the wallet to him. I did, with all contents in order — I think he said “thank you”, but I can’t recall. I know for a fact I didn’t get a reward.

But that wasn’t really the point, was it? The point is to do the right thing, and — while it’s impossible to do the right thing all the time — we should look for opportunities to do the “right” thing as often as we can.

and went to the safe. By then I was in tears, she came to the counter with my little pinky ring. I asked if I could leave a small reward, she said, “Oh, no, the people in Arlington are wonderful, no need for a reward.”

So to the person who found my ring and turned it in without a thought, I say “thank you, so much, whomever you are.” I am forever grateful and will try to pay your kindness forward!

With deepest gratitude,

Rebecca Ruhoff
Stanwood

Figure 9: A selection of people expressing gratitude and discussing rewards.

Sources:


MacRumors (https://forums.macrumors.com/threads/standard-reward-for-someone-finding-your-lost-3gs-16-32gb-734329/)
4.2. Prototypes

The pre-study has led to design openings that have been beneficial in the creation of prototypes. This chapter first presents the Low-Fidelity prototype that mainly focuses on the concept creation, and later describes the creation of a High-Fidelity prototype.

4.2.1. Low-Fidelity prototype

The Low-Fidelity Prototype resulted in a concept. This was created through a brainstorm, creation of concepts, and a concept presentation session.

Brainstorming

Three participants were found within the company: a male UX/Interaction designer, a female UX/Interaction designer and a male design intern. The participants were introduced to the current service by presenting the storybraid, effect map and current service prototype. The persona was read through individually.

During the brainstorming session, two trigger questions were introduced. Both had a different perspective as they provided good metaphors to my design. The first one focused on thanking a friend for an expected deed. The second trigger, however, focused on the way how a stranger could be thanked for a deed that was not expected.

First trigger question

“How would a friend be thanked for the moment that he/she helped a friend to feel better again?” This trigger was chosen for two reasons: (1) the ideas would presumably include a personal character, and (2) monetary rewards were less likely for a friend. Participants were given three minutes to write down as many ideas on post-its as possible. This resulted in a stack of different post-its with ideas.

After a brief discussion of results (Figure 10), an echo on the first trigger was done according to the blue card technique. Participants received another three minutes, in which they iterated on the first round. The new ideas were then also discussed and showed similarities with the first round, but also resulted in new ideas.
The first trigger question (including echo) resulted in the following categories of ideas. The numbers represent the number of similar ideas.

- **Physical gifts**
  
  *Movie tickets, a small gift like a bottle of wine, ice cream, chocolate (2)*

- **Non-physical gifts**

  *A lunch and a long talk (2), thank you and explanation why the friend is so great (5), a hug (2), doing an activity together(6), a donation to charity for a cause that my friend supports.*

- **Hand-made gifts**

  *Secret letter/gift, hand-written card (4), home-cooked food (3)*

- **Other**

  *Service in exchange (8), a surprise(2), gift for the person & partner*

There are many other ways to categorise the ideas. As a preliminary conclusion, it can be said that just extending a ‘thank you’ to the friend was sufficient – a confirmation of thanking for the friend’s help. Showing appreciation by doing an activity together also was an idea that was mentioned multiple times. Some personal items (such as a hand-written card or home-made food) were also seen as positive ways of showing gratitude. A common idea to return the favour back was by offering a service in exchange to the friend. All participants had presented their idea of ‘doing a favour’ in different ways: they wanted to help the friend as well, with any skill they had, to get equal on a scale of reciprocity again.
Second trigger question

A second trigger question was presented afterwards: “How would a stranger be thanked for putting a note on your car writing down which car had just damaged yours and then drove away?”. This trigger was chosen for three reasons: (1) It was unclear if the person had left contact details, (2) It was a stranger, so some gift options from the first trigger would be inappropriate, (3) It costed the stranger effort, without getting anything in return for it. Three minutes were given for this, and ideas were written down on post-its.

For the second question, there was no iteration performed. Quantitatively there is a smaller amount of ideas compared to the first trigger question. The results:

- **Physical gifts**
  
  *Try to ask the person what they like as a small gift, lottery ticket, swish some money, flowers, general gift for someone you don’t know, cinema tickets.*

- **Non-physical gifts**
  
  *A text message with gratitude(2), say thank you in person (2), call them (2)*

- **Hand-made gifts**
  
  *Thank you letter/card*

- **Other**
  
  *Ask them if they can use any of my skills, note in the newspaper (Dagens Ros), share thank you on social media or offline (2), do a good deed for someone else, an advertisement to thank someone, thank you note at the parking spot, tell others, put a note in my car to thank others, be happy for the day and try to make other people happy, giving to charity.*

With the second trigger, people were more eager to contact the person to say ‘thank you’, or buy a general gift. The participants also were more eager to ‘be happy themselves’ and motivated to do something good to someone else too. “Seeing people doing good makes you also wanting to do good” had been one of the sayings.

Other trigger questions and contra-logic

Due to time constraints, the other triggers were not presented with the blue card technique. Several other triggers (finishing the persona scenario, letting users configure the service themselves, showing gratitude for an item retrieval and a small deed by a stranger) were presented at the same time, so was the contra-logic technique.

Those triggers and contra-logic initiated a new discussion. This discussion consisted of three main themes: partnerships, the value of the item, and contra-logic.
Some mentioned that the finder could get an incentive for leaving the item at one of the partner-locations: leaving an item at Pressbyrån would result in a free coffee, etc. Finderoo could then partner up with those places.

The value of the item had a big impact on the expectations of the finder. If the finder would bring back an item with a low value, the experienced effort would be high for the finder compared to the value of the object. A thank-you or sign of gratitude was expected and needed in such a case to feel ‘as doing good’. If the item however had a high value (such as an expensive camera), the intrinsic motivation to bring such an item back to its owner (or a shop where it would be left) was already sufficient for the person to ‘feel good’: it was seen as ‘a normal thing to do’.

Through the use of contra-logic, new insights into the service were gathered. Currently, the finder needs to act first on a lost item. In one of the ideas, the owner would act first. He/she could report the item already as missing, other Finderoo users could then search around the described location, and gather points: gamification. Those points could be used to receive gifts/perks.

Finally, the inclusion of a charity in the service was discussed: it would possibly increase the service impact and spread the word. If the owner could donate the money, and the finder could choose its destination, all parties would do something, which would increase the impact of donating to a charity.

**Brief analysis**

It is interesting to see that the friend was thanked in a very personal way, as it felt that such a thing was most impactful of showing gratitude. When the other party was unknown, the participants preferred to aim a ‘thank you’ through a message/phone call – or through a physical present. Non-physical presents or hand-made items were then mentioned less. It was also interesting to see that people felt more eager to ‘spread the word’ of the stranger doing something good, or get conscious about the fact that they want to do something good as well.
Creation of concepts

By using the Chili Table technique, several themes and items of the brainstorming session formed the basis for design suggestions. The below-mentioned concepts should not be seen as complete concepts, however, as building blocks to one complete. All concepts visualise the finder with a green colour, and the item owner with blue.

Concept 1: a personal thank you

This concept (Figure 11) involves a personal thank you. The finder registers the item by scanning it, and provides an item description and left location. Then, additionally, the finder chooses to be notified upon the retrieval of the item. If the finder wants this notification, he can choose to share his e-mail, phone number and/or address. A message is then sent to the owner with the report, and where it can be picked up. If the finder chooses not to receive this message, the finder gets a generic message that stresses the good deed.

If the finder has shared contact details, the owner can decide to send a personal message after retrieval: through a phone call, SMS, email or postcard. If the owner does not do this, the finder would still receive a message that the item was retrieved. As an alternative to sharing the address to the owner (this might be sensitive), Finderoo could work as an intermediary. The owner would send a card to Finderoo’s address with a
special code. Finderoo then connects this code to the finder’s address and sends the card to the finder.

The first concept was chosen as it puts an emphasis on the personality of the thank you message. The finder had an option to get to know if the item was retrieved, and could be thanked for that. The effect map showed that the finder had a demand for those two characteristics.

The owner had an option to thank the finder in a personal way: through every channel (if shared), there was an option of creating a personal message. This way, the owner could influence the reciprocal action to show gratitude.

The alternative option to send a handwritten card was included as there was a wish for certain people to stay anonymous. Having Finderoo as an intermediary would have solved this privacy concern.

**Concept 2: the finder suggests what happens**

![Concept 2 Diagram](image)

*Figure 12: Concept 2*

The current service of scanning a found item and writing the location information remains unchanged in the second concept (Figure 12). After the registration, the finder has an option of suggesting the next step to the owner. Only one suggestion can be chosen, and includes options such as: (1) no follow up (stay anonymous), (2) a message from the owner, or (3) a gift/reward.
The owner then receives the report of the found item. After the retrieval, he chooses if he agrees with the finder’s suggestion, and if so, executes it.

This concept builds on the different wishes for finders. Some felt that they wanted to receive a thank you (especially if the item had a small value), others felt that they were happy to help and did not require any contact. This also took away responsibility for the owner: it could be difficult for the owner to choose what the finder would like.

**Concept 3: the owner acts first**

![Image](image13.png)

*Figure 13: Concept 3*

This concept (Figure 13) originated from the use of contra-logic. Currently, the finder is the first actor in the process of retrieving an item: the item is found, and then registered. This concept reverses this process: the owner would share the loss first.

Setting the status of an item as “lost” would be as easy as sharing three basic details, that would be visible to the finder upon scanning the item. The message could start with providing instructions for the finder what to do with the item. A reward could also be mentioned to motivate the finder to return the item. Finally, a phone number could be shared to provide an option for a faster retrieval. The latter could also be standard for the service, without needing to report an item as lost first.

This concept was chosen as it could relieve the owner: by influencing the process on getting the item back, the owner could feel less worried about the lost item. It could also help the finder, as instructions for retrieval were shared.
Concept 4: pick-a-gift

Finally, the fourth concept introduces the pick-a-gift functionality (Figure 14). The process would start by the finder scanning the found item, and describing the location where the item was found or left. The finder then has an option of choosing to stay anonymous or to share a phone number and/or e-mail address. If the finder stays anonymous, there is no further process that the finder goes through, and receives an automated thank-you message on the screen. If the finder did share his details, he could be informed at the moment that the item was retrieved by the owner.

The owner receives a notification and can retrieve his item. Then he is introduced into the pick-a-gift process. The item owner first chooses if he wants to send a message only, or a message and a gift. The message will be in the form of a text message (if the e-mail address was shared), or an SMS (if the phone number was shared).

In the case that a gift was selected, the owner would set an amount that he would like to spend on this gift: e.g. 20, 50 or 100SEK. This would be paid, and ends the service for the owner.
The finder would receive a notification with the message, and if chosen by the owner, a gift. The finder can decide which exact gift he wants to choose for the amount that the owner has set. If the owner had set an amount of 50SEK, the finder would be able to pick a gift within that specific category. Gifts include (amongst others) a coffee voucher, cinema ticket, flowers, etc. The amount could also be donated to a charity.

Two alternatives were presented in this concept. First, the design of the message could be personalised through a visual design. This has been done in the payment application Swish, and makes the textual message more personal. Secondly, a partnership with an insurance company (that might offer this Lost and Found service to its clients) could lead to bonuses for charity donations. The insurance company could e.g. offer a 10% bonus of the charity amount to promote this option.

The fourth concept was chosen as it offered a very personal thank you to the finder. The finder would get a personal notification of the retrieval, a personal thank you, and eventually a card. As the gift is not decided by the owner, the finder can himself choose a gift that he likes best. The finder gets to know that the item had been retrieved and receives a thank you. The owner has an option to extend his gratitude towards the finder, both with a message and with an optional gift.

**Concept presentation**

The above-mentioned concepts were ready to be discussed. Two out of three participants from the first session were able to meet again – one had moved to another office. For this last person, a ‘replacement’ was found: a female Art Director/Interaction designer. She was briefly introduced to the current status and activities of the first workshop.

**Pros and cons**

All concepts were discussed, which led to a list of pros and cons per concept.

The first concept was mentioned as the simplest concept. The additional card-sending service was however perceived as complex, and a digital option for this was presented. The owner could e.g. share a thank you message on a digital notice board of the Lost and Found service. This digital notice board would be anonymous for both parties.

The second concept was perceived as partly dangerous, as it included a risk of creating expectations. The finder would suggest a next step (nothing, message or gift), but if the owner did not accept this, the finder would end disappointed – as his expectation was not met. The end experience would become negative then – which is worse than a
neutral ending. Suggesting the next step also brought the risk of the item being kidnapped: the owner would only get it back if the expectation of the finder was met.

The third concept was also seen as risky, as it also brought a risk of the item being kidnapped until the owner complies with a reward. This concept could work in the way that an item owner shows that the item has been lost. It would highlight the importance of the item being retrieved to the owner.

The fourth concept was reacted most positive upon. This concept had the power of surprising the finder in a positive way. There were no expectations set for the finder, they only could be exceeded. It was mentioned that the gifts should not only be available in stores, as those have geographical boundaries.

**General discussion**

During the succeeding general discussion, thoughts were shared on concepts, how they could work together, and what their impact might be.

It was mentioned that the finder always should have the ability to stay anonymous.

The finder should be notified of the legal recommendation of returning items with a value of over 500SEK to the police station.

The name *Finderoo Hero* was introduced for the finder after registering an item.

It is crucial that the owner notifies the system if the item was retrieved: otherwise the follow-up process cannot be started for the finder. The system can e.g. send notifications (email/app) to the owner to ask if the item was already retrieved.

There is a possibility of the item never being retrieved by the owner. If the finder shared contact details, he should still get an automated message after a week that the item has not been retrieved yet, but there still is a chance that the owner will retrieve it. His action of returning should be mentioned as useful.

Finally, it was mentioned that the importance of rewards should be clear. Rewards should not be the motivation to pick up an item; however only a surprise of doing a good deed.
The final concept

Based on the created concepts and the following brainstorm, ideas have been merged into the ‘final concept’ (Figure 15). This step concludes the Low-Fidelity Prototype.

![Figure 15: The merged concept. This concept has been iterated regarding the gifting, so minor differences between the drawing and accompanying text will be visible.](image)

Registration of item loss (optional)

If the owner finds out about the loss of an item, he can set it as lost in the app. In the text field that is available, he can choose to share his phone number, and instruct on where the item can be left. The text is however freely adjustable, so a message stating the importance of the item is also possible. This step is optional – which means that the rest of the service will remain unchanged if the owner does not report his item as lost.

Registration of a found item

As soon as the item is found, the finder registers the item through the sticker and website. If the owner has set the item as lost, a message is visible first. The standard questions ‘where did you find the item’ and ‘where did you leave the item’ are asked. A new question is ‘if the finder wants to be notified if the owner retrieves the item’. If so, there are multiple options to share details: a name, e-mail address and/or phone number are available. If the finder wants to stay anonymous, this is also possible.
Thanking the finder
The owner receives a notification (e-mail, message) of the fact that the item has been found. The owner can then pick the item up, and needs to select the item as retrieved again (scanning the item or registering the item code). As soon as the owner has registered the item as retrieved, he sees the finder’s preference. If the finder did not want to be notified, there are no follow-up actions. A message could be displayed in the direction of “Someone made you happy. Can you make someone happy too?”.

If the finder has shared some kind of contact information, the ending part of the service can be executed. The item owner can choose if he wants to send a message only, or send both a message and a gift. The message can be written in the Finderoo app and will be in the form of a digital card that the item owner can choose. Multiple designs will be available, and a small text can be written ‘on the card’.

The selection of the gift has been changed after an informal concept presentation of this merged idea. The owner is able to select a gift, e.g. a coffee, cinema ticket, flowers, or a charity donation, and pay the gift through Swish. The owner is finally presented an option to share his experience with others.

The available gifts can be distributed through new nation-wide partners of Finderoo, e.g. coffee shops, cinemas, florists, etc. This would initiate a new business model for the service as well: getting a share of the item that was ‘gifted’ through the system.

Receiving the message and gift
The finder receives a notification and will be redirected to a webpage. Here, the thank you card is visible. The gift is presented afterwards. The finder can choose to keep the gift or to donate the gift amount to a charity (the charity can be decided). The finder has the option of sharing his experience in the end.

Alternative
If the finder does not react to the thank you message and gift within a week/two weeks, the owner will be notified of this. He can then choose to have the money refunded, or it being donated to charity.
4.2.2. High-Fidelity prototype

The High-Fidelity Prototype involves the visual representation of the concept that was introduced previously. First, the new Customer Journey Map and storybraid will be presented. This will be followed by a walk-through of screens that were designed.

New Customer Journey Map and Storybraid

The new Customer Journey Maps (CJM) were both created for the item owner and the item finder. The currently available steps were blurred to highlight the new additions to the service, and show the journey as how it was designed.

Figure 16 presents the new CJM for the item owner. In the stage where the item is lost (Item lost/found), the owner has an option of reporting the item as missing. This is however not mandatory. In the final stage (after retrieval), all procedures are new. The owner can send a message to the finder and eventually attach a gift to this. Finally, the owner can spread the word of using the service.

The designed emotional curve is peak-high in the end: the owner feels content for the fact that he was able to reciprocate the finder, and show his gratitude.

Figure 16: The new Customer Journey Map for the item owner

The new CJM for the finder is presented in Figure 17. This CJM visualises the new after retrieval phase. The finder receives a message of the successful retrieval in a personal way. Then, if chosen by the owner, the finder receives a gift. The finder can decide to donate this gift to a charity fund, to ‘double the good deed’.
The designed emotional curve is increasing towards the end, and also the peak of the finder’s service experience. The surprise element of receiving a message and possible gift should be the cause for this. It ends high, as people should ‘feel good’

Figure 17: The new Customer Journey Map for the item finder

The storybraid, as presented in Figure 18, displays the chronological order of events and interactions between owner and finder. The optional step of registering an item as lost is added first. At the right, the new ending and interaction are visualised. The owner constructs a message, that is being sent to the finder. Finally, the owner should receive a confirmation of the fact that the gift was accepted.

Figure 18: The new storybraid
Visual designs

The visual designs will be presented chronologically, similar to the structure that was used to describe the Low-Fidelity Prototype. Not all individual screens that have been designed will be presented here – only the ones that contribute to the story in this chapter will be shared. The complete (and clickable) design is available from the author upon request. Please note that the designs presented in this chapter are the final designs, and include iterations based on the test. This was done to provide a better overview of the final working of the concept. The factual iterations are described in the next chapter.

Visual style

The current design of Finderoo has a very dark colour scheme. Personally, I experienced this colour scheme as negative. My perspective was confirmed by a research of McCandless (2012), who shows that black colours in the western culture are connected to “Authority, Death, Eternity, Evil, Mourning and Style”. Those characteristics might not fit well with a service that promotes “happiness and doing a good deed”. Therefore, I have reversed the colour scheme, trying to bring a more positive and grateful feeling in the designs. Yellow, according to McCandless describes amongst others happiness and fun. Figure 19 gives an impression of the style change.

![Figure 19: Comparison between the current visual style (left) and the new (right)](image-url)
Item lost (owner)
If an item is lost, the owner feels stressed and insecure. An option to report the item was introduced to reduce those negative feelings: the owner would get a sense of ‘doing his best’ to have the item retrieved. At the same moment, the finder might be extra motivated – or helped to return the item.

Figure 20 visualises the process of reporting an item as lost. The app starts with an overview of registered items, and the item can be clicked on (no visual here). This leads to the detail page of the item, and includes an option to set the item as lost. The owner can set a message that will be visible to the owner; recommendations what to write are provided. Doing this results in the overview page showing the current item as lost.

![Figure 20: Marking the item as lost.](image)

Item found (finder)
The finder enters the service here by registering the found item. A finder can do this by scanning the QR code on the item, or by entering the web address to register the alphanumeric code, as visualised in the first image of Figure 21.

If the code is scanned/registered correctly, the finder is presented with three or four steps to help to retrieve the item (depending on the owner’s lost message), Figure 21.

1. [optional] The owner’s message is shown.
2. What was found and where was the item found?
3. Where is the item brought to? Locations to securely leave an item at are suggested.
Here, the finder can share his email address to be notified upon retrieval. Due to expected privacy concerns, this step has been designed carefully. First, it is made clear what the purpose of sharing the e-mail address is: receiving a notification if the item was retrieved. Second, there is a confirmation of staying anonymous. The finder would share his email address to the system, but this would not be visible to the item owner.

(5) Finally, the finder is thanked for his effort and can share the service experience.

Figure 21: Registering the lost item by the finder
**Item retrieved and gift-giving (Owner)**

The lost item has been found and was reported by the finder at this stage. The owner of the item receives a notification of the fact that the item has been found, and can read the finder’s message (Figure 22). The owner can decide to pick the item up directly (if he might be close by), or to do this later. This is done by selecting whether “I’ll get it back soon” or “I picked it up”. If the owner would like to do this later, the system will ask at a later time (e.g. 2 days later) if the item has been picked up. This is essential to know, as the proceeding of the service depends on it.

Once the item owner has reported the lost item as retrieved again (whether through the notification, or the product-detail-screen), the owner starts with the thanking process, as can be seen in the middle screen of Figure 22. The owner has an option of starting with this process at a later time (it can be expected that the owner is not home at the moment of retrieval), as is visible on the right of Figure 22. There, he is reminded that the finder would appreciate his message, and can postpone the process to a later moment (with a reminder). This screen is also shown if the user would press the cancel button during the process.

![Figure 22: Notification of the item being found, the start of the thanking process, and drop-out message](image_url)
In the next step (Figure 23), the owner can write a message to the finder in free text. Suggestions are made what the owner could write in order to thank the finder. The owner then chooses a design to make the card more personal – it can be flipped to see the text on the back. The displayed card designs are made by Swish (used with permission), that is offering such a functionality in their payment service.

The factor of a personal thank you was stressed during the brainstorm, so through a free-text message and handpicked design, this message should be perceived as a very personal thank you to the finder.

![Figure 23: The messaging functionality and card design feature.](image)

*Card designs: Swish (2019), used with permission.*
After selecting a message, the owner has the option of adding a gift (Figure 24). This is highlighted – but not mandatory. If he decides he does want to add a gift, he is able to pick from a selection of pre-defined general gifts, such as a coffee, ice cream, flowers, cinema ticket, or a charity donation in the finder’s name (Figure 24, middle).

All gifts should be in the form of digital codes/links, so that the finder can easily receive one – independent of the geographical location. A chosen item then can be paid through Swish, or credit card. The credit card option was introduced as the owner might not have access to Swish, a Swedish payment service. After the payment, the owner received a confirmation of the sent gift.

The gift is now sent to the finder. If he for any reason might not accept or open the gift, the owner should be notified that the gift had not been opened within e.g. one week, and choose to get his money back or donate the money to charity. If the gift was opened, the owner should also be notified of this, confirming his good deed. It will not be mentioned if the finder chose his gift or a donation.

*Figure 24: The gifting functionality*
Receiving a message and gift (Finder)

This part of the concept has been created for a desktop layout for two reasons. First, as it shows the new style for a desktop layout. Second, as the finder might be working at his computer upon the receiving of the email, which was useful for the testing scenario.

The finder receives an email (Figure 25), mentioning that the owner would like to thank him for its effort. It is explained how the finder stays anonymous, or what to do if the finder does not want to accept the gift.

![Figure 25: The email to the finder](image)

The finder then arrives at the message and gift page (Figure 26). The sent message, combined with the card design, is shown at first. Second, a gift can be selected. The finder can choose to accept the owner's gift (e.g. a cinema ticket), and by filling in his e-mail address, the finder would receive a gift voucher for a cinema ticket.

The finder however also can choose to donate his gift to charity. In this case, the finder would donate the representing amount of money for the gift to charity. The charity can be picked manually. This step is highlighted by advertising it as ‘doubling your good deed’.
Figure 26: The message and gift for the finder.

Hej!
Thank you for taking the effort of returning my bag to me. It does mean a lot to me. I hope that you will have a fantastic day!

Choose your gift.

You received a

- or -

Double your good deed:
donate your gift to charity

Choose the charity you support:
- UNICEF
- Save the Children
- ActionAid
- The gift equals 130 PLN

Cinema ticket
Conditions for gift:
We will send the voucher to you.
E-Mail:
Mux.mustermann@online.com
Gift E-Mail:
Mux.mustermann@online.com

Charity donation

Confirm & receive →

Confirm & donate →
Closing screen (Owner & Finder)

Both the item owner and finder see a positive closing screen (Figure 27). The item owner sees a screen that confirms the successful sending of the message and gift.

The finder sees a confirmation that his gift was sent to his e-mail address, or if a charity was chosen, that the donation was sent to the charity. The finder is called a “Finderoo Hero”, stating that the user has done a good deed. The word Karma is used here to stress the fact of being a good Samaritan.

Both users see one of the visuals that were used for the current service: a man with a phone using Finderoo. The figure was given a cape, to stress the feeling of ‘being a Finderoo Hero’, doing something good.

Both users have the option to share their experience through social media (e.g. Twitter and Facebook). This could vary from a hand-written message describing their experience, to a standardised message sharing the application.

Figure 27: On the left the closing screen for the item owner after sending a gift. On the right (a part of) the closing screen for the finder who selected his gift.
4.3. Test

This subchapter discusses the test. In the first part, the preparation and execution of the test will be discussed. Succeeding, the changes based on iterative testing will be presented. This subchapter concludes with the test results.

Pilot testing

In order to have an optimal testing scenario, two pilot tests were organised with colleagues. The purpose of this test was both to find usability issues in the design that needed to be solved, and to try the test procedure. The test procedure was checked on the fact if enough context was given to the participants to run the test, if the tasks were clear to be executed, and how the chronological order of interview questions was experienced. The test also resulted in useful feedback on the scenario.

Two pilot tests were run with a total of four colleagues. All participants were female, aged 26-38, with an average age of 30.

Based on the pilot testing, changes were made to the test procedure and design. The most salient changes: the participant instruction was improved (regarding the non-working text fields), a ‘mystery box’ was included to represent the lost item, and more enactment was introduced. The finder’s scenario also had to be redesigned to a mobile layout, as the finder would be in a public place and not have access to a computer there. A question was added in the interview regarding charity inclusion.

Participants

For the test, two target audiences were recruited. A first group consisted of people having experienced the loss of an item within the last six months. The second group would consist of people having found an item in the past. One test would include one item owner, and one finder. This led to a tight schedule, as many calendars had to be synced in order to find a suitable time.

Sauro (2012) recommends to over-recruit participants for a test, as some might not show up. As the planning was very tight, and I had recruited passionate users (that were enthusiastic to participate), I did not over-recruit participants. This has been a bad decision, as it turned out that five participants had to cancel at the latest moment (Figure 28). It was a challenge to reschedule sessions and find replacements for users that could fit the same role. It however has worked.
In the end, the test was executed by 10 participants in 5 sessions. None of the participants knew about Finderoo before. The participants varied in age from 21 to 43, with an average age of 26. There were 6 female participants and 4 male participants. The majority of participants were students (8 out of 10). The pilot-test participants are not included in this calculation; with them the number of participants would come to 14, divided into 7 different tests.

**Test execution**

*The complete test protocol is attached in Appendix A. The execution of it will be discussed here.*

As a pre-test preparation, every item owner was asked before what had been lost and where. This allowed me to prepare custom visuals and text for every test (Figure 29).

**Figure 28: Cancellations and reschedule-requests for the test**

**Figure 29: Examples of different versions. Also, the messages and locations were changed.**

Participants were interviewed at the beginning of the test, in order to create a tailored scenario. One participant was appointed as the item owner, the other as a finder. The owner had to explain his experience with losing an item, the finder about finding an
item. Especially the owner's input was useful for the test scenario: that content would
be used in the test.

The enactment of the scenario (which included usability testing) consisted of a
preparation and four sub-tasks. As a preparation, the item owner had to mark his item
with a Finderoo sticker. A post-it was used to substitute a Finderoo sticker on the item.
The item had the form of a black box (Figure 30). To increase the reality of the
experience, the owner was asked to put the item in the box if possible.

For the first task, the item owner had to lose his item. The participant had to move to
the location within the room (that was appointed through the use of an A4 paper with
the name, Figure 30), and leave the item there. The person would then join the table
with the other participant and me, and got the task to report his item as lost in the app.
The participant received my phone, and could click through the screens to report the
item as lost. A selection of those screens was presented in Figure 20.

The second task involved the finder. The finder had to move to the place in the room
where the item was left, and act upon that. The finder was given the task to report the
found item in the app. The finder received my phone, and could go through the screens
in order to report the item as lost. During the process, the finder had to physically bring
the item to the second location in the room.

Then, I made a notification sound and handed over my phone to the item owner: a
message was received that the item had been found. The owner could read the report,
and move to the location where the finder had left the item. I acted as a store clerk in
this place, and handed the item back to the owner. The owner then could continue

Figure 30: Left: The mystery box with a post-it substituting the Finderoo sticker.
Right: a 'location' within the testing room, in this case the train station.
using my phone by marking the item as retrieved, which included the creation of a message and a gift. The owner wrote a message, and in most cases, selected a gift. This step concluded the enactment of the owner.

The finder had to perform the last step – which was shown in a desktop environment to stress the fact that the owner would be in a different location than the first. The participant was sitting at a table, and an email was presented to the finder. He had to open the email, and run through the screens of receiving the gift. The finder could choose between receiving the gift (in the prototype always a cinema ticket), or to donate the corresponding amount of the cinema ticket to a charity. This concluded the enactment.

The interview was based on the enactment of the service, and included questions for all actions that were done. Some questions were aimed at one user – other questions were applicable to both roles. The final interview questions were not specified towards an action, but on a more general level regarding the closing experience and consequences of one. Example questions were: “How does the owner feel when they set the message ‘item lost’?” and “In which way would you share your experience?”.

The product reaction cards were then presented to the users; a table consisting of forty negative, neutral and positive descriptions (Figure 31). Participants were asked to circle the five most applicable words to their experience.

<table>
<thead>
<tr>
<th>Valuable</th>
<th>Complex</th>
<th>Not Secure</th>
<th>Personal</th>
<th>Useful</th>
<th>Helpful</th>
<th>Distracting</th>
<th>Entertaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boring</td>
<td>Engaging</td>
<td>Stimulating</td>
<td>Disruptive</td>
<td>Satisfying</td>
<td>Difficult</td>
<td>Friendly</td>
<td>Trustworthy</td>
</tr>
<tr>
<td>Appealing</td>
<td>Time-consuming</td>
<td>Impersonal</td>
<td>Optimistic</td>
<td>Inefficient</td>
<td>Ordinary</td>
<td>Hard to use</td>
<td>Uncontrollable</td>
</tr>
<tr>
<td>Motivating</td>
<td>Expected</td>
<td>Meaningful</td>
<td>Collaborative</td>
<td>Efficient</td>
<td>Convenient</td>
<td>Fast</td>
<td>Inspiring</td>
</tr>
<tr>
<td>Frustrating</td>
<td>Effective</td>
<td>Time-Saving</td>
<td>Fun</td>
<td>Stressful</td>
<td>Confusing</td>
<td>Secure</td>
<td>Attractive</td>
</tr>
</tbody>
</table>

*Figure 31: The product reaction cards, of which 5 could be selected*

The session ended with the drawing of a UX curve. Participants were instructed what a UX curve was by presenting an example of a train ride. Then, for their own roles, they were asked to draw their own curve (Figure 32). It should be noted that this was not done by all participants, as this was one of the iterations of the test procedure. The UX curve was drawn by the last four participants.
Drawing the UX curve concluded the test. Participants were thanked, and it was asked if they wanted to receive my thesis in the end to see their contributions. A gift was also provided to them in the form of a Finderoo sticker sheet so that they could use the service themselves. All participants reacted surprised and grateful to this gesture (Figure 33).

As not all participants had drawn a UX curve during the session, and as it would be useful to test the memorability of the service, an assignment was sent 1-2 weeks after the test occasion. All participants were asked to draw this UX curve at home of what they memorised from the service. For the people that had no experience with drawing such a curve, an example was provided of a train journey. Half of the participants sent their UX curve.
Iterative testing

By using the RITE method, the design was iterated between tests. After a test, notes were filed digitally, and the RITE method was used in order to categorise findings. Easy fixes were directly implemented, and fixes that needed more time was started with. Multiple changes were made in the prototype, of which a selection will be presented here.

As a first change, the phone number was removed from finder’s report. It was experienced as too intrusive, and an email address worked for the purpose.

Second, the purpose of sharing an e-mail address had been made more clear, and the anonymity of the finder was stressed once more.

Third, a more detailed description was given on where the item could be left.

Fourth, the price indication was changed on the screen where users could choose to add a gift or stay with the message. This as people reacted to it as a way to “send money”.

Fifth, the gift selection page was iterated. It was made more clear in which way the finder would receive the gift (as a digital voucher), and what the charity would receive if that had been chosen.

Sixth, the text box where the owner could set his item as lost was redesigned as the first design did not communicate the purpose clearly, and the text field and font size were too small.

Test result

The test result is divided into the four anchors of the concept, followed by the product reaction cards and UX curves.

Reporting an item as lost (finder)

Usability wise, reporting an item as lost was perceived as easy and intuitive. The content of the message was not agreed upon, and some did not know what to write. The purpose of sending this message was unclear to some participants.

This step had a big impact on the experience of the owner. The owner felt panicked because of the item loss, but by sending this message, all participants mentioned that they felt hopeful again, and felt as if they had put in the effort to have the item retrieved. It was comforting.
The finder was less affected by the owner’s message. It was slightly motivating, as the finder got a confirmation of the item being missed by the owner rather than just being lost. However, participants were already in the process of returning the item, so this motivation was not needed. It was mentioned that the message could have the opposite effect if it would be rude or demanding.

**Reporting an item as found (finder)**

The process of reporting an item as found was generally perceived as fast and easy, resulting in positive usability. Two factors however were discussed. First, some mentioned that they were not sure where they should leave the item. The text had been changed between tests to solve this, but it did not lead to the desired outcome.

Second, and most importantly, the purpose of sharing an e-mail address was unclear, which was a threshold for them to provide one. This step was repeatedly iterated but did not lead to the optimal outcome yet. Privacy and spam concerns were one of the causes. They would also let it depend on the value of the item and effort that they had done to retrieve the item. For a high-value item or a high effort, they would be more keen on sharing their email address than for a low-value item or low effort. Most mentioned that they found it important to stay anonymous for the owner in this stage.

**Retrieving the item (owner)**

Retrieving the item, and marking it as retrieved was perceived as slightly confusing. However, it is an important stage. The owner receives a notification that the item can be picked up at a specified place. When the item is retrieved, it is crucial for the owner to set the item as ‘retrieved’ again, in order to start with the process of thanking the finder. At which moment the owner needs to be reminded of this is discussable: now, people were slightly confused as the message appeared too early in the process (at the notification stage).

**Sending a message and gift (owner)**

Participants were enthusiastic about the option to send a message to their ‘anonymous finder’. They found it a natural thing to thank the finder, as the finder had put in the effort to have the item retrieved. It was an emotional release for them, they felt thankful and grateful. They felt that the message was more personal because of the card. Finally, by thanking the finder, some mentioned that it would motivate the finder to do the same thing again.

Six out of seven participants even added a gift. Their first impression during the usability test was “I can send money to the finder”, but through iterations, it became more clear that it was a gift. They wanted to send a gift as the finder made them happy,
and now they could make the finder happy. The gift added more value to the thank you and encouraged the finder to return an item again.

The gifting depended on the economic situation, however, people already saw their item as lost, and counted on buying a replacement. A gift then was then not seen as a financial issue anymore.

Participants did not feel forced to buy a gift – and enjoyed the fact that there was a range of gifts to choose from, fitting their preferences.

**Receiving a message and gift (finder)**

Finders were happily surprised when they received a message – they did not expect it. It made them feel good and confirmed their good deed. They mentioned to be happy that the owner had retrieved his item. They felt that the message was personal, also because of the design.

The gift was perceived as extra proof of appreciation and liked by the finders. Five out of seven participants did donate their gift to a charity fund: they said the gift did not belong to them, as the effort to return the item was minimal. They would be happy to transfer their good deed to a charity fund.

It was mentioned that receiving a gift could lead to expectations in the long run: if the finder would return another item through Finderoo, he would be disappointed if he would not get a gift.

**Other**

Most participants were not keen on sharing their experience on social media, as they did not use social media that much. All participants would however share their experience offline with friends and colleagues.

The overall service was experienced as positive. Participants got a positive feeling about mankind, felt relieved and grateful. Owners mentioned that they had shown their appreciation and gratitude. Without the newly designed ending, finders would not have felt appreciated, and both parties would have been left with many questions. With the designed service, this did not happen, and users had a positive ending experience.

**Product reaction cards**

A distinction was made between the experiences of the finder and owner. Participants could choose a maximum of five characteristics per person, the mentioned number correspondents to the number of participants selecting the same characteristic.

The finder scored as following: convenient (4), helpful (3), friendly (3), useful (2), satisfying (2), motivating (2), inspiring (2), fast (2), effective (2), time-saving (1),
stressful (1), stimulating (1), personal (1), optimistic (1), meaningful (1), impersonal (1), entertaining (1), engaging (1), confusing (1), collaborative (1), and appealing (1).

Most finders evaluated the service as positive. Out of the in total 35 chosen characteristics, three differed from the designed experience (confusing, stressful, and impersonal). Those were all mentioned by the same participant; an explanation is not available. The other characteristics connect well to the test results: finders experienced the service in a positive way, stressing convenience, helpfulness and friendliness of the service. Those characteristics can also be applied to the users themselves: they felt helpful and friendly. This connects to the earlier mentioned theory where users are part of creating the value (Holmlid, 2009; Koivisto, 2009).

The owner has reacted as following: friendly (5), useful (4), trustworthy (3), collaborative (3), uncontrollable (2), time-saving (2), satisfying (2), optimistic (2), motivating (2), helpful (2), valuable (1), personal (1), meaningful (1), inspiring (1), expected (1), engaging (1), effective (1) and convenient (1).

The owners have reacted positively to the service experience too. One characteristic differed here from the designed experience (uncontrollable), all other characteristics fitted with the designed experience. They connected to the interviews where users mentioned the service as friendly, useful, trustworthy and collaborative.

**UX curve**

The finders had unanimously drawn a curve that was increasing towards the end, and one that ended higher than at the moment where the current service ends, both during the test and after 1-2 week(s). This is important, as the increasing end has a big impact on the evaluation (Ariely & Zaubermann, 2000). The experienced end was mentioned as the moment that the gift was collected, as designed. This was also seen as the highlight of the service. The experience was also memorised correctly.

The owners have drawn a different curve. Their curve was increasing towards the end in half of the cases, one was neutral towards the end and one was decreasing. The ending point was higher than in the current service ending for most participants, one had an ending that was at the same level, but still positive. The gifting stage was the perceived end of the service – the highlight was the retrieval of the item. The owners had memorised their experience correctly.
5. DISCUSSION AND CONCLUSION

This chapter concludes the thesis. Subchapter 5.1 provides a discussion, including meaning and implications, limitations and suggestions for future research. Chapter 5.2 concludes this thesis.

5.1. Discussion

This subchapter describes the outcomes of the thesis in three steps. First, the meaning and implications of the research will be presented. This will be followed by a review of limitations. Future recommendations conclude this subchapter.

This thesis has originated from a case in which the Lost and Found service Finderoo was not providing an accurate closing experience. Design openings for a closing experience were expected, which led to the creation of the main research question: How might a closing experience of a Lost and Found service be designed? Theories regarding (closing) experiences were reviewed and stated the importance of two salient moments in an experience: the peak and end. They were influential on the memorability and emotions of the experience. Through the use of (service) design tools, and a user test, a closing experience of a Lost and Found service was designed. The closing experience included reciprocal acts for the owner, and surprised the finder for their act. This led to a new highlight of the service, which benefited the overall evaluation of the service.

5.1.1. Meaning and implication of results

The meaning and implication of results will be analysed per sub-research question, as they cover the research that was done in this thesis. This will be followed by a discussion around key-themes.

What is the current status of the design of Lost and Found services?

As a first procedure, the current status of the design of Lost and Found services has been researched. This was done for both the appointed service Finderoo and competitors. Through the use of several representation techniques, the working of the current service was visualised. The working of the concept and roles of participants became clear through this. The competitors were also analysed, and showed a variety of techniques to design a Lost and Found service. A (brief) research on gratitude and reciprocity resulted in an understanding of underlying mechanisms to return an item – and being thanked for it.
The results of this subquestion led to the understanding that Lost and Found services are running, focus mostly on the Core Service (Grönroos, 2000), which includes the retrieval of the item. The closing experience is not ultimately designed, which leads to a design opening.

**Given earlier research, what are the elements and principles of a closing experience that should be considered in design?**

Through a theoretical perspective, the working and implications of a closing experience became clear. Gradually, through the exploration of experiences, services and closing experiences, it became clear what the importance of the closing experience is on the whole service evaluation. The closing experience is the moment that provides evidence for the closure of the experience to the user, which is important as it allows the user to move to the evaluative stage of the experience: were the expectations met?

This evaluation of the expectations is crucial, and is based on the user’s memorability of the service. However, this memorability is biased. The memorability of the experience is influenced by the peak and end and chronology (Ariely & Zaubermann, 2000; Ariely & Carmon, 2000; Tully and Meyvis, 2016). The peak and end are salient moments that have a larger impact on the memorability of a person. The chronological order of the experience is influential as an increasing trend makes the experience more intense. The closing experience itself needs to have distinct memories in order to be memorised (Kahneman, 2010).

The user’s biased evaluation was found important: it is only the reconstructed memories that people share with others, and guide the future behaviour of the individual (Norman, 2009; Karapanos et al. 2000).

A review of gratitude and reciprocity explained their mechanisms that can be used in a Lost and Found service. The owner has a psychological debt towards the finder and wants to reciprocate this by extending his gratitude.

Through the literature review, it became clear that those salient moments are important in the experience. It also became clear that there is a knowledge gap of closing experiences within the field of design: the literature on closing experiences was mainly found within the field of social sciences. Applying the currently existing literature to the creation of a design therefore can be seen as a knowledge contribution. It also has a societal impact: the services that we use daily, might use the knowledge of those closing experience in order to improve their closing experience, leading to more content service users.
How might the elements and principles of a closing experience be implemented in the design of the Lost and Found service?

Here, the findings of the pre-studies and theoretical framework were combined in order to come to a concept and design. A brainstorming session led to four concepts. Those were merged in a next session, which led to one concept in which the owner can thank the finder for his work, and the finder receives a notification of retrieval, a message and optionally a gift.

Three main elements and principles of a closing experience were found in the design. First, the closing experience needed to provide evidence for the finder and owner of a service closure. Second, the closing experience needed to be distinct from other memories in the service. Third, the closing experience needed to be more positive than the other moments of the experience in order to have an increasing trend towards the end.

Those three main elements were designed in the way that the owner can thank the finder for his deed, and express his gratitude through a message and optional gift. This would leave the owner with a positive end feeling: and having the item retrieved, and doing a good deed of thanking the finder for it. The finder on his turn receives a notification of the successful retrieval and is surprised with the personal message and optional gift that was/were sent. The finder feels positive and useful; a positive ending experience.

What are the experiences users have with the proposed design for the Lost and Found service?

As this thesis has been inspired by a Research Through Design approach, the knowledge contribution is based on the creation of the prototype. To verify the validity of suggestions, a user test was introduced. Fourteen participants executed the test, half of them as a finder and half of them as an owner.

Because of the real-life scenario and enactment that was used, participants mentioned being immersed in the user test. The overall conclusions of the test were positive. All participants had a positive closing experience. Most of them even defined it as their highlight of the experience. Most described their emotions as more positive than if they had used the service without the new closing experience. Especially the transfer of the gift was experienced as positive by both the owner and finder.

The test also led to recommendations for improvements in the concept. Some were already implemented through the use of iterated testing, others were not solved yet.
Finders mentioned to be insecure about sending their email address to the system: they wanted to stay anonymous to the finder. It was not clear to them that the email address would not be shared.

The owner’s ending experience also has room for improvement. One participant had drawn a decreasing UX curve after the end of the service, one had drawn a neutral curve. It can be researched how this curve can be prolonged and kept positive – also after ending the service.

**Discussion around key themes**

The purpose of my thesis has been the design of a new closing experience for the Lost and Found service. The result did meet my expectation: based on a pre-study and theoretical framework, reasoned decisions were made to create a prototype. However, it has also been a creative process in which iterations have happened.

It is hard to compare my results to the current research, as current research mainly has been limited to the field of social sciences. However, especially through the user test, the existence of a peak- and end rule can be found, and shows that the closing experience has an impact on the experience. The designed closing experience was experienced as positive, which has been the purpose of this research.

### 5.1.2. Limitations

With great care, the research process was designed in order to provide valid results. Unavoidably, this research has had limitations, especially during the testing and analysing phase. The impact of those limitations will be discussed here.

The selection of test participants forms the first influence on the generalisability of the research. The group of participants has been relatively small (7 participants per role, 14 participants in total), most of them were students. This leads a relatively small sample size. However, all participants were acquired for their specific role and were able to relate to the tasks given. The sample group therefore does provide a relevant perspective on the prototype.

A second influence that might bias the test result is formed by the presence of both user groups at the same moment. In a realistic scenario, the finder and owner would not know each other. The anonymity of not knowing the other party would therefore be influential on the user experience. Normally, there would also be a (considerable) amount of time between the different steps of losing and finding an item.
During this test, both participants were involved in the same test, and the waiting time between steps was not experienced. Nonetheless, the test has been valid for answering the research question, as passionate users were recruited and the enactment scenario created a representable environment.

The analysis of test data forms another bias in the results. The results have not been analysed through a rigorous qualitative content analysis method, however, the analysis was only inspired by them. Also, the data was interpreted subjectively as I had been both present during the test, and was accountable for the analysis. There was no external validation for the choices that I made. I am aware that the choice of a different method and collaboration with other researchers could have led to a different outcome of the test analysis. However, the results were analysed in a transparent way and based on the methods that describe a qualitative content analysis. I would therefore argue that the analysis does lead to a (first) understanding of the user’s experiences.

Finally, I am aware of the fact that the theoretical framework that was used in this research was not originally created for design purposes. I have strived to translate the techniques and findings of their researches in a correct way into the practice of design, however, I am aware of the fact that there might have been biases and subjective influences in this process.

5.1.3. Future research

Regarding the prototype that I created, I would suggest an iteration based on the results of the test and design recommendations. Running a user study with a wider variety of users in order to find out the results within a larger group would be interesting too.

I would suggest further research on closing experiences within service design. Through my research, I have addressed the importance of a closing experience within service design and suggested a design solution for a Lost and Found service. However, there are still openings for more theoretical research on closing experiences within service design.

Finally, in a more general theme, I would suggest research on the studies of impersonalising services. Through the creation of digital services, human-to-human contact seems to get more scarce in a service. I would suggest a broader study than just the functionality of e.g. self-service kiosks v.s. a physical employee. The impact of this impersonalisation of services would be interesting to be researched.
5.2. Conclusion

How the closing experience of a Lost and Found service might be designed has been the main research question of this thesis work. The answer includes two factors. First, a closing experience needs to be designed, and secondly, this must be applicable to a Lost and Found service. Research showed that the closing experience is one of the salient moments of an experience, and has an increased impact on the retrospective evaluation of the experience. Diversity is one of the factors that help people’s memorability. Research regarding the current Lost and Found service has shown that the acts of reciprocity and gratitude are relevant for the owner – and knowing if the item was retrieved relevant for the finder. Through brainstorming sessions, concept presentations, the creation of a prototype and a test study, a design was presented. The owner could thank the finder for his effort, and send a personalised message and gift. The finder would then receive this message, and the gift, confirming the good deed.

The approach to reach this result has been according to my expectations: a typical (service) design project goes roughly through the same stages. The process has been effective in answering the research question. It was unexpected that the research took longer than initially planned. There had not been done research on closing experiences within the field of service design, which led to an increased workload to find applicable researches and to translate those into the field of service design. However, through this research and the Research Through Design methodology, a gap in the knowledge was addressed. A start was even made with filling this gap.

Initially, a charity gifting functionality was expected, this somehow has been implemented. Through the addition of a card and gift, the service has become more personal though, and the result has matched, and at some points, exceeded my expectations. Especially the mostly positive feedback on the user test and likability of the concept within the company have been confirming factors in having succeeded to solve the initial problem statement.
6. **PERSONAL REFLECTION**

This has been my first piece of ‘real academic writing’, based on weeks of research. I am a curious person – and as a child, I already enjoyed learning new things and exploring unknown fields. Before I started my thesis, I had worries about the amount of literature that I needed to read. I consider myself as a do ‘er- not as a reader. However, as I was really interested in the subject, I found it very interesting to see what was formerly written about the theme of closing experiences. After some weeks I found it even hard to end the research phase – I was really enjoying it.

In the succeeding phase, a design project was run. It allowed me to interview users, colleagues, and to be creative in the creation of a new idea. Designing the idea and thinking about all factors was very interesting, and was a preparation for the test.

I enjoyed the test period a lot. It was fun to meet ‘real’ users, and see how they reacted to my designs. Most participants were very enthusiastic – and left the test session with a pleasurable feeling. This was one of my aims; bringing pleasure to users. It was great to experience.

For my future career, the work done in this thesis has been very useful. The design process that I have gone through during my bachelors focused on Interaction Design, whereas I have been able to improve my skills in UX- and especially Service Design through this thesis. It was very useful to see the design process from a more scientific viewpoint – and to base decisions on theory. The knowledge of understanding the importance of salient moments in the experience will also be beneficiary for any future project.

This reflection ends my thesis. As I have presented in my thesis, is the ending experience important for the overall experience. I hope that this chapter shows how I have enjoyed this thesis work – and that it concludes my thesis in a personal and memorable way.

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7. REFERENCES


Norman, D. A. (2009). Memory is more important than actuality. *Interactions*, 16(2), 24-26.


References


APPENDIX A: TEST PROTOCOL

0. Pre-test:
I need to know what the item owner has lost, so that I can prepare the screens with a picture of that item. I need an item description, and a location. If possible, they should bring the item with them.

1. Participant introduction.
Introduce all participants to each other. Explain the basic user participation things:
- There is no right answer, there are no expectations.
- Ask me if something is unclear.
- It’s a prototype, so a simulation of how things could work.

2. Test introduction
Introduce the aim of the test: finding out how ideas work and are experienced, the prototype is just a representation.

Introduce one participant as the person that has lost an item, and the other participant as the finder. Ask the owner about the lost item: how was the item lost, efforts to get back, end result.
Ask finder about finding things: experienced before? What happened?

Explain the schedule:
1. I’ll explain the basics of the (current) Finderoo service.
2. We will play through the scenario where the owner will lose the item, and the finder will find it. The prototype is used for this and clicked through.
3. Discussion on the prototype and themes that connect to the prototype directly.
4. A general discussion on themes that are not directly connected to the prototype.

3. Finderoo introduction.
The basics of Finderoo will be explained. The sticker sheet is connected to the app that the owner has installed. Every sticker is unique and put on an item, through the app linked as item.
If someone finds an item, the finder can scan the QR code, or type in the code on the website finderoo.net. The finder shares the location where he/she brought the item to (a location to be decided by the Finder – from an Espresso House to police station). The owner receives a notification (app notification + email) with the information that the finder shared.

4. First part
The item owner has my phone and clicks through. The finder can also listen to this part. When roles shift, the finder clicks on my computer through the screens.
Brief questions should be answered instantly, ‘larger questions’ should be written on post-its to discuss them after the role play.

Task attempts:
1. Set the item as lost (Item Owner)
2. Find the item and register (Finder)
3. Retrieve the item and set as ‘retrieved’ again in the app (Owner)
4. Receive the sent message.

5. Discussion on prototype
   a) How does the owner feel when they set the message ‘item lost’?
   b) How does the finder feel about reading this message from the owner that he is missing the item? What if the text would be different?
   c) How does the finder feel about sharing personal details?
   d) How does the owner feel when retrieving the item?
   e) How does the owner feel when sharing a message with the finder?
   f) How does the owner feel when sharing a gift with the finder?
   g) How does the finder feel when receiving a message?
   h) How does the finder feel when receiving a gift?
   i) How do you feel about the charity inclusion for owner and finder?
   j) In which way would you share your experience?
   k) How do they experience the closure (end of the service)
   l) What are the consequences of this closing experience?
   m) What if there would not have been a closure – but the service ended when the finder returned the item, and the owner picked it up. And they did not know who the finder was.
   n) What if the end would have been different?
   o) What are the components of the experience? What emotions?
   p) How do all the parts relate to each other?

Use the product reaction card to select max. 5 words that you find applicable to your experience.

A UX curve should be drawn: experience line. This will be tested a week later again (to test memorability and see how the peak/end has changed).

7. End of test.
Thank for participation, ask if they want to know the final outcome (maybe receive the thesis?), and gift the sticker sheet.