



DESIGNING FOR
EXPERIENCE-DRIVEN
SAFETY
IN THE EFTELING



MASTER THESIS
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DESIGNING FOR EXPERIENCE-DRIVEN SAFETY IN THE EFTELING

POSITIVELY INFLUENCE GUEST BEHAVIOUR
TO AVOID FALLING PHONES DURING THE
RIDE OF BARON 1898



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1. INTRODUCTION

Efteling, World of Wonders. Since 1952, the popular and oldest theme park of the Netherlands has made it its goal to enchant their visitors. However, this enchantment has a downside: guests occasionally show unexpected and undesired behaviour that can lead to unsafe situations for themselves, others, or their belongings.

This thesis answers to the request of the Safety Department of the Efteling to positively influence guest behaviour. This graduation project approaches the problem of undesired guest behaviour through a designer's viewpoint: The designed environment of the Efteling is a very unique and highly exciting experience which can strongly influence the choices and behaviour of the guests. The safety solution should play into this immersive experience and positively influence the guests by means of 'Experience-driven Safety'.

Safety measures in the Efteling are commonly based on typical safety solutions, such as warnings signs and fences, which are thematically adapted to fit the environment of the Efteling. This design style shows a common conception: safety precautions damage the immersive experience of the Efteling. I believe this to be a misconception, and will show in this graduation project that safety elements can be successfully implemented into the storytelling of the Efteling.

In this graduation project I have focussed on one specific form of undesired behaviour to answer to the request of the Safety Department; the behaviour of not safely storing phones during the ride of Baron 1898. Guests occasionally lose their phone

during a ride in this extreme rollercoaster.

The initial assumption was that these falling phones are the result of guests filming during the ride. However, field studies uncovered that the cause is actually much simpler: phones slip out the pocket when the guests do not store it safely. This undesired behaviour is not made by the guests as a conscious decision. Rather, it is steered by the exciting environment and the lack of awareness that the guests possess of the risk and the solutions offered to them.

The Discover phase aimed at uncovering the choices and considerations that the guests make in the current situation. Existing storage solutions are insufficiently utilised, while their functionality would actually be sufficient to solve this problem. The exact reasons why guests currently do not use these storage solutions for their phones and rather keep them in their pocket was used as guidance for the new design.

Next, experience-driven safety design was implemented throughout the design phases in order to evoke the desired behaviour of guests storing their phone safely. User tests evaluated the balance of safety and storytelling elements needed within a design, to both convey a clear safety message and strengthen the immersive experience.

The final design proposal is the Kompel jacket: A wearable allowing guests to take small personal belongings along with them during the ride, without the risk of losing them. The jacket is designed to resemble a mineworker's outfit, appropriate to the storytelling of Baron 1898.

The Kompel jacket is a design that offers the

guest an effortless storage solution. It plays into the needs of the user such as staying close to personal belongings and it takes the influence of the highly exciting environment into consideration, by addressing the guest in a low-pressured moment of the experience of Baron 1898.

Most importantly, it takes an active role in the storytelling of Baron 1898: the guest transforms from a normal Efteling guest to a 'Kompel' – a mineworker recruited by the Baron Gustave Hooghmoed to mine for gold.

The experience-driven safety solution addresses the guests' behaviour in a positive way. It makes the guests aware of the risks and offers them a solution for it, all without breaking the immersive experience that is created.

This thesis concludes with recommendations to the Safety Department on how to address guest behaviour through design solution, based on the learning in this design project. Furthermore, it evaluates the role that experience-driven safety can take in positively influencing guest behaviour.



POSITIVELY INFLUENCE GUEST BEHAVIOUR THROUGH EXPERIENCE-DRIVEN SAFETY DESIGN

TO AVOID FALLING PHONES DURING THE RIDE OF BARON 1898.

DESIGN CHALLENGE

2. PROJECT OBJECTIVE

The Safety Department of the Efteling has observed a worrying phenomenon in rollercoasters in their theme park: Guests occasionally lose their phone during the ride, assumingly while filming or taking pictures.

When the phone slips from their hands, it drops several meters towards the ground. The result is a phone shattered to pieces, lost in shrubbery or ponds, or just out of reach in a restricted area underneath the tracks. Operational staff is tasked with retrieving these items, however, they are not allowed to enter the track area during opening hours due to safety restrictions.

In the best case scenario, guests will have to wait until after opening hours before retrieving their phone. In the worst case scenario, their phone cannot be found along the tracks and the guest will have to return home without his or her valuable belonging.

This project takes one particular ride in the Efteling as the focus – Baron 1898, a so-called dive coaster and one of the more extreme rides in the park. Losing phones is most prominent at this attraction due to the dynamics of the tracks, which includes several inversions and a steep lift and drop (see Figure 1). In addition to this, the open, floorless train cannot act as a safety net when a phone slips and falls. The problem of losing phones is not limited to this specific rollercoaster or to the Efteling. Most theme parks

encounter this problem to a greater or lesser extent. Due to the aforementioned physical attributes, of all the rollercoasters in the Efteling, Baron 1898 would benefit the most from a design intervention.

BEHAVIOUR-FOCUSSED SOLUTION

Most importantly, the intervention requested by the Safety Department should be behaviour-focussed: tackling the problem at the source. They have noticed that placing warning signs and simply instructing the guest has proven to be insufficient in addressing this issue. Therefore, they want to know why guests currently show the undesired behaviour, in this case suspected to be filming in Baron 1898. The goal is to find a way to positively influence the guest behaviour through an intervention.

To achieve this, the guest should be convinced to change this undesired behaviour and store his or her phone safely during a ride in Baron 1898.

Figure 1. Part of the tracks of Baron 1898.



SOURCE: EFTELING

3. DESIGN BRIEF

The goal of this assignment is clear and simple: avoid falling phones from Baron 1898. However, at the moment only the end result – dropped phones – is observed. Actions and choices of the guest leading up to this result are still unknown. So what exactly are the reasons that phones fall out during the ride at Baron 1898? Is it because guests film themselves and want to take pictures, or is there another factor that has not been considered yet? Furthermore, what exact steps lead up to the decision of the guest to take their phone along during the ride and why are they not more careful with such a valuable personal belonging? Only after these questions have been answered, a fitting design intervention can be created.

This graduation project specifically focuses on how the designed environment influences the guests' decision-making process. The enchanting environment of the Efteling is very different from normal everyday life, where we make rational decisions all day long. However, the Efteling aspires to draw their guests into their storytelling and to make them forget everyday life. The guests encounter new and exciting experiences and are enjoying a fun and carefree day with their family or friends. This complex environment likely has a strong influence on the rational decision-making process of keeping personal belongings safe.

EXPERIENCE-DRIVEN SAFETY

This brings us to the next challenge. There seems to be a clash between experience and safety. The concept of safety requires rational decision-making. This appears to be contradicting and jeopardising to the immersive experience created in Baron 1898, an emotion-laden experience. The common conception that safety breaks down an enjoyable immersive experience is, in my eyes, a misconception. I will challenge this misconception by showing – through one specific design case – how the park might enhance safety through storytelling, essentially combining the two opposites into one cohesive concept.

From here on out, this will be referred to as experience-driven safety.



Figure 2. Examples of existing safety measures at Baron 1898. These have been thematised to fit the style of the attraction.

4. APPROACH

The Design Brief can be divided into three research questions, explained in section “4.1 Research questions” and linked to their accompanying methods in section “4.2 Methods”.

4.1 RESEARCH QUESTIONS

The following three research questions are answered in this graduation project.

1. What is the direct cause of the falling phones?

The assumption that guests film themselves during the ride seems to be a logical one. Other theme parks encounter this problem regularly, YouTube clips show people filming their rollercoaster ride and guests are often spotted filming in another rollercoaster (Joris en de Draak) in the Efteling. However, none of these situations have been specifically linked to Baron 1898. Only the end result, guests who have lost their phone, is observed. Therefore the assumption that phones are lost because the guests were filming should be disputed. It is necessary to uncover whether another cause can lead up to guests losing their phones.

This question is answered in section “8.1 Direct cause of falling phones”.

2. What is the influence of the environment on the choices and considerations of the guest?

Whereas the first research question aims at the direct causes, this research question revolves around the indirect reasons of phones falling down. It requires an analysis of all the steps the guests perform leading towards a lost phone. The effect of the environment on their decision making process is evaluated. It is still unknown why existing safety measures lack effectivity to fully eradicate the problem. Furthermore, the immersive experience and storytelling might greatly affect guests’ considerations and choices.

This question is answered in section “8.2 Analysis of current target behaviours” and chapter “9. Customer journey”.

3. How is experience-driven safety able to answer this Design Challenge and future safety problems?

As mentioned in the Design Challenge, I believe the common conception that safety and an immersive experience break each other down to be a misconception. To explore this, design solutions throughout the design phases (Ideation, Iteration and Demonstration) combine these two perceived opposites.

This question is reflected upon in chapter “23. Conclusion on Experience-driven Safety”.

4.2 METHODS

The first research question is answered through two methods: observations at the attraction and interviews with operational staff.

OBSERVATIONS

The chances of actually observing a phone falling down are slim, seeing who was the owner and concluding whether they were filming is nearly impossible. Therefore, the direct cause of phones falling down needs to be determined through alternative observations. First off all, observations at the Photo Point with on-ride photos of all guests, to determine whether guests actually hold their phone in their hands during the ride. Secondly, observations at the existing storage solutions to determine whether people put away their phone before entering the ride.

INTERVIEWS WITH OPERATIONAL STAFF

The operational staff deals with the guests on a daily basis and is the main source of information regarding this research question. They search for lost items, have contact with the guests who have lost something and observe the behaviour on a daily basis. Interviews with operational staff were conducted to determine whether phones were lost by guests because of filming during the ride.

The second research question is higher in complexity and is therefore answered through multiple methods.

EXPERT INTERVIEWS

Experts within the Efteling from different fields (Engineering, Design and On-site Communication) provided insights into the reasoning behind design choices and limitations in the existing situation.

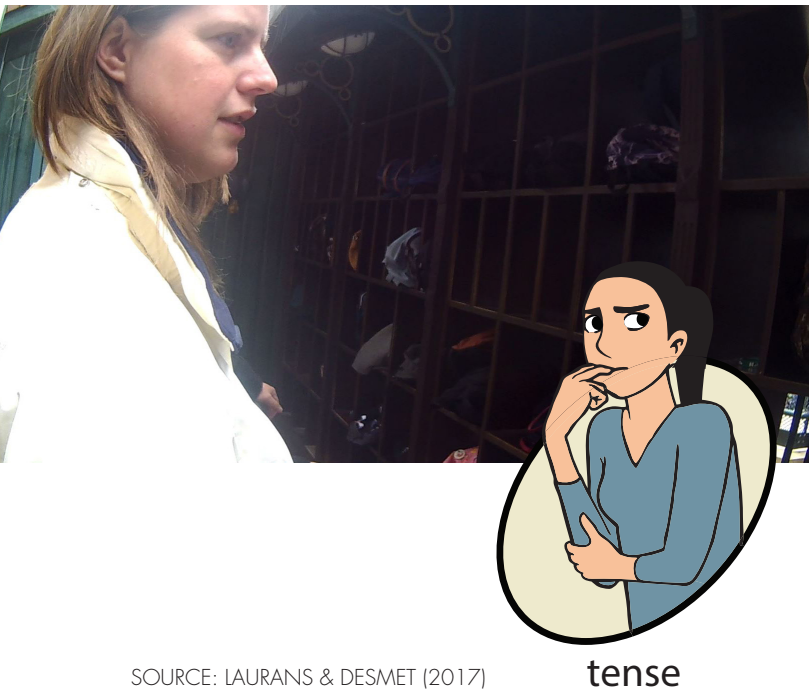
SHADOWING AND IN-DEPTH INTERVIEWS WITH USERS

To gain insight in user behaviour, eight participants, in four different groups, were invited to the Efteling to experience Baron 1898. Without any preliminary knowledge on the subject of this research, they went through the attraction while being (knowingly) shadowed. This was followed by a semi-structured in-depth interview on their experience, considerations, motivations and dilemmas. The questions revolved around the use and comprehension of storage facilities offered, their knowledge and interest in the (safety) information communicated to them through warning signs and employee interactions, and general experience and understanding of the attraction. Furthermore, they were specifically asked where they stored their phone, whether they felt it would be a safe option, and if they saw value in filming themselves during the ride.



Figure 3. Participants were shadowed through Baron 1898 before the in-depth interviews were conducted.

Figure 4. Participants were asked to indicate their experience in several touchpoints through the Pic-a-Mood tool.



SOURCE: LAURANS & DESMET (2017)

tense

Pic-a-Mood tool

To conclude the interviews, the participants indicated their mood in different steps throughout the attraction by means of self-reporting with Pic-a-Mood (Desmet et al., 2012). This tool is generally associated with measuring mood, a long-term state which in first instance does not seem to conform to the short-term situation created in different steps in Baron 1898.

However, emotion measuring tools such as PrEmo (Laurans and Desmet, 2017) aim at direct emotional responses to a product. The environment of Baron 1898 seems to illicit responses which are more fitting to the states indicated in PAM, such as excitement, boredom and tension.

The PAM tool has successfully been implemented in many different types of research (Desmet et al., 2012) amongst which as interpretation tool of affective states during car navigation (Hilbolling et al., 2011). The duration of these affective states are comparable to the short term state changes identified by the participants in Baron 1898.

Most importantly, the PAM tool is in my opinion an intuitive and clear communication tool for participants. The sought-after data, the arousal level, was effortlessly communication by the participants through PAM. This data was used to determine whether the context of Baron 1898 distracts the participants from the possibility of rational decision making.

Results from this field study can be found in Appendix A, and insights are presented in chapter "8. User behaviour" and chapter "9. Customer journey".

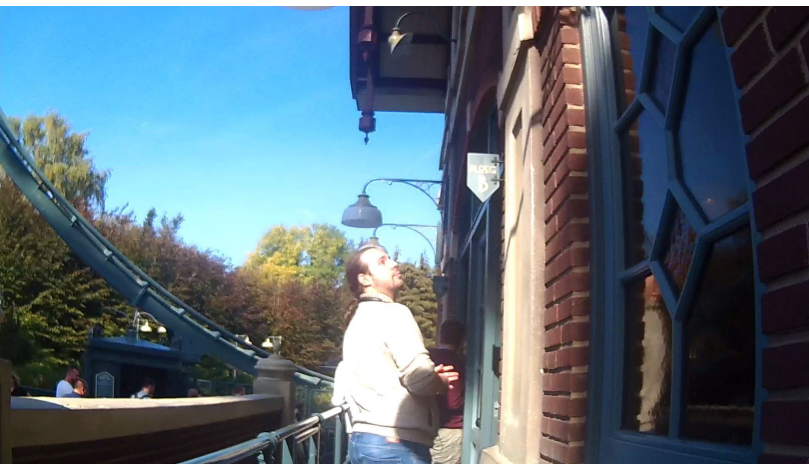


Figure 5. Choices and considerations of the participants were uncovered in in-depth interviews.

FOGG'S BEHAVIOURAL MODEL FOR PERSUASIVE DESIGN

Fogg's Behavioural Model for Persuasive Design (Fogg, 2009) provides structure to the information gained during the participant study and has been used to clearly understand why existing solutions are insufficiently effective.

This method reasons from the viewpoint of selecting a target behaviour that is expected from the guests. The behaviour is split up in Motivation, Ability and a Trigger. These three elements can be attributed to the considerations of the guests (Motivation), the influence of the context (Ability) and the placement and effect of existing design interventions (Trigger). Figure 6 shows a visual representation of the model.



Figure 6. A visual representation of the Fogg Behavioural Model for Persuasive Design (adapted from Fogg, 2009). It shows the two elements needed (Motivation and Ability) to perform a certain target behaviour, the Activation Threshold is represented by a dotted line. A Trigger can give the final push towards the target behaviour.

Once the Motivation and/or Ability are high enough, the Activation Threshold will be crossed. A Trigger can give additional incentive to perform the target behaviour and should be placed in the right moment. Preferable this would be the exact moment when the behaviour should be executed (for example an alarm when getting out of bed). It should be noticed by the user and be associated with the expected behaviour.

This method was suitable for analysing the data collected during the shadowing & in-depth interviews. It aided in determining the influence of internal motivation and the influence of external factors. The request of the Safety Department to gain insight in guests behaviour connected to this method. This method clearly included the influence of design on reaching a specific target behaviour.

The third research question is a design-oriented research question and thus was explored throughout the design phases, by exploring the balance between experience and safety. During the Ideation phase I stretched the search field by developing ideas ranging from primarily experience-oriented solutions towards the typical safety-oriented solutions. In the Iteration phase, several varieties of one concept showed the influence of experience- or safety-oriented elements in a design solution. User testing indicated the effect of the design concept being either experience-focussed or safety-focussed.

DESIGN WITH INTENT AND VISION IN PRODUCT DESIGN

To stretch the search field during Ideation, two methods were used for further exploration of ideas on both the experience and the safety range.

Design with Intent cards (Lockton et al., 2010) expanded ideation towards safety-oriented solutions, specifically cards belonging to the Error Proofing Lens, Machiavellian Lens and Security Lens. All three 'lenses' show patterns that are regularly found in typical safety design.

A short walkthrough of the Vision in Product Design method (Lloyd et al., 2006) provided guidance for expanding the Ideation field towards experience-oriented solutions. Through this method design solutions were created based on new types of interaction.

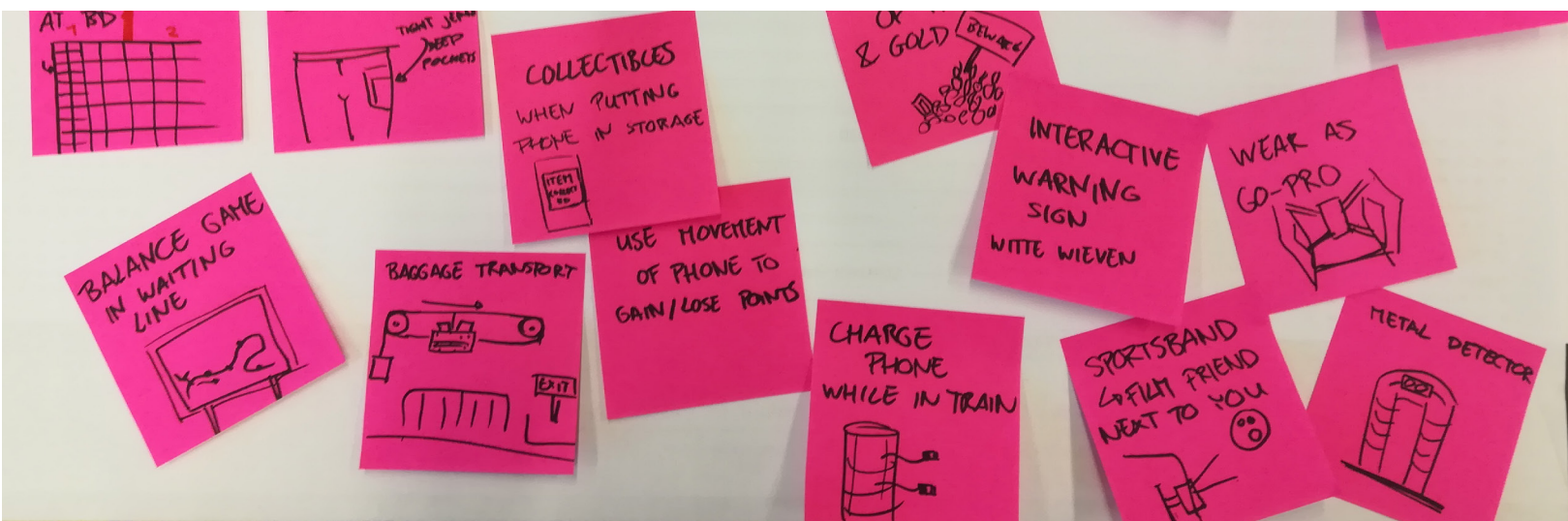
The results can be found in chapter "13. Experience-Safety Matrix".

USER TESTING WITH VARIETIES OF A DESIGN CONCEPT

During the Iteration phase, different varieties of the chosen design concept were created, again ranging from being experience-oriented to being safety-oriented. User tests indicated whether potential users understood the function of the design concept, and where they felt was a comfortable balance of being in-theme with the storytelling while also conveyed a clear (safety) message.

The varieties (ranging from Experience- towards Safety-oriented) of the chosen design concept can be found in chapter "16. Experience and safety elements on the Kompel jacket". Results of the user testing can be found in chapter "18. User tests".

Figure 7. The third reserach question is design-oriented and was explored throughout the design phases.



DISCOVER

5. CONTEXT: IMMERSIVE EXPERIENCE AND DESIGN STYLE

This chapter describes the experience that is created in the Efteling and in Baron 1898. The storytelling, design style and immersive experience are the foundation for new design interventions.



SOURCE: EFTELING



SOURCE: EFTELING



SOURCE: EFTELING

Figure 8. Examples of Efteling storytelling. From top to bottom: Red Riding Hood in 'het Sprookjesbos'; children throwing trash in the thematised trash bin 'Holle Bolle Gijs'; décor of the rollercoaster 'De Vliegende Hollander'.

5.1 THE EFTELING; MISSION AND DESIGN STYLE

'Efteling, World of Wonders'. The largest theme park of the Netherlands revolves around enchanting its guests through storytelling and letting them escape their everyday life. Since officially opening its doors in 1952, this family park has been transitioning from depicting fairy tales in their well-known Sprookjesbos (Fairy tale Forest) towards a theme park for all ages with many different thrill rides. However, the Efteling has always stayed true to its vision of storytelling and enchantment in natural surroundings. Each attraction has its own theme (based on fairy tales or legends), which is incorporated throughout the environment, into show elements, and during the ride.

Being theme-oriented and drawing the guest into the storytelling to create an immersive experience is one of the main starting points of attractions in the Efteling. Furthermore, the park aims to be strongly guest-oriented and has recently introduced its new vision for 2030: 'Through innovative power and being guest-oriented towards the 9+!'. This 9+ refers to a (fictional) review score. This means making all aspects of the park, for every single visitor, the most enjoyable experience possible.

These two facets, being theme-oriented and being guest-oriented, are also the starting point of this thesis. Guests who lose their phone during a ride do not experience a 9+ day, and visitors who are disturbed by ill-fitting safety warnings are disrupted from the storytelling. Therefore, the problem of falling phones will be addressed from within the immersive experience and will aid both the guest-oriented vision and the theme-oriented vision.



SOURCE: EFTELING

Figure 9. Baron 1898, the attraction resembles an old mining building.

5.2 BARON 1898 STORYTELLING

Baron 1898 is the newest and one of the most extreme thrill rides in the Efteling, a floorless dive coaster with multiple inversions. It opened on July 1st 2015 to attract a youthful public but is generally visited by guests of all ages (from about 10 years and older due to a minimum height requirement).

This attraction has a mining theme and revolves around the story of the Baron: A wealthy, fictional character in search of gold. The shape of the rollercoaster (see Figure 9) resembles old Dutch mining buildings and the interior is recreated with authentic mining artefacts. Guests entering the

ride are addressed as 'Kompels' (Old Dutch word for mineworkers) and find themselves in late 19th century mining surroundings. They have been recruited as mineworkers by Gustave Hooghmoed (the Baron, see Figure 10) but have been lured into working in a mine haunted by Wailing Women, ghosts from Dutch folklore who protect the mine and the gold in it. The setup of the attraction is created in such a way that guests feel like actual mineworkers and are starting their work day, while being warned by the Wailing Women to turn back and not be greedy for the gold.

Figure 10. Elements in the interior. On the left: the fictional character Gustave Hooghmoed.



SOURCE: EFTELING

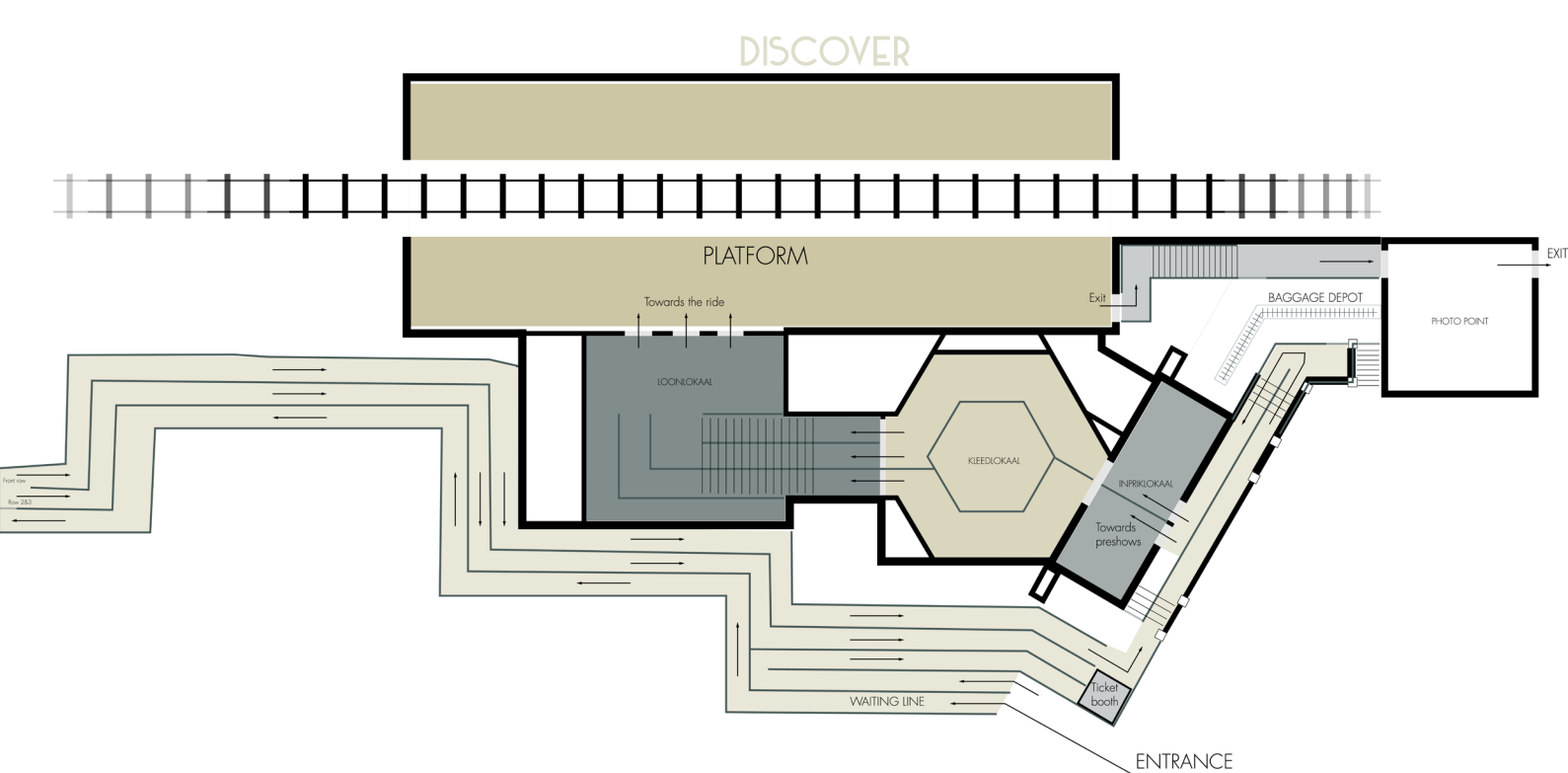


Figure 11. A simplified map of the attraction (ignoring for example some height differences) showing the different areas and flow of the guests. Guests enter through queue area, into the two pre-shows (Kleedlokaal and Loonlokaal) with show elements and end up on the Platform where they enter the train.

Guests encounter the experience of Baron 1898 well before entering the attraction, as the tracks and the distinctive wheel at the top tower above the trees. When walking towards the attraction the sounds, suspenseful music and screams from people in the ride can be heard in a wide radius. First of all, they enter an outdoor queue area which meanders in between the tracks of the rollercoaster and is passed by a train filled with screaming people approximately every two minutes. During the queue, they are presented with the choice of having a longer wait and sitting front row, or having a shorter wait and sitting in second or third row. After having gone through the queue, guests receive a paper ticket from an employee which seems to grant entrance and indicates their seat. Then, they hand in their bags and enter the building for the start of the attraction.

Figure 12. View walking towards Baron 1898.



Figure 13. Receiving a ticket to enter.



Figure 14. Entrance of the building.

The inside of the building contains two pre-shows – thematic areas in which the story is introduced through visual and auditive show elements. This is achieved through decorative objects, instructions through an old gramophone, projections, an animatronic and many more. These areas represent the process of starting the work day in an old mine, first going into the Kleedlokaal (Dressing area, first pre-show) where they are introduced to the story and warned by the Wailing Women to turn back. Next, when they enter the Loonlokaal (Payment area, second pre-show) where the Baron is urging them to come along and get ready to mine. Guests arrive in each area as a group but are not able to look beyond the room they find themselves in.



Figure 15. Pre-show 1 (Kleedlokaal) where the Wailing Women warn guests to turn back (top). Pre-show 2 (Loonlokaal) with the Baron standing above the guests (bottom).



Figure 16. The doors suddenly open and guests find themselves on the Platform with the train awaiting.

The separate rooms are designed to create disorientation, which is reinforced when lights suddenly start flashing. Then, three doors open and the guests find themselves looking at the train of the rollercoaster. They have not had the chance to observe this process before and suddenly find themselves on the Platform. Within less than a minute, they have to take in these new surroundings, get ready and sit down in the train. The train is sent off with (what seems to be) an employee pulling a large lever.



Figure 17. View from the train, just before the train is dropped.

When the train leaves the guests encounter one last show element where the Wailing Women appear once more and give a final warning. After this, the train is hoisted up onto the 45 degree slope when it suddenly stops just past the apex. Guests are staring down into the depths below while the floorless train leaves no sense of protection underneath them as their feet are dangling around. After

a tense couple of seconds, the Wailing Women 'cut the rope' and the train drops 37.5 meters into the mine. The train then emerges into the open air, continuing through the track with several inversions, twists and turns. Finally, the train slows down to be unloaded at the Platform and ready to pick up the new group of Kompels. Guests leave the Platform through a corridor filled with mining artefacts.

GUEST EXPERIENCE OF BARON 1898

As is the goal of any rollercoaster, Baron 1898 is meant to be a unique and thrilling experience for guests who ride it, but also for onlookers. Upon arrival at the area of Baron 1898, guests are dragged into fearful anticipation, excitement and slowly taken through the storytelling.

The elements described in the process above contribute to create not just excitement, but also disorientation and surprise. Dark, closed-off areas, where one is unable to see any other guests entering the train before doing so yourself add to this experience. A different perspective on this situation will be reviewed in chapter "6. Context: Safety and daily operations", where its practical implications are discussed.



5.3 DESIGN STYLE

New design concepts should match the design style currently used in the Baron 1898. This style is based on late 19th century mining, with a combination of coal mining from the south of the Netherlands and gold mining from the United States.

The industrial style consists of lots of steel, open brickwork and slightly worn-out wood. The colour scheme is similar to the Pieck colours used throughout the park. These could be described as a blue-green grey washed colour, a brick red colour and a golden yellow colour. Baron 1898 is accessorised with both authentic mining artefacts and replicas spread throughout the attraction. The Wailing Women are depicted by steam in the tunnel.



Figure 18. The design style used in Baron 1898.

5.4 STORYBOARD



1. First clear view of Baron 1898, where music and screams can already be clearly heard. To walk towards the entrance, guests need to pass underneath the tracks.



2. When walking towards the entrance of the queue area, the building (which contains the pre-shows) is clearly visible.



3. If guests look to their right they see lockers, where they can store their bags and other belongings.



4. The entrance of the queue area indicates the remaining wait time (on top) and the rules and restrictions for entering the attraction (to the left).



5. The first part of the queue area, often passing people on the right who have been waiting a while and are almost allowed to enter.



6. Guests are presented with a choice here: sit first row, or sit 2nd or 3rd row and wait half the amount of time.



7. It is usually a 15 or 30 minute wait after guests pass the sign. Here, they pass alongside the building of the attraction.



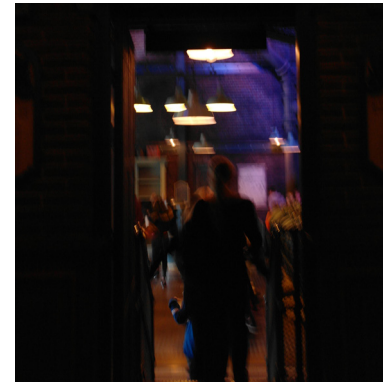
8. Guests receive a ticket from an employee which indicates the row they have chosen and are sent through in groups of 32 'Kompels' at a time.



9. Guests pass a manned Baggage Depot where they should leave their bags.



10. Guests arrive at the Inpriklokaal, an area themed as an office. This area is divided in two lanes, and the ticket they have received indicates which door they should take to enter.



13. Lights start flashing and the doors open, revealing the first view on the Platform where the train awaits.



16. Larger items such as coats can be left in the cabinet at the back wall.



11. The first pre-show. Guests find themselves in an area filled with clothing (the Kleedlokaal), receiving instructions from the Baron through an old gramophone, which are suddenly interrupted by the presence of the Wailing Women.



14. Guests should enter the train while the group ahead of them is simultaneously leaving. In the background behind the train the next optional step is visible: the Carousel storage.



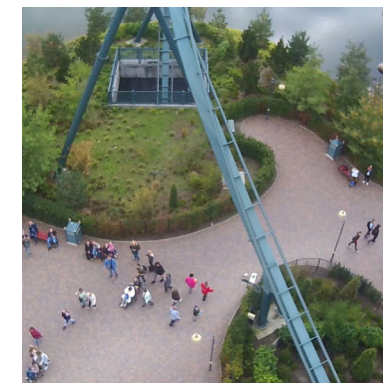
17. Guests need to sit down quickly. The restraint systems are checked by the employees and they are sent off towards the last show element just behind the gates.



12. Guests proceed into the Loonlokaal, the second pre-show where an animatronic of the Baron is urging them to move along and get ready to descend. An employee sorts them into three rows of six people based on the ticket they have received.



15. The Carousel storage may be used at the guests' convenience for small items such as phones, water bottles, glasses, etc.



18. The actual ride through the tracks. This image shows the view when hanging still just before the Wailing Women cut the cable.



19. The train returns to the Platform, where guests exit to their left.



20. Stored items may then be retrieved.



21. The exit is an elevated corridor above the Platform with displays of old mining artefacts.



22. Guests pass the Baggage Depot on the other side where they may retrieve their bag.



23. When exiting the attraction, guests pass a Photo Point which sells pictures that are taken during the ride.



6. CONTEXT: SAFETY AND DAILY OPERATIONS

This chapter reviews the context as described in the previous chapter, but highlights it from a safety and operational viewpoint. Information in this chapter has been collected through expert interviews, knowledge from the Safety Department and mostly interviews with operational staff. This chapter discusses practical touchpoints aimed at the expected guest behaviour (safe storage), rules and regulations regarding storage and operational implications within the system.

6.1 DESIGN TOUCHPOINTS TO ELICIT DESIRED BEHAVIOUR

Several existing design touchpoints aim at affecting the guest behaviour in a positive way to avoid falling phones in Baron 1898. In this situation the desired behaviour is for guests to safely store their phone, as the phone cannot be lost when it is not present during the ride. This desired behaviour is enabled and communicated through five different touchpoints in order of appearance (see Figure 19):

1. Lockers outside of the attraction: Meant for storing all personal belongings.
2. Warning sign showing rules and restrictions: This sign shows the first warning that filming during the ride is not permitted.
3. Baggage Depot: A manned baggage depot where guests are required to leave their bags. Preferably, guests would have put all their small items such as phones in their bag before reaching this point.
4. 'No filming' sign: In the Loonlokaal, a final warning is shown on the wall that filming is forbidden during the ride.
5. Carousel storage: The last option for putting small items away safely is the Carousel storage on the Platform, where items can be picked up after the ride.

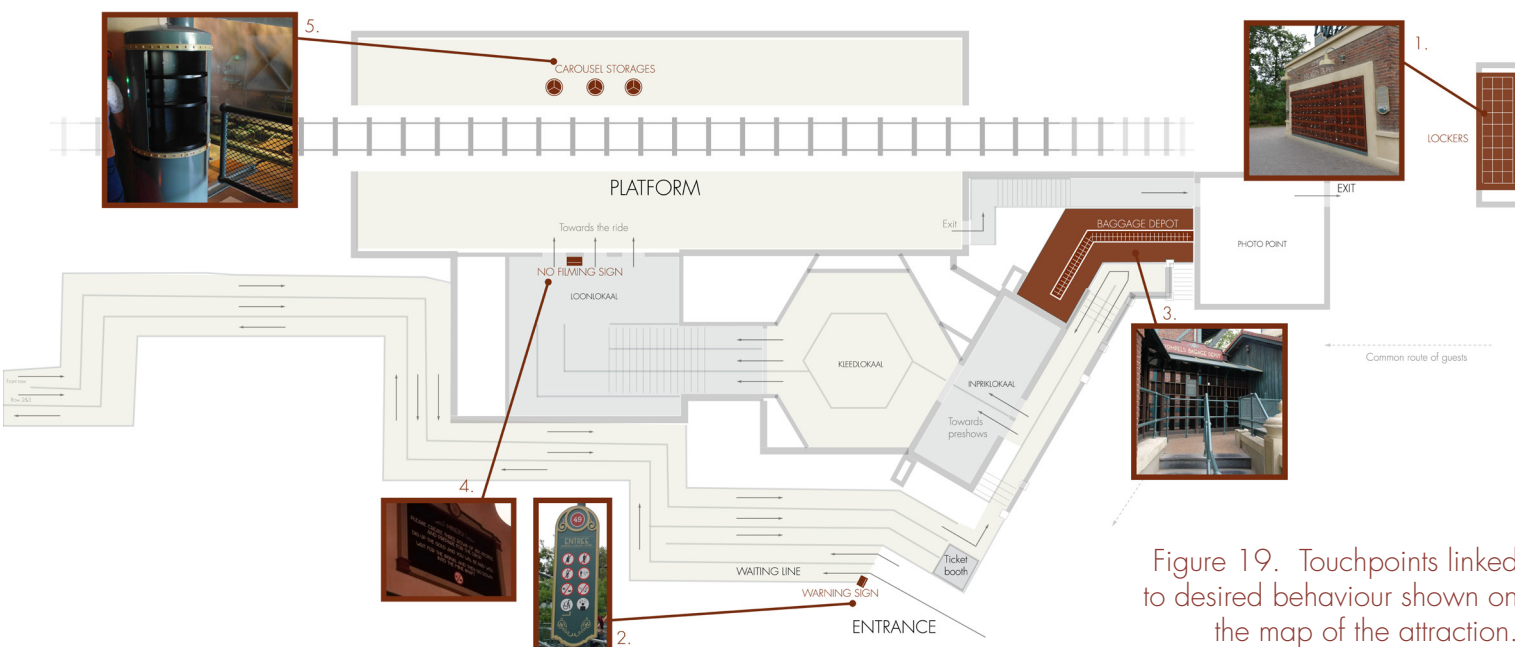


Figure 19. Touchpoints linked to desired behaviour shown on the map of the attraction.

These touchpoints can be divided into two types: Storage solutions and 'awareness creators'.

STORAGE SOLUTIONS

Lockers outside the attraction. These lockers are large enough for all personal belongings, used at the guest's initiative and convenience. They are however placed out of the line of sight and are often unused. To use it, guests need a coin which will be returned after use.

These lockers are not used exclusively by guests entering Baron 1898, all guests throughout the park are allowed to use them and technically could leave their belongings the entire day. Some guests will use the lockers this way, though it is not encouraged or intended, as this occupies the lockers for Baron visitors.



The Baggage Depot manned by operational staff to store large bags.

Guests are required to leave their (large) bags at this storage touchpoint, which is guarded by a member of the operational staff at all times. The Baggage Depot is passed upon entering from one side, and passed when exiting from the other side. The open cabinet style allows employees to easily take in and hand out the bags. Guests receive a bracelet with a number to wear around their wrist, which is mandatory to receive their bag when exiting the attraction.

Unfortunately it is not possible to store small items such as phones in the Baggage Depot due to the risk of damage or getting lost in the large cabinet. Guests are advised by staff to either put their small belongings in their bag, or to leave their remaining items at the third storage point.



Carousel storage at the Platform. When guests still carry their phone on them, the Carousel storage at the Platform is the last possibility to put it away safely. It is also often used for other small items such as flipflops, sunglasses, water bottles and small purses. The Carousel storage's cylindrical appearance is not just for show: Every train that passes by has its own compartment. The Carousel makes 1/3 of a turn to shield personal belongings from being (accidentally) taken by others. When guests arrive after the ride, the Carousel will have made a full turn and their belongings are awaiting them as they would have left them.

Observations at the Platform (See Appendix B) have shown that these Carousel storages are used very little by the guests: Out of the 810 people observed, only 20 used the Carousel storage for small items.



AWARENESS CREATORS

Warning sign showing rules and restrictions at the entrance of the queue area: Rules relevant for the guests are shown on this sign, such as height limit requirements, medical restrictions, 'no smoking allowed' and 'no filming allowed'. The latter is portrayed by an icon showing a mobile phone, a video camera and a selfie stick in a prohibition sign.



'No filming' sign: The same prohibition sign is repeated once more just before guests are entering the Platform, shown on a larger sign above the doors. This sign consists largely out of a written piece of storytelling. Underneath, the prohibition sign is printed relatively small.

Enforcement of this prohibition is a task of the operational staff who regularly check through video surveillance whether guests are filming during the ride. The effectiveness of the warning signs towards preventing undesired guest behaviour is discussed in chapter "8. User behaviour".



Though the storage solutions should be sufficient capacity wise, they do not seem to be used to their fullest extent and therefore do not solve the problem. Section "6.4 Common Issues" lists the physical limitations of these storage solutions within the system which could contribute to guests not using them as intended. Chapter "8. User behaviour" deals with the decisions and choices of the users from the field study regarding these touchpoints and analyses their effectiveness on an interaction level.

6.2 ADDITIONAL RULES AND REGULATIONS FOR LOOSE ITEMS

The previous section described the communication of certain relevant rules towards the guests. However, other rules and regulations are not explicitly communicated but expected to be common sense and are enforced by operational staff whenever needed.

As mentioned before, the desired target behaviour would be for guests to not take their phone with them into the rollercoaster, hence the storage facilities that are encouraged to be used. The operation manual (Efteling, 2018) states that it is "forbidden to bring loose items during the ride, for example cameras, mobile phones, selfie sticks, hats, scarfs, etc." Furthermore it is prohibited to put items in between the visitor and the restraint system, for example backpacks.

However, the term loose is not clearly defined for all items. For example, it is not forbidden to safely store the phone in a zippered pocket as this would not be a loose item anymore. When this phone is stored in an open pocket it becomes a grey area: To what extent can a pocket be considered the change from a phone becoming a loose item towards becoming a safely stored item?

Currently, enforcement of this rule is mostly left to the interpretation of operational staff. When they observe a guest in their seat taking out a phone from their pocket, they will ask them to place it in the Carousel storage. Employees can warn and advise when they spot an item which is not stored properly, though are not able to scan all possible 'loose' items.

Items placed in pockets are technically not loose and therefore seem to adhere to the rules. However, they can become loose during the ride when guests are able to reach into their pockets or when these pockets are open and cannot be closed properly. This grey area of loose items can therefore not be enforced unambiguously by both guest and employee.

6.3 INFLUENCE OF STORAGE SOLUTIONS IN DAILY OPERATIONS

The Carousel storage seems to be most fitting for loose items such as phones. However, when it is used by every single guest another problem would arise: a very high dispatch time. The end result is detrimental for the overall experience – the longer it takes to send away a train, the longer the queue becomes. Therefore, the fact that Carousel storages are not used to their fullest extent is actually a good thing.

This issue had arisen during the first couple of weeks after opening Baron 1898. The Baggage Depot did not exist and guests were required to leave their bags on the other side of the Platform. The dispatch time suffered and queues became excessive. The Baggage Depot was introduced as a solution to this problem and has proven to be very effective at creating a seamless flow of guests. The result is a Carousel storage that is only used as a last resort for small items that cannot be left at the Baggage Depot.

It is therefore not desirable to encourage all guests to store their phone in the Carousel storage, as it would once again trigger the capacity issues (high dispatch time means a low guest capacity). Also, since the pre-shows are very specifically timed, there is a limited time for one group of guests to hand over their belongings in the Baggage Depot. Each storage option within the attraction is therefore linked to a relatively short time limit. The table on the next page shows the options for storing small items in the current system, and the advantages and disadvantages of each solution.

Storage option	Advantages	Disadvantages
Guests put phones in Lockers.	Cannot slow down dispatch time as it is located outside of The Baron.	Lockers are often occupied by other guests roaming the park.
Guests put phones in their bag before reaching the Baggage Depot.	Baggage Depot is already effective for storing bags, phones being stored in the bag is efficient for both employee and guest.	Small items cannot be stored in the Baggage Depot and not everyone carries a bag to put the phone in. There is a time limit of approximately 2-3 minutes. Lots of guests fumbling with their phones here can again slow down the process.
Guests put phones in Carousel storage.	Safe separate compartment for each train, storage solution is developed for small items such as phones. Guests can use it autonomously without interference of the employees.	Heavily slows down the dispatch time when everyone would use it.

All steps throughout the process (starting at handing guests their ticket and ending at unloading the guest from the train) are timed and linked to each other. A delay in one area results in a delay of the entire process. Therefore, an additional requirement for preventing fallen phones would be to avoid a snowball effect. When disrupting anything in the system the dispatch time will slow down. This would thereby create longer queues and decrease the guest experience.

6.4 COMMON ISSUES

Interviews with the operational staff (Appendix C) uncovered several common issues with the five design touchpoints that are currently installed to elicit the desired behaviour of storing phones safely. This section lists the common issues that came forward during these interviews and observations (Appendix B) at the attraction. These issues are practical restrictions of the storage solutions and do not yet include the choices and considerations from the user's point of view, which will be discussed in chapter "8. User behaviour" and provide deeper insights for a new design intervention.

LOCKERS

The main limitation of the lockers is their visibility: They are situated out of the line of sight, where guests need to look over their shoulder to see them. Furthermore, their use is not limited to Baron visitors only. Guests throughout the entire park can use them for an unlimited amount of time (though this is not encouraged or intended) and some lockers are often occupied the entire day. Therefore, on busy days, Baron visitors might not be able to use these lockers. Last but not least: A one-euro coin is required to use the lockers. Even though the coin is returned after use, the guests still need to be in possession of this specific coin.

BAGGAGE DEPOT

The Baggage Depot has proven to be very functional for storage of bags. However, small items cannot be stored here as these are too vulnerable to store in the large open cabinet. When they do not carry a bag, guests are instructed to take their small items along with them onto the Platform and store them there. Furthermore, operational staff often encounters guests who quickly start rearranging their bags upon reaching the Baggage Depot, presumably because they did not know of its existence. As the operational staff only has two to three minutes to store the bags of 32 people, there is often no time for delays like this.

CAROUSEL STORAGES

On observations on the Platform, I noticed that the Carousel storage was used only sporadically (by 20 out of 810 guests). During interviews, operational staff claims that guests simply do not see the Carousel storages and often simply walk past these to put a small item in the open cabinet next to it. Furthermore, out of the aforementioned twenty guests, six did not use the storages autonomously and were aided or instructed by an employee. An interesting limitation arose: When guests were seated in the train, they often immediately pulled down the restraint system which was then stuck. If someone realises in that moment that they want to leave their phone somewhere else, they cannot get up anymore to put it in the Carousel bin. Some guests asked the employees for help, others might simply put the phone in their pockets.

This issue links back to an element that was mentioned in the previous chapter:

The disorientation that is created adds a lot of excitement to the experience of Baron 1898, but the downside is that it might be disturbing the use of the Carousel storage. The Carousel can be considered a last resort to put away items, but it is situated in a highly exciting moment in the attraction. Additionally, guests are not able to observe others using these storages, cannot learn from others before them and therefore will not copy the behaviour.

The lack of learning from previous guests posed another problem: The functionality of having a single compartment that turns per train does not come through with the guests. The Carousel is only turned when guests are seated in the train, so they do not get the reassurance that their items are safe.

Though all these limitations seem to be detrimental to the use of the Carousel storage, when every single guest would actually use it, the dispatch time would be heavily influenced. Therefore, the low number of people using it is not an undesirable result.

7. SIMILAR SITUATIONS

Other theme parks with similar extreme rollercoasters encounter the problem of falling phones as well. An inquiry with three other theme parks resulted in responses very similar to the problems experienced in the Efteling (see Appendix D). These parks addressed the problem of falling phones mostly by placing warning signs and storage systems in the attraction, instructing operational staff well and placing protective netting underneath the tracks.

Walibi Holland has recently chosen a different tactic, by placing a confronting warning – a large plastic tower filled with broken phones – in the waiting line of their rollercoaster the Goliath (see Figure 20). Their ‘phone graveyard’ seems to aim at scaring their visitors and increasing awareness of the problem.



Figure 20. The ‘phone graveyard’ at Walibi Holland to warn guests from losing their phones in the rollercoaster Goliath.

Universal Orlando in Florida takes strict measures for guests entering three of their more extreme rollercoasters: No personal belongings are allowed on the ride, checked by metal detectors at the entrance of the attraction. When guests are caught by these detectors, they have to leave the line and will lose their spot (Universal permanently installs metal detectors, 2015).

Europa Park in Germany displays a movie in the waiting line of their rollercoaster Blue Fire, instructing guests where to store their bags and to hand in their personal belongings to the operational staff once sitting down (see Figure 5). The movie shows two guests who hand a mobile phone and a camera to an employee (personal communication, January 4, 2019).

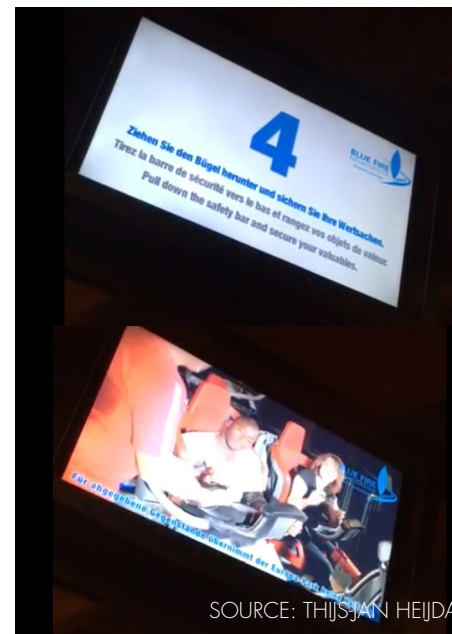


Figure 21. Screens at Europa Park’s Blue Fire showing instructions to hand personal belongings to an employee.

These solutions focus on creating awareness, either through instruction video or through shock value. Furthermore, the operational staff plays an important part in monitoring, correcting and supporting the guests. Creating awareness is a promising solution, though it should be fitting to the enchantment of the Efteling. A design concept should preferably take some of this responsibility away from the employees and let guests use it autonomously to maintain efficiency in the system.

8. USER BEHAVIOUR

This chapter links back to the original question of the Safety Department: Why do people behave in ways we do not expect them to? First of all, this chapter will answer the first research question posed in chapter “4. Approach”: What is the direct cause of the falling phones? The assumption that all guests lose their phones because they are filming is challenged. Secondly, choices and considerations are shown through the method of Fogg’s Behavioural Model (Fogg, 2009) for each of the target behaviours that are required to reach the desired behaviour in the existing situation.

8.1 DIRECT CAUSE OF FALLING PHONES

Chapter “4. Approach” poses the following research question which will be answered in this section, as it is a result of the user behaviour in Baron 1898.

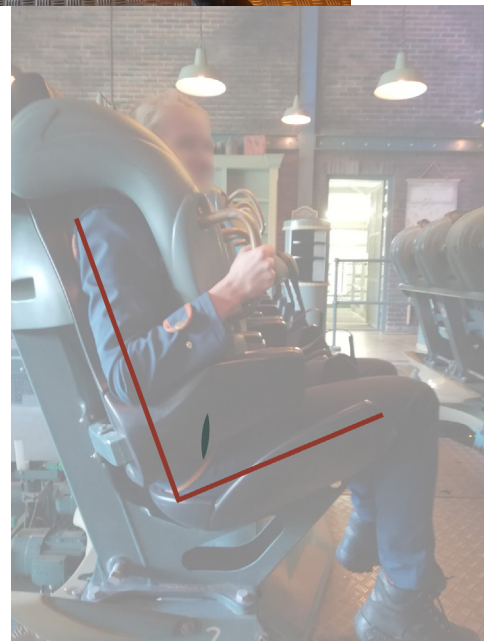
Research question 1: What is the direct cause of the falling phones?

This question is not easy to give a decisive answer to as the chances of actually observing a phone falling down are slim. However, through observations and interviews with the operational staff a deduction can be made and the research question can be answered with a high certainty.

Observations at the Photo Point played a large part in answering this question, where I have observed whether anyone could be seen holding a phone in their hand. As guests are physically unable to reach their pockets due to the restraint system, anyone filming the ride should be seen in this picture with a phone in their hand.

Interviews with the operational staff added to the conclusion, as they are the ones who are in contact with the guest on a daily basis and talk to the guests who have actually lost their phones. Furthermore, they perform video surveillance on the tracks and observe guests who are filming the ride.

Figure 22. Body posture in the seat of Baron 1898. Pockets can often not be reached after the restraint system closes. The body is tilted in a slightly backwards angle, which is exaggerated during the lift.



There are several reasons to question the assumption that all guests who have lost their phone were filming:

- The photos that were observed at the Photo Point showed no one who was holding a phone in their hand. 621 guests were observed in these pictures.
- Interviews with operational staff resulted in several interesting arguments:
 - Many more items are lost, such as keys, money, sunglasses, and many other items. None of these are used to film.
 - The issue is most prominent in the summer season, when guests wear loose clothing.
 - The carousel is hardly ever used and guests often keep their belongings in their pockets.
 - It is relatively easy to spot someone sitting down in the train who is planning on filming, as the restraint system does not allow for guests to hide their hands (see Figure 22).
 - There is video surveillance throughout the tracks. During the lift some guests are spotted when they are filming, after which the ride is stopped and the guest requested to put away the phone before continuing the ride.

Due to these reasons, operational staff believes most items are lost when guests carry items in pockets that do not close properly. During the lift, the body is tilted to the back and the items simply slide out of the pockets.

Loose items

From here on out, items that can potentially be lost during the ride will be defined as loose items.

Loose items are not attached to someone’s body properly and can fall off when going through the ride. This includes items that are put into open pockets, and clothing items and accessories that can be blown away by the wind. Most common items to fall down are phones, keys, coins, sunglasses and hats. Some of these

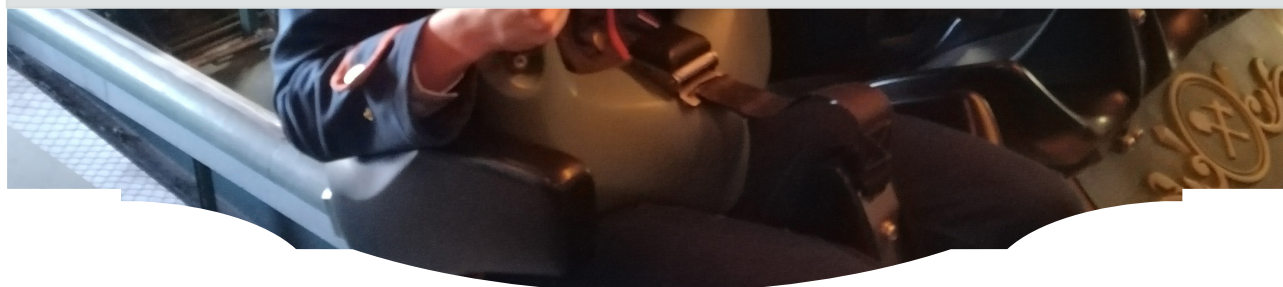
are easily spotted by employees (such as hats and flipflops), while others such as phones are often hidden from sight in pockets.

Specifically phones will be the focus point as they are most valuable for a lot of guests and are reported to be lost most often by operational staff. Design solutions will primarily aim at phones and whenever possible take other loose items into account as well.

CONCLUSION

Based on these arguments, it is safe to assume that most guests who lose their phone do not lose it due to filming. Rather, they lose their phone because they have stored it in an unsuitable pocket. This does not imply that none of the guests who lose their phone were filming, but the main cause seems to be gravity and dynamics combined with poor storage.

From here on out, the research will continue from this viewpoint: guests lose their phone (and other loose items) because these slide from their pockets. Loose items are not stored properly and fall out of the ride due to the extremities in the ride such as inversions, high velocity and steep angles. Gravity and dynamics are the direct reason items fall, yet human factors are the cause of the problem. Storing items properly would solve the issue entirely. As no one would want to lose their personal belongings, only one question remains. Why do guest not store their belongings safely when entering an extreme attraction?



The following section will go into the reasons why guests do not properly store away their loose belongings. These are based on shadowing and in-depth interviews with users, combined with the previous knowledge acquired through employee interviews and observations.

Section "8.2 Analysis of current target behaviours" and chapter "9. Customer journey" together answer the second research question: What is the influence of the environment on the choices and considerations of the guest?

"It's a long queue, I do want to look at it every now and then. A half hour to an hour, that's too long for me to be without my phone. I always have it with me."

8.2 ANALYSIS OF CURRENT TARGET BEHAVIOURS

A lot of the user behaviour can be explained by a simple concept: The guest simply wants to have a fun and carefree day. Therefore they will go for the easy solution, with the least amount of friction, worries and challenges. The following chapter explains why some guests currently don't behave as desired.

The participant study identified multiple consecutive problems that result in the unwanted behaviour. In general, users simply seem to underestimate the issue of losing items during the ride and trust that they have stored their belongings properly in their pockets. A lot of the participants claimed to feel uneasy leaving their belongings unattended: They felt safer keeping items in their pockets than in the Carousel storage and deemed it to be the best solution.

Furthermore, they are not aware of the large amount of phones falling out, do not see the

possibilities that are offered to them, and simply continue with the flow of people.

The Baggage Depot was mostly well liked, but not all participants stored away all their loose belongings there: Either they were not carrying a bag, or they simply kept everything that was already in their pockets in place. Again, the pocket was deemed a proper solution to store their loose items.

Warning signs generally did not draw attention, either because they were not visible or because participants believed they were not interesting as they wouldn't be breaking any rules anyhow.

Carousel storages are used very little, due to the high (social) pressure on the Platform, with a short amount of time and no possibility for a learning curve in an unfamiliar environment. The participants felt there was no time to search for options and simply followed the other guests.

The main findings on user behaviour at four different touchpoints are shown on the following pages.



Figure 23. A word cloud of the most common reasons for the current behaviour

In the existing situation, the desired behaviour can be split up in several different target behaviours that eventually might lead to less falling phones. Each will be analysed on the three pillars for persuasive design as defined by Fogg (2009): Motivation, Ability and Triggers.

1. Store away all belongings in the lockers.
2. Put away loose items inside of bag before handing it in at the Baggage Depot.
3. Store away remaining loose items at the Platform, either in Carousel or in Cabinet.
4. Conform to the rules (no filming, no loose items).

1. STORE AWAY ALL BELONGINGS IN THE LOCKERS.

NONE OF THE PARTICIPANTS USED THE LOCKERS, ONLY THREE PARTICIPANTS KNEW THERE WERE LOCKERS.

MOTIVATION

Motivation for using lockers or not varied a bit. Some participants claimed they would like to use them. Others thought the lockers would separate them from their belongings for too long. These participants wanted to look at their phone in the queue, or have their food and drinks with them.

+/-

ABILITY

Ability seemed lacking for this target behaviour as well: There was either too much physical effort and time needed (the Baggage Depot is much simpler by being en route, and therefore favoured over the lockers). Furthermore, participants felt the money was an issue. They either did not have an euro coin or did not want to spend time on finding out if it would cost them money.

-

TRIGGER

The largest issue was the trigger, participants simply did not notice the lockers. It was situated out of sight and sometimes simply not recognised as being functional lockers instead of decorations.

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"It's not anywhere you walk. You have to walk out of your way to get there."

"I had a moment of doubt after I had dropped off my bag, I thought: Yeah, I still have too much stuff in my pockets. Because I always have my keys in my side pocket of my sweater."

2. STORE LOOSE ITEMS IN A BAG BEFORE HANDING IT IN AT THE BAGGAGE DEPOT.

SOME PARTICIPANTS PUT EVERYTHING IN THEIR BAG, OTHERS DEEMED THEIR POCKETS TO BE SAFE STORAGE. ONE DID NOT REALISE IN TIME AND HAD HANDED OVER HIS BAG BEFORE REALISING HE STILL HAD LOOSE ITEMS THAT HE WANTED TO STORE SOMEWHERE.

MOTIVATION

Motivation to put all items in the bag is generally low as most participants were not aware their current solution (pockets) is not sufficient. There is no incentive to change anything in this situation. Furthermore, people tend to want to stay close to their valuables and keep a close eye on them.

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ABILITY

The Baggage depot offers a lot of simplicity, it costs hardly any physical and mental effort, and guests simply follow the example of the ones before them. One issue here is that the Baggage Depot comes as a surprise, so there is not a lot of time to store away items in a bag. Furthermore, when someone is not carrying a bag, there is no ability at all to perform this behaviour.

++/-

TRIGGER

There is no trigger at all to put away small items at the Baggage Depot, guests are not reminded of this fact and need to think about it on their own. One participant was the perfect example of this, he had both the motivation and the ability but only realised he should have stored his items during the first pre-show. He was not triggered at the right moment.

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3. STORE AWAY REMAINING LOOSE ITEMS AT THE PLATFORM, EITHER IN CAROUSEL OR IN CABINET.

PROBABLY THE MOST PROBLEMATIC TOUCHPOINT. THIS IS THE LAST OPTION TO SAFELY STORE AWAY LOOSE ITEMS BUT IS HARDLY UTILISED. NONE OF THE PARTICIPANTS STORED ANYTHING AT THE PLATFORM (EVEN WHEN ACTUALLY NEEDING TO). OUT OF 810 OBSERVED GUESTS, ONLY 20 UTILISED THE CAROUSEL STORAGE, OUT OF WHICH 6 NEEDED ASSISTANCE FROM THE STAFF.

MOTIVATION

Generally motivation is similar to point 2, which is very low due to not being aware of the risks. Some guests seem to realise at the moment of sitting down that their phone is not completely safe in their pocket. However, the motivation to put something away at the Platform is a lot lower as people realise their items are unguarded and might get stolen. Specifically because many do not realise the Carousel has separate compartments for each train as they don't see it turning away. Even then, some still find it risky to store their phone clearly visible for everyone and not hidden in a bag.

+/--

ABILITY

The ability to store something at the Platform is very low. There is little time to look around and store something. It takes up a lot of mental effort in a highly exciting environment (guests experience excitement and fearful anticipation). Additionally, spending time on storing items results a feeling of social deviance as everyone is sitting down and you are the only one slowing it down (social pressure). To top it off, it is a completely new environment for the guests as they cannot observe the actions of the trains before them, so there is no element of routine whatsoever. The guests that realise their phone is not very safe in their pocket when sitting down, are often already in the restraint system and physically can no longer get up.

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TRIGGER

The Carousel would be the trigger in this situation, however, a lot of participants did not notice the trigger, as the view was blocked by the previous group leaving the train or the people entering the train before them. Furthermore, some participants did not recognise its storage function and therefore did not associate it with the target behaviour at all.

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"In that moment you only see your seat, because we were the last two to enter. Like, they sit down, so you sit down."

4. CONFORM TO THE RULES (NO FILMING, NO LOOSE ITEMS).

IN ORDER TO BE ABLE TO CONFORM TO THE RULES, GUESTS MUST KNOW THE RULES WHICH CAN BE FOUND ON THE WARNING SIGNS AT THE ENTRANCE AND AS A SECOND REMINDER IN THE LAST PRE-SHOW (A 'NO FILMING' WARNING SIGN).

MOTIVATION

All participants had no desire to break any rules, and are aware filming might cost them their phone. Even though there will be others who think differently, generally people will be motivated to stick to the rules when realising their safety and that of their belongings is at risk. However, the participants were not motivated to find out about the specific rules, as they expected they were showing no deviant behaviour.

+/-

ABILITY

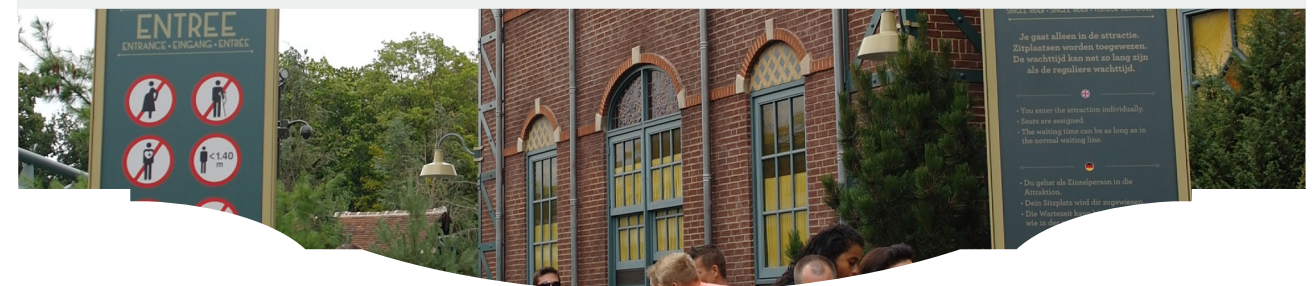
Due to the placement of the warning sign at the entrance, it is easily possible to know the rules, but it requires time to read that cannot be spent on hurrying through the queue area. Furthermore, there is no hierarchy in the warning sign, so it requires a bit more brain cycles than the participants seemed willing to spend. The second reminder is high in simplicity.

+/-

TRIGGER

Even though the second reminder is high in simplicity, it was often simply not noticed by participants as they were engaged by the text above it. The warning sign at the entrance is not well timed to communicate about loose items and 'no filming', as the guests do not perform any of that behaviour yet.

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The experience of the Baron 1898 is built to be disorienting, is aimed at emotional responses (excitement and fearful anticipation) and quick decision making (lots of distracting stimuli, social pressure and a short amount of time) while storing away loose items is a rational decision-making moment and seemingly insignificant element in this experience. This decision has to be made in a highly emotionally stimulated context, where excitement and anticipation overrule rational thinking.

In the current situation all three elements are missing or lacking. First of all, most guests do not have any **motivation**, as they are not aware their pocket is not a safe storage space or are afraid of their belongings being stolen. Secondly, the **simplicity** of the storage solutions is insufficient. At the Platform, there is too little time, and guests feel social pressure to be fast. Additionally, it is an unfa-

miliar environment which requires too many 'brain cycles' in the high stimulus environment, where they cannot rely on routine. The lockers require planning in advance and a euro coin that a lot of people don't carry. The Baggage Depot is actually sufficient in simplicity, but it lacks a trigger. So thirdly, there are no **triggers** at the right moments. Lockers are invisible, the Platform is unclear and the Baggage Depot comes unexpected where the guest is not reminded in advance to store their belongings. Even the guests that might already have the proper motivation are not triggered at the right moments.

Especially first time users and inexperienced roller coaster riders will be affected by this problem as the attraction does not provide time for a learning curve and there is no continuity throughout the park so they cannot learn from other attractions.

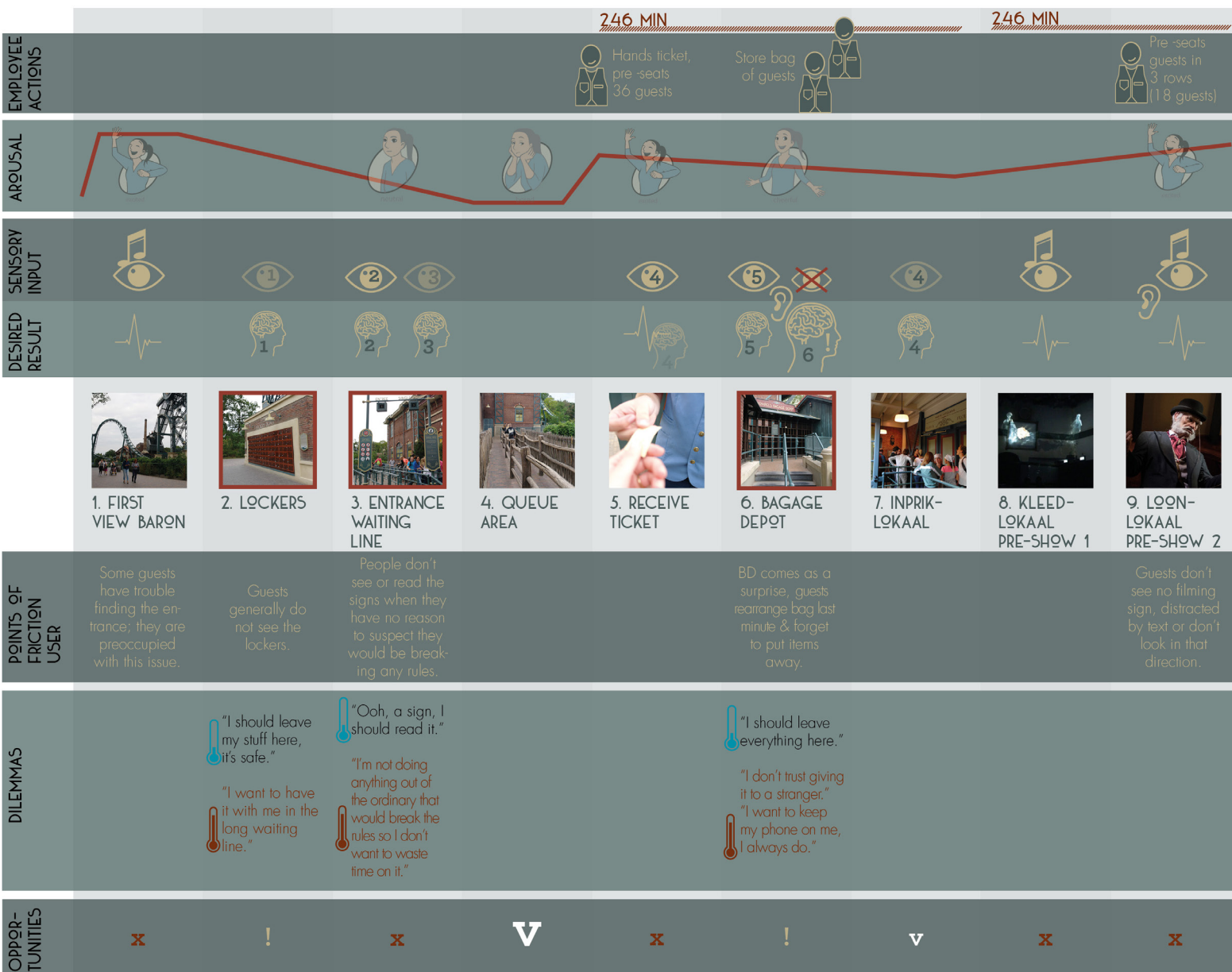
9. CUSTOMER JOURNEY

The Customer Journey (see Figure 24) elaborates on the input of the overall environment. The top three rows show a representation of the effect on the user (based on the PAM results), the interaction with the employees, and stimuli in the designed environment with their intended goal.

The bottom rows show common points of friction that were found within this customer journey and dilemmas that could play a role in the decision forming of the user. All information gathered is used to deduce whether each touchpoint in the customer journey is suitable for a design intervention.

This Customer Journey is based on the information I have gathered through the field studies, personal observations of the system and interviews with employees of the Efteling. It serves as a tool during the design phase for finding the right touchpoints, determining influences of the context and to evaluate concepts. An elaborate version can be found in Appendix E.

Figure 24. The Customer Journey.



AROUSAL LEVEL

This information has been derived from the answers given by participants during in-depth interviews (see chapter "4. Approach") through PAM (Desmet et al., 2012). High arousal states (excitement, tension) are less suitable for a design intervention. Low arousal states (such as boredom or calmness in the queue) leave more mental capacity for rational decision-making and are therefore suitable for a design intervention.

EMPLOYEE ACTIONS

The employee actions represent a direct interaction between the guest and the employee, and the task the employee needs to fulfil. The number of employees depicted is derived from the maximum number of staff on a busy day.



SENSORY INPUT VERSUS DESIRED RESULT

The third and fourth row show the influence of the designed environment through sensory input and the desired result that needs to be achieved. Input consists of visual and auditive cues from the designed environment or instructions from employees. Most of the environment is aimed at evoking an emotional response (excitement, anticipation, fear, etc.) while some cues are aimed at a rational output from the guest (decision-making). The latter requires adequate input to bring back the guests from an emotional-laden environment to rational decision-making, such as safely storing their personal belongings.

Touchpoints 5 to 7 (where the guest receives his ticket, passes the Baggage Depot and needs to choose which Ploeg he enters) shows a troublesome part of switching from emotional arousal to requiring rational decision-making. The guest has been waiting for a long time in the queue, and has now finally received a ticket that spikes his excitement. We expect him to check the information on the ticket, but this visual cue is often lost to guests as they want to rush on and are immediately confronted with the next rational decision: they have to hand in their bag, an action that a lot of guests have not anticipated as they have not seen information on it before. Then, we expect them to put all loose items into their bag (without knowing how long they will be waiting after this or what other storage touchpoints they will encounter) and quickly continue without slowing down others. After this, the guest should again remember the visual cue from before (the ticket) to choose the right entrance. Within this commotion, one or multiple of these decision-making moments are easily passed and failed.

In general, the visual cues seem to be very effective at eliciting excitement or tension, but do not seem to be able to bring back the guests to the rational state to make a well thought-out decision. Two specific decision-making touchpoints are discussed in the next section: storing loose items in the bag before reaching the Baggage Depot and storing loose items on the Platform.

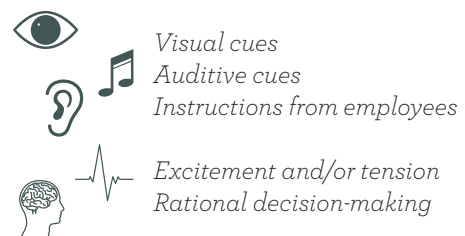


Figure 25. Explanation of the icons used for sensory input and desired result.

Decision-making:

1. Store belongings in lockers
2. Gain knowledge of rules
3. Choose family or single rider lane
4. Check ticket which entrance you should take (ploeg A or B)
5. Give off bag
6. Put all loose items into the bag
7. Store remaining loose items
8. Judge storage to be safe
9. Retrieve loose items
10. Retrieve bag

POINTS OF FRICTION

Points of friction are issues that have been addressed in previous chapters and contribute to the undesired behaviour.

DILEMMAS

Dilemmas explain why some guests show the undesired behaviour based on two conflicting desires or thoughts that compete. These dilemmas can be identified as hot concerns (immediate result and pleasure) and cold concerns (long term goals) (Ozkarmanli, 2012). In this scenario, the identified cold concerns revolve around safety decisions. However, hot concerns are more easily acted upon, especially in the emotion-laden context of the Efteling.

HIGH PRESSURE DECISION-MAKING MOMENTS

Two of the desired target behaviours are expected from the guest in a troublesome touchpoint. These are highlighted below.

Figure 26. Decision-making moment 6.

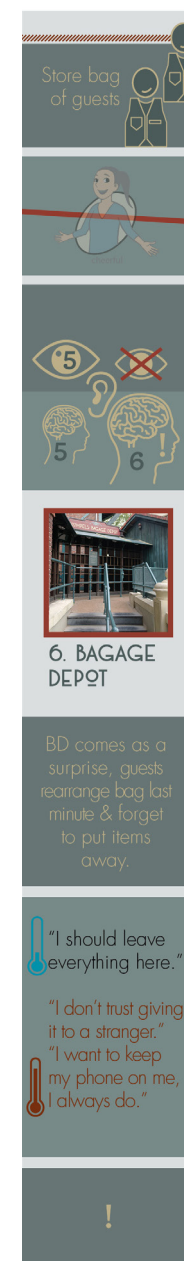


Figure 27. Decision-making moment 7.

Baggage Depot, decision-making moment 6. Put phone and all other loose items in bag.

This decision-making moment is crucial to the flow of the rest of the process. Ideally, all loose items will be stored in the guest's bag and handed to the Baggage Depot employee. However, guests do not expect the Baggage Depot as there are no clear visual cues marking its existence in the queue area. Furthermore, nothing is communicated about putting away loose items in the bag.

Preceding this decision-making moment a high arousal state is created after a long time standing in the queue. Suddenly a series of rational decisions are required. The short amount of time this all needs to happen in does not leave a lot of time for guests to think rationally about their belongings.

Platform, decision-making moment 7. Store loose items in Carousel storage.

When the loose items are not stored properly in the Baggage Depot the second option is to store it in the Carousel Storage. Even though this should not be overly encouraged, as it takes up a lot of time, it is the second best option. Right now it is not utilised by a lot of guests. Several contextual factors contribute to this:

- There are no visual cues that items can be stored when entering the train, because the view is often blocked by other guests entering and leaving the train. Only when someone has already made the decision to store something, he will walk past the others and see the Carousel Storage.
- There is a lot of sensory input, mostly aimed to create an emotional reaction rather than a rational decision; excitement and pressure for time overrule.
- Users encounter a dilemma here: they are more scared of losing their phone when keeping it out of their sight in an unguarded storage space. The Carousel Storage does not communicate its function of turning away and therefore is not interpreted as a safe storage space.

Even though adaptations can be made to the Carousel Storage, the context of the Platform is not a suitable environment for rational decision-making and should be kept as a last resort storage solution.



TOUCHPOINTS SUITABLE FOR A DESIGN INTERVENTION

X

Certain touchpoints are not suitable for a design intervention, due to a combination of Arousal level, Sensory Input/Desired Result and practical issues. These touchpoints are indicated with a red cross in the Customer Journey (Figure 24).

!

Some touchpoints need adjustments to function properly:

Lockers. The location of the lockers cannot be changed, but their existence could be better communicated through signage.

Baggage Depot. The Baggage Depot comes as a surprise. This should be communicated earlier on, especially the fact that guests should store away items beforehand.

Carousel. Use cues for the Carousel Storage should be strengthened, especially the fact that it turns away, giving the guests a bigger sense of safety over their belongings. Furthermore, the Carousel could be introduced earlier on in the process, so guests are familiar with its appearance and function.

Carousel Retrieve items. Preferably a solution should be found for the 'invisible' items. When the Carousel does not make a full turn, your belongings seem to be gone from the place you have left them. This would provide a better experience and feeling of safety over belongings.

V

Certain touchpoints are very suitable for a design intervention, mostly as the arousal level is low and there are no other rational decisions to be made:

Queue area. This is the most promising touchpoint, because there is a low arousal state and no alternative decisions should be made. A design intervention should visually draw attention and be clear in a glance, as guests are often preoccupied with their friends or family and do not pay specific attention to all details in the environment.

Inpriklokaal. During the Participant Study, quite a lot of participants noticed the signs placed on the walls here, possibly because the entire wall is filled with interesting details. This could be utilised in communicating a message.

Photo Point. Another promising touchpoint, as taking pictures is related to phones and some participants showed interest in seeing a movie of the ride. Linking photos of the Photo Point to a design intervention could be used as a persuasive element.



DEFINE

10. KEY INSIGHTS

The Discover phase brought the following key insights to light, which are used in forming the Design Goal and giving direction to the Ideation phase.

ITEMS SLIPPING OUT OF POCKETS

Falling phones are not only caused by guests filming during the ride, but are actually most often lost due to extremes in track design. Guests simply do not realise their pockets are not a safe solution, as this generally is the case for many other attractions in the park. Furthermore, they do not always feel comfortable using the storage solutions offered, or do not fully understand or recognise the existing solutions. Other loose items such as keys, sunglasses, money and hats are lost as well, and will be taken into consideration for the design solutions whenever possible.

LACK OF COMMUNICATION

Currently there is no visual communication towards the guests about the risks of losing personal belongings during the ride. This communication is expected from the operational staff, however they cannot spot all loose items and it is very hard to judge whether something will fall out of a pocket during the ride.

Design implication: Make the design solution communicative in both its function and the possible risk of losing personal belongings.

POORLY TIMED DECISION-MAKING

Safely storing personal belongings is a rational decision that is currently asked of the guest in high arousal states within the Customer Journey. Rather, it would be preferable to address them in low arousal states such as in the queue area.

HIGH PRESSURE DECISION-MAKING

Social pressure and limited time have a large influence on guest behaviour during the process, stimulating guests to follow and act in a similar manner to the people in front of them. Specifically on the Platform this is highly noticeable; as the guests do not have the opportunity to learn from looking at groups before them and they have no time to learn about the existence and function of the Carousel storage. Therefore, they often simply follow the line of people sitting down in the train without storing anything. Because the excitement and tension clouds all rational decision-making on the Platform, this is not a suitable design touchpoint.

Furthermore, the decision-making moments are short and pass quickly. When someone decides to sit down in the train, or has already passed the Baggage Depot, they can no longer go back to the decision-making moment and store their phone.

Design implication: Increase the Ability-factor in a new design solution by focussing on time pressure and brain cycles. This means including recognisability in the design and placing it in the Customer Journey at a time when the guest is given time for the decision-making moment, such as the queue area. After receiving the ticket, excitement is generally high and rational decision-making moments are very hard to establish. Preferably, this decision-making moment is stretched over a longer period of time.

LACK OF TRIGGERS

If guests stored their phone in the Baggage Depot, the problem would have been solved. However, guests generally do not notice the existence of the Baggage Depot until they are standing in front of it. Again, there is only a short time to process this new information and they are not triggered to actually store loose items into their bag. The Carousel storage is similarly 'untriggered' and unannounced.

Design implication: When a new storage solution is created, its existence and use should be actively encouraged and not expected to be understood by the guest without a trigger.

STAYING CLOSE TO PERSONAL BELONGINGS

As is expected, many guests do not like to be separated from their personal belongings. However, the fact that they are unfamiliar with the next steps in the process (e.g. they have no idea how long the queue continues) seems to strengthen this issue. Even though the queue area seems to be the most promising touchpoint for a design intervention, guests might not like the idea of being separated from their belongings for an unknown amount of time.

Design implication: Allow the guests to remain close to their belongings for as long as possible.

EXPERIENCE-DRIVEN SAFETY

Storage solutions are currently not incorporated in the storytelling but rather 'camouflaged' through the design style. Because of this, some users seem to miss them, for example believing the lockers or Carousel storages are simply there for show.

Design implication: Let the design intervention play an active role in the storytelling, in terms of both function and looks.

11. DESIGN GOAL

The Design Goal is twofold and therefore consists of two intertwined goals. First of all finding an effective solution for the falling phones based on the guest's behaviour. Secondly, exploring design for experience-driven safety and maintaining the balance between safety and experience throughout the designing process.

1. CONVINCING THE GUESTS OF BARON 1898 OF THE RISK OF LOSING THEIR PHONE AND OFFERING THEM AN EFFORTLESS SOLUTION – THAT IS SUFFICIENTLY TRIGGERED – TO SAFELY STORE IT.

Convince of the risk

Currently, guests are neither aware of the risk nor of the solutions offered to them. The design intervention should increase this awareness.

Effortless solution

Make a design solution that is easily understood and recognisable to the user to create a low pressure solution, thereby increasing the Ability-factor. The result should be an interaction for the guest that is situated in a low-pressure part of the Customer Journey, and is a simple action to perform. It should take away the short, pressured decision-making moments that are currently asked of the guest in Baron 1898.

Sufficiently triggered

Simply placing a solution has proven to be ineffective. Therefore, the existence of the design intervention and the function it performs should be clearly communicated.



2. IMPLEMENT EXPERIENCE-DRIVEN SAFETY DESIGN TO POSITIVELY INFLUENCE GUEST BEHAVIOUR.

Include in storytelling

The design solution should play an active role in storytelling, either playing into the storytelling of Baron 1898 or into the overall enchantment of the Efteling.

Explore designing for experience-driven safety

To explore the field of experience-driven safety, design solutions should range safety-driven towards experience-driven, and be evaluated and tested throughout the process.



IDEATE

12. IDEATION PROCESS

The methods as described below were used in the initial ideation process.

BRAIN DUMP AND BRAIN WRITE

The brain dump was aimed at getting rid of all ideas that had formed during the analysis phase. Brain writes revolving around the Customer Journey and the three pillars of Fogg's Behavioural Model expanded the quantity of ideas.

SESSIONS WITH FELLOW STUDENTS AT EFTELING

Two brain writes with fellow students working at the Efteling followed after the initial ideation to diversify the idea directions. The first session took place early on in the ideation process, and focussed on the central question of how to convince guests to store their mobile phone. After this session, I sorted the initial brain dump and the brain writes into categories, creating idea directions to explore further in following steps (see Figure 28).

The second brain write was conducted at the Efteling with fellow graduate students from varying departments and backgrounds. These students were given three Design with Intent cards (Lockton, 2010) at random to force them to think in directions other than the most obvious first solutions. They had to use at least one, and if possible multiple, of these cards as inspiration for the basis of their idea.

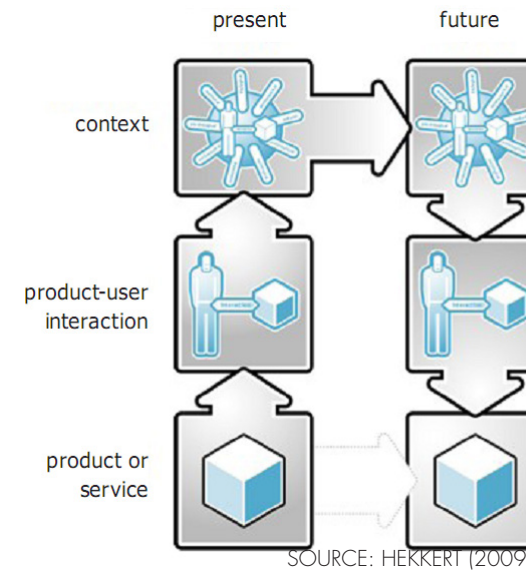
STRETCHING THE SAFETY-EXPERIENCE SEARCH FIELD

Design with Intent cards further guided the design process to target specific sub-problems (found in Appendix F) which were based on commonly found problems in the Discover phase. The main focus lay on stretching the search field towards typical safety solution, the explanation for which may be found in chapter "1.3. Experience-Safety Matrix". Specifically the categories 'Error Proofing', 'Machiavellian' and 'Security' from the Design with Intent cards helped guide the creation of safety-driven solutions.

The next step revolved around stretching the idea space towards experience-driven solutions, for which a short version of Vision in Product Design (Lloyd, Hekkert & Van Dijk, 2006) was implemented. To achieve this, analogies for situations where people generally feel comfortable being separated from their personal belongings formed the base for new interactions (e.g. putting money in a bank and paying with a debit card, or leaving dogs at the day care).

Figure 28. The brain dump was sorted in categories for further ideation.

new interactions were created which formed the base for additional experience-driven designs. The deconstruction and new interactions from this process can be found in Appendix G.



SELECTING AND DEVELOPING THE BEST SOLUTIONS

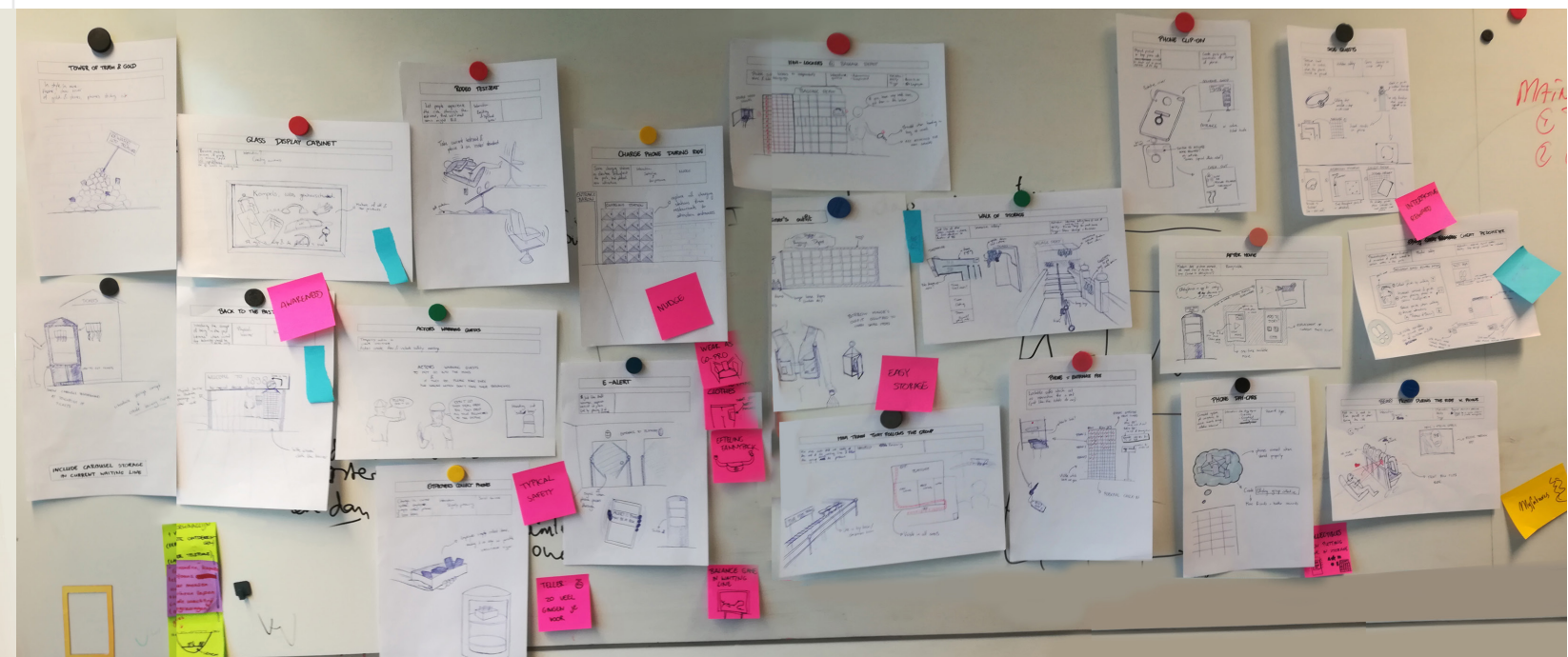
Eventually, I selected and further developed the most promising ideas into twenty different idea directions ranging from experience-focussed towards safety-focussed. These ideas were presented and discussed, and the concepts meant to continue into iteration were chosen. The next chapter will elaborate on the search field of experience-driven safety.

Figure 31. All twenty chosen idea directions lined up varying from experience-focussed to safety-focussed.



Figure 29. A selection of Design with Intent cards from the Machiavellian Lens, which were used to create safety-driven ideas.

Figure 30. A representation of the VIP process. Deconstructing the past (left) and reconstructing it into new interaction and concepts (right). This was used to expand the experience-driven ideas.



13. EXPERIENCE-SAFETY MATRIX

The matrix in Figure 32 shows the balance between Safety and Experience according to the ideas created in the Ideation phase. The idea directions are placed on an Experience- and a Safety-axis.

Experience-axis

The level of experience is rated as:

1. Appropriate to the experience of Baron 1898.
2. Pleasant for the guest to interact with.
3. 'Hidden' as a safety measurement.

Safety-axis

Safety solutions generally:

1. Give priority to clearly stating safety measurement precautions.
2. Actively draw people's attention to safety.
3. Can therefore be considered 'strong' interactions.

Tromp (2011) classifies the experience of the influence in behavioural design on two dimensions: force (weak-strong) and salience (hidden-apparent). The sought-after results for experience-driven safety are effectiveness (force) and perceived pleasantness (salience). In this Safety-Experience matrix (Figure 32), effectiveness can generally be linked to Safety but often results in an apparent intervention. This breaks the flow of the immersive experience as it is not well embedded into the storytelling. On the other hand, when the perceived pleasantness is high, the solution is generally weaker in its effect. These solutions generally score high on the Experience-axis.

Furthermore, Tromp (2011) describes the difference of discouraging undesired behaviour (a

typical safety approach) or encouraging desired behaviour. Concepts that encourage the desired behaviour are generally more pleasant to interact with and score higher in Experience.

The goal is to find a solution that combines storytelling and pleasantness and still actively takes guests' attention back to safety through a clear statement. The next chapter elaborates on the chosen idea directions, showing strengths of both Experience and Safety and taking advantage of both directions.

The full-page sketches with accompanying explanation can be found in Appendix H.

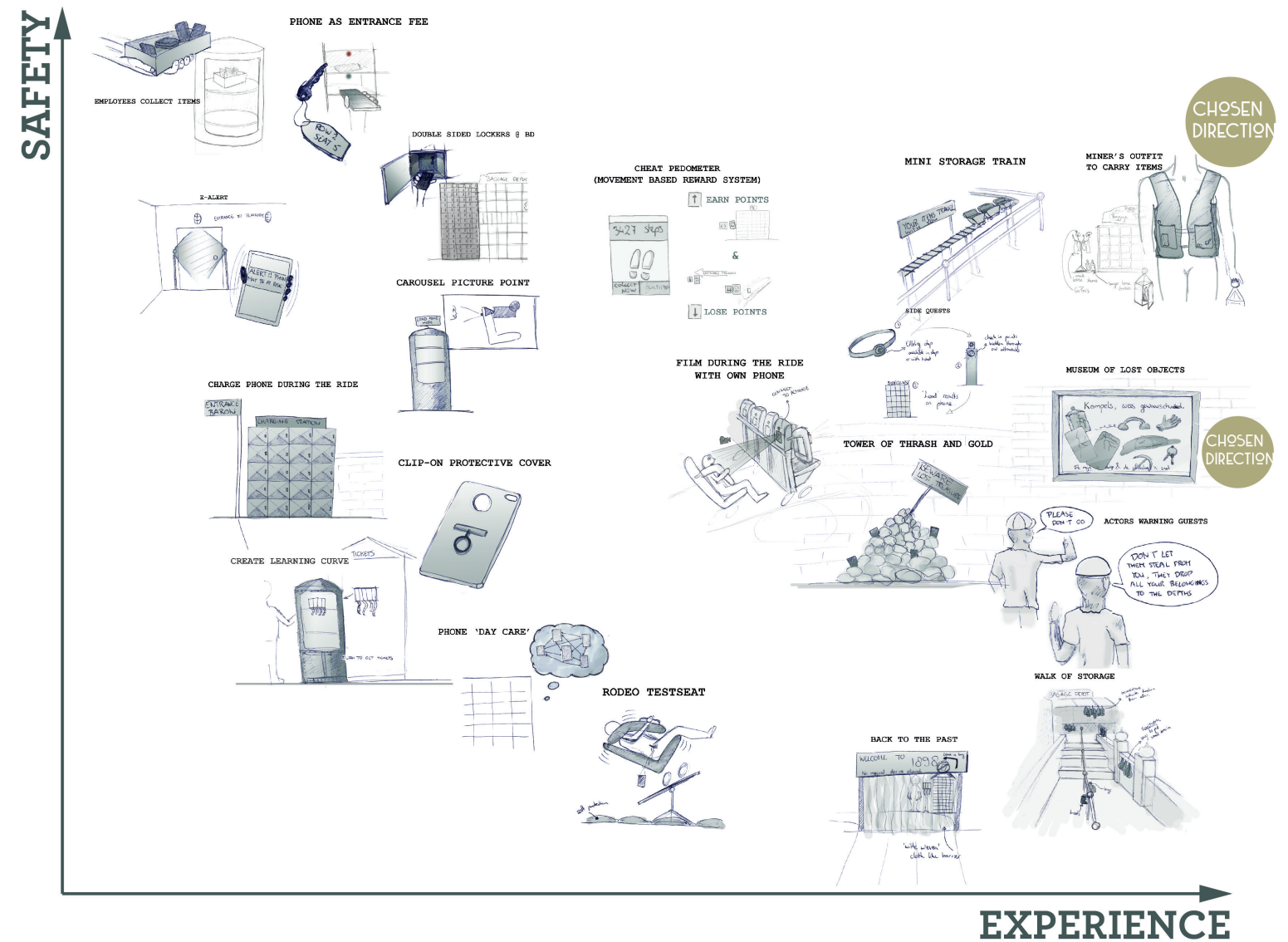


Figure 32. Matrix of twenty idea directions, sorted on their properties of safety and experience.

MINER'S OUTFIT

ITEM OF THE MINER'S OUTFIT EQUIPPED TO CARRY PERSONAL BELONGINGS AND KEEP THEM ON THE BODY DURING THE RIDE

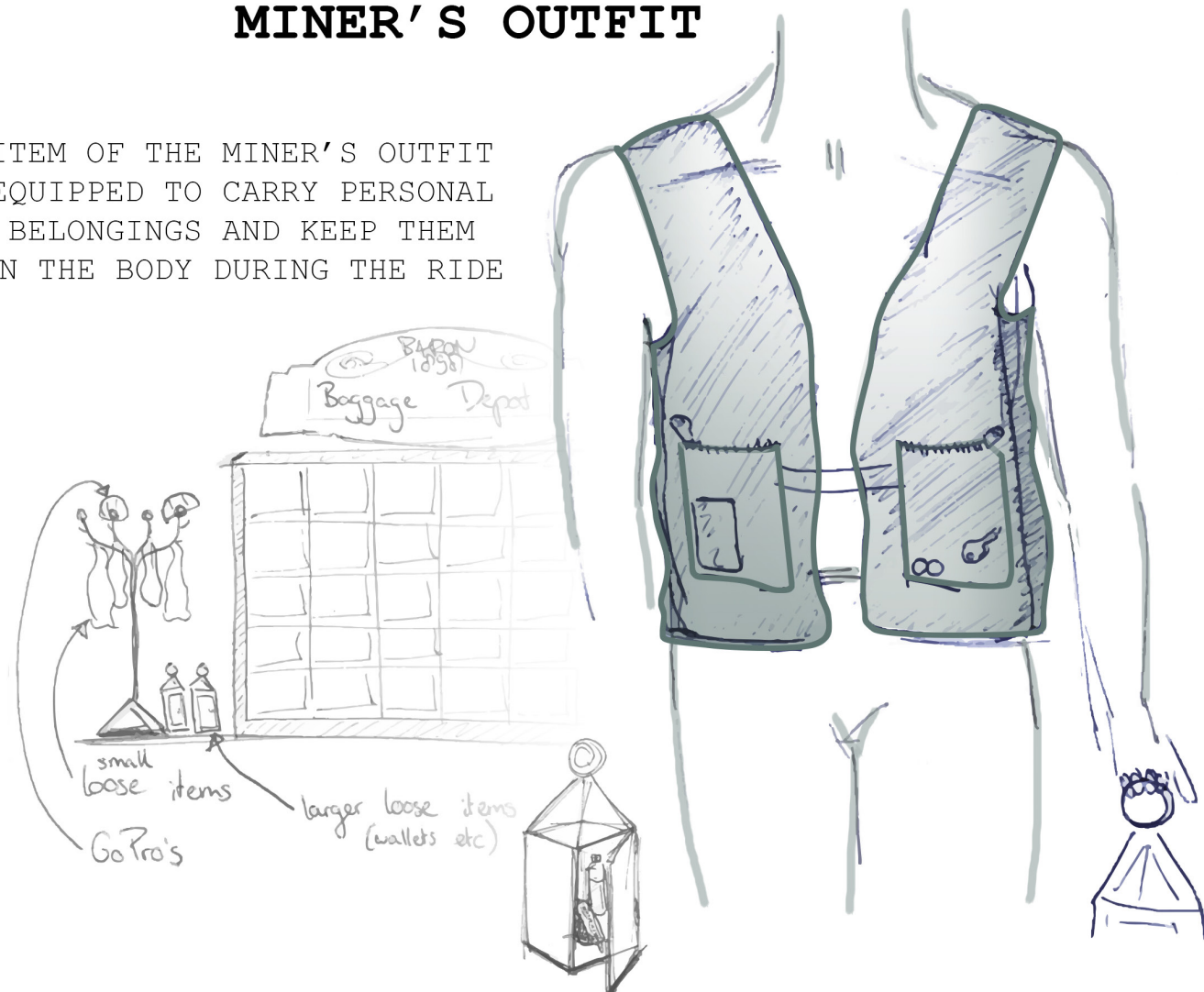


Figure 33. First sketch of the Mineworker's Outfit designed to carry personal belongings into the ride without the risk of losing them. Shape and detailing are yet to be determined.

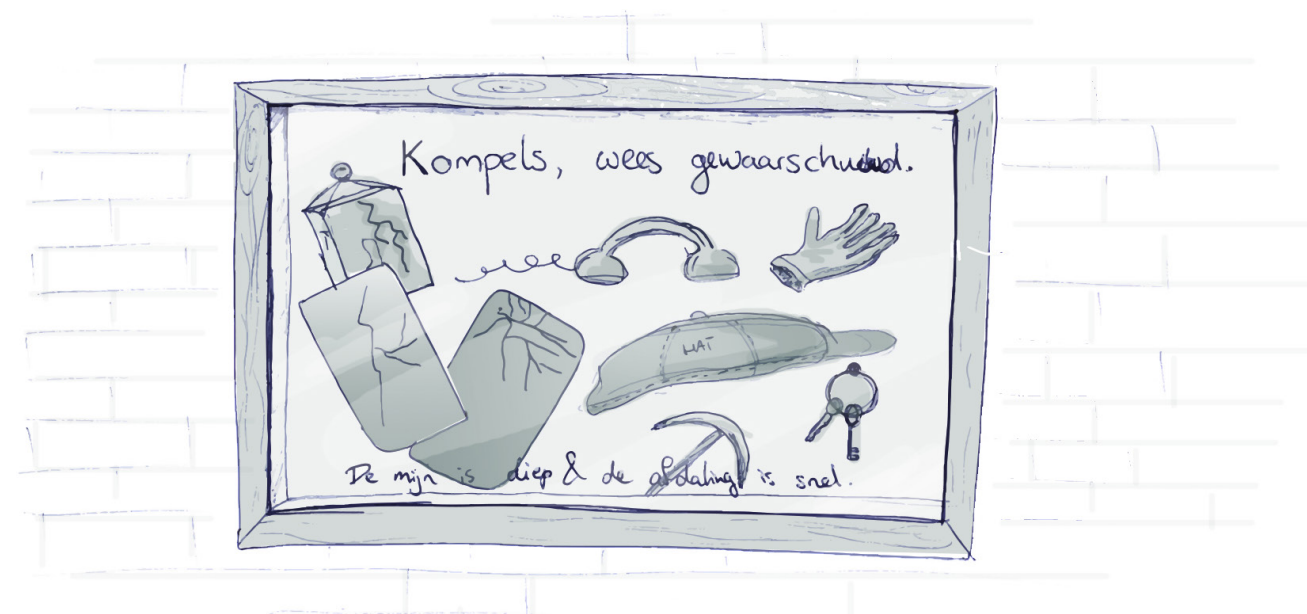
14. CHOSEN IDEA DIRECTIONS

Out of the twenty idea directions, two designs have been chosen to develop further into a design concept (see Figure 33 and Figure 34). The first concept, the Mineworker's Outfit, scores high in both Safety and Experience in the matrix as it is fitting to the theme of Baron 1898 and can easily be implemented into the storytelling. It provides a storage solution that plays into the needs and wants identified in the Discover phase, though does not yet warn the guest about the risk. Therefore, a second design concept will be integrated to fulfil the awareness function. Both solutions are relatively easily implemented without needing to make big, structural changes to the current layout of the attraction. Together they form a design concept that can be described as an experience-driven safety solution.

1. Mineworker's outfit	-	Increasing ability
2. Creating awareness through in-theme warning	-	Increasing motivation

The two concepts are explained in the following sections.

MUSEUM OF LOST OBJECTS



COLLECTION OF LOST OBJECTS:
REAL LOST OBJECTS SUCH AS PHONES AND HATS,
COMBINED WITH OLD MINE WORKERS TOOLS

Figure 34. First idea direction for warning guests about the risk of losing personal items through an in-theme warning. More iterations on this concept will follow. w

14.1 DESIGN CONCEPT 1 – MINERWORKER’S OUTFIT

The Minerworker’s Outfit is an item of clothing appropriate to the Baron 1898 mining theme, designed for carrying small personal belongings on your person during the ride, without risk of loss or damage. It is primarily aimed at pulling the guest into the storytelling of Baron 1898, and simplifying storage of personal belongings.

STRENGTHS OF THIS CONCEPT

This concept responds to the requirement of ‘Effortless solution’ in the first Design Goal (see “11. Design Goal”).

- Personal belongings stay close so there is no need to convince guests to separate from their valuables.
- It stretches the decision-making moment; guests on the Platform no longer have to decide within a couple of seconds to store away their belongings. Rather, it can be placed in the queue area so the entire time guests are wearing it they have the possibility to store their items safely. This greatly increases the Ability for storage.

Furthermore it responds to the second Design Goal, playing an active role in storytelling (“11. Design Goal”).

- It strengthens the experience by staying true to the storytelling of Baron 1898. Wearing a minerworker’s piece of clothing or accessory can create a transition; you are no longer a guest at the Efteling, but a Kompel about to enter the dangerous mine.

Additional strengths

- It attracts attention, especially when worn by multiple people. Through this, it might also draw attention to the fact that items should be stored properly.
- A lot of small items are kept safely, not just the phone. A set of keys, sunglasses and money could be kept safe as well.

- It is a rather easy and flexible solution to test and implement, without changing a lot in the current system. These can easily be placed in the queue area, or even at multiple points in the attraction. When one location does not appear to work well, it is easily moved to another area.
- It could possibly be expanded over time to other wearables, such as hats to mount GoPros on.

FURTHER DEVELOPMENT

Currently, it does not yet convince guests of the risk of losing their phone (see first Design Goal).

- To make this concept successful it should be exceedingly clear that the solution is meant for storage, and not just simply for dress up.

Practical issues

- Guests should immediately recognise how the wearable is worn. It requires special attention to design the outfit in such a way that it is easy to put on, and appealing to wear.
- Items should be stored in the jacket without the risk of getting caught underneath the restraint system and possibly getting damaged.
- Pockets should be easily closed so they are not left open by the guest.
- The outfit should be wearable for people of varying size and shape.

For a full list of requirements, see Appendix I.

14.2 DESIGN CONCEPT 2 – CREATING AWARENESS THROUGH IN-THEME WARNING

This concept shows an example of how to address guests and warn them about the risk of losing their personal belongings. This warning is a showcase filled with broken phones and other lost items that have fallen down, combined with old minerworker’s accessories to stay in theme. It is one example of creating awareness; other possibilities should be explored to find an intriguing and clear way to communicate the risk towards the guest.

STRENGTHS OF THIS CONCEPT

This concept responds to the requirement of ‘convincing the guests of the risk of losing their phone’ in the first Design Goal.

- This concept aims at increasing awareness. As it is appropriate to the theme of the ride it can be an additional point of interest during the queue to entertain guests.
- It can be placed in the queue area, where most people stand still and have plenty of time to look around. At the moment, this area is quite empty so it is easy to draw attention with a special object.

FURTHER DEVELOPMENT

- In its current shape, this concept only makes guests aware of the risk but does not introduce them to the possible solution (the Minerworker’s Outfit). This link should be present in the final design.
- It should be comprehensible without using too many words or large pieces of text. It should also preferably be understandable within a few seconds.

ITERATE

15. DESIGNING THE SHAPE AND LOOK OF THE WEARABLE

This chapter describes the first iteration of the design concept, progressing from the general idea of a mining outfit towards a specific shape and overall appearance. It discusses the different steps and considerations that were made to finally decide on the choice of making a mining jacket. Furthermore, it describes how the design process alternated between focussing on safety (for example the exact placement of the pockets) and focussing on experience (for example through determining the aesthetic vision). Guest behaviour remains the main guidance throughout design decisions. For example through designing recognisability of the wearable to increase Ability of the storage function.

15.1 REQUIREMENTS

The following requirements are the main focus for designing the shape and look of the wearable. The wearable should:

- Be fitting to theme of late 19th century mining.
- Provide sufficient amount of storage space (at least for a phone, possibly provide storage space for other loose items as well).
- Protect the belongings from being damaged by the restraint system.
- Be safe and sturdy, and have an appearance as such.
- Have a recognisable shape and be easy to put on.
- Be recognisable as a storage solution.
- Be suitable for many body shapes and sizes.

These requirements are selected and adapted from the full list of requirements found in Appendix I. The following sections refer to these requirements, which are shown in each step.

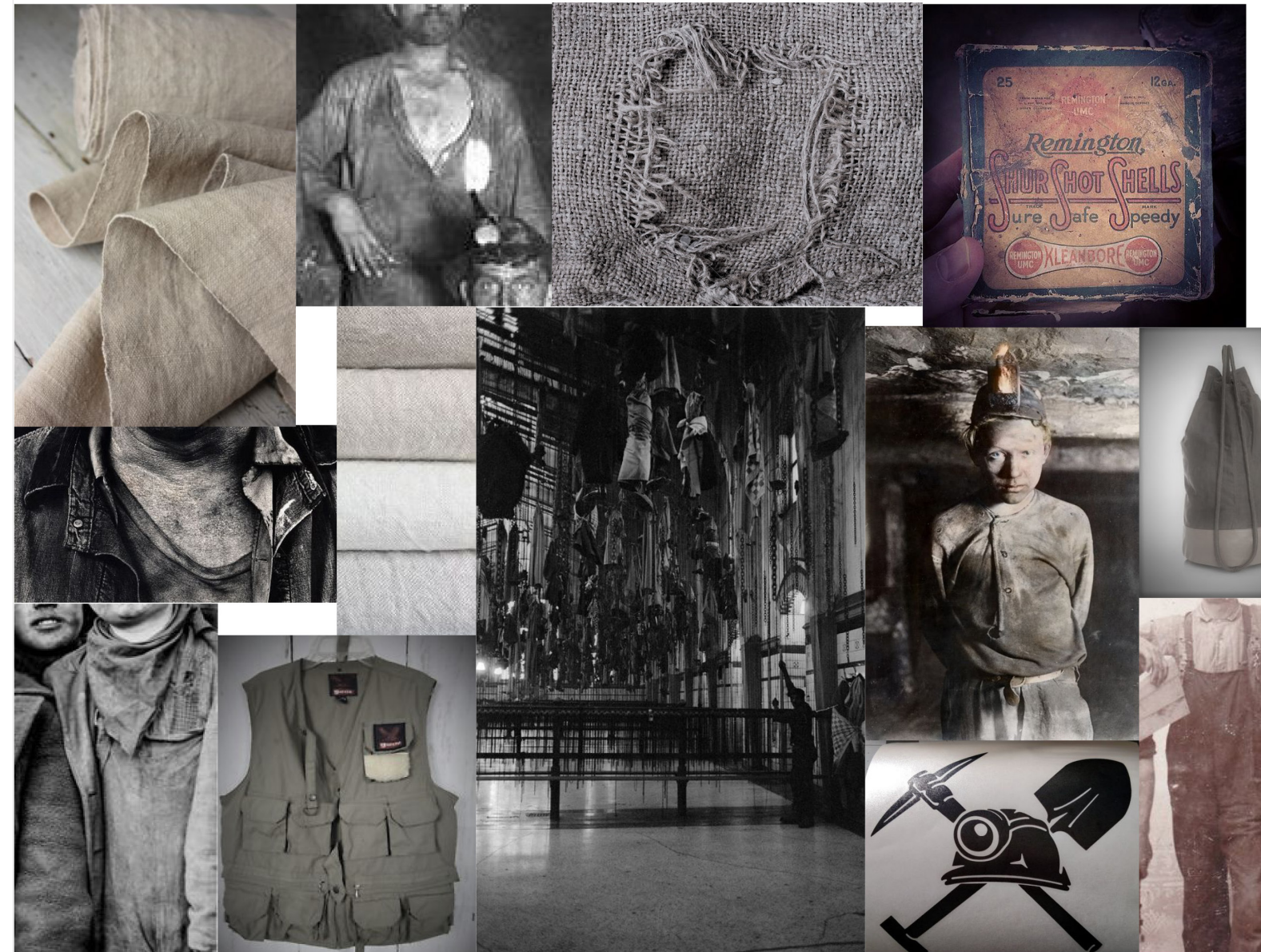
15.2 DESIGN STYLE

For a better understanding of the type of clothing that mineworkers wore in the late 19th century, a brief search through contemporary images provides insight in this. Furthermore, inspiration is taken from modern storage solutions generally found in contexts as camping and mountaineering. Figure 35 shows the resulting mood board, depicting typical

clothing items, fabric styles and preferred detailing. A cartoonist style such as the pickaxe, shovel and helmet on the bottom row can add a playful style fitting to the Efteling. I use this mood board throughout the following iterations as guidance for the general look and feel of the product.

'Be fitting to theme of late 19th century mining.'

Figure 35. Mood board for the development of the Mineworker's Outfit.



15.3 DEVELOPING THE SHAPE

AVAILABLE SPACE

'Provide sufficient amount of storage space (at least for a phone, possibly provide storage space for other loose items as well).'

'Protect the belongings from being damaged by the restraint system.'

The two requirements depicted above play an important role in the following iteration to determine the shape of the wearable. Due to the shape of the seat in Baron 1898 there is a limited space on the body left to use. Figure 36 illustrates the available space for a relative small person (approximately 1.55m). The space that is free behind the restraint system covers an area of 20cm by 30cm, and should provide storage space for at least a phone and preferably other small items as well.

When the wearable is situated beyond this area, there is a chance that stored items get caught between the body and the restraint system. This means that someone could damage their phone due to crushing it between their chest and the restraint system.

Depending on the body size and shape of the user, the restraint system restricts movement by fixating the body either at the hips or at the shoulders (and very occasionally the belly or chest) (personal communication, September 26, 2018). In practice, a larger area will be available as the restraint system is often not touching the chest or belly. However, this size (20 x 30cm) will be the limitation in design concepts to err on the side of caution.

While diverging in concepts for the mineworker's outfit, storage at the arm, leg and head are also explored.



Figure 36. A representation of the workspace that is freely available when the user is sitting in the seat.

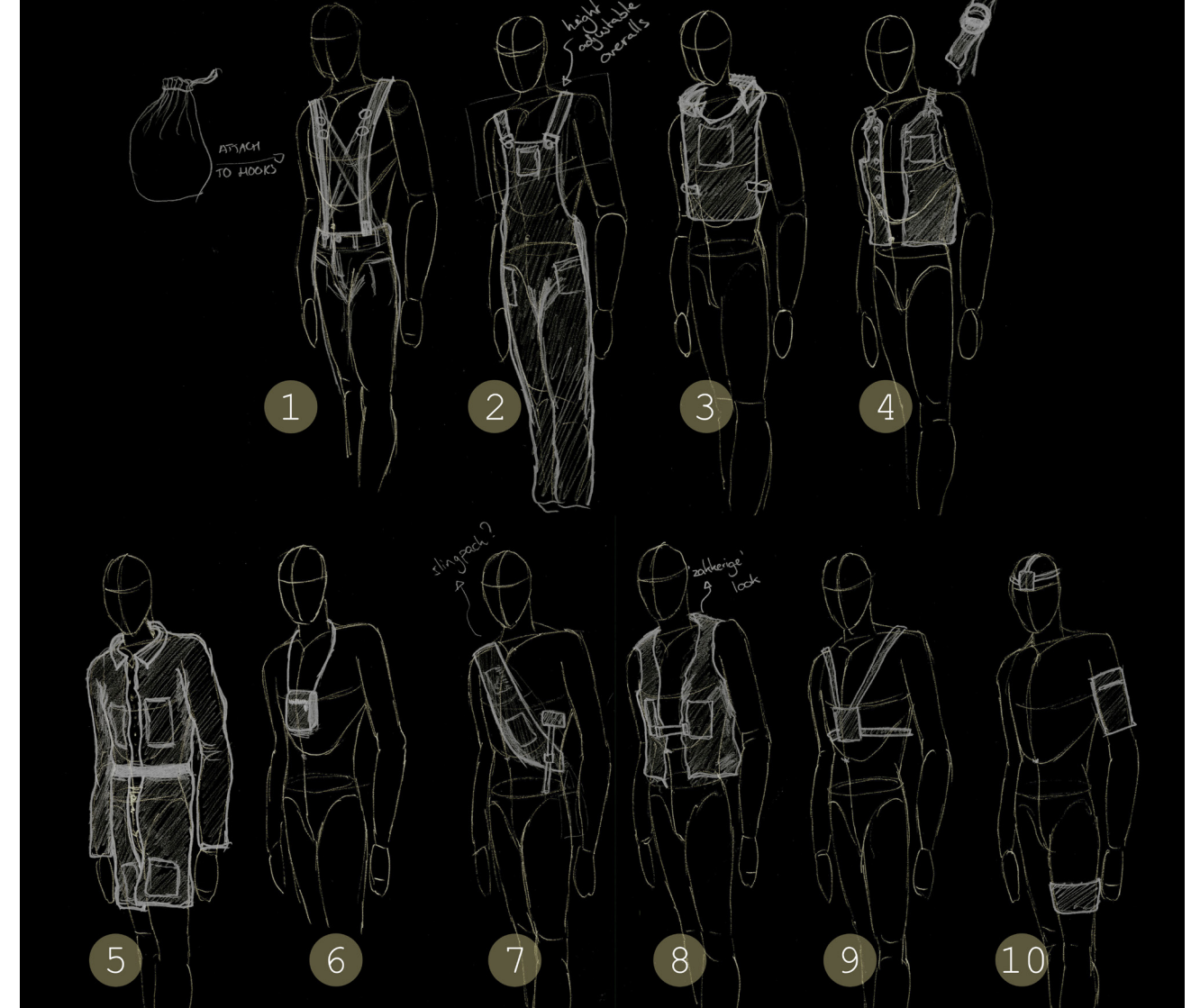


Figure 37. Sketches of several different options for a wearable for storage.

The sketches in Figure 37 depict varying shapes and types of wearables. They are all based on the inspiration found in historical pictures and modern storage wearables.

'Be safe and sturdy, and have an appearance as such.'

'Have a recognisable shape and be easy to put on.'

Several of these concepts are discarded based on the two requirements depicted above. Concept 2 would be difficult to put on quickly in the queue. Concept 10 shows an alternative for using different parts of the body than the chest area. However, these solutions would be very ambiguous in shape and it would be unclear how to wear these intuitively. Concept 6 seems very simple and clear, yet it might hit the user in the face in an inversion. Other concepts such as 3 and 9 seem promising in functionality as they are also modern wearables (resembling an airplane lifejacket GoPro harness). However, they are at a large disadvantage as they cannot be put on intuitively and often require some instructions.

A quick model was made for concept 7 as it was promising in function, could easily be worn over clothing of all seasons, and would be easy to adjust to multiple body sizes. However, the concept was quickly discarded after it became clear that crossing a bag across the body turned out to be quite challenging. Furthermore, it was easily mistaken for a bag worn at the hip.

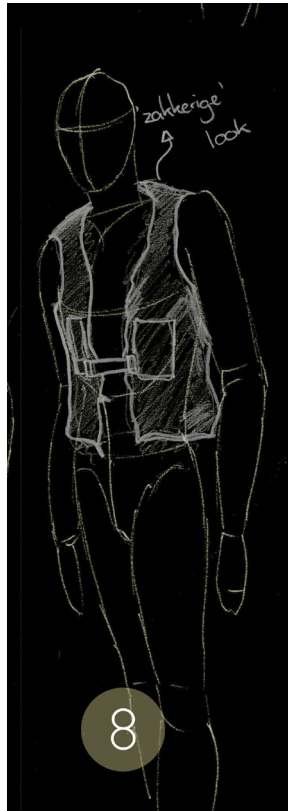


Figure 38. A sleeveless jacket is best suited for the recognisability and usability of the wearable.

CHOSEN CONCEPT - CONCEPT 8

Concept 8 is a simple variety of a jacket which best suits the requirements of recognisability and ease of use. It is unambiguous in its shape, resembling an everyday item. Additionally, it can easily be turned into a garment fitting to 19th century mining. A sleeveless option of the jacket (as opposed to concept 5) is easier worn over clothing and better suited for a one size fits all model.

This concept is a starting point for the design, and is further developed in regards of placement and functionality of pockets. Furthermore, its overall look is defined (see the following section and chapter "19. Design Concept") with specific attention to safety and experience elements to communicate its function to the guest. (see chapter "16. Experience and safety elements on the Kompel jacket").

Several small models were made to check the exact placement of the pockets, which can be found in Appendix J.

15.4 CHOSEN WEARABLE – THE JACKET

The jacket is developed further into a more specific look (see Figure 39) with the following two requirements in mind.

'Be recognisable as a storage solution.'

'Be suitable for many body shapes and sizes.'



Figure 39. The general shape and look of the jacket. The darker coloured pockets are functional, other elements are decorative to convey the storage and mining look.

Recognisability of a storage solution

Even though a small area of this jacket is functional as storage solution (only the top pockets can be used), the overall look of being a jacket meant for storage is exaggerated. Fake pockets and visuals of other 'stored items' such as a pickaxe add to the look of being a functional jacket. However, the main communicative factor requires another iteration, which can be found in chapter "16. Experience and safety elements on the Kompel jacket".

Suitable for many body shapes and sizes

This is a challenging requirement which is mostly addressed by making the jacket oversized similarly to pictures that are shown in the mood board (Figure 35). Further recommendations for the size can be found in chapter "21. Design evaluation and recommendations".



16. EXPERIENCE AND SAFETY ELEMENTS ON THE KOMPEL JACKET

The first iteration of the jacket as presented in the previous chapter is mostly aimed at functionality and overall look, but is still missing the communicative factor towards the guest. As found in the Discover phase, guests tend to overlook storage options such as the lockers and Carousel storage (see section "8.2 Analysis of current target behaviours"), especially when they do not expect to encounter one. A similar situation must be avoided in the Kompel jacket; once it is offered in the queue area, it should be clear that it is meant for the storage of small items, rather than being a costume for playing dress up.

The following part of the first Design Goal is addressed through the iteration shown in this chapter:

Effortless solution

Make a design solution that is easily understood and recognisable to the user to create a low pressure solution, thereby increasing the Ability-factor.

Convince of the risk

Currently, guests are neither aware of the risk nor of the solutions offered to them. The design intervention should increase this awareness.

This iteration also answers to the second Design Goal:

Explore designing for experience-driven safety

To explore the field of experience-driven safety, design solutions should range safety-driven towards experience-driven, and be evaluated and tested throughout the process.

Several varieties of this design concept are explored, going from experience-driven towards safety-driven. These concepts are shown in Figure 40. These range from being 'high in experience', aiming at an authentic looking 19th century mining outfit, to 'high in safety', conveying the message clearly through typical safety elements such as warning signs and contrasting colours. These four concepts are tested on participants in order to find out whether they effectively convey the message while still adhering to the storytelling of Baron 1898.

HIGH IN EXPERIENCE

ITERATE

Experience-safety balance

HIGH IN SAFETY



Figure 40. The four varieties designed to convince the guest to store personal belongings in the jacket. Concepts range from experience-focussed to safety-focussed.

16.1 JACKET 1 – WORN-OUT LOOK

The worn-out look of the jacket is continued in this concept to indicate the items that are supposed to be stored. Worn-out imprints of a phone and a set of keys are visible on the pockets. Also, a pickaxe crossed with a shovel (derived from the Baron 1898 logo, from here on referred to as pickaxe-shovel) and a lantern styled similarly are used to dress up the jacket. These further strengthen the notion of storing 'equipment'. The top pockets' bulki-

ness draws attention, while the pockets below are fake as they are just pocket covers without an actual pocket inside.

The back of the jacket is bare and simple, only 'Kompel' and a number is printed on it. This is purely meant for decoration and should give the guest the impression that they are a mineworker with an assigned employee number.

16.2 JACKET 2 – OLD-FASHIONED
ICONS AND IN-THEME MESSAGE

This jacket incorporates an eye-catching style to address the functionality of the pockets. Outdated counterparts to modern-day personal items are stylised and clearly printed on the fabric, indicating which items guests may store in the jacket. The pickaxe-shovel and lantern are printed in the same colour to create unity.

Aside from the Kompel logo, the back of this jacket features a checklist of all items presented on the jacket, to subtly draw attention to the storage options. All items on the list are checked off, except for the gold/stones, indicating that one should have stored everything properly before descending into the mine. The written message on the checklist hints towards safely storing personal belongings, hidden in storytelling.



16.3 JACKET 3 – MODERN ICONS AND SIMPLE MESSAGE

This jacket shows a modern style icon contrasting with the authentic look of the jacket to clearly alert the guest to the status of his own belongings. The pickaxe-shovel and lantern are faded markings to draw less attention and bring focus towards the functional pockets. The fake pockets are no longer tactile pockets but drawn shapes.

The phone and key icons are depicted in a lock, which indicates a safe storage when the pocket is closed, and an open lock when the pocket is not

closed (to urge the guest to close the pockets properly).

The back shows a similar checklist to Jacket 2, though the items that need to be stored are replaced with their modern counterpart. Furthermore, the gold/stones icon is removed from the list. The phone and keys icons are the only ones not checked off, indicating they require attention. The message shown on Jacket 2 is replaced with a single question to indicate that it is directed towards the guest.



16.4 JACKET 4 – MODERN ICONS WITH TYPICAL SAFETY ELEMENTS AND UNAMBIGUOUS MESSAGE

Jacket 4 is mostly in a similar style to the previous jacket with traditional safety markings added to attract attention to the functional pockets. The pictograms are depicted in red to create a contrast, and a dotted line directs the guest towards the area with functional pockets, indicating a dangerous situation.

The checklist on the back shows an unambiguous question ("Is your equipment safe?"), directly asking the guest to check whether their belongings are safe. Furthermore, a warning sign is added to make the guest directly aware of the risk of losing items in this rollercoaster.



17. AWARENESS AND STORAGE TRIGGER

Though the previous iteration has addressed the issue of distinguishing the jacket as being a functional one rather than just a costume, the initial use should be triggered as well. When passively offering the jacket in the queue area (expecting guests to take one autonomously rather than have an employee hand it to them), there is a risk of the jacket being perceived as simply decorative. It could appear to be a piece of cloth when the illustrations are not clearly visible, or seen as a static part of the environment which should not be touched. Therefore, the last part of Design Goal 1 needs to be addressed through a trigger aimed at making the guests aware of the purpose of this wearable.

The last facet of the first Design Goal that needs to be addressed:

Sufficiently triggered

Simply placing a solution has proven to be ineffective. Therefore, the existence of the design intervention and the function it performs should be clearly communicated.

The initial idea of an in-theme warning featuring broken phones amidst a collection of authentic artefacts (see section "14.2 Design Concept 2 – Creating awareness through in-theme warning") is a very subtle and inexplicit warning. It requires the guests to make several connections themselves: recognising the broken phones, realising that it is suggested that these have fallen during the ride, and linking it to the jacket. So, while the idea of an in-theme warning like this is very suitable for the experience of Baron 1898, it needs another iteration to fulfil the Design Goal.

To reach this goal, the awareness and storage trigger has been adapted keeping the following requirements in mind:

- Make the guest aware that items can fall down or have fallen down before.
- Introduce the jacket and its functionality.
- Link the jacket to the fallen items.
- Understandable within a short amount of time.

Simplified, this means the trigger should be a much clearer and more direct message. Ideas ranged from showing an actual mineworker (picture or life-sized figure) wearing the jacket, and a newspaper article about lost equipment in the mine, to a video screen showing real life accidents from other theme parks where guests lost their phones during the ride. The final choice is depicted in Figure 41.



Figure 41. The iteration of the in-theme warning, showing small Lost&Found-posters and a vintage style advertisement.

This concept consists of several posters placed together to form an announcement board (see Figure 41), as if mineworkers and the mining company itself could place messages for each other. The main focus would lie on a vintage style advertisement, introducing the jacket and its storage function as if selling a new piece of clothing in the late 19th century. Figure 43 shows this advertisement. Figure 42 shows some of the real contemporary advertisements it was inspired on.



Figure 42. Contemporary advertisements used as inspiration for the Kompel jacket advertisement.



Figure 43. The vintage-style advertisement, introducing the jacket and its storage function.

Next, small Lost&Found-posters (as if posted by mineworkers themselves) on the announcement board should warn guests about the risk of losing their items during the ride. Some posters show this a bit more explicitly (e.g. a hand-drawn cartoon of someone losing his keys from the mining cart), while others simply show a lost piece of equipment that a mineworker would carry such as a lantern. These items were mostly derived from the pictograms used on the jacket.

These individual posters do not specifically tell the guests what they are being warned about. Rather, the collection should spark the idea that you, as a guest, should be careful with your belongings when descending into the mine. As some of the small posters can be recycled further along the queue area, guests are given a small yet constant reminder that this is a risk without detracting from the experience too much. These reminders can lead up to the moment where the jacket is offered in the queue area and aim to stretch the decision-making moment to store items safely.

Figure 44. The Lost&Found-posters.



DEMONSTRATE

18. USER TESTS

User tests evaluated whether the design concept clearly communicated the storage function and made users aware of the risk of falling items. Furthermore, these tests indicated which of the four jackets (chapter “16. Experience and safety elements on the Kompel jacket”) was most successful in terms of experience-driven safety. The results were used to make a decision on the final concept choice, find flaws in the current design and improve several elements of the design concept. The results are discussed in this chapter and implemented in further concept development (see section “18.3 Concept choice and adaptations” and chapter “19. Design Concept”).

18.1 SET UP AND EXECUTION

The main goal of this user test is to find out whether users understand the function of the design concept and whether they would use the jacket correctly. This would mean that they recognise its storage function, understand the risk of falling items and feel encouraged to safely store their items in the jacket. The four different jackets are evaluated through this user study, thereby determining which variety is most suited for effective communication and yet still appropriate for the environment of Baron 1898.

Through these user tests, I have uncovered several flaws in the current design concept. The adaptations can be found in the final section of this chapter, along with the final choice of jacket.

USER TESTS OBJECTIVES

1. Find out whether the design concept clearly communicates its function of being a storage space (ability).
2. Find out whether people feel encouraged to store their belongings (motivation).
3. Indicate which jacket is most suitable as a safety solution within the experience of Baron 1898.

METHOD

For this study, the design concept was tested in a neutral setting instead of within the real context of Baron 1898. Twenty participants were presented with the concept without any prior knowledge except the information that it was designed to be placed in the queue area of Baron 1898. Each participant was shown the advertisements and posters along with one type of jacket (see Figure 45 and Figure 46). This method was used for the first sixteen participants; each type of jacket was tested on four participants. The final four participants were only shown the jacket that had turned out to be the most suitable (Jacket 4) without the advertisement and posters.

Participants consisted of employees from the HR department, interns from several different departments and hospitality employees. These sets were chosen to decrease the chance of the participants having prior knowledge of items falling from Baron 1898. Unfortunately, it was not possible to select participants according to this criterion beforehand, as it would betray the intention of the user test. Hence, some of the participants were aware of falling items, mostly through personal experience.

Appendix K shows the setup and results of this study and indicates whether the participants had prior knowledge on the subject.

Let participants experience the prototype

Participants were told to imagine they encountered this design concept in the queue area of Baron 1898. The only information they were given was the placement of the advertisement and posters (on the side of the building), and that the jacket would be offered in large quantities in a box in the queue area. Next, they were given a short moment to observe, touch and examine the prototypes.

Introductory questionnaire

A short questionnaire was used to allow participants to evaluate the concept on understandability and desirability. The number of participants was too few to use this questionnaire as a quantitative measurement. Rather, it was used as a guideline, and for the additional insight it provided during the interview that followed. For example, one participant scored the design concept to be extremely clear on the questionnaire, yet the interview uncovered that she completely misunderstood the message. The questionnaire allowed me to clearly evaluate how strongly participants believed to understand the function of the concept, or whether they were guessing its meaning.

Figure 45. The four prototypes of the jackets. Front and back of: Jacket 1 (top left), Jacket 2 (top right), Jacket 3 (bottom left), Jacket 4 (bottom right).



Semi-structured interview

The semi-structured interview consisted of several questions starting with the overall perceived function of the design concept. First of all, participants were asked why they believed this concept was created and how they envisioned that guests were supposed to use it. Follow-up questions indicated which specific elements of the design concept influenced this perception, especially when they misunderstood the function of the design concept. Secondly, they were asked what they would do when encountering the announcements and jacket in the queue area. The goal of this was to get an indication of whether they felt compelled to store their belongings using this design concept. Finally,

they were asked to explain what they believed the meaning of each illustration to be. The focus in this part was the illustrations on the jacket and whether they communicated the storage function.

Choose and evaluate preferred jacket

Lastly, participants were explained the exact function of the design concept and were shown the four different jackets. They indicated and explained their preferred concept, specifically highlighting elements that stood out to them. Furthermore, they were asked to identify which one they felt conveyed the message clearly while still being suitable to the experience of Baron 1898.

Figure 46. A neutral room displaying the advertisement and posters along with a test model of the jacket.



Figure 47. In comparison: the actual context in which the design concept could be placed.

18.2 FINDINGS

The following paragraphs describe the main findings derived from the user tests.

CLARITY OF DESIGN CONCEPT

The storage or warning function of the design concept was not understood by all participants. The biggest influencing factor was the interpretation of the Lost&Found-posters, which led some participants to believe they were going to participate in a scavenger hunt. Once this idea had formed, the other elements of the concept were often misunderstood as well. Participants wondered what the function of a jacket would be in this scavenger hunt. Some believed the pockets indicated that this was where you had to store the items you would find in the queue area, while others felt the jacket would just be an added experience to dress up as mineworker during the hunt.

Which type of jacket was shown to the participants did not seem to influence this outcome. For every type of jacket, one or more participants believed the goal of the design concept was entertainment or decoration in the queue area. The Lost&Found-posters clearly had a disruptive function for the clarity of the design concept.

The written messages on the advertisement were perceived to be clear and often made participants realise the function of the jacket. However, it did not draw attention visually amongst all the other posters and was therefore missed by some participants. Others did not comprehend the call for action that the message actually entailed. They did not understand that it was a message with a purpose and that something was expected of them. Participants who read the text block ("The best miners keep their belongings safe") understood the message of the advertisement, however the text block did not really stand out in the advertisement.

Participants that were not misguided by the posters generally understood the design concept is aimed at preventing falling items. However, some believed the concept to be a new type of warning sign simply aimed at raising awareness. Others thought they were meant to wear the jacket in the queue area and then hang it on a coatrack next to the train before entering. The two main causes for this misunderstanding were the deficient message of the advertisement, and participants who did not see the icons on the pockets.

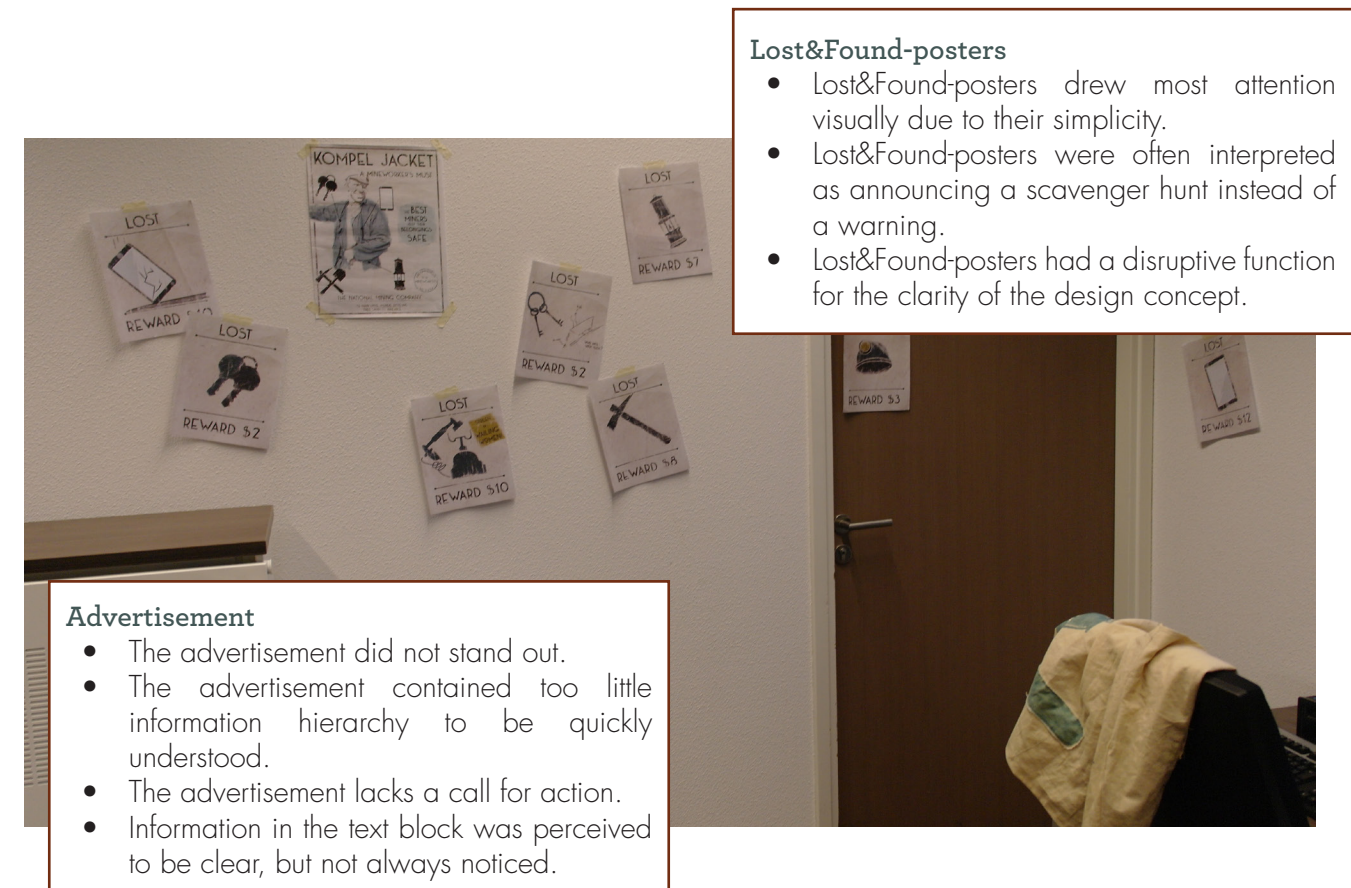


Figure 48. The interpretation of the advertisement and Lost&Found posters greatly influenced the understanding of the overall message.

PREFERRED JACKET

Of the different types of Kompel jacket, version 4 was generally best understood and was most often chosen as the preferred concept.

Version 1 was generally found to be too vague, while version 2 was appreciated mostly because of the authentically styled icons. However, a lot of participants felt these icons would be misunderstood by younger generations, or they would not understand the connection to their own belongings. The clarity of version 3 was valued and well-understood. Nonetheless, participants often preferred version 4 due to the clarity as a result of the colour contrast, the warning sign on the back and the unambiguous message above the checklist ("Kompel, is your equipment safe?").

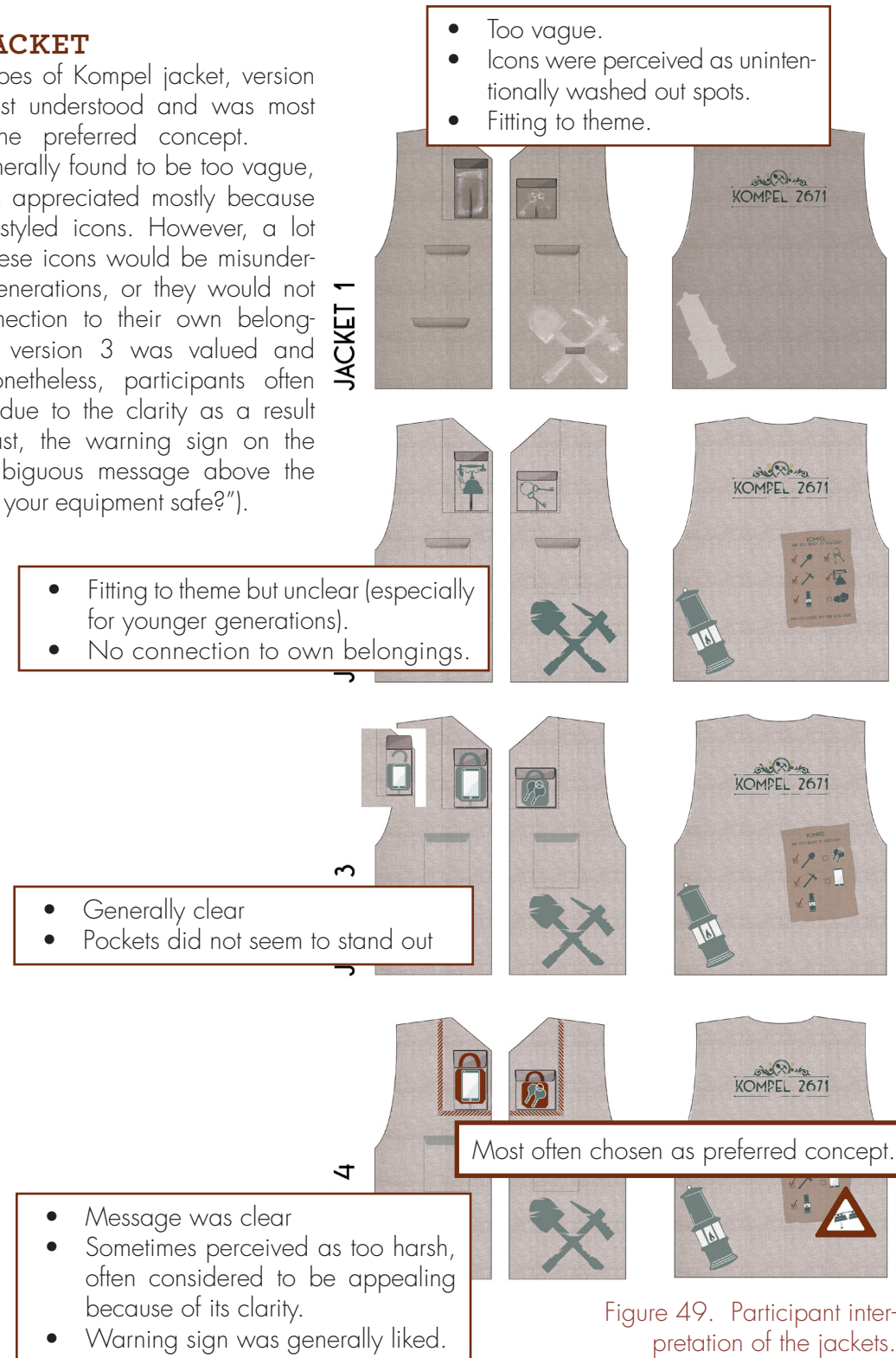


Figure 49. Participant interpretation of the jackets.

ILLUSTRATIONS AND DETAILING

Firstly, the checklists, especially the one from version 2, caused some confusion; not everyone understood the stones icon, nor did they recognise it as a prompt to do a final check to see if their items were safe. The checklists for version 3 and 4 were clearer, though some understood this to be a signal that they were not allowed to bring their phone and keys onto the ride.

Next, the padlock-icons were not recognised by the participants; hence the message of the pockets being safe was not conveyed. These icons should be improved upon to draw more attention to the function of the pockets. This could also increase the overall understanding of the jacket.

Additionally, the fake pockets did not seem to influence the understanding of the jacket. The three painted fake pockets (version 3 and 4) were visually distracting and aesthetically unappealing, and were therefore reduced to only one pocket before conducting the tests.

Lastly, not everyone felt that the Velcro closures of the pockets would be safe, and claimed they would not feel comfortable leaving their phone and keys in the jacket during the ride. The quality of the Velcro might contribute to this as the Velcro used was of very low quality and fell off the fabric during the user tests.

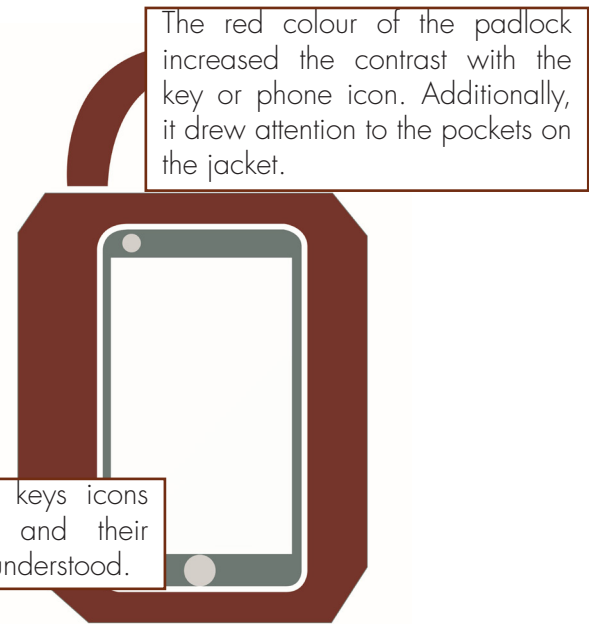


Figure 50. Main findings on illustrations and detailing of the jacket.

The padlock icon was unclear. It was hardly ever recognised. Often it was perceived as simply a frame, or a bag.



Modern phone and keys icons were unambiguous and their meaning was easily understood.



The red colour of the padlock increased the contrast with the key or phone icon. Additionally, it drew attention to the pockets on the jacket.

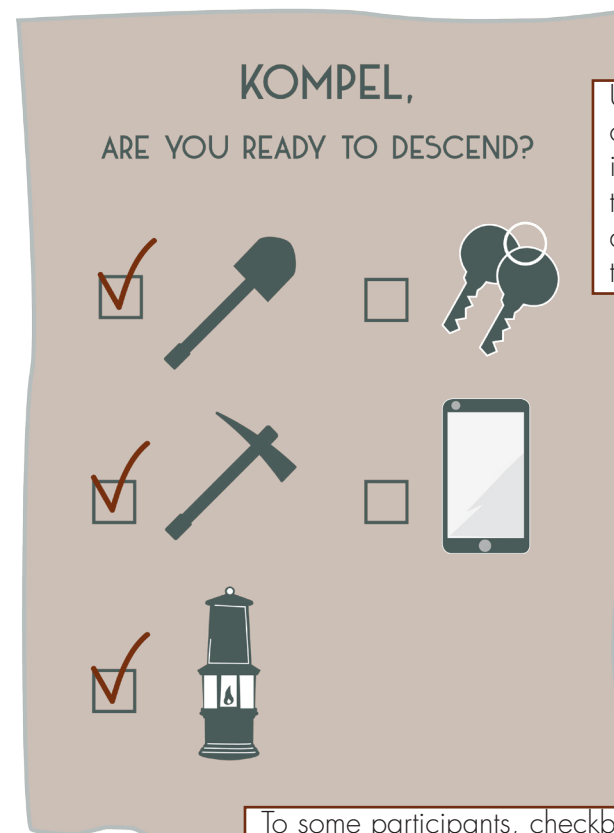
Figure 51. Findings on the icons printed on the pockets.

English was not understood by some participants.



Stones-icon caused confusion and should be left out. It was either not recognised, or drew attention away from keys and phone.

AND GO WHERE NO ONE ELSE WENT



Unchecked boxes sometimes caused confusion: it was perceived as a message to warn guests that they are not allowed to bring these items into the ride at all.

To some participants, checkboxes appeared like guests could/should tick them off themselves.



'Is your equipment safe' made the meaning of the checklist clear and unambiguous.

The warning sign improved the understanding of the checklist a lot.

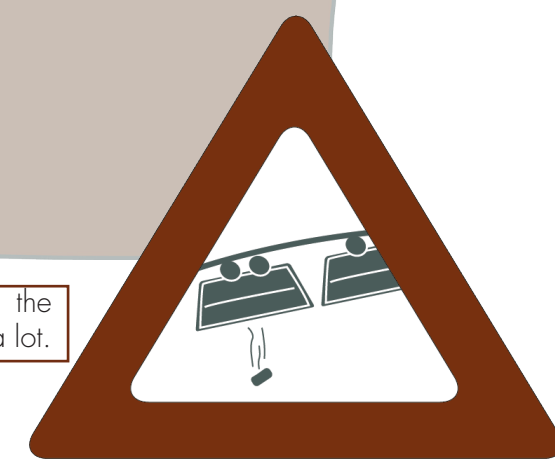


Figure 52. Findings on checklists.

EXPERIENCE-DRIVEN SAFETY

Prior to these user tests, I expected Jacket 4 to be perceived as being too direct and extreme in its message, and therefore be regarded as disrupting to the experience of Baron 1898. However, participants in this study often indicated that they felt confused by the other concepts, thus decreasing the experience of the product. Only two participants felt the colour contrast of Jacket 4 was too 'loud', whereas others felt it simply added to the clarity. Some also preferred the colour scheme with the red included in it, as it reminded them of the overall look of Baron 1898. While I expected the warning sign on the back to be too confronting, several participants pointed out this element as the most helpful and would like to see it incorporated in the final design. Some suggested adding it to the advertisement as well because they appreciated being made aware of the risk of losing their belongings. Taking all these observations into consideration, it can be concluded that confusion seemed to have a stronger negative impact on the experience than the safety elements had.

With regard to the desirability of this concept participants were a bit hesitant. Most claimed that they would only wear this jacket when others would be wearing it as well because they would feel a bit uncomfortable wearing it. This is a challenging part of the design concept, which can be improved by creating a prototype of higher quality; the models created for the user tests were a bit flimsy and awkward-looking. However, it should mostly be evaluated during user tests conducted in the real context of Baron 1898 because crowd mentality cannot be predicted beforehand. Whether it would be 'cool' enough to wear such a jacket would strongly influence the experience.

In general, from these user tests I can conclude that it is possible to create a design that incorporates both the element of safety as well as storytelling effectively. However, whether the interaction within the actual context is a positive experience will remain a question for further research.

18.3 CONCEPT CHOICE AND ADAPTATIONS

Based on the user tests, several choices and adaptations to the design concept were made. Additional recommendations that arose during the user tests will be further discussed in chapter "21. Design evaluation and recommendations"

JACKET

Jacket 4 has proven to be the most suitable, with certain adaptations:

- The overall look has been improved in the final prototype. A rougher material has been used, the fit of the jacket is improved and the worn-out look has been enhanced. This should give the jacket more of an authentic look, instead of the slightly flimsy and unappealing look of the first models.
- The opacity of the lantern and pickaxe-shovel logo has been lowered, thus drawing more attention to the functional icons on the pockets.



Figure 53. The improved padlock icons.

- The Velcro closures are reinforced in the final concept to strengthen the idea that the pocket is a safe storage space. This has been achieved by adding a tough fabric to the pockets and using more and higher quality Velcro. The Velcro in the first models was of very low quality and did not attach properly.
- The checklist on the back has been revised to communicate that these items are not yet safe, but will be in the pockets. To achieve this, the padlock icon similar to the one on the pocket is placed next to the word 'safe'. Furthermore, the checkboxes are adapted to represent a handwritten style to remove the association with digital checkboxes.
- The padlock icons have been improved, and now more realistically resemble padlocks.
- The fake pockets of Jacket 1 and 2 will be used because of their aesthetical purposes and tactile interest.

The results of these adaptations can be found in chapter "19. Design Concept". Changes to the padlock icon and checklist are presented in Figure 53 and Figure 54.



Figure 54. The improved checklist.

LOST & FOUND-POSTERS

- The Lost & Found-posters will be removed from the concept because they were detrimental to the understanding of the concept. Furthermore, they cluttered the view of the advertisement, which resulted in a lot of participants simply skipping this element. Removing the posters will effectively draw more attention to the advertisement.
- The purpose of the Lost & Found-posters will be replaced by the warning sign on the jacket and a clearer message in the advertisement.

ADVERTISEMENT

- The advertisement is adapted to have a clearer information hierarchy. This is attempted by decreasing the size and opacity of non-functional elements and by adding the red colour. Both the padlock icons on the jacket as well as the text block are given a red colour. The text block was often the reason participants understood the message of the advertisement and should therefore be one of the focal points. The red padlock icons on the advertisement draw attention to the functional pocket on the jacket.
- The advertisement employs a more direct message towards the guests, so they understand an action is required of them.
- The mineworker on the advertisement is changed to clarify the advertisement. He is looking straight at the camera to address the guest directly and, most importantly, he is wearing the same jacket that is presented to the guest.



Figure 55. The improved advertisement.

DELIVER

19. DESIGN CONCEPT

This chapter presents the final design concept: design choices, the intended use and suggestions on costs and production.

19.1 INTENDED USE OF THE KOMPEL JACKET

Figure 56 shows the Kompel jacket worn in the queue area of Baron 1898, with its accompanying announcement in the middle of the path. As can be seen in this image, the Kompel jacket is intended to be a voluntary option: guests can choose whether they take one or not.

The Kompel jacket – a wearable storage solution – is introduced and offered to the guests in the queue area. Guests can use this jacket to safely store small items such as their phone and keys. The jacket is a reusable item within the system of Baron 1898. It can be taken from a box in the queue area and after the ride the guests hand it in at the Platform. An employee takes batches of jackets back towards the queue area to be used by the next guests. Figure 57 shows the placement of the different elements within the attraction.

The jacket offers effortless storage, increases awareness of the risk of falling items from Baron 1898 and adds on the immersive experience. The guests transform from being onlookers to being part of the story and becoming 19th century mine-workers. The presence of multiple Kompel jackets in the queue area warns the guests in a thematic way that they should safely store their belongings. By

using the jacket the guests are wearing their belongings on them and therefore there is no more need to store items on the Platform, where excitement and fear overrule rational thinking. This responds to the need of staying close to personal items and shifts a rational decision towards a moment where excitement is still relatively low.

The next section shows the details of the Kompel jacket and discusses design choices that were made.

The Kompel jacket is announced by a message from the mining company, which states that new company uniforms are available for all mineworkers who want to keep their equipment safe. This vintage style announcement shows a mineworker wearing the Kompel jacket and uses similar illustrations that can be found on the jacket to indicate the possibility of storage of a phone and keys. This message is shown in the queue area twice: once on an empty area on the side of the building, and once at the exact moment where guests come across the boxes with jackets (see Figure 58). Similar to the jacket, the announcement introduces the risk of losing items during the ride and aims at motivating guests to be careful with their belongings.



Figure 56. The Kompel jacket in the queue area. A representation of both elements of the design concept.

DESIGN CONCEPT THROUGHOUT BARON 1898

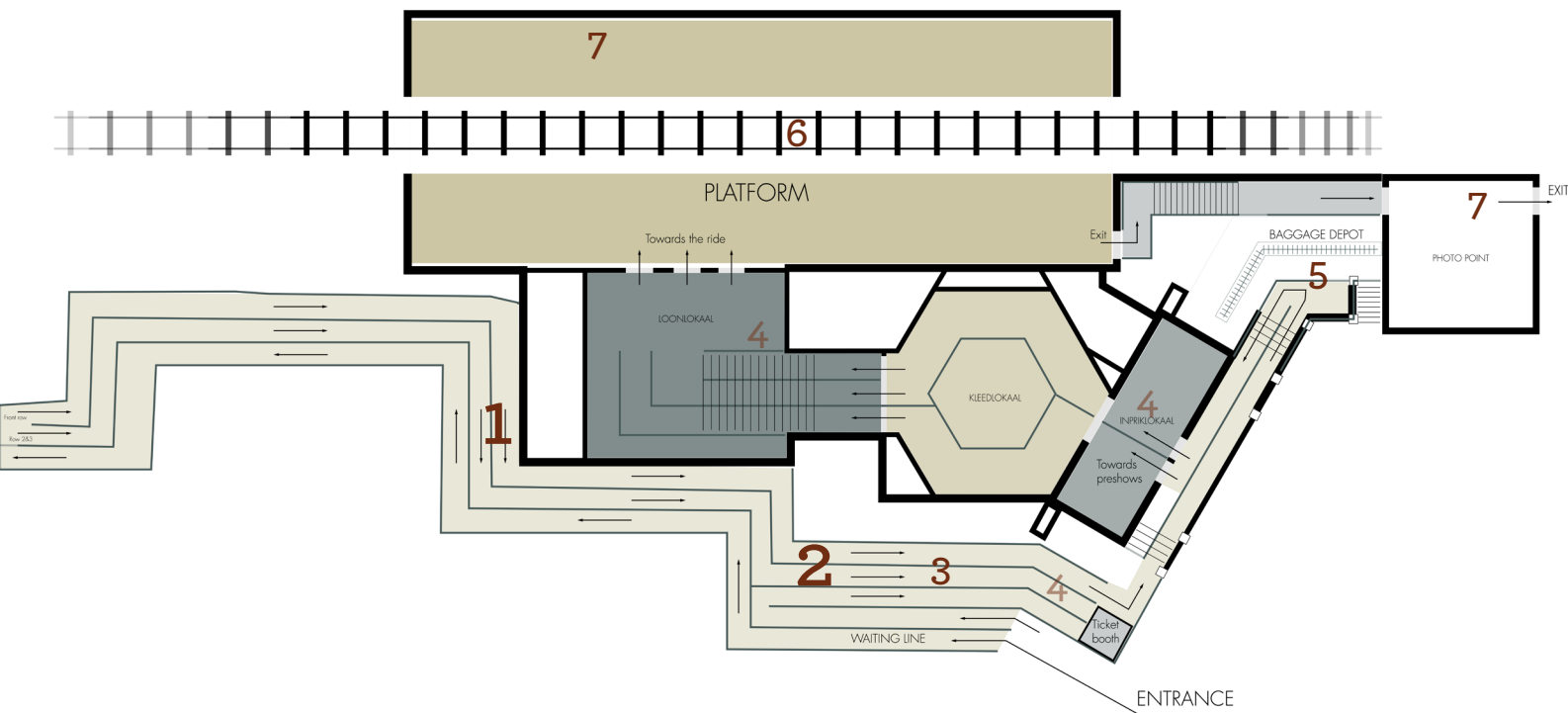


Figure 57. A map of Baron 1898 showing the different touchpoints.

1. First announcement to trigger the existence of the Koppel jacket.
2. Wooden boxes in between the lanes of the queue area, where the jackets are offered to the guests. Guests can take one autonomously. Once again, the poster is shown to clearly link the expected behaviour to the storage solution offered.
3. The back of the jacket is visible for other guests in the queue area, alerting them of the risk.
4. The guests can store their items whenever they like, up until the moment they sit down in the train. This stretches the decision-making moment, as guests are constantly reminded by seeing others who wear the jacket.
5. As a lot of guests currently ask to leave small items at the Baggage Depot, jackets could additionally be offered at this touchpoint. It is not desirable to only offer them at the Baggage Depot, as this slows down the process and could disrupt the dispatch time. However, it could intercept some last guests who want to leave their small items somewhere.
6. The jacket is worn during the ride. To ensure the belongings do not get crushed between the person and the restraint system, the pockets fit in between the gap of the restraints.
7. After the ride, the jackets should be handed in at the Platform, for example in vintage looking laundry bags. The presence of employees should compel guests to leave it in the attraction. A similar second point can be created at the Photo Point.



Figure 58. Six different steps in the use of the Koppel jacket. Only step not depicted: handing in the jacket at the Platform or Photo Point.

19.2 KOMPTEL JACKET:
DESIGN DECISIONS



Figure 59. The Kompel jacket.

The Kompel jacket derives its shape mostly from the requirement of being recognisable. It is a wearable that can clearly be linked to the mining era and most importantly, has no ambiguity in how it should be worn. Pocket placement is based on the physical restrictions caused by the restraint system

of the seat. The illustrations are a combination of communicative and decorative elements.

The steps of creating this prototype can be found in Appendix L.



Figure 60. The jacket is closed at the top only.



Figure 61. The jacket is fully closed and the person is leaning backwards.

WEARING THE JACKET

The jacket is sleeveless so it is easily worn over clothing. Furthermore, it is oversized to fit as many body shapes and sizes as possible.

The jacket can be closed with two Velcro strips. These are placed at the height of the pockets, to make sure they are close together and fit better in between the gap of the restraints. It is therefore advisable that all guests close this jacket. This is encouraged through the simplicity of closing the Velcro and by the red line that crosses through the middle and connects when the jacket is closed.

The jacket does not close along its full length to increase the wear comfort, especially when sitting down.

Figure 62. The jacket is advised to be worn closed.

Figure 63. Two Velcro strips close the jacket (one at the chest and one at the waist section).



Figure 64. Bulkiness of the pockets increases ease of use and draws attention, along with the red markings.



POCKETS – STORAGE OF ITEMS

The top part of the jacket is a functional storage space: the two pockets in the front can be used to store small items. One of these pockets indicates a set of keys; the other one a phone. This is a suggestion for two commonly lost items that will cause a lot of nuisance when falling out. The phone is added as it was the starting point of this design concept, the keys are another valuable item that commonly fall out during the ride. Of course, other items can be stored in the pockets just as easily.

A red, striped line draws the attention to the pockets, communicating to the guest that something important is happening in this area. This area is reinforced with a double layer of fabric to create a reliable and sturdy feel, and prevents the pockets from sagging.

The pockets are bulky so they stand out visually and tactilely (see Figure 64). Furthermore,

Figure 65. The storage space available on the jacket.



Figure 66. The pocket with the closed padlock icon.



items are more easily stored and reached in these pockets compared to tight versions.

The pocket sizes are based on the available space in between the restraints identified in chapter "15. Designing the shape and look of the wearable". The phone pocket is slightly taller so it would fit most large phones. Two popular large smartphones, the iPhone 7 (Apple, n.d.) and the Samsung Galaxy S9 (Samsung, n.d.) fit these pockets easily. The keys pocket is slightly wider and shorter, to accommodate to large keychains and let the user easily reach the bottom of the pocket for smaller items.

The pockets are closed by Velcro, as this is the most durable type of closure and can withstand large forces easily (personal communication, 2018, December 18).

To reassure the guest that the pocket is a safe storage space, a strip of Velcro across the entire width of the pocket is used. Furthermore, the pocket covers are reinforced with layers of fabric. The result is a sturdy feeling pocket which takes quite some strength to open.

The icons on the pockets are meant as a reminder to store valuable belongings and are depicted in red padlocks. The padlock is visually closed when the pocket is closed and open when the pocket is open (see Figure 66 and Figure 67).

The icons have two functions: first of all, to draw attention due to their colour contrast. Secondly, to indicate that the pocket is a safe storage option, and unsafe when the pocket is left open.



Figure 67. The pocket with the open padlock icon.

Figure 68. The checklist and warning sign on the back indicate that there is a risk and a solution.



BACK OF THE JACKET – CREATE AWARENESS

The back of the jacket is primarily visible for the other guests in the queue, and is therefore mostly aimed at warning them of the risk of falling items.

The checklist conveys the message that the phone and keys are not yet stored safely, and creates the awareness to store them on a safe place. All icons used can be found on parts of the jacket, either as decorative elements or icons on the pockets. The Kompel is directly addressed by a written message accompanied by a padlock icon similar to the ones on the pocket. These icons mark the pockets as safe storage spaces.

The warning sign is a direct message to warn the guests that items might fall out during the ride.

Furthermore, a decorative element is added on the back; the word Kompel with an accompanying number. These numbers should all be different to give the impression that it is an employee number and guests have just been recruited to work in the mine.

Figure 69. A decorative element, showing the guests that they have been recruited as mineworker.



Figure 71. The imprint of the pickaxe-shovel logo.



Figure 72. The imprint of the lantern.

AESTHETICS AND DETAILING

The jacket should appear to be a 19th century mineworker's jacket and therefore can look rough and dirty. This is achieved through the material choice (a thick fabric with visible fibres), worn-out spots and edges, and a greyish layer with spots (as if it has been in touch with coal or grease).

Two decorative elements are added: the pickaxe crossed with a shovel and the lantern. The first is a reference to the logo of Baron 1898, the second is created after an artefact that can be found in the exit corridor after leaving the train. The colour of these two illustrations is similar to the one used on the tracks of Baron 1898. The imprint is low in opacity to keep the focus on the functional elements.

Lastly, a fake pocket on the bottom half balances out the two top pockets. This pocket is not functional as the restraint system often fixates on this area of the body.

Figure 70. A fake pocket is added for visual balance.



Figure 73. Worn-out spots of fabric give the jacket an authentic look.



19.3 'NEW COMPANY UNIFORM' ANNOUNCEMENT

The 'New Company Uniform' announcement is a suggestion for introducing the jacket in the queue area. It represents a message from the mining company, directly addressing the guest and clearly linking it to the solution that is offered. Even though the final design should be revised by a graphic designer, certain design choices are made to improve the function of this announcement. This section describes these choices and their function in the design concept.

Figure 74. The 'New Company Uniform' announcement.



The poster shown in Figure 74 is adapted from the initial iteration of the advertisement. Several elements from this poster have been purposefully redesigned and should be considered in further development:

- The announcement clearly needs to introduce the jacket, which is shown by an actual depiction of the jacket. Pockets are highlighted through colour contrast.
- The guest should be directly addressed in the poster. This is achieved by the top line "Kompel, attention" and an image of a miner-worker who seems to be looking directly at the onlooker.
- The visual focus should be on the jacket, the indication that a phone and keys can be stored in the jacket, and a written message about keeping belongings safe. These three elements are brought forward by decreasing the opacity of non-functional objects and showing important elements in red.
- The text "The best miners keep their belongings safe" was found to be illuminative in the user tests (see chapter "18. User tests") and is advised to be included in the final design. However, it initially did not draw attention of the guests which is improved by adding the colour contrast of the brick red.
- A relatively large amount of negative space affects the comprehensibility of the poster positively. Adding too much detail clutters the communicative message.

20. IMPLEMENTATION

This chapter discusses the influence on the daily operations when implementing this design concept, a suggestion for the steps to implementation and the production costs of the Kompel jacket.

20.1 INFLUENCE OF THE KOMPEL JACKET IN DAILY OPERATIONS

The daily operation (chapter "6. Context: Safety and daily operations") is an intricate system of several connected elements in Baron 1898. Improving the dispatch time has been a largely influencing factor in implementing existent storage solutions. The new design intervention should fit the daily operations and fit into the tasks of the operational staff.

First of all, the Kompel jacket is placed in the queue area and it should therefore not slow down the dispatch time. However, handing out the jackets at the Baggage Depot should be evaluated because this might slow down the dispatch time. Jams could occur at this touchpoint due to guests taking a jacket or having the concept explained to them by the employee.

Secondly, operational staff will gain some tasks. One of the main additional tasks will be transporting the jackets between the Platform and the queue area. At the end of the ride the guests hand in the jacket in a laundry bag. This laundry bag has the advantage of being relatively easy to transport. The frequency of transporting these jackets depends on their popularity and the number of jackets being placed in the attraction. Additionally, operational staff will be responsible for checking whether the jackets require maintenance and cleaning. Furthermore, it is preferable if employees actively encourage the use of the Kompel jackets, especially to guests who clearly carry loose items.

Lastly, the design concept should eliminate some existing tasks and problems of the operational staff. Currently they are checking for loose items, of which the complications of deciding what items

should be considered loose and which are safe is a challenging proceeding (section "6.2 Additional rules and regulations for loose items"). This is an additional task for them at the Platform, where they already have many responsibilities over the guests' safety. The introduction of the Kompel jacket should take away most of the responsibilities of checking loose items. Employees can easily spot whether a pocket is properly closed due to the padlock-icon and can focus on other tasks. Most importantly, the use of the jacket would result in less personal belongings falling out during the ride. Therefore, operational staff would not have to search for lost items at the end of their work day.

20.2 STEPS AND CONSIDERATIONS TOWARDS IMPLEMENTATION

One of the advantages of this design is the flexibility in implementation: A small amount of jackets can be produced and placed in the queue area to test their desirability and effectivity. However, introducing the function of these jackets to the guests is important for implementation. When the jacket is not announced as a storage solution, it can easily be mistaken as a decorative element, therefore it is advisable to include at least one of these 'New Company Uniform' announcements in the early implementation the jacket.

Furthermore, the suggested touchpoints for placing the jackets (see section "19.1 Intended use of the Kompel jacket") can be placed somewhere else when they prove to be inconvenient.

When implementing and further developing this design concept, I strongly recommend taking sections "19.2 Kompel Jacket:" and "19.3 'New Company Uniform' Announcement" into consideration. Design

decisions have been explained in these sections, as well as the functionality and requirements of the 'New Company Uniform' announcement.

Furthermore, introducing the Kompel jackets would be most effective in summer: because most guests wear loose clothing in summer, which strongly increases the risk of falling loose items. It might be considered to only employ the jackets during the summer, thereby saving operational time and maintenance costs during the winter.

The exact number of Kompel jackets needed is very dependent on their popularity and the regularity with which the operational staff can transport jackets from the Platform to the queue area. On a busy day, over 450 guests (personal communication, December 6, 2019) per half hour are riding Baron 1898. When a quarter of the guests would wear a Kompel jacket and operational staff transports the jackets every half hour, this would mean over 112 jackets are required.

For early implementation – after initial small tests have shown the desirability and effectivity to be sufficient – I would suggest between 30 and 50 jackets. However, this number needs to be determined by user tests in context to the frequency of use.

20.3 MATERIAL, PRODUCTION AND ESTIMATED COSTS OF THE KOMPTEL JACKET

The material in the final prototype has been chosen for its aesthetic qualities, which the final design should incorporate. These qualities are attainable by different types of fabrics. Natural materials would be preferable as these are more breathable than synthetic fibres. This breathability would slow down the process of the development of odours by the use of many different guests. Cotton and linen would be suitable for these qualities,

though they are more easily influenced by external conditions such as UV light and shrinkage through washing.

My advice would be to research the possibility of bamboo textiles. This textile has a ramie-like feel (when mechanically manufactured), has antimicrobial properties and is moisture wicking (Waite, 2009). The result is a piece of clothing that stays fresh longer and therefore needs to be washed less often.

This type of textile is claimed to be a sustainable alternative due to the fast renewability and sustainable production of its raw material. However, there are still some downsides in the sustainability of the manufacturing process which are inherent to the textile industry in general (Waite, 2009). To fully uncover whether bamboo is desirable over cotton or linen, further research is required.

Costumes are often produced by the Costume Atelier in the Efteling. The production process has been based on their in-house resources. When the jacket is produced in larger numbers, a print design on the textile can greatly speed up the production process (personal communication, March 5, 2019). All illustrations and decorations, including the worn out and dirty look can be printed directly on the fabric. This greatly reduces the production time, which makes up the largest amount of production costs.

For fifty jackets, the production cost is estimated to be around 4820 euros. This comes down to just over 96 euros per jacket (see Appendix M). Additionally, periodic costs will have to be included for dry cleaning and maintenance of the jackets. The frequency and costs of this process needs further research.

VALIDATE

21. DESIGN EVALUATION AND RECOMMENDATIONS

The design of the Kompel jacket and its accompanying 'New Company Uniform' announcement originated from the request of the Safety Department to positively influence guest behaviour. It was created to avoid falling phones and other loose items in Baron 1898's ride through experience-driven safety. This chapter evaluates the resulting design concept and whether it answers to the Design Goal as well as its limitations. Furthermore, recommendations for further development are suggested; discussing the main iterations that are needed for a successfully implementable design. Lastly, some relatively simple suggested changes to the existing storage system are discussed which as a result of the Discover phase.

21.1 EVALUATION OF THE DESIGN CONCEPT

The Kompel jacket is a response to the Design Goal as presented in chapter "11. Design Goal". This chapter evaluates to what extent the design concept successfully answers this goal and what its current limitations are.

1. Convince the guests of Baron 1898 of the risk of losing their phone and offer them an effortless solution – that is sufficiently triggered – to safely store it.

The Kompel jacket can, in my eyes, be considered an effortless solution. It allows the guests to store their items over an extended period of time, starting at the queue area up until the Platform. This removes the high-pressure decisions that need to be made in the existing situation. Furthermore, it allows them to stay close to their valuables. Recognisability of the storage solution has been evaluated in the user tests which indicated that the user recognises the jacket's function due to the chosen illustrations on it.

Additionally, these illustrations aid in increasing awareness of the problem of falling items. Especially the warning sign on the back of the jacket conveys this message clearly. The 'New Company Uniform' announcement further strengthens the communication of this risk and triggers the use of the Kompel jacket. It communicates the notion of the jacket as a storage solution to the guest. Through its placement in the queue area the announcement first

introduces the existence of the jacket (the first poster on the wall), then it triggers the guest at the decision-making moment to take one of these jackets (the second poster is above the box with jackets).

However, it should be noted that the current understandability of this design concept has been tested in a context with a low amount of external stimuli. Even though the queue area is a relatively quiet moment in the Customer Journey, it is still unknown whether the concept is sufficiently triggered in the real context of Baron 1898. Therefore, it is crucial that the design concept is tested in context.

2. Implement experience-driven safety design to positively influence guest behaviour.

Experience-driven safety is explored throughout the different design stages. A reflection on and evaluation of this process is found in chapter "23. Conclusion on Experience-driven Safety".

The design solution plays an active role in the storytelling of Baron 1898. Use of the jacket is encouraged by creating a transformation: the user transforms from being a guest in the Efteling to being a Kompel working for the Baron Gustave Hooghmoed. Because of this active role in storytelling the jacket is introduced as a part of the experience rather than a straightforward safety solution. This Kompel jacket shows that experience and safety can work harmoniously and strengthen each other in a singular design concept.

LIMITATIONS

In terms of communicating the risk there is one issue that is not addressed in this design concept. When a guest is convinced that their phone is safe in their pocket, their perception is not actively changed by this design concept. It suggests a better storage solution but it does not clearly indicate the risk of their pockets. Changing this perception is too complex a message to convey visually. This perception could however be changed by a written message shown underneath the 'New Company Uniform' announcement (see Figure 75). The poster will draw attention visually, and a small disclaimer is added underneath to alert guests of the risk of keeping items in open pockets.

Other limitations of this concept are based on guest perception that could not be tested during this graduation project. First of all, some guests might find it unsanitary to wear a jacket others have worn before. The exact amount of people with this perception is unknown, as it was heard sporadically during user testing or when talking to others about this design concept. However, not everyone seemed to share this notion. In the next section it

is suggested how to approach this issue.

Secondly, as the design has not been tested in context, it is not possible to predict the amount of guests willing to wear one. Most participants during the user tests claimed that they would wear a jacket when others did as well. This social pressure cannot be predicted as it is very hard to control crowd mentality. However, it is possible that the jacket needs active encouragement from operational staff to succeed.

Last of all, there are some limitations to this design concept with regard to daily operations and returning maintenance costs. The operational staff is tasked with transporting the jackets from the Platform to the queue area on a regular basis. Furthermore, they should check regularly for any required maintenance of the jackets.

This maintenance is another limitation of the design concept. As it is a textile product, regular maintenance costs can be expected for cleaning, washing, mending and replacing jackets.



Figure 75. A suggestion for the written disclaimer to communicate that open pockets are not safe.



21.2 FURTHER DEVELOPMENT OF THE DESIGN CONCEPT

To further develop this design concept several aspects need to be taken into account:

- The first step would be to test the Kompel jacket on desirability and understandability in the actual context of Baron 1898.
- Different body sizes should be taken into account. Right now, the jacket is made to be oversized, but perhaps several different sizes might need to be considered. Introducing multiple sizes brings another challenge in the form of how to keep the sizes separated and communicate them to the guest. Different colour jackets could help in distinguishing the sizes easily. Further research is needed on this subject.
- To tackle the issue of the jacket feeling unsanitary, a different type of lining fabric could be used. A smoother fabric might convey a cleaner and fresher feel to the jacket.
- The material of the jacket should be determined, as already discussed in section "20.3 Material, production and estimated costs of the Kompel jacket". Bamboo might increase the freshness of the jackets due to its antibacterial and moisture wicking properties, but needs to be evaluated in terms of costs and claimed sustainability.
- The pockets should be adjusted a bit as the sewing techniques used in the prototype affected the alignment of the pocket covers. When putting heavy keys into the pocket the padlock icon was distorted. Because of this, the padlock appeared to be open instead of closed. This could be solved by better sewing techniques, a larger pocket cover or enlarging the padlock icon.
- Though this prototype does not contain an inner pocket, I advise to include it in further development. An inner pocket can provide a sense of security because it is close to the body. Furthermore, additional storage space can be created for other items such as sunglasses.

22.3 RECOMMENDATIONS FOR SIMPLE CHANGES

This design concept is based on positively changing guest behaviour through experience-driven safety. Implementing this design intervention, however, requires some investment. Therefore, some relatively quick, low-cost and effortless adaptations can be implemented regarding current storage solutions.

- Improve the signage for the Lockers outside of the attraction. Many guests do not notice them, and they are poorly communicated. More loose items may be stored, and general convince could be increased, by making guests aware of this existing storage solution.
- Communicate the presence of the Baggage Depot to the guests. Currently, guests are surprised by its existence and start to rearrange their bags last-minute. This slows down the process and might result in more loose items being taken along during the ride. Communicating the option of the Baggage Depot well ahead of time gives guests the opportunity to place small items in their bag.
- The risk of losing personal belongings during the ride is not communicated at all. While a warning sign might not reach all guests, it should at least be communicated somewhere in the queue area. This warning should be communicated before guests reach the Baggage Depot, to allow them to store items in their bag. A second warning could be added closer to the Platform, as a last reminder before entering the train. The current placement of the 'no filming' sign (above the three doors which enter the Platform) is very ineffective, and not a suitable spot for a warning sign. When choosing to place a second warning sign, it should be placed at eye level and somewhere more visible to guests.



CONCLUDE

22. RECOMMENDATIONS ON DESIGNING FOR INFLUENCING GUEST BEHAVIOUR

The original request from the Safety Department was mostly aimed at gaining insight into undesired user behaviour. Why would guests behave in ways that put themselves, others or their belongings at risk? And, most importantly, how can undesired guest behaviour be positively influenced by an intervention?

In this graduation project, I have focussed on one specific form of undesired behaviour to answer these questions; the behaviour of not safely storing personal belongings at Baron 1898. Through this design process, specific recommendations can be made to implement guest behaviour in future projects. This chapter reflects on the design process and the role of experience-driven safety, and suggests how the results of this graduation project could be included in future projects by the Safety Department.



It should be noted that this graduation project focussed on unconscious undesired behaviour. This type of behaviour will often be caused by a misunderstanding of, or a distraction from, the designed environment, therefore making it suitable for a design intervention. Conscious undesired behaviour (breaking rules, vandalism, etc) might require a different type of analysis and intervention. The design of the Koppel jacket aims at encouraging the desired behaviour. Discouraging the undesired behaviour results in a different type of design solution (Tromp, 2011) and would be more suitable for conscious undesired behaviour.

The following recommendations focus on analysing the influence of an existing context on guest behaviour and suggest a tactic for including guest behaviour in future projects.

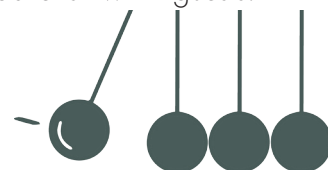


OPERATIONAL STAFF AS EXPERT

When noticing a recurring undesired behaviour, one should start by talking to the operational staff. They can be considered experts in observable guest behaviour and communicate with the guest on a daily basis. Because of this, they can identify common bottlenecks and hear the voiced

opinions and concerns of the guests. The operational staff holds a large amount of information on guest behaviour and by simply talking to them one will uncover a large portion of the problem.

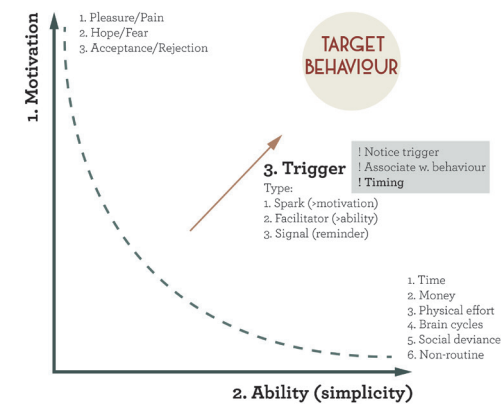
However, keep in mind that they are limited to observable behaviour and explicitly spoken opinions from guests. Furthermore, they might have a coloured view on the issue after encountering several negative interactions with guests.



CHALLENGE ASSUMPTIONS

Causes for guest behaviour should be challenged. This project has shown that the initial idea that phones are lost due to filming is not correct. Starting from the point of view that guests film their ride would have resulted in a completely different design intervention. An intervention based on the initial assumption would not have addressed the problem at its core.

The observable end result or observable guest behaviour might be very different as a result of the steps leading up to it. Guests make a lot of (unconscious) choices and considerations that eventually lead up to the undesired behaviour.



IS THE TARGET BEHAVIOUR ENABLED?

First of all, the guest's choices and consideration should be uncovered through qualitative research. Fogg's Behavioural Model (2009) can help to structure this process and find out why the desired behaviour is not always shown. A rough step-by-step procedure:

1. Decide the expected target behaviour, what exactly should the guest do to avoid the problem?
2. Decide on the touchpoint(s) that enable this behaviour and perhaps split up the target behaviour into smaller desired actions (such as storing the phone in either a bag before the Baggage Depot or in the Carousel).
3. Find out whether the guest is motivated to perform the target behaviour(s).
4. Analyse the interaction between the guest and the touchpoints: Does the product and/or environment provide sufficient simplicity in reaching the target behaviour? Keep in mind all the aspects of the surrounding environment, including social interactions with employees or other guests.
5. Decide on existing triggers: Is the behaviour sufficiently triggered through an intervention and is the guest reminded of the risks at the appropriate time? Are functional elements in the context (such as storage solutions) sufficiently triggered?

ADAPT THE SITUATION TO REACH THE TARGET BEHAVIOUR

Dependent on the findings in the previous step, the ability or motivation should be improved. Increasing ability is most easily reached through design by adapting touchpoints to make the behaviour as simple and effortless as possible.



Increasing motivation is a lot harder through a design intervention. However, I believe experience-driven safety can play an important role in increasing motivation, either explicit or implicit. Especially design interventions that play an active role in the storytelling might increase guest motivation that would otherwise be insufficient. Chapter "23. Conclusion on Experience-driven Safety" elaborates on the role of experience-driven safety.



INFLUENCE OF THE DESIGNED ENVIRONMENT



The context of the Efteling is an extremely challenging one for conveying safety measures. Rational decision-making is extremely hard to convey when an abundance of stimuli is present. Design solutions need to be triggered; they cannot simply be offered to the guest and expected to be understood in a distracting context. First of all, one must find out which stimuli are present throughout the Customer Journey, and at which moments a rational decision is required. These decisions should preferably not have to be made in high-pressure areas with lots of stimuli. The influence of the context will clearly show through in the analysis of the ability-factor of the target behaviour.

FUTURE PROJECTS



Analysing the influence of the environment is challenging, especially when building new attractions. My suggestion would be to create a preliminary customer journey as early on as possible. The rational decisions that are required and the expected level of excitement/tension as a result of external stimuli should be listed. Rational decision-making moments in high-pressure areas are undesirable. Furthermore, when multiple decision-making moments are required simultaneously, chances are high that at least one will be missed.

Furthermore, continuity in functional solutions should be created throughout the attractions as much as possible. The recognisability of, for example, storage solutions can greatly speed up the decision-making process. The guest can then rely on a routine rather than learn interactions every time.

Lastly, I would advise to experiment with experience-driven safety. This project shows just one example, but it can be implemented in many ways. Introducing a safety measure with an active part in the storytelling can be used to draw and maintain the attention of the guest.

23. CONCLUSION ON EXPERIENCE-DRIVEN SAFETY

Throughout this graduation project, I have slowly gathered insight and understanding on how to design for experience-driven safety. This chapter describes the results of this process. It evaluates the strengths, possibilities, and pitfalls of experience-driven safety design based on my own experiences and observations.

Several examples of purposefully designing for experience-driven safety can be found throughout this thesis. Some clear examples are the iteration of the Kompel jacket, and testing the results with potential users. A more explorative approach has been chosen in the ideation phase, where the search field was stretched, forcing the idea directions from experience- to safety-driven solutions. However, I do not believe that experience-driven safety design is simply a matter of following rules or certain methods. Rather, it is a designer's view on safety which is strengthened by regularly having your design choices challenged.

DESIGN RESULTS

First of all, experience-driven safety seems to be less forceful than regular safety design. This is a positive quality for guest interaction, which was the goal of this graduation project. However, a less forceful interaction might not be desirable for all safety problems. This means experience-driven safety has a time and a place.

It is a promising method for drawing the guest's attention towards rational decisions that may otherwise have been skipped. Experience-driven safety has the capability of letting a safety measurement play an active role in the storytelling. The result is much more pleasant for the guest than traditional safety measures, and he or she is therefore more likely to willingly interact with it. Once the attention of the guest has been drawn, an interaction can be started that steers the guest behaviour.

USER INTERACTION

Experience-driven safety design can correct two general misconceptions. First, that all safety measures are unappealing to the eye and disrupt the immersive experience. Second, that the guest is not interested in seeing or hearing about these safety measures.

When interacting with (potential) users in this project, I have noticed that the guests appreciate being warned about risks and want to know that they might lose valuable belongings. However, they often do not take the time to inform themselves when they do not know the rules are relevant to them (personal

communication, October 3, 2018). Therefore, they do not spend a long time checking warning signs when they have no reason to believe they are breaking any, especially when excitement is in the air. Experience-driven safety could potentially add to the excitement instead of letting it be a distraction from safety measures. A new type of interaction can be created to make guests aware of risks while remaining in the immersive experience.

DESIGN PROCESS

Designing for experience-driven safety was a challenging process; mainly due to the pitfall of focussing too much on storytelling. The functional element of the designs often became overshadowed by the experience-elements. It was not challenging to create designs which were appropriate for the storytelling, while featuring a fun or nuanced safety warning. However, safety elements quickly became hidden in this storytelling and could easily be missed, and connections are unlikely to be made if guests are not aware they are presented with a safety measure.

The clearest example of this pitfall was encountered when creating awareness of the risk of falling items. The first solution was a display case where modern day items such as broken phones were hidden among mining artefacts. However, the odds that guests would actually see these modern items and link them to the risk of the rollercoaster were pretty slim. The odds that they would link it to the Kompel

jacket offered to them were nearly non-existent.

The second example of digressing towards storytelling was by making the jacket look as authentic as possible. The initial design of the jacket was a bare jacket without any illustrations to make it resemble the era as realistically as possible. However, this would assume the guest understood its function without proper communication, relying on the guest to make their own connections in terms of risk.

One last example was the design concept of the Lost&Found posters, and the initial design of the contemporary advertisement. The Lost&Found posters were simply misunderstood, and were perceived to be a game or entertainment in the queue area. The Kompel jacket advertisement was created according to the style of real contemporary advertisements, which often lack a clear information hierarchy and have no call for action. The result was that the Kompel jacket advertisement lacked these qualities as well. However, triggering use of the jacket and communication of potential risk were its prime functions. Therefore, once again, overly thematising the design concept resulted in poor communication of the functionality.

RELEVANCE OF USER TESTING

The Lost&Found posters was an example where user testing showed the lack of clarity in the design. Moreover, it raised the issue that participants assumed the design was meant for entertainment. This might be attributed to the focus on experience in the safety solution. It may also be attributed to the fact

that guests in theme parks in general might expect to be entertained by their surroundings. Especially the queue area is often dressed up to entertain guests while waiting in line. This might be a common pitfall with experience-driven safety and is something to be wary of. User tests are crucial in evaluating whether a design intervention might simply be perceived as entertainment rather than functional.

Likewise, user tests allow for finding the right balance of safety elements within an experience-driven concept, which the four different varieties of the Kompel jacket also helped achieve. Initially, I expected the most authentic-looking jacket to sufficiently convince guests to store their belongings. However, it actually turned out that the jacket with clear safety warnings on it was the most preferred and clear concept. The active role in the storytelling perhaps affords some leeway towards including explicit safety elements. Once the main theme of the design concept is appropriate to the storytelling, participants do not seem to mind clear safety warnings printed on them. The authentic-looking jacket simply seemed to confuse participants, and definitely did not entertain them as I had expected.

These examples prove the importance of user testing in experience-driven safety. How guests interpret a design concept cannot be fully predicted, and it is easy to get lost in the storytelling of your own designs. Regular user contact determines whether a design is an effective example of experience-driven safety or whether it is a confusing piece of storytelling.

Experience-driven safety is a promising method for drawing the guests' attention within the immersive experience and subtly steering their behaviour. Guests appreciate being made aware of the risks, and this approach enables one to capture their attention in an emotionally turbulent environment such as a theme park.

It is however a challenging process to find a balance between experience and safety elements in a design. Once the design plays an active role in storytelling, the eye-catching safety elements can be included without breaking the immersive experience. Overly hiding these safety elements through thematising and storytelling seems to be a persistent pitfall.

User testing is therefore crucial to determine how guests interpret a design concept. Regular user contact determines whether a design is an effective example of experience-driven safety or whether it is a confusing piece of storytelling.

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