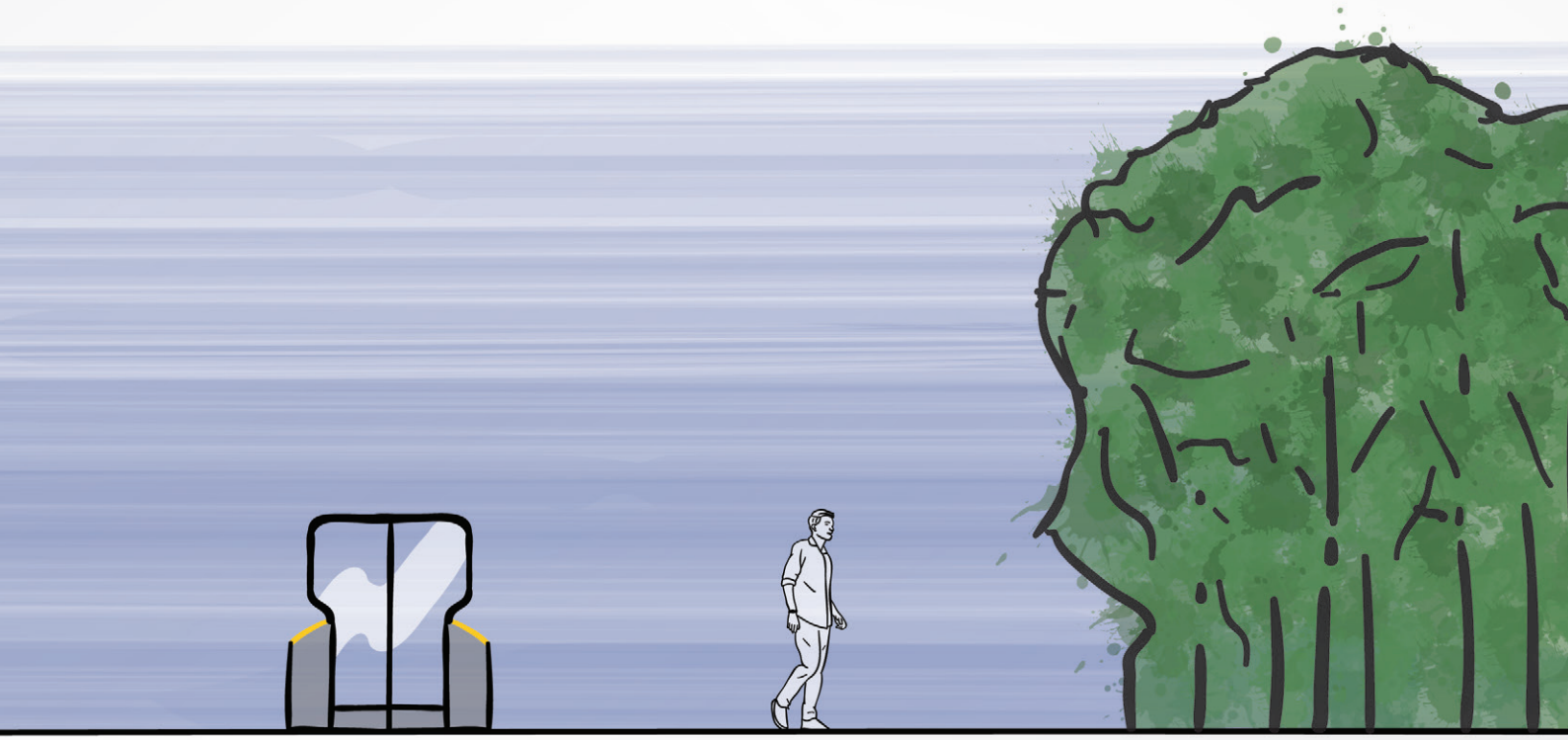

Research on Experience at Small Stations and Design of StationsOmmetje

Master Thesis | Marijn Kleijer

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Master Thesis
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PREFACE

This report is my master thesis for the completion of the study Industrial Design Engineering at the University of Twente. This report presents the process and results of my graduation project which I have executed for the Dutch Railways (NS). The project includes research and design with the aim of understanding and improving the experience of small train stations.

During my master I followed the Human Technology Relations track, which allowed me to fully dive into the human side of design. I am thankful that NS gave me the opportunity to apply this knowledge within my graduation project. NS provided me with a challenge and the means that allowed me to do what I like most; to collect insights about user needs and translate these into a meaningful concept.

This project would not have been the same without the support of my mentors. Therefore, I would like to thank Deger Ozkarmanli for her guidance and hands on tips throughout the project. You have stimulated me to further develop myself as a design researcher. I have come to realize more and more what the power of design with dilemmas entails. I want to thank Mark van Hagen for the conversations we have had which always provided me with new insights and ideas. It is truly a treasure of knowledge that you have contributed to over the years which has been resourceful for the project. I would like to thank Evelien ten Elsen for her insightful input and her motivating enthusiasm. I want to thank Joost van der Made for his sharp questions that encouraged me to pursue a clear view on the real problem and appropriate design.

I would like to thank Mark Jansen and Maartje Beerens from NS Stations for their involvement and input.

I would like to thank Roald Hoope from Reframing Studio for being a sparring partner. I enjoyed our conversations which always gave me interesting ideas to think about.

I would like to thank my colleagues Jessica Sauren, Imre Jacobs, Sem Koole, Valerie Severens, Brit Moritz, Bob Bohlander, Do van Elferen, Fred Versfeld, Heleen van Beek, Anna Levert, Jan Hartman, Wendy van Dijk, Lars Sieverink and Marion den Hooglander for being sparring partners and collaborating with me.

I would like to thank the passengers who participated in interviews or generative sessions. I truly enjoyed immersing myself into your stories. Without your input it would not have been possible to gain deep insight into how you experience small stations.

Lastly, I want to express my deepest gratitude to my family who have always believed in me. Their continued support is invaluable to me.

I hope you will enjoy reading this thesis.

Marijn Kleijer

ABSTRACT

Motive

The Dutch Railways (i.e. Nederlandse Spoorwegen or NS) has the ambition to improve the quality of the public transport journey as a whole. Stations are important touchpoints of this holistic journey, since 25% of the experience of this journey is influenced by stations. This realization has let to many interventions at large stations, resulting in higher scores regarding the experience at large stations. However, the experience at small stations, especially the aspects of waiting experience and ambiance, continues to score low. This insight led to the initiative for a gradation project that focuses on enhancing the experience at small stations.

The goal of the project is to gain insight into the current experience at small stations, and to design a concept that enhances this experience. This ambition is approached by asking the following questions: What do people think about the experience of small stations and what do small stations look like? What are important themes, emotions and personal dilemma's regarding small stations? And how can we design to improve the experience at small stations?

Methodology

A scenario based design approach, in which design and research processes explore current and future scenarios, has been executed. Within this approach, the project incorporated context mapping and dilemma-driven design methodologies as well.

To map current scenarios of small stations a literature study, 59 interviews, observations at five stations and five generative sessions, have been executed. The interviews and observations are part of explorative research that resulted in an identification of twelve topics and five station collages. The generative research resulted in deep insight into the themes, emotions and personal dilemmas regarding small stations. Three design-worthy dilemmas defined a design-space for the future scenarios, these dilemmas include (i) social comfort versus inspiration, (ii) mindfulness versus seeking distraction and (iii) control versus fascination.

To explore near future scenarios a design ambition and five design buildings blocks have been described to provide inspiration and direction to the concept ideation. Four concepts, in which stakeholders, actions, events and context are incorporated, have been developed in order to react to the three dilemmas. Subsequently, a development process materialised the chosen concept called StationsOmmetje. This materialization includes the design of three components of StationsOmmetje, namely (i) triggers, (ii) physical wayfinding guides and (iii) features within the NS application. Subsequently, a concept validation process has conducted twenty interviews with passengers at Nunspeet station. The results gained insight into the perceived interest and preferred usability features of StationsOmmetje.

Conclusion

The graduation project resulted in a validated final concept of StationsOmmetje in which passengers are invited to explore the surroundings of stations in order to make waiting time meaningful. The concept is designed in a way that allows passengers to seek fascination around the station while remaining control to catch the train. The validation interviews showed that the vast majority of the participants show moderate to serious interest in StationsOmmetje.

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INTRODUC-TION

Chapter 0
Pages 10-13

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start here

The introduction briefly explains the approach of the project. The introduction contains a description of the motive for improving the experience at small stations, the methods that are applied within the graduation project and the final deliverables. Subsequently, the introduction describes the structure of the thesis.

Motive

The Dutch Railways (i.e. Nederlandse Spoorwegen or NS) has the ambition to improve the quality of the public transport journey as a whole (*Visie Nederlandse Spoorwegen*, 2018). Stations are important touchpoints of this holistic journey, since 25% of the experience of this journey is influenced by stations (*Stationsbelevingsmonitor*, 2019; Van Hagen & de Bruyn, 2015). Improving the experience at stations is profitable, especially since social and recreative travelers are sensitive for the experience on stations and can be tempted to travel more often (Van Hagen & De Munck Mortier, 2003). Many interventions have been executed at large stations, resulting in higher scores regarding the experience. However, small stations score significantly lower in comparison with large stations (appendix 13) (*Stationsbelevingsmonitor*, 2019). This insight shows the potential to enhance the experience at small stations. To conclude, enhancing the experience at small stations is a priority in order to improve the experience of the holistic public transport journey, to heighten the scores regarding the experience and to increase profitability.

The goal of the graduation project is to gain insight into the current situation of small stations and to design a concept that enhances the experience. This ambition is approached by asking the following questions: What do people think regarding the experience at small stations and what do small stations look like? What are important themes, emotions and personal dilemmas regarding small stations? How can we design to improve the experience at small stations?

Methods

To answer the questions of above a research and design process has been executed in which scenario based design, context mapping and dilemma-driven design methodologies have been applied. The following paragraphs briefly introduce each method and describe their purpose within the project. See appendix 1 for the complete plan van approach.

Scenario based design entails a holistic approach that allows to gain insight in how various actors and factors interact with each other (Anggreeni & Voort, 2007). Scenarios are rich descriptions of use situations containing one or more actors, their goals, the product or service, the context of the use situation, the actions involved, and the events that occur (Garde, 2013). Within the project, scenario based design allows to incorporate a holistic approach in research of current practice scenarios and design of new concepts within future practice scenarios.

Context mapping allows people (which are the experts of their own experience) to express themselves in a structured manner. A creative process takes place that stimulates participants to dive deep into their own experiences. This way latent knowledge about what people know, feel and dream becomes visible (Stappers & Sanders, 2012). Within the project, context mapping allows to gain deep insight into the important themes regarding the experience at small stations, and the emotions and desires of passengers.

Dilemma-driven design allows to gain insight in personal conflicts that people experience. Dilemmas, that consist out of conflicting concerns, mixed emotions and mutually exclusive choices, allow to guide rich insights into a framework that defines an appropriate design space (Ozkaramanli, Desmet, Özcan, 2017). Three primary design directions can be taken in order to respond to dilemmas. These include resolving dilemmas, moderating dilemmas or triggering dilemmas (Ozkaramanli, Desmet, Özcan, 2016). Within the project, dilemma-driven design allows to frame deep insights into a framework that shows how different concerns relate to each other, and facilitates a design space for concept ideation.

Deliverables

- An analysis of the current experience world of passengers and the context of small stations.
- A range of concepts that fit the context of small stations and aim to improve the experience of passengers.
- A materialized final concept that is evaluated by passengers.

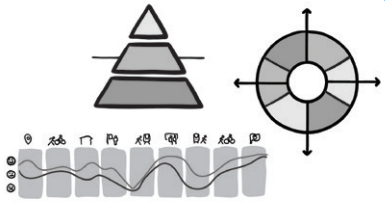
Thesis overview

The thesis consists out of various sections; the blue section focuses on mapping current practice scenarios, the yellow section explores future practice scenarios and the green section reflects on the process. Figure 0.1 shows an overview of the blue and yellow section.

The blue section of this thesis consists out of three chapters that (1) review literature, (2) explore what people think and what small stations look like and (3) execute generative research to gain deep insight in the experience at small stations. The yellow section contains four chapters that describe the design process in which (4) concepts are made, (5) one concept is further developed and (6) evaluated. Chapter 7 makes recommendations with regard to the further development and implementation of the final concept. The green section includes a reflection regarding the process of the project (chapter 8).

1. Literature research

Literature research on passengers and small stations



2. Explorative research

Observations & interviews to explore what people think and what small stations look like

3. Generative research

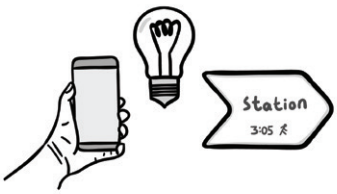
Co-design methodologies to identify themes, emotions and dilemmas

4. Concept ideation

Design of 4 concepts that fit the experience world of passengers at small stations

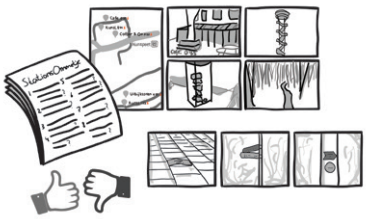
5. Concept development

The materialisation of the chosen concept StationsOmmetje



6. Concept validation

Validation of StationsOmmetje



7. Concept roadmap

Recommendations for further development of StationsOmmetje

Figure 0.1: Overview of chapter 1 to 7 that describe the research and design process

LITERATURE RESEARCH

Chapter 1
Pages 14-20

1.1 Stations
1.2 Passenger needs
1.3. Innovation framework

01

orientation

This section presents data gathered by secondary research which has a large influence on further research and concept development during the project. Upcoming chapters will refer to these theories. Firstly, this chapter describes the context of small stations as it introduces the types of stations and their structure. This knowledge helpes to gain insight into the limitations of the five station domains. The second part focuses on passenger needs and passenger types. This knowledge shows the hierarchy between needs and the diversity of needs amongst passengers. The last part introduces the innovation framework of NS. This framework includes action-focused principles that have influenced the framing of the personal dilemmas (chapter 3.7) and the design direction during the concept ideation (chapter 4).

1.1 STATIONS

This section includes a description of stations categories and stations domains. This knowledge helpes to gain insight into the limitations of station domains that are included at small stations. These limitations have implications for the design guidelines (chapter 4.1).

Station Categories

The NS has arranged all the stations of the Netherlands into six different types of stations (Van Hagen & de Bruyn, 2002). These types are based on characteristics such as location, function, size of the city or village and number of passengers. The types are described in figure 1.1. The scope of this graduation project includes station types four, five and six.

Station Domains

The stations domains organise functions and facilities in order to provide clarity at stations (Bureau Spoorbouwmeester, 2012). The domains are the environment domain, receiving domain, travel domain and residence domain. The walk connection zone connects these domains. The domains are hierarchically organised and have their own purposes:

Environment domain: The environment domain is the physical connection between the station and the city (or village) which is focused on the transition moment between city and the journey. It is important that this domain has the appearance that fits the environment while incorporating cues that refer to the journey.

Receiving domain: The receiving domain provides clear orientational communication for departing as well as arriving commuters. The domain has a calm ambiance and contains opportunities that evoke rich and inspiring experiences. This public area contains facilities for passengers to wait and meet. On larger stations there are often shops and catering services in the receiving domain.

Travel domain: The facilities in the travel domain allow commuters to wait and board the train safely and efficiently. There are shops for quick purchases (e.g. food, drinks and magazines) which are focused on improving comfort during the train journey.

Residence domain: The residence domain is only present at a few large stations and is characterized by a large range of horeca, retail and services. The functionalities of the residence domain can also be incorporated within the receiving or travel domain at stations without a residence domain. However, this should not compromise the functionality in the concerning domain.

Walk connection zone: The primary function of the walk connection zone is to facilitate fast and safe transferring from and to the train and is connected to all other domains. The clear structure allows for easy orientation and navigation.

To conclude, this section showed that the five domains all have their own functions and purposes. However, often small stations do not have access to some of these functionalities, since there is no residence domain, and the receiving domain is often limited at small stations. The fact that these domains along with their functionalities are omitted, creates a gap for passenger needs. Therefore, it is the challenge is to fulfil these needs while maintaining the functional purposes of the receiving and travel domain.

Station type	Examples	Amount of stations in the Netherlands
1. very large station in the city center	Amsterdam Centraal, Utrecht Centraal	6
2. large station in a medium-sized city center	Alkmaar, Hengelo, Enschede, Zwolle	30
3. suburban station with junction functionality	Amsterdam Amstel, Duivendrecht	11
4. station near center of small town/village	Deurne, Culemborg, Nunspeet	145
5. suburban station without junction functionality	Utrecht Overvecht, Enschede Kennispark	107
6. station in outer area at small city/village	't Harde, Ruurlo, Dalfsen	96

Figure 1.1: The six station types

1.2 PASSENGER NEEDS

This section provides insight in the experience dynamics of passengers with the use of general frameworks and theories that are applicable and relevant for all public transport touchpoints, including small stations. Therefore, this project often uses the knowledge and terminology that these frameworks and theories provide.

Customer Needs Pyramid

The pyramid of customer needs (figure 1.2) is a hierarchical model that organises five needs of passengers in order of priority (Van Hagen, Peek & Kieft, 2000). The pyramid is based upon research on the core needs of passengers and is conform to Maslow's hierarchy of human needs (1954). At the very base of the pyramid the needs of safety and reliability are located. For passengers, these needs indicate mostly social safety and the predictability of the journey. The following needs include speed and ease. These represent the need for a travel experience that is fast, clear and without hassle. The last needs are comfort and experience. These needs respectively represent the desire for physical comfort and pleasant experience in which they can spent their time in a meaningful manner.

Satisfiers and Dissatisfiers

The core functionality of a station is to transfer people from one means of transport to the other. The needs that are relevant to this primary functionality are the needs for safety, reliability, speed and ease. These needs provide use value while being on the move and are important for all passengers. Minimizing the travel time and simplifying the travel process is important in order to enhance use value (Van Hagen, Ten Elsen, Nijs, 2017). When these basic needs are not met, the actual experience is worse than the expected experience and passengers evaluate the experience negatively, i.e. dissatisfied (Van Hagen & Bron, 2014). Therefore, safety, reliability, speed and ease are considered dissatisfiers. The need for experience is secondary of nature. This need provides experience value while staying and is different for each need segment (see next section: needscope segmentation). To facilitate experience value, it is important to offer a choice for passengers to make better use of their time (Van Hagen, Ten Elsen, Nijs, 2017). When the experience needs are met, the actual experience exceeds the expected experience and passengers evaluate the experience positively, i.e. satisfied (Van Hagen & Bron, 2014). Experience is a satisfier. The need for comfort is not explicitly classified as a dissatisfier or satisfier, but lies in between.

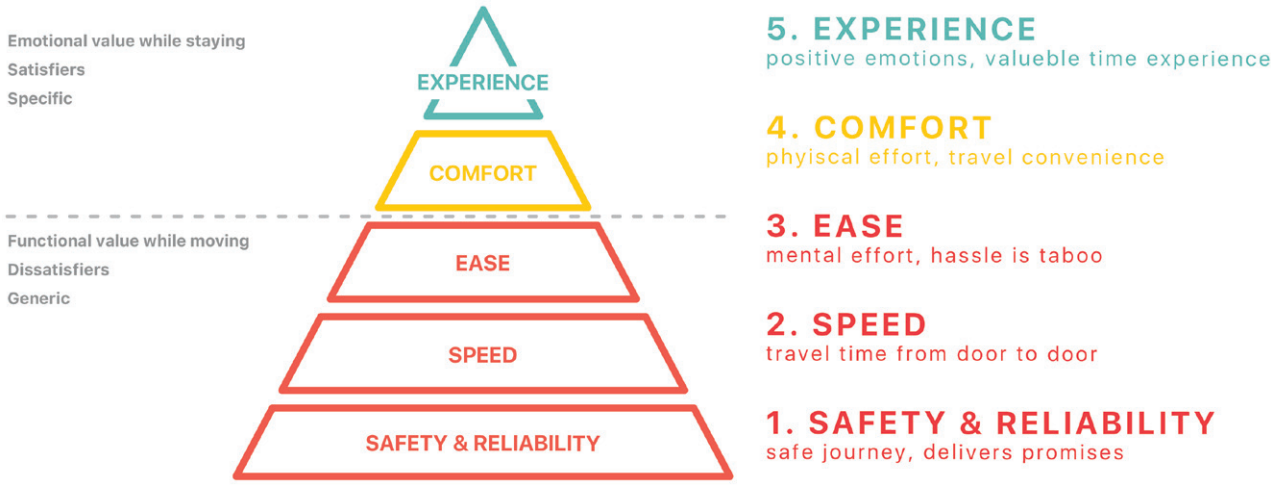


Figure 1.2: Pyramid of customer needs shows quality dimensions in order of importance (Van Hagen, Peek & Kieft, 2000)

Needscope Segmentation

Stations are public spaces in which many different kinds of people are participating in on a daily basis (see appendix 14 for the social demographics of passengers). These people all have generic needs such as reliability, speed, safety, cleanliness, customer friendliness, certainty, quietness and no unpleasant surprises (Van Hagen, 2009). However, the satisfiers located in the upper part of the pyramid are specific of nature. The needscope (Van Hagen, 2009) identified these specific needs and organised them across six need segments; namely the explorer, the individualist, the functional planner, the certainty seeker, the socializer and the convenience seeker. Figure 1.3 shows the model of the need segments. The percentages represent the size of the segments in the Netherlands. The model is built on the two dimensions which all human behavior is based. This makes that the six customer segments are still relevant today, even though the context of the public transport journey has changed. The two dimensions include the introverted-extraverted and social-individual spectrum. Introverted (bottom of the model) meaning that passengers see the train journey as a means to reach their destination and extraverted (top) meaning that passengers see the train journey as an option they can freely choose to reach their destination. Passengers that see the train journey as an activity to fulfil personal goals, are on the individual side of the spectrum (right). Passengers who are more orientated towards their surroundings, see the journey as a social meeting place and are on the social side of the spectrum (left).

The needscope shows a wide variety in needs that passengers long for. These needs can be contrasting at times, e.g. the socializer longs for an active interaction with others, while the individualist wants passive interaction. This variability shows the importance of the diversity within products and services in order to satisfy different kinds of personal needs. Chapter 6.2 shows how the final concept reacts to the wide range of different needs that are identified by the needscope.

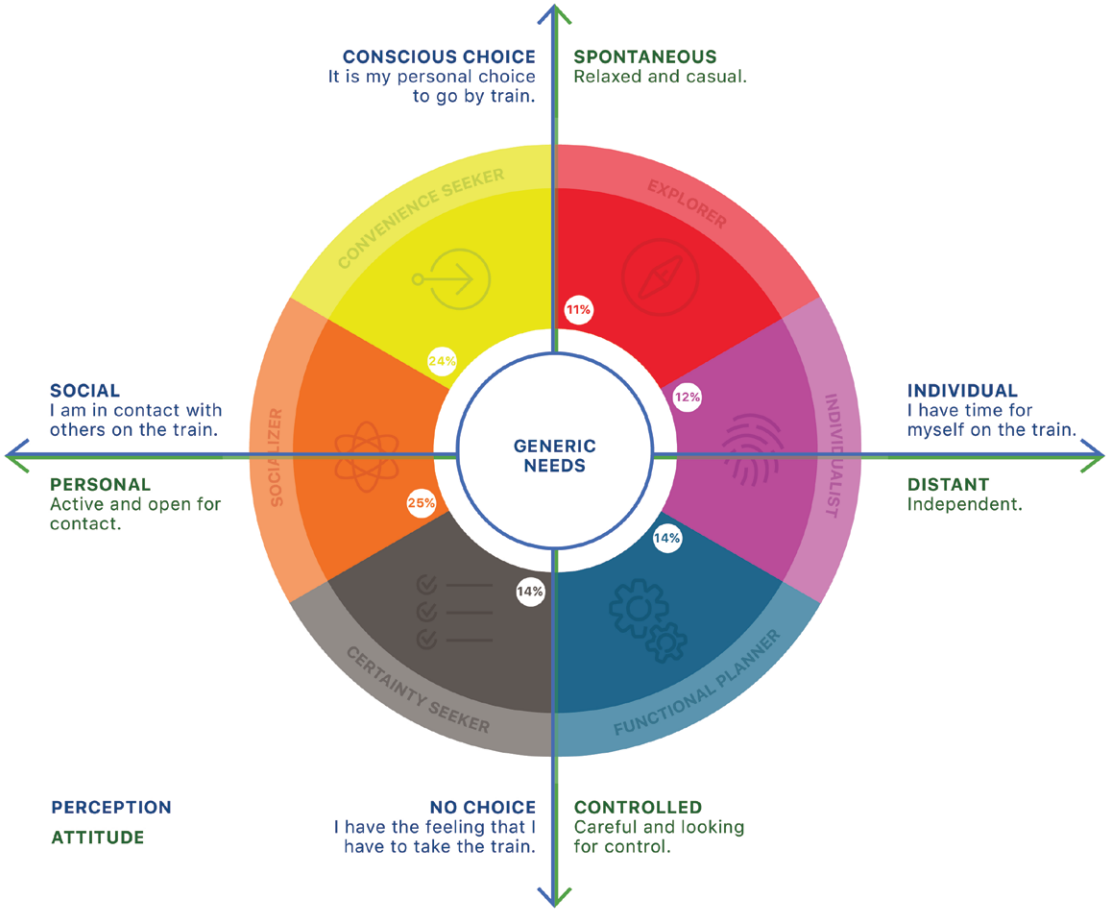


Figure 1.3: Need segments of train passengers (Van Hagen & Hulster, 2009)

Must versus Lust

Another segmentation that has an influence on the attitude of passengers towards their journey, is motivation orientation, i.e. must versus lust (Van Hagen, 2011). Must indicating that passengers are using the train for responsibilities such as going to school or work and crave less environmental stimuli. Lust passengers, on the other hand, are passengers that travel for recreational and social purposes and are more receptive for environmental stimuli. This difference in travel motive has an impact on the emotions as well (Van Hagen & Bron, 2014). For must travellers the journey is part of their daily routine and these travellers are reacting less emotional to certain situations. Lust travellers on the other hand experience the public transport journey more emotional, e.g. they are more enthusiastic in the anticipation of the journey and are more stressed during transfers (see figure 1.4).

This insight in motivation orientation emphasizes the importance of diversity of the participants (i.e. must and lust passengers) and scenario descriptions (i.e. commuting and social/recreational scenarios) during the generative research (chapter 3). The generative research also used the research regarding the emotions during specific journey episodes to validate the emotions that were identified during the generative research.

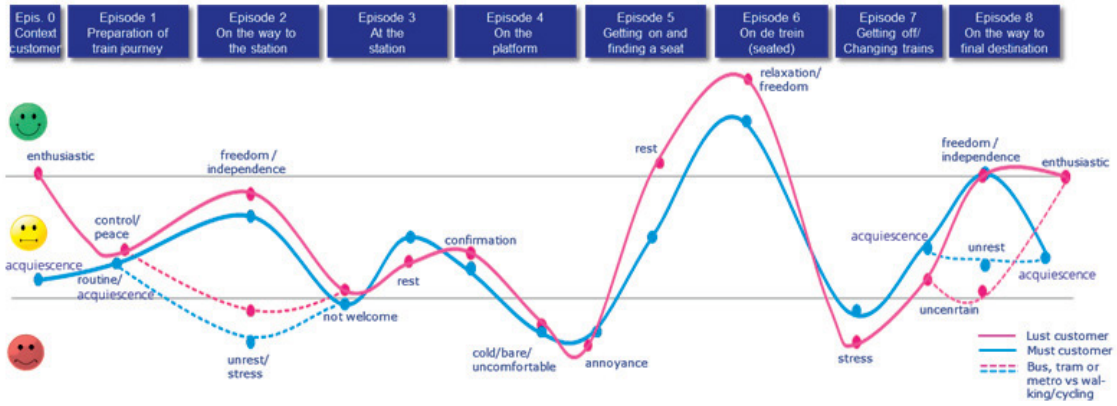


Figure 1.4: Emotional curve of train travel (Van Hagen & Bron, 2014)

1.3 INNOVATION FRAMEWORK

This section includes the NS innovation framework which incorperates nine design principles. These design principles have influenced the framing of the personal dilemmas (chapter 3.7) and the design direction during the concept ideation (chapter 4).

NS indentified three primary emotions that passengers want to experience (figure 1.5) (Altuïtion, 2015; Van Hagen & Van der Made, 2017). These include; control (I have access to the necessary information and understand the prevailing situation), appreciation (I feel that I'm being taken serious in terms of my wants and needs) and freedom (I am able to do what I feel like doing). The emotional core needs are coherent to the five customer needs of the customer needs pyramid (page 17, figure 1.2). In order to respond to the emotional core needs, nine action-focused design principles (figure 1.6) are identified (Van Hagen & Van der Made, 2017). The design principles focus on eliminating dissatisfiers and promoting satisfiers. The Kano Model (Kano et al., 1984) is applicable for the improvement of the experience of public transport, i.e. when functional needs have reached a plateau, the experience can only be improved by satisfying of emotional needs (figure 1.5).

Innovating for a public space, such as a train station, requires collaboration with many partners. To map these partners a stakeholder analysis matrix has been made (see appendix 2).

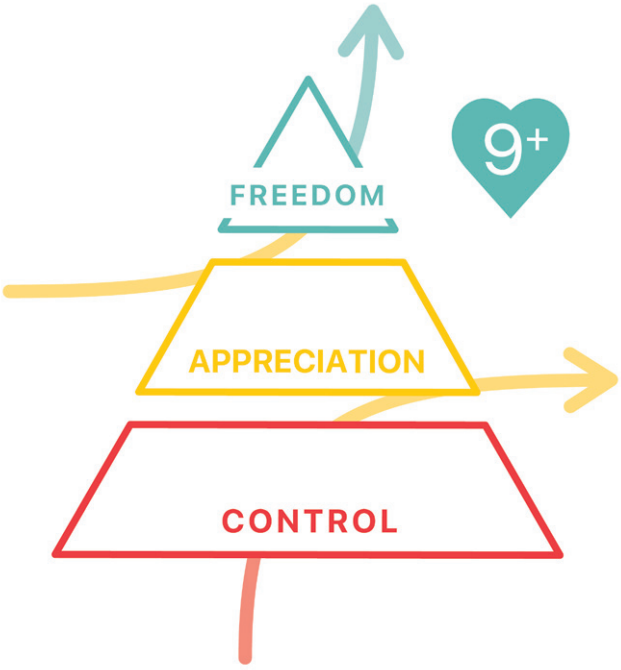


Figure 1.5: Three emotional core needs and the Kano model

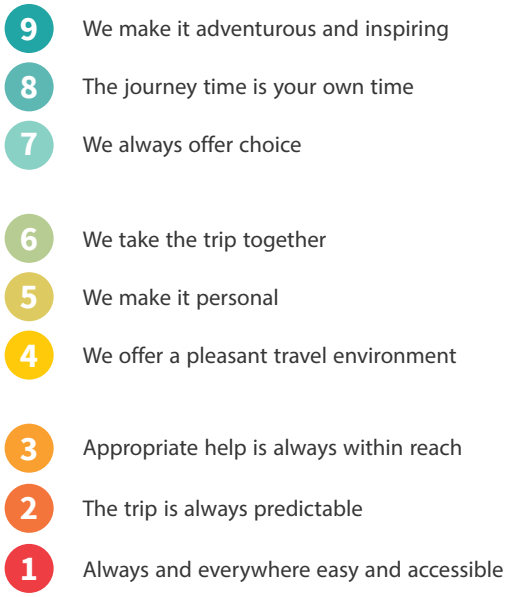


Figure 1.6: Nine design principles related to the three emotional core needs

EXPLORATIVE RESEARCH

Chapter 2
Pages 22-31

2.1 Setup interviews and observations
2.2 Results
2.3 Conclusion

02

explore small stations

Chapter 1 focused on earlier research on stations, passengers and innovation at small stations. This chapter describes the process and results of the explorative research. During the explorative research, stories from passengers at small stations are collected during interviews. In this way, explicit knowledge is gained about what people think about the experience at small stations. The explorative research also contains observations of small stations to gain more insight in what small stations look like. The knowledge obtained from the interviews and observations is part of the preperation for the generative research as it generated input for topic-cards, scenario descriptions and miniature role-playing world (chapter 3).

2.1 SETUP INTERVIEWS AND OBSERVATIONS

The aim of the explorative research is to explore how people experience small stations as a preparation for the generative research. The questions that are central to the explorative research are: What do people think regarding the experience at small stations? What do small stations look like? The first question is addressed by interviewing passengers. The second question is addressed by observing small stations.

Station selection

In order to choose a varied set of small stations, an evaluation of small stations has taken place. The factors that have been analyzed include the amount of passengers, travel motive, distribution of age classes, distribution of passengers (NS, 2016) and customer satisfaction (*Stationsbelevingsmonitor*, 2019). Another factor that has been incorporated is whether the station has interesting characteristics, such as a recent renovation or an interesting location. Based on these factors a varied set of stations has been selected, including the station Nunspeet, Rijssen, Raalte, Culemborg and Santpoort Noord. See appendix 3 for a table of the chosen stations.

Observations and interviews

The chosen stations are observed by making photos in order to get familiarized with the physical aspects of the stations and their surroundings. Further desk research has been executed which gave more insight into the local events and buildings. Opinions of the stations commented at google reviews and twitter have also been examined.

Subsequently after the observation of the stations, the passengers are invited to express their experience regarding a specific station. Interviewing is a 'say-research method'. Therefore, it only uncovers 'explicit' insights of passengers, i.e. interviewing allows people to express experiences they can put into words (Elizabeth, Sanders, William, 2003). A total of 59 interviews were executed in June 2019 on the platform of the stations themselves. At each station eleven to fifteen people have been interviewed. The interviews are conducted outside rush-hours and each interview lasted four minutes on average (see appendix 4 for the setup). The passengers were asked two questions; what are pleasant experiences at this station, and what are unpleasant experiences at this station? During the interviews the participants are invited to look around the station. This way the station itself becomes a conversation piece in which all kinds of memories are evoked. Throughout the interviews the participants are encouraged to share their honest opinion and follow-up questions are asked to uncover the why behind the participants' statements.

Analysis

The photos made during the observation have been used to make collages of the stations. The insights of the preparation and the stories about real experiences of passengers that are generated by the interviews have been summarized. The comments have been organised and described with the use of twelve topics. A quantitative analysis has been made of these topics in order to gain insight into the relevancy of each topic. A mapping has been made of the topics in order to gain insight in the relations between these topics.

2.2 RESULTS

5 Stations

The data of each of the five stations is summarized below. These summaries display a short introduction followed by pleasant and negative experiences regarding the concerning station. Collages are made to give an illustration of the main characteristics of station.

Rijssen

The station of Rijssen is a station that is located between a shopping center and an industrial area (figure 2.1). There is a bus stop at the station and a building in which a company has taken in.

Passengers at Rijssen perceived the station as safe due to open structure of the station and are satisfied with the bicycle and car storage and the arrangement of the station. People find it easy to access the station, due to the clear arrangement of the station. The abri's and the seats provide pleasant waiting experience while staying protected against the sun or rain.

Passengers mentioned that there are simply not enough roofs on the platform to protect all passengers against bad weather. Passengers often mentioned that they missed facilities such as food, drinks and a toilet as well. The ambiance was perceived as unpleasant since the platform looks outdated and bare.

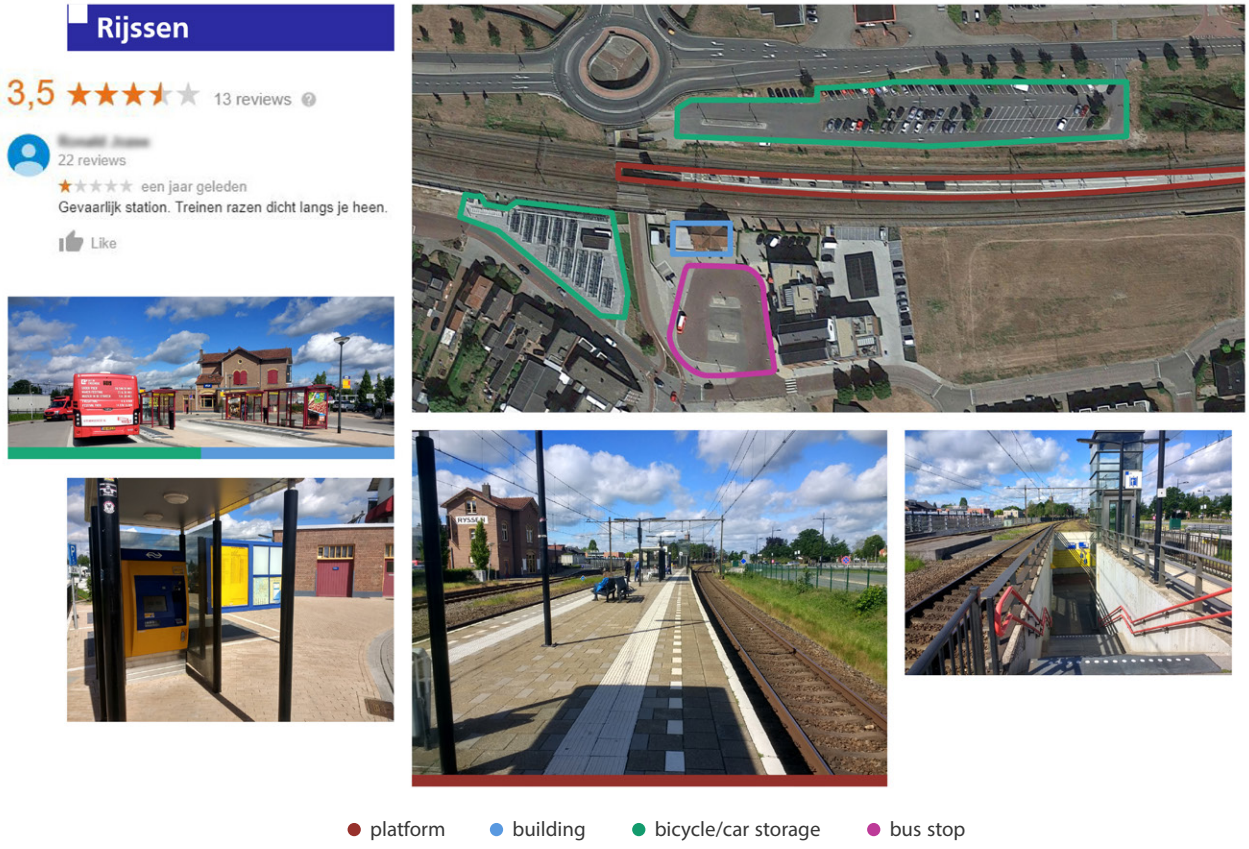


Figure 2.1: The station of Rijssen

Raalte

The station of Raalte is a station that is located next to a neighborhood and relatively close to the city center (figure 2.2). There is a bus stop and a restaurant located at the station. There is an open crossing that provides access to the train platform.

Passengers at Raalte appreciate the abri's, the sufficient space for bicycles, and arrangement and the accessibility of the station. Due to the small size of the station and the arrangement, people felt that the station is logical. One passenger said: "The station is well arranged, because it is so small little can go wrong".

At station Raalte people mentioned that there are not enough shelter places when it rains or snows. It has been often mentioned that there is not enough car parking space. Regarding the ambiance one passenger said: "I find the station bare and empty, there is no wow-factor and no surprises". At the time of the interviews, the café was not open, people were disappointed that it was not open to get a cup of coffee.

Figure 2.2: The station of Raalte

Nunspeet

The station of Nunspeet is a historical monument and is located between a neighborhood and nature (figure 2.3). The direct environment contains restaurants, supermarkets, a bus station and a forest with many recreational activities.

The most mentioned pleasant aspect of the station is the indoor waiting room which is heated during the winter. The passengers like the fact that there is lots of space under the roof span under which people can protect themselves against the rain or sun. Passengers perceived the ambiance as attractive and nostalgic due to the old building style which gives a sense of authenticity.

Many passengers mentioned that they desire food and drinks services at the station, although it was also mentioned that there are places to get food or drinks in the immediate area of the station. Some mentioned that the appearance of the station could benefit from new elements that are more modern, since the station has been looking the same for a long time. It was mentioned that some spaces, especially the platform in the back of the station, look unattractive and boring due to its emptiness and grey colours.

Figure 2.3: The station of Nunspeet

Santpoort Noord

The station of Santpoort Noord is located next to nature consisting of forest, dunes and the beach which is reachable on foot (figure 2.4). There is an empty building at the station and a tunnel. Since May 2019 a pilot has been launched to promote the station as a gate to nature targeted at the people who live in the big cities such as Amsterdam.

Many passengers found the decorations in the tunnels regarding the local nature pleasant, since it makes the tunnel no longer bare. The decorations evoke memories about earlier experiences passengers have about the local environment, which makes it better than 'random' art according to some passengers. People appreciate the shelter areas at the station.

The dirty tunnel that stinks was mentioned most often as an unpleasant feature of the station. The sheltering was often mentioned, people find that there is not enough of shelter when it rains. Passengers of Santpoort Noord are longing for a waiting room that is more closed of, to protect them against wind. The passengers perceive the station as unsafe due to vandalism.

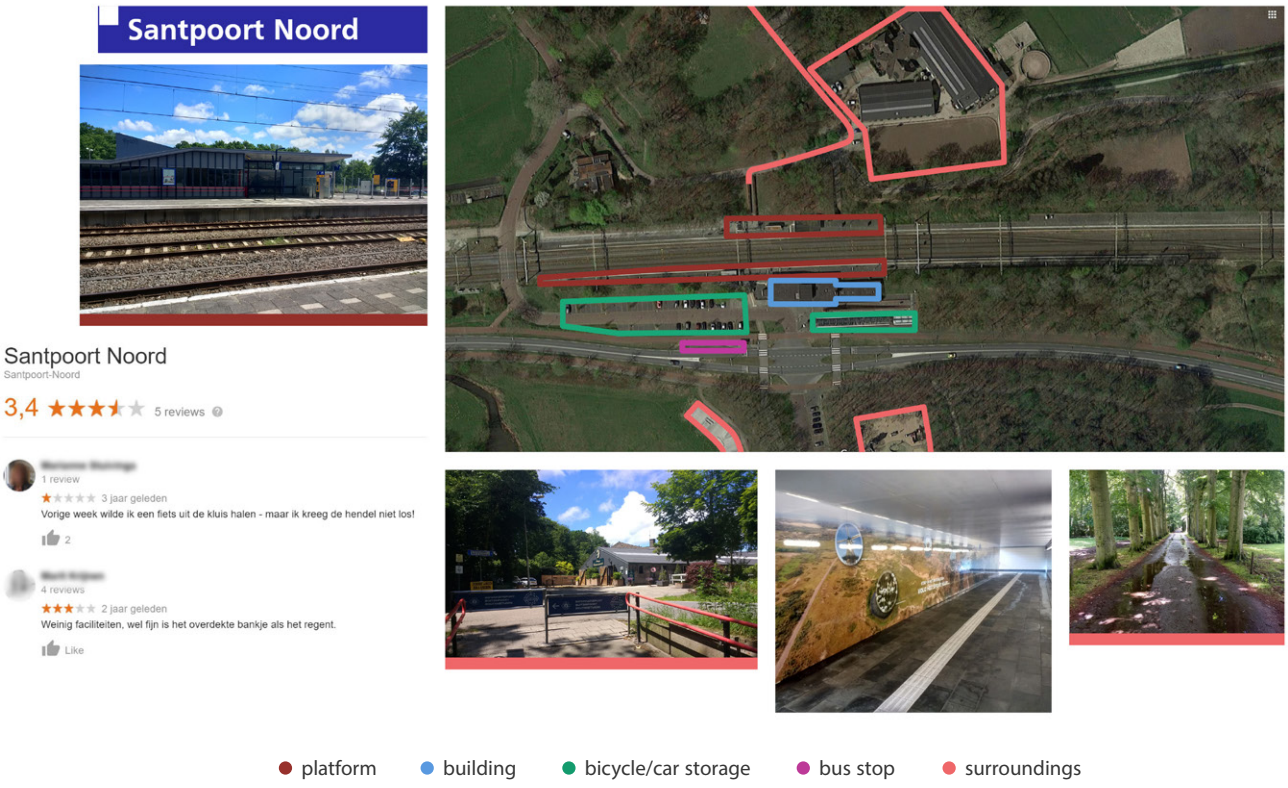


Figure 2.4: The station of Santpoort Noord

Culemborg

The station of Culemborg is a station that is located next to a neighborhood (figure 2.5). There is a 'station livingroom' which offers food and drinks and a place to have a seat. At the train platform there is a closed of abri that is arranged as if it is a living room environment and plays the local radio of Culemborg. There is a café located next to the station.

Closed of waiting areas are perceived as pleasant, since it allows passengers to stay out of the wind and rain and distance themselves from noise. The living room is positively perceived, since it gives people something to look at. Passengers mentioned that the locality of the station increases the chance that people encounter familiar people which adds a fun factor.

The passengers experience discomfort from smokers who refused to smoke at the smoking areas. Another discomfort was that the elevator was once defect. However, it was pleasant that people helped out without asking with taking the bicycle upstairs. The passengers perceived the station as old and bare, the passengers felt that modern elements on the station would be beneficial for the ambiance.

Conclusion Observations

The five stations show the diversity between small stations. Appendix 5 shows the differences between these stations regarding twelve relevant experience topics (see next section). Each station is different, this is especially noticeable when focusing on the differences regarding the environmental differences (range from nature, to neighborhoods, to industrial areas, to restaurants), facilities (waiting areas, toilet, food and drinks) and social safety (vandalism, loitering people). Therefore, the opportunities to enhance positive experience and dismantle negative experience are different as well. E.g. some stations have the problem of a dirty tunnel that smells, while others do not have enough shelter to protect passengers against bad weather. Because of these explicit differences is it important to dismantle negatives features and exploit the positives.

However, it can also be said that there are commonalities, since often small stations have a clear arrangement due to the small scale of the station. Small stations also have in common that food and drink services are very minimal.

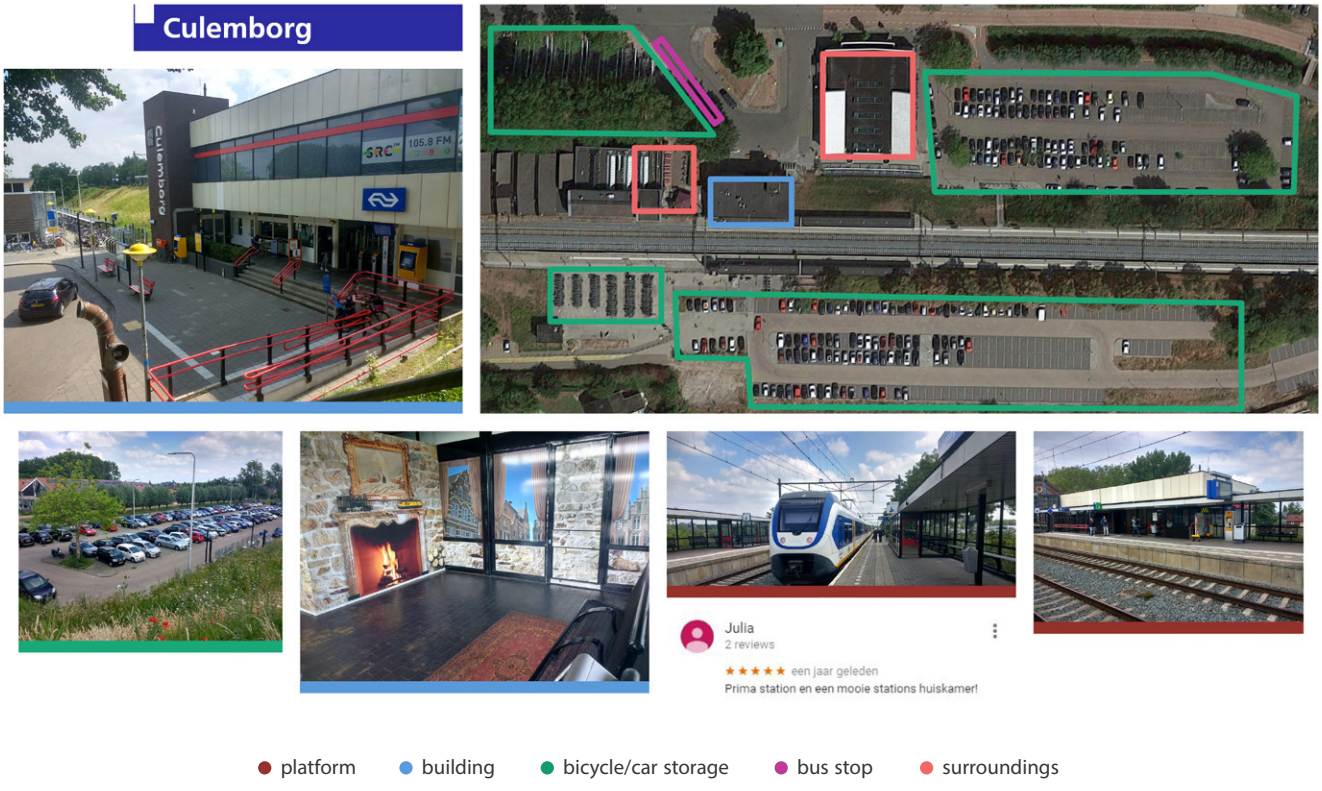


Figure 2.5: The station of Culemborg

Twelve Topics

Based on the 59 interviews, twelve topics have been identified. Starting with the most frequently mentioned topics these include: ambiance, waiting area, accessibility, arrangement, food/drinks, bicycle/car storage, cleanliness, safety, seating, travel information, toilet and smoking. The scores of the topics regarding to the five individual stations can be found in appendix 5. Only six comments have not been allocated to a topic. Figure 2.6 shows the percentages of how many times the topics were mentioned per participant both positively or negatively all the stations combined. I.e. the percentage is the amount of times a topic was positively or negatively mentioned divided by 59 participants.

The total amount of positive comments is larger than the amount of negative comments, respectively 115 and 79. Often passengers had positive and negative comments regarding the same topic. For example one passenger said: "I find it pleasant that the station is easily accessible by car or bicycle. However, sometimes there are not enough parking places and I have to park my car in the neighborhood". This shows that the type of passenger determines what catches the attention regarding pleasant and unpleasant experiences. This dynamic is coherent to the theory of the six passenger needs segments (Van Hagen, 2009).

The next paragraphs summarize the most important insights for each topic.

Ambiance: Character and Liveliness of Station

Ambiance is an aspect that relates to nostalgia and locality. People are more prone to perceive a station with historical elements and decorations as a pleasant ambiance, especially when this is authentic to the local context. Passengers also appreciate it when a station contains a surprise for its travellers which makes the station less boring. Elements that have a negative influence on the ambiance are the emptiness and greyness of stations. These characteristics can cause a lack of stimulation during waiting (Van Hagen, 2011).

Sufficient Sheltering Waiting Areas

Sheltering is an aspect that is widely praised when it is present and disliked when it is missing. Although the interviews were conducted in sunny weather, passengers still remembered the cold and wet weather conditions of the winter. At some of the stations people share the opinion that more shelter is necessary, especially in cold and rainy conditions when it is crowded. The station of Nunspeet which has a lot of roofs and a waiting room that is heated during the winter shows that people perceive the waiting area experience as positive (58%).

Accessibility to Station

At stations of small villages, people are often content with the fact there is a station at all, which allows them to travel by train. Passengers like it when stations are easily accessible by bicycle or car and when the station is on ground floor.

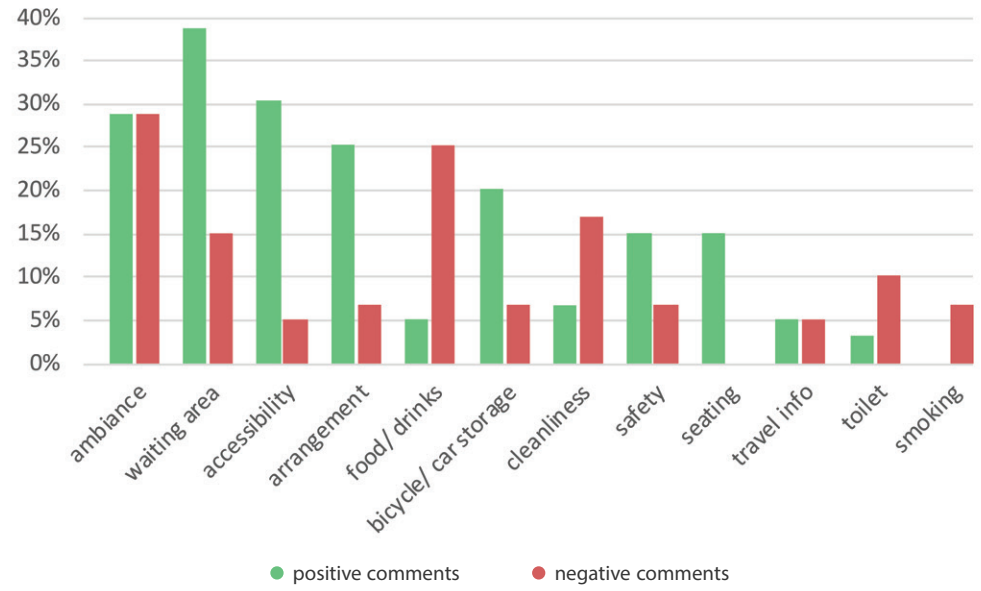


Figure 2.6: Percentage positive and negative comments per participant

Clarity and Functionality of Arrangement

Small stations often have only two railways which makes the structure of the station simple and understandable for the passengers. The arrangement of stations are sometimes separated due to the development of the station over the years, which causes an inconvenient separation between functionalities.

Availability of Food and Drinks

Food and drinks are desired by passengers. People find it pleasant if there are at least food and drink services nearby, especially when they have to wait for a longer periods of time.

Amount of Bicycle and Car Storage

Storage for bicycles and cars is a practical facility that passengers think is important. People often appreciate the expansion of bicycle and car spots.

Cleanliness of Station

Stations that are not clean are dissatisfying passengers. Waste such as cigarettes on the floor or the smell and moisture in a tunnel are perceived as unpleasant.

(Social) Safety

Aspects that increase the experience of feeling safe on the station are open arrangements, check-in gates and familiarity of fellow passengers. Influences that negatively impact safety are confused people, loitering teenagers and vandalism. People mention that high speed trains make them feel at unease.

Seating at Station

Seats are appreciated since they allow passengers to rest and do other activities while they are waiting, such as working or reading. People think that there are enough seats at stations.

Clarity and Adaptability of Travel Information

People appreciate the travel information at stations, especially when there is an incident and the schedule has changed.

Availability of toilet

The facility of a toilet is not on the top of the priority list, but is practical at the times that it is needed. It seems that passengers mostly start mentioning the need for a toilet when the shelter facility is already sufficient.

Smoking

Passengers complain about people who smoke outside the designated smoking areas.

Conclusion Interviews

The twelve topics show the complexity of elements that influence the experience at small stations. Appendix 6 shows a relation mapping regarding the twelve topics. This scheme maps how the topics relate to each other and what positive and negative experiences influence the topics.

2.3 Conclusion

The explorative research, which included observations and interviews at five different stations, helped to gain insight in how people perceive small stations. This resulted in the identification of many instances that people perceive as positive or negative experiences. Most of these experiences can be sorted by twelve topics, namely: ambiance, waiting area, accessibility, arrangement, food/drinks, bicycle/car storage, cleanliness, safety, seating, travel information, toilet and smoking. A commonality between all the stations is that people feel that the waiting area is important; people widely appreciate it when a waiting area that protects them against the weather is present. Stations at which the need for a waiting area has been satisfied, the longing for toilets, food and drinks are significantly more mentioned in comparison with the other stations at which the waiting area needs are not satisfied. This dynamic is also conform to the hierarchy shown in the pyramid of customer needs (section 1.2). Each station is different, this is especially noticeable when focusing on the differences in positive and negative experiences as well as the surroundings. Because of these differences is it important to dismantle negatives elements and exploit the positives.

Overall it can be said that the explorative research gained insight in the explicit dynamics of the experience at small stations as well as a better understanding of how contextual factors influence the experience. The knowledge obtained from the interviews and observations is part of the preperation for the generative research. The results will provide input for topic-cards, scenario descriptions and contextual information for the design of the miniature role-playing world (chapter 3).

GENERATIVE RESEARCH

Chapter 3
Pages 32-57

3.1 Setup generative sessions
3.2 Session 1
3.3 Session 2 & 3
3.4 Session 4 & 5
3.5 Analysis
3.6 Themes
3.7 Dilemmas
3.8 Choosing a design-worthy dilemma

03

digging deep

The explorative research (chapter 2) generated input for elements that are made during the generative research, e.g. topic-cards, scenario descriptions and miniature role-playing world. This chapter presents the process and the results of the generative research. During the generative research, five sessions took place in which the participants expressed their experiences through creative exercises and discussions. This resulted in five themes and eight personal dilemmas that are relevant for the experience at small stations. Three of these dilemmas have been selected to be the starting point of the concept ideation phase (chapter 4).

3.1 SETUP GENERATIVE SESSIONS

Structure of Generative Sessions

The goal of the generative sessions is to gain insight into the emotions and longings of passengers regarding relevant themes that play a role in small stations. A total of five generative sessions have been executed in which five or six travellers of small stations participated. Each session had an effective duration of two hours (see appendix 9 for an example session script). The sessions are structured in such a way that the output of one session is the input for the following session (figure 3.1). The topic cards functioned as a starting point for the collage making in the first session. These cards are based upon the results of the explorative research. The collage making helped people to describe their ideal small station experience and to identify themes. This contextual information provided input for scenario descriptions that are used at the second and third session. Within these sessions longings and problems became apparent through enactment. These desires and problems provided input for the last two sessions. Session four and five contained low-fi prototyping in which the first idea directions were explored. These artefacts made by the participants represent the longings behind these low-fi prototypes.

Each session contained an introduction in which the participants were informed about the project, could introduce themselves and could share a preparatory assignment they executed at home as a warm-up. The sessions took place at the Customer Experience Lab of NS, which is a creative and inspiring environment. After each session a meal took place, sharing a meal together created the opportunity to informally talk about the experience of stations.

Recruitment

Five generative sessions have been executed in which a total of 26 travellers of small stations participated. It is required that each participant travels regularly (at least six days in the past twelve months) through a small station. 117 people responded to an invitation that has been send via the NS Panel. The selection process focused on diversity between age, gender and travel motive. Additionally, four participants were recruited from the personal network, since young passengers were not sufficiently represented by the people from the NS Panel. The last two sessions contained two Industrial Design Engineering students who are familiar with creative processes. See appendix 7 for an overview of the participants.

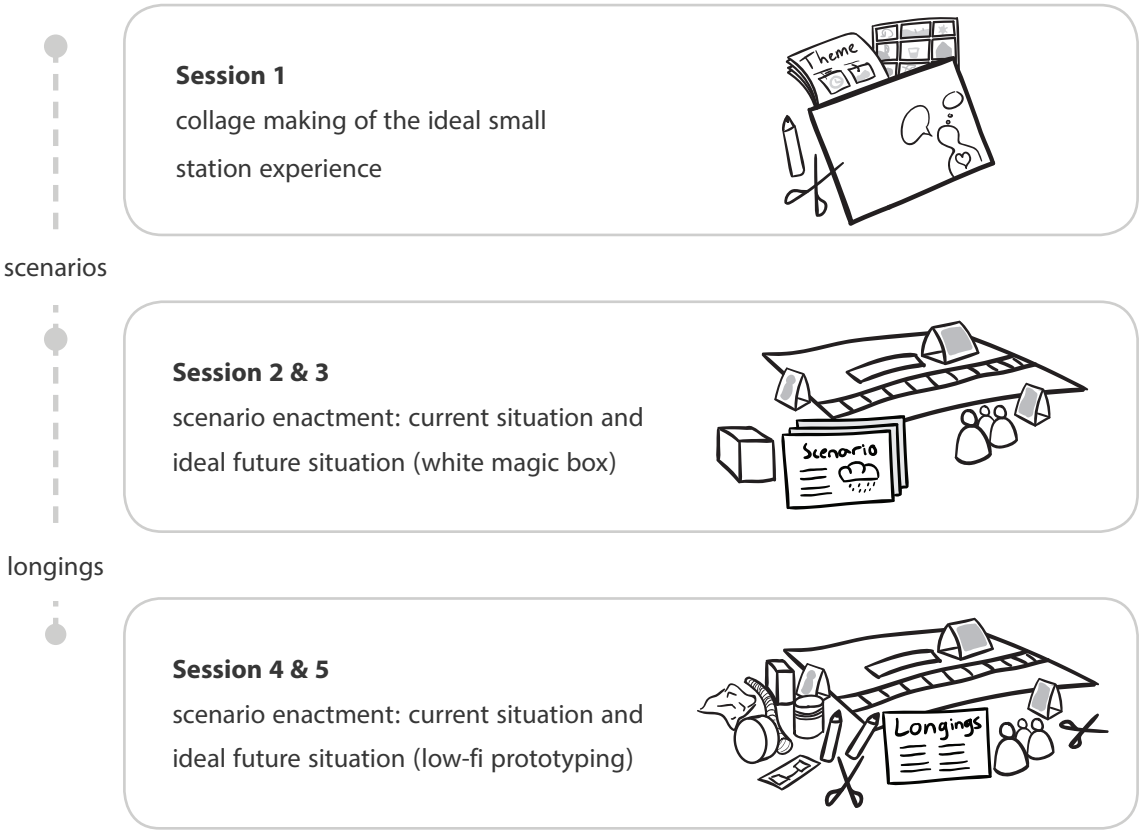


Figure 3.1: Overview of the five generative sessions

Sensitizing

Sensitizing is the preparatory process that participants go through in order to get familiar with their experience regarding small stations. It cannot be expected that people are creative in an instant. Therefore, a week before each session, the participants received a sensitizing booklet. The booklet consists out of exercises that stimulate the participants to explore the top two levels of the context mapping framework (Stappers, Sanders, 2012) through say and do exercises. This stimulates people to reflect upon their own personal public transport experiences while they go through the first two stages of creativity (Wallas, 1926), namely preparation (e.g. consciously thinking about the experience of small stations) and incubation (i.e. let it sink in for a moment). The entire sensitizing booklet is shown in appendix 8.

The sensitizing booklet is designed in a way that gives the participants enough clear instructions, since most of them are not used to work with creative methodologies. However, the setup of the exercises remain open enough for people to share their personal experiences and thoughts. The booklet includes an informal, fun and neutral appearance to stimulate the participants to take ownership of the booklet. The sensitizing booklet contains the following three exercises:

Positive and Negative Experiences

In this exercise, the participants make photos of a pleasant and an unpleasant experience at their station (figure 3.2). Additionally they explain why the experience is pleasant or unpleasant.

Say Exercise

Within the text balloons, participants share their memories regarding small stations (figure 3.3). Each text balloon contains a sentence that the participant needs to finish. People find it easier to share experiences this way, in comparison to a question and answer format. The sentences include variation in specificity. The specific sentences facilitate concrete starting points, while the global sentences stimulate participants to freely associate and be creative. For example, 'while waiting on the platform I keep myself occupied with...' (specific) and 'I feel the station is missing...' (global).

Timeline Activities of Public Transport Journey

The timeline exercise allows the participants to reflect upon their public transport journey as a whole (figure 3.4). The participants describe the activities that take place and attach emotions to these words. The booklet contains an example timeline that is not related to public transport, examples of emotions and emoticons are provided to make it clear and easy to use.

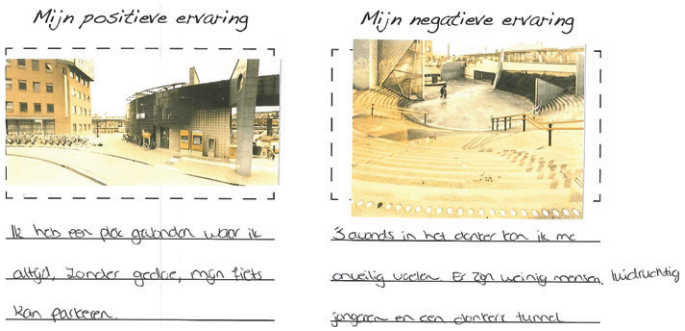


Figure 3.2: Exercise that helps participants observe the setting of a small station

Figure 3.3: Exercise that helps participants express how they think about their station experience

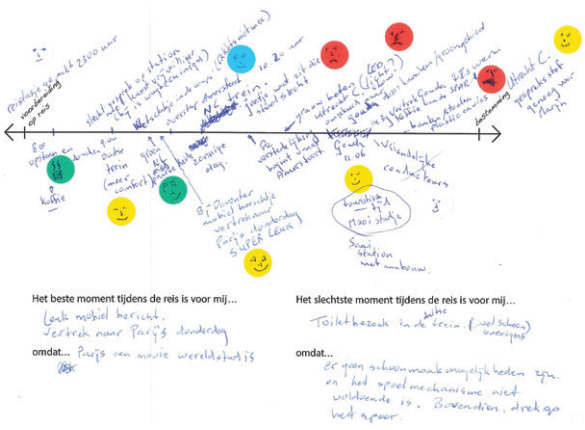


Figure 3.4: Exercise that helps participants think about their activities and their emotions

3.2 SESSION 1

After the introduction in which the participants shared their current public transport journey, the participants made a collage about their ideal station experience of the future (figure 3.10). Afterwards, the participants discussed these collages and identified themes. The first generative session is explorative of nature as the main goal is to further explore themes that are relevant to small stations.

Make Activity: Collage making

Collage Making

The participants completed the collage template in which they describe their ideal journey experience through a small station. The participants selected one station for which they describe their ideal experience in order to give them more structure and guidance. After 25 minutes the participants titled their collages. The title stimulates them to summarise their experience which is helpful for the discussion. It is also stimulates participants to emphasize what is most important to their ideal experience.

Stimulus Set

The stimulus set, that the participants used for the collage making, contained 108 images (figure 3.7) and six topic cards (figure 3.8). The topic cards were based upon relevant aspects that have been identified during the explorative research. The topics included liveliness, predictability, beauty, reliability, nostalgia and modernity of which each participant selected one or two. The topic cards also contained blank space in which participants could add their own perspective to these topics.

The composition of the images is important since its purpose is to trigger associations (Stappers & Sanders, 2012). The images contained diversity regarding subject (people, icons, locations, objects) and variation between positive and negative images. The images also contained different levels of ambiguity, i.e. some images are explicit (they can be interpreted in a limited number of ways and provide concrete starting points for the participants) while others are abstract (these images allow people to work more associatively and creatively). To give an example: an image of a cup of coffee is explicit and an image of colours with lines between them is abstract.

Collage Template

The sheet on which participants made their collage was prestructured. The sheet contained a description of the exercise and a blank space on which the selected station can be written. The template included an experience figure (figure 3.5) as well, that stimulates participants to think about their personal experience (Bystedt, Lynn, Potts, 2003). The experience figure consisted out of a thought balloon (I'd be thinking…), a say balloon (I'd be saying…) and a heart balloon (I'd be feeling…).

Say Activity: Presentation & Discussion

After the collage making the participants presented their ideal experience on the basis of their collages (figure 3.9) and a discussion took place. The session moderator asked the participants probe questions to dig deeper into why a certain experience is desired or undesired. Questions were also asked to the group as a whole, e.g. what elements do you recognize in the collages of others? What are differences? And what are surprises? The moderator asked a final question to conclude the session: what are the most important themes and insights regarding the small station experience? The participants identified important themes during the discussion, these were written down on a flip over (figure 3.6).

Figure 3.5: Experience figure: Arjen's ideal future experience

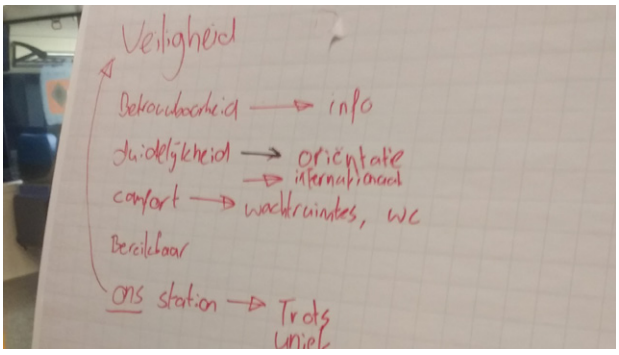


Figure 3.6: Themes mentioned during the discussion were written down

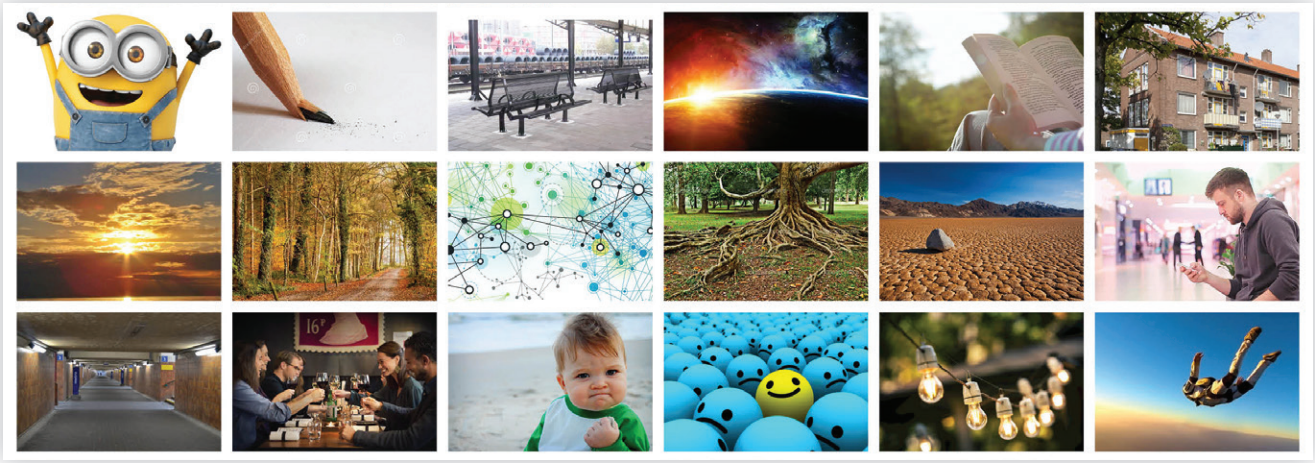


Figure 3.7: Stimulus set included a varied selection of 108 images

Figure 3.8: Topic card based upon the interviews, edited by Wim

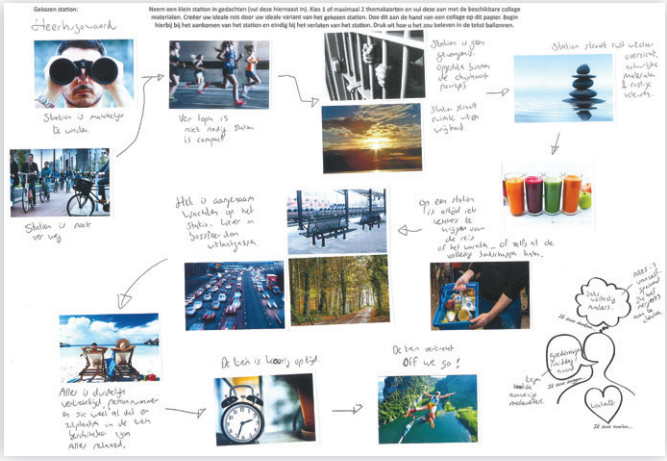


Figure 3.9: Arjen's collage about his ideal station journey

Figure 3.10: Participants are making the collages in the UXLab of NS

3.3 SESSION 2&3

After the introduction the second and third session invited the participants to roleplay a current practice scenario with the aim of identifying problems and longings. Thereafter, participants enacted future practice scenarios with the use of the white magic box which allowed them to describe their ideal experience. Each sessions repeated this process three times. The main goal of this round of sessions is to identify problems and longings that passengers experience at small stations. The miniature roleplay is suitable to uncover these problems and longings since it allows people to immerse themselves into the scenario and to reflect upon problems and longings they experience. Another key characteristic of miniature roleplaying is that it enables participants to communicate physical interactions within the user scenario that includes actors, actions, events and context. This way all participants are able to see what is happening in the miniature world and talk about the same scenario.

Tools

The information generated by the explorative research as well as the first session provided input for the descriptions of relevant scenarios (figure 3.12; appendix 10). The scenario cards give contextual information (time and date, weather conditions, activities and travel motive) in order to provide direction for the participants to enact a scenario.

The map (figure 3.13) aligns with characteristics of a small station and has variation in context e.g. nature, road or neighbourhood. The map is illustrated which creates an abstract feel to it in which the participants feel free to modify. Additionally, the miniature world included realistic images of station elements, which made it clear what each element of the map represents (figure 3.11). These images included images of passengers, attributes (e.g. mobile phone, bag, coffee) and objects that are common at stations (e.g. waiting cabins, check-in gates). The images could be moved around freely to allow the participants to enact the scenarios in a playful manner.

Current Practice Scenarios

A selected participant (to whom the scenario is familiar) enacted a current practice scenario (figure 3.12). The moderator asked the rest of the participants to observe what problems occurred during the scenario enactment. Subsequently, the participants discussed problems and longings that they had identified. Through enactment, problems become apparent because the participants go through each step of the experience. An example of an insight that became apparent was for the scenario in which the passenger had to wait for 29 minutes: as the participant enacted the scenario it became apparent that he had a longing to go outside the station to seek distraction, but found that the check-in gates created a high threshold.

Future Practice Scenarios

After the current practice scenario, the participants used a white magic box to enact a future practice scenario (figure 3.14). This box solves a problem or fulfils a longing somehow (for this exercise it does not matter how the white magic box exactly works) and this allows participants to creatively envision what the ideal experience looks like in response to the problems and longings that were identified during the enactment of current practice scenarios. The miniature world enabled to discuss how the white box has an impact on the rest of the station's context, events and actors. An example of a white box that was mentioned was a white box that creates an escape at any time in reaction to the problem of feeling closed off in small area's such as the waiting cabins or the tunnels.

Figure 3.11: The miniature roleplay includes different kinds of actors, artibutes and contextual elements

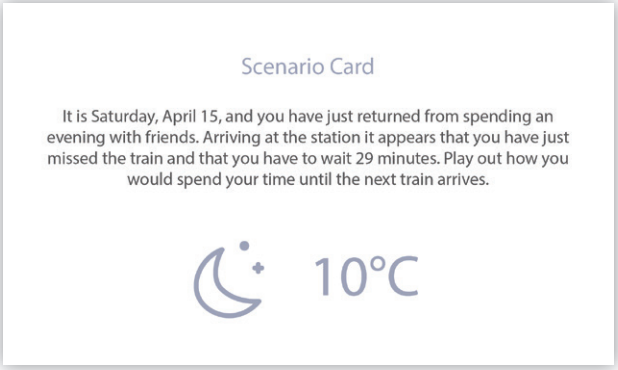


Figure 3.12: Scenario cards include contextual information

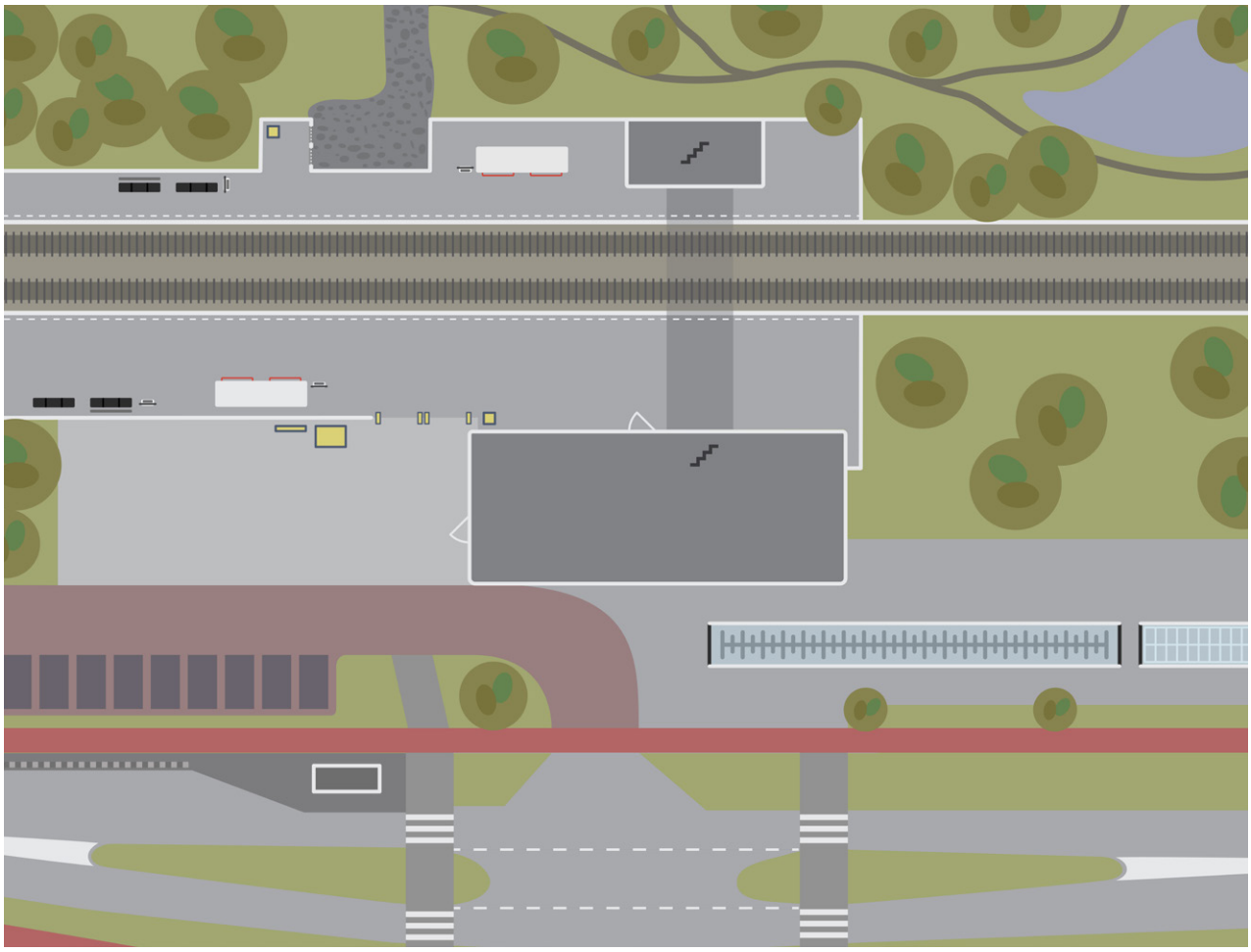


Figure 3.13: The miniature map of the station in basic elements of a small station

Figure 3.14: Scenario cards are used to play current practice scenarios, subsequently the participants used a white box for roleplaying future practice scenarios

3.4 SESSION 4&5

Session two and three resulted in identified problems and longings which is the input for the fourth and fifth session. In these last sessions, the participants make, as a reaction towards these problems and longings, low-fi prototypes to explore idea directions. The goal of these sessions is not to create perfect concepts, but to let participants create artefacts that represent their most important problems and longings. One master student Industrial Design Engineering was included amongst the participants in each session. The moderator did not instruct or introduce these students differently, but they were supportive to fellow participants since they are used to the creative processes.

Tools

The tools that have been used in the second and third session are used in the last two sessions as well, with the exception of the white magic box. Instead of the magic box a set of props have been used for the exploration of future practice scenarios (figure 3.16). These props are a set of random objects that allow participants to embody their ideas in a three dimensional model. Examples of props that have been used are: tubes, motherboard, cloths, wallpaper, game controller, paper and a tin can. Basic tools such as scissors and glue have been provided as well. The materials vary in ambiguity in similar ways as the collage stimulus set varies in ambiguity, i.e. some material are explicit of nature (e.g. electronics or game controller) while others are raw (e.g. paper or cloth).

Session 4

The fourth session used two posters with quotes of previous sessions that represent a certain problem or longing (figure 3.15). The first poster is about the waiting experience with quotes such as "I always try to plan my journey ahead to prevent waiting a long time at the station. However, in occasions that I do have to wait I want to wait as pleasantly as possible" and the other poster was about clarity with quotes such as "I find clarity at the station pleasant, because I don't want to think about traveling. I wait more pleasantly when there is structure and clarity about the next episodes of my journey". This tool facilitated a discussion in order to familiarize the participants with the current experiences at small stations. In this discussion people could react to these quotes and add new ones themeselves. Follow-up questions were asked such as: Do you recognize the experience? Do you agree with it or does it surprise you? Do you have an experience of your own you would like to add?

Subsequently the participants made their low-fi prototypes in reaction to the discussed problems and longings. The participants were given 25 minutes to create their artefacts. The prototypes allowed for a discussion to take place in which people could share their ideas and how it reacts to a problem or longing they experience. Two rounds of this ideation and discussing took place in the fourth session.

Session 5

There are differences in the approach between session four and session five. After the fourth session a participant told that she found it difficult to make the transition from the problems and longings to creating ideas. To resolve this difficulty, themes with associated problems were written down on a flip-over in the fifth session. This made it easier to assign more specific problems or longings to the participants. Another difference with the fourth session is that in the fifth session scenario cards were used again to enact current situations, just as has been done during the second and third session. This allowed the participants to familiarize themselves more with the issues at small stations in an immersive manner that stimulates them to think more about their own experiences. This approach took more time and allowed for only one round of scenarios. However, the second round of scenarios with the white magic box was executed since there was some time left and these rounds take less time.

The artefacts made by the participants, not only contain an idea that reacts to a problem or a longing, but represent a problem or longing as well. See figure 3.17 and 3.18 to see examples of artefacts made by the participants.

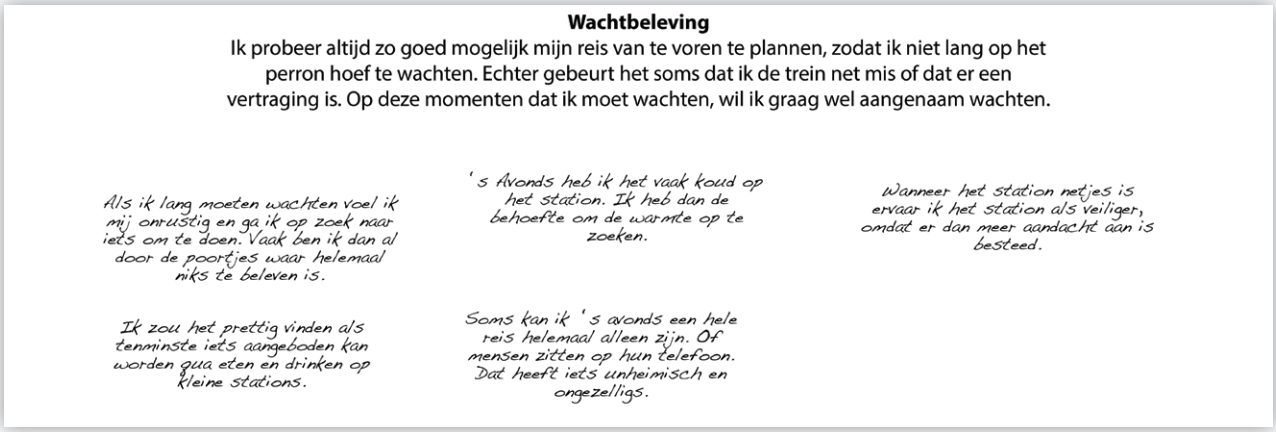


Figure 3.15: Session four contained longings posters with quotes from earlier sessions

Figure 3.16: Participants use props to translate their ideas into rough prototypes

Figure 3.17: Jessica's chat pole that enables people to talk with passengers from random station locations to prevent feeling unsafe & abandoned

Figure 3.18: Paul's news pole with sockets, news and a heating system to attract people towards the same location to create more social comfort

3.5 ANALYSIS

The generative sessions resulted in a large set of raw data consisting out of sensitizing booklets, topic cards, collages, low-fi prototypes, pictures and audio recordings. This raw data set is structured in order to analyse it. Therefore, quotes are extracted out of the audio recordings and mapped in order to see patterns (figure 3.19). The structure in which the quotes are classified, originate from the themes mentioned by the participants during the sessions themselves. The themes include clarity, safety, waiting experience, ambiance and facilities. These contain sub-themes, as well. The next layer that has been added are emotions which are connected to the quotes. The taxonomy of positive emotions (Desmet 2012) and the emotion typology (Fokkinga, 2019) have been used to identify emotions. Quantitative research regarding the emotions of the public transport customer journey (Van Hagen & De Bruyn, 2015) correlate with these emotions, such as worry, distress, relaxation, fear, annoyance, bored and joy. The qualitative research also shows that these emotions are common at the specific journey episodes that occur at small stations (i.e. departure and arriving station). The final layer added conflicts that indicate contradictions to the themes or quotes.

The analysis provides a blue print for the themes and dilemmas that are shown in the following sections.

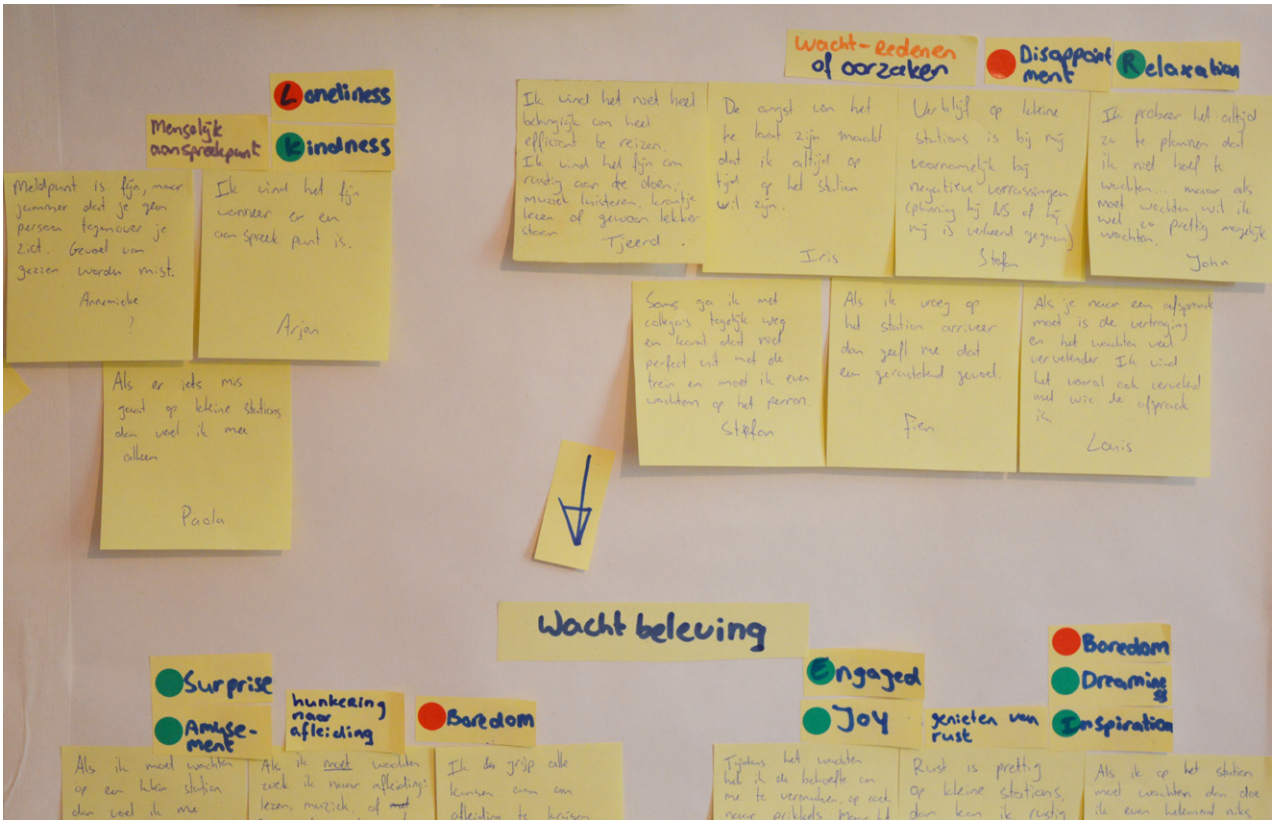


Figure 3.19: Snapshot of pattern mapping with the use of quotes

3.6 THEMES

The analysis mapped five themes which include clarity, safety, waiting experience, ambiance and facilities. This section explains the meaning of these themes as well as the emotions that are related to these themes. The themes originated from personal stories of passengers. Therefore, describtions of the themes include quotes and artefacts created by participants.

Clarity in the Anticipation of Upcoming Journey Episodes

This theme focuses on the anticipation of the train journey which is often perceived as a pleasant part of the journey (figure 1.5). Passengers perceive the train as an oasis in which they spent time for themselves, e.g. working, sleeping, eating, doing homework or reading. Passengers view the small station as a place that prepares them for the upcoming part(s) of the journey. While passengers are waiting on the platform questions arise such as ´Where will be the most empty seating spots in the train?´ or ´Where will be the first class? or 'Where will be the entrance for bikes?´. Figure 3.21 shows Fréderique's collage in which she longs for a clear travel experience in which she knows where the entrance of the wheelchairs will be. This theme could be summarized as 'Don't make me think, don't make me worry' (as one of the participants mentioned).

Negative Emotions

Negative emotions that arise are **worry** and **distress**, which relates mostly to unknown aspects of the upcoming journey episodes (see figure 3.20 and 3.21).

I find it an annoying moment when the entire platform is full of people. Then I think to myself: Shit… I have to stay on the train for 40 minutes and I do want to sit - Tjeerd

I am tensed when I know I have to run to get to the right entrance with my bike - Annemieke

Positive Emotions

Positive emotions that arise are **relief** and **relaxation**, which relates to the relief passengers experience when they find an empty seating spot and can relax in the train. In Arjen's ideal future he relaxes on the platform as he experiences a sense of calmness and thinks about something different (figure 3.22).

When I have found a seating spot in the train, that is always a happy moment for me - Hans

For me the train is an oasis of peace. It is time for myself that I can use to eat, drink, read or even sleep - Paola

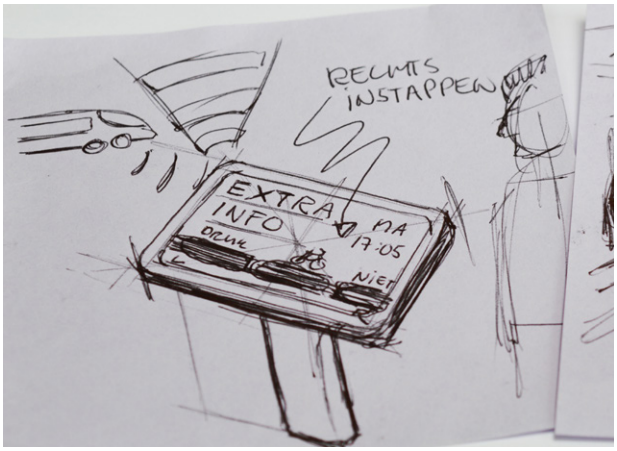


Figure 3.20: Thijs' ideal future with information screen about the train that will arrive

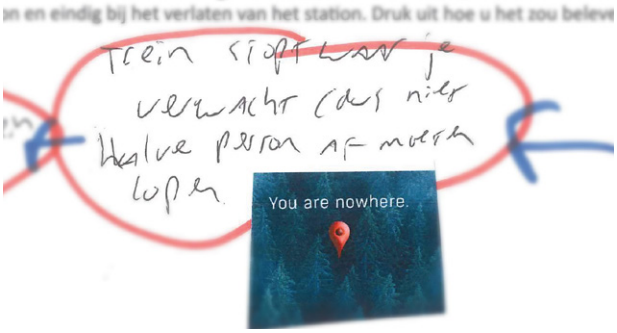


Figure 3.21: Fréderique's collage: the train stops where I expect it to stop

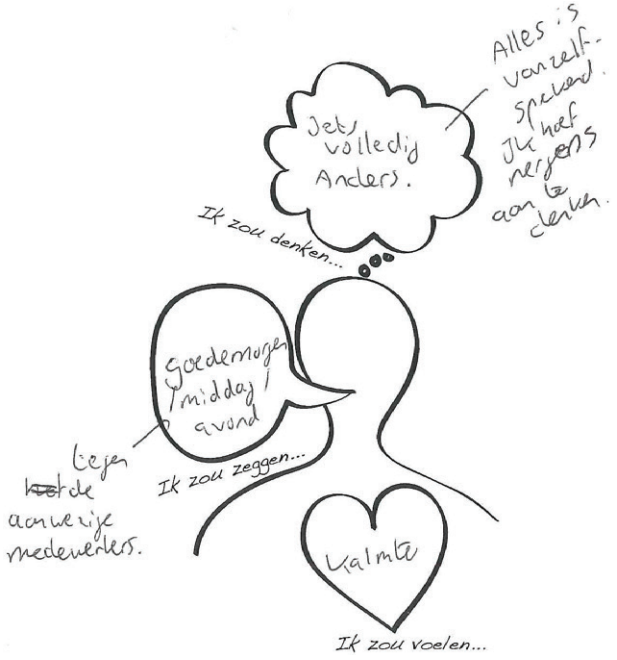


Figure 3.22: Arjen's ideal future experience

Social Safety

Passengers feel that the social safety is negatively impacted when people are causing disturbance and/or when there are only few people at the station. Passenger feel more social comfortable when there are more people (whom they trust) at the station. The context influences the degree of social safety, since tunnels or waiting cabins make people feel unsafe due to the fact that these areas are closed of.

Negative Emotions

Negative emotions that arise are **fear**, **distrust**, **disgust** and **annoyance**, are related to the amount of people, the type of people or the context that mediates human interaction in an unpleasant manner.

My wife plans her evening journeys around remote train stations, because she knows that there are less people on these stations - Keimpe

Dark Stations are breeding grounds for loitering people. I feel less safe in these areas - Fia

The waiting areas are not pleasant because they are small. In the evening I do not go into a waiting area when there is already someone sitting there. I feel that there is too little personal space and I feel locked up - Iris

Positive Emotions

A positive emotion that arises is a feeling of **belonging** which is also evoked by the amount and type of people. Figure 3.23 and 3.24 show artefacts that represent this desire.

I get a feeling of safety when standing close to other people. - Paul

When I do not feel save, I call my parents or I pretend that I call them. Although they are far away, I do experience a sense of social control that feels safer – Jessica

Figure 3.23: Paul's news pole with sockets, news and a heating system to attract people towards the same location

Figure 3.24: Jessica's chat pole that enables people to talk with passengers from random station locations

Waiting Experience

There are many scenarios in which passengers end up waiting at small stations, such as a sudden malfunction, missing the train, poor connection with buses or arriving early at the station to avoid missing the train. People often see small stations mainly as a departure and arriving station. Therefore, expectations are low in terms of extra facilities to improve the waiting experience at small stations. However, passengers do want to wait as pleasantly as possible when they have to wait at small stations. This pleasant experience is sought in distraction or (in some respects the opposite) peacefulness.

Negative Emotions

Negative emotions that arise are **boredom** and **longing**.

I feel at unease when I have to wait at a small station. I go look for something to do, such as walking down the platform - Stefan

I seize every opportunity to get distraction while waiting – Jessica

Positive Emotions

Positive emotions that arise are **joy**, **amusement**, **surprise**, **engaged**, **dreaming**, **inspiration** and **anticipation**. These emotions can be divided into 2 categories; namely emotions that are based on a longing for distraction (joy, amusement, surprise and engaged, figure 3.25) and emotions based on a longing for peacefulness (dreaming, inspiration and anticipation, figure 26).

I look for distraction when I have to wait, such as studying, music or talking to people. When I talk to people it feels as if time goes faster – Annemieke

While waiting I feel the urge for entertainment and I think to myself: I have become such an "information beast". But I think to myself that I could also use this as a moment of mindfulness. I do not have to be amused all the time – Thijs

I do nothing at the station when I have to wait. I look forward to what is coming, such as the visit to a museum – Fien

Figure 3.25: Thomas' multifuntional bookcase, including electricity, wifi and games that fascilitate distractions

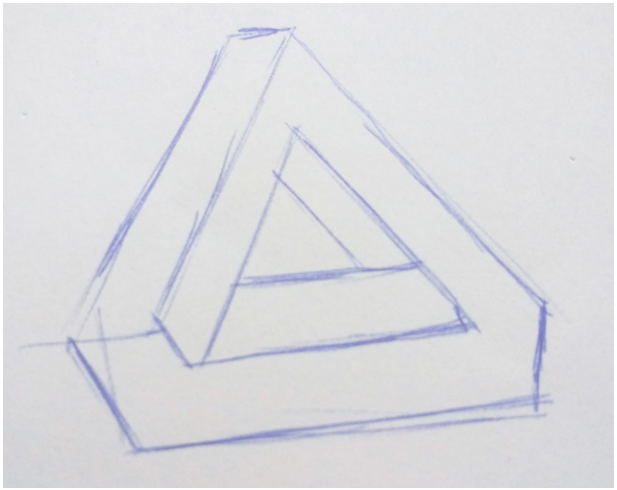


Figure 3.26: Thijs' drawing of something inspirational to think about

Ambiance

Although the expression "less is more" applies to many things, it does not apply to the context of small stations. Passengers experience that less is less, i.e. small stations are empty and boring which leads to a lack of fascination. The emptiness of stations makes that passengers perceive small stations as creepy, especially at night. Ambiance has influence on the perceived safety and waiting experience.

Negative Emotions

Negative emotions that arise are **boredom** and **fear**.

I don't like it when I have to wait on a grey platform. In this scenario doing nothing is really doing nothing - Tjeerd

In the evening, stations give a bit of a dead feeling. If there would be something, then it would already be better - Paola

Positive Emotions

A positive emotion that arises is **fascination**. Fascination was sought in nature (figure 3.27), colours (figure 3.28) and authenticity.

Green decoration is nice to prevent greyness and emptiness - Twan

I wish the station was more than just a platform, make it into something. I long for a cosy and warm place that is authentic - Wim

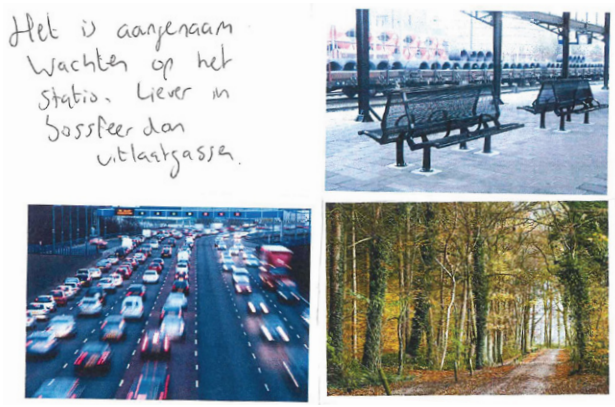


Figure 3.27: Arjen's collage. Arjen prefers to have an ambiance that looks like an forest rather than a road with exhaust gases

Figure 3.28: Nathalie & Annemieke's colorful benches to create a more vibrant ambience

Facilities

There are various facilities that passengers value at small stations. These range from waiting areas, to toilets, to food and drink services. The participants highly prioritize waiting areas, which are often perceived as dirty, cold and uninviting. This high prioritisation of waiting areas correlates with the result of the explorative interviews as well. Passengers also long for toilets since the sprinters (which are the most common trains at small stations) do not have toilets. Stations without toilets could exclude people who are unable to travel for long periods without the toilet. Food and drinks services are perceived as a 'nice to have'. Among the participants there is an understanding that they do not expect the same level of facilities as is the case for large stations. However, the lack of facilities is one of the factors that contribute to unpleasant waiting experiences at small stations.

Negative Emotions

Negative emotions that arise are **dissatisfaction**, **longing**, **distress**, **disgust**, **fear** and **annoyance**.

Waiting rooms are not nice and creepy. They can be very dirty and smell as well. I like it better when these areas are open at the front rather than fully closed off - Wendy

In case of a delay I would like it if there is a toilet and something to eat and drink – Fréderique

Positive Emotions

Positive emotions that arise are **desire** and **relaxation** (figure 3.29 and 3.30). Notice the contradiction between Wendy's quote from above (desire for open waiting areas for more safety) and Hans' quote (desire for closed of waiting areas for more comfort).

The most sheltered waiting area is the best waiting area for me. I am out of the wind, and I can just wait peacefully - Hans

I am happy when there is something to eat, but I would like something more healthy than what is often offered - Paola

Figure 3.29: Twan and Mike's waiting area is isolated, heated and has a round and friendly appearance

Figure 3.30: Hendrikje´s ideal station journey collage: a space for coffee, lunch, a moment with friends

3.7 DILEMMAS

The dilemma-driven design framework (Ozkaramanli, Desmet, & Özcan, 2016) allows to gain insight into conflicting aspects of passengers' experiences. Dilemmas consist out of conflicting concerns, mixed emotions and mutually exclusive choices (Ozkaramanli et al., 2016), see figure 3.31. The dilemmas summarize research insights extracted from the generative research and define a design space for the concept ideation.

The analysis of the generative research identified a total of eight dilemmas. The following section presents these dilemmas in a visual manner that incorporates the considerations of passengers within their context. The pyramid of emotional needs and the NS design principles (Van Hagen et al., 2017) have been attached to the dilemmas in order to give insight in how, hypothetically, the dilemmas can relate to these needs and design principles. The dilemma frameworks of the eight dilemmas are shown in appendix 11.

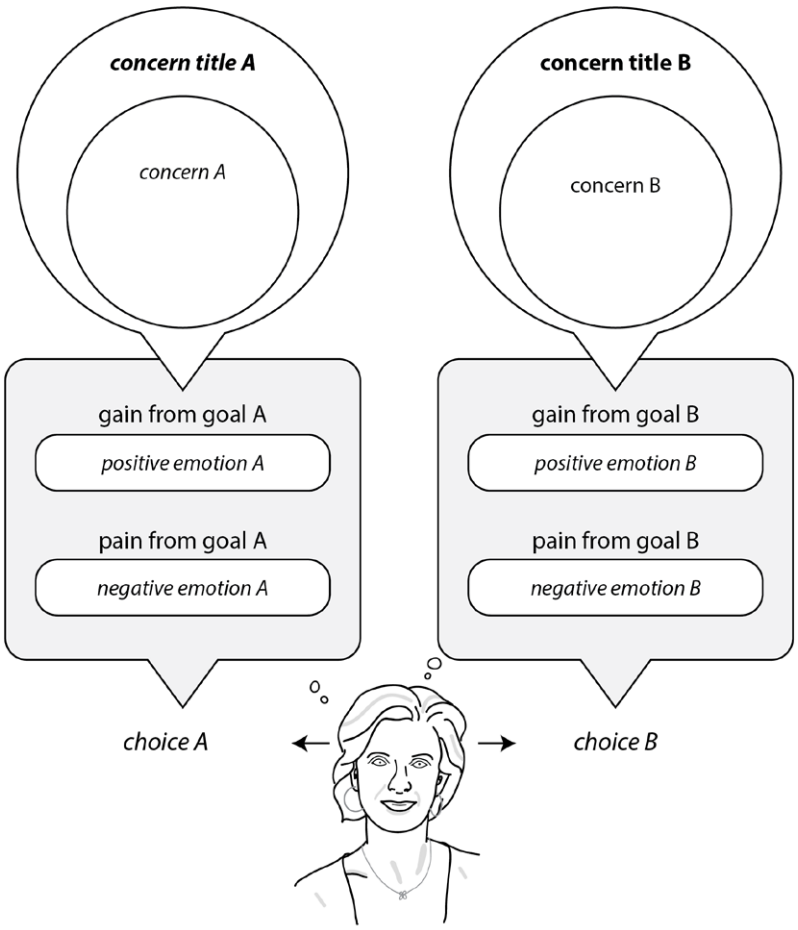


Figure 3.31: Dilemma framework which incorporates concerns, emotions and choices

Social Safety vs Physical Comfort

This dilemma (figure 3.32) originates from the concern of wanting to avoid feeling locked up in small waiting cabins, but also wanting to take shelter against bad weather. Some passengers feel social discomfort or even unsafe due to the lack of personal space in waiting cabins. When passengers choose to wait inside the cabin they can physically **relax**, but they experience social **fear** as well. When choosing to wait outside, passengers are **worry free** about feeling constricted with strangers, but feel physically **uncomfortable**.

This dilemma inspires a design space in which design principles 1, 3, 4 and 6 could potentially play a role in (figure 3.32). Principle 1 and 3 are relevant, because they have the potential to resolve emotions of fear when sitting in a waiting cabin with a stranger. Principle 4 and 6 have the potential to make the waiting area a pleasant place in which waiting time is shared with others.

Control
1. Always and everywhere easy and accessible
3. Appropriate help is always within reach

Appreciation
4. We offer a pleasant travel environment
6. We take the trip together

Figure 3.32: Dilemma Social Safety vs Physical Comfort

Social Safety vs Mobility

The evening is a pleasant timeframe to be mobile as many recreational and social activities take place. However, passengers do not feel safe when they are alone with people they do not trust, which is a plausible scenario at small train stations. People feel **engaged** when they choose to be mobile, but are **fearful** of loitering people. When choosing to avoid public transport in the evening, people are **worry free** regarding social safety. However, they feel also **bored**, since they are unable to participate in evening activities. The dilemma is illustrated in figure 3.33.

This dilemma inspires a design space in which design principles 3 and 6 could play a role in (figure 3.33). Principle 3 has the potential to resolve emotions of fear when traveling during the evening. Principle 6 has the potential to make traveling a joint experience in which people experience social comfort, even in the evening.

Control
3. Appropriate help is always within reach

Appreciation
6. We take the trip together

Figure 3.33: Dilemma Social Safety vs Mobility

Belonging vs Boarding Efficiency

Passengers perceive the station platform as a place of anticipation in regard to following journey episodes. While waiting, they wonder whether they will find a seating spot in the train. Passengers feel **relaxed** when choosing to wait at a distance from fellow passengers which increases their chances at a seating place, but it can feel **lonely** as well. Passengers experience a sense of **belonging** when choosing to wait among fellow passengers, but **worry** about whether they can find a spot in the train. The dilemma is illustrated in figure 3.34.

This dilemma inspires a design space in which design principles 1, 5 and 6 could play a role in (figure 3.34). Principle 1 has the potential to eliminate feelings of worry about boarding efficiency. Principle 5 and 6 have the potential to make traveling a joint experience in which passengers feel seen and are comfortable with each other's presence.

Control
1. Always and everywhere convenient & accessible

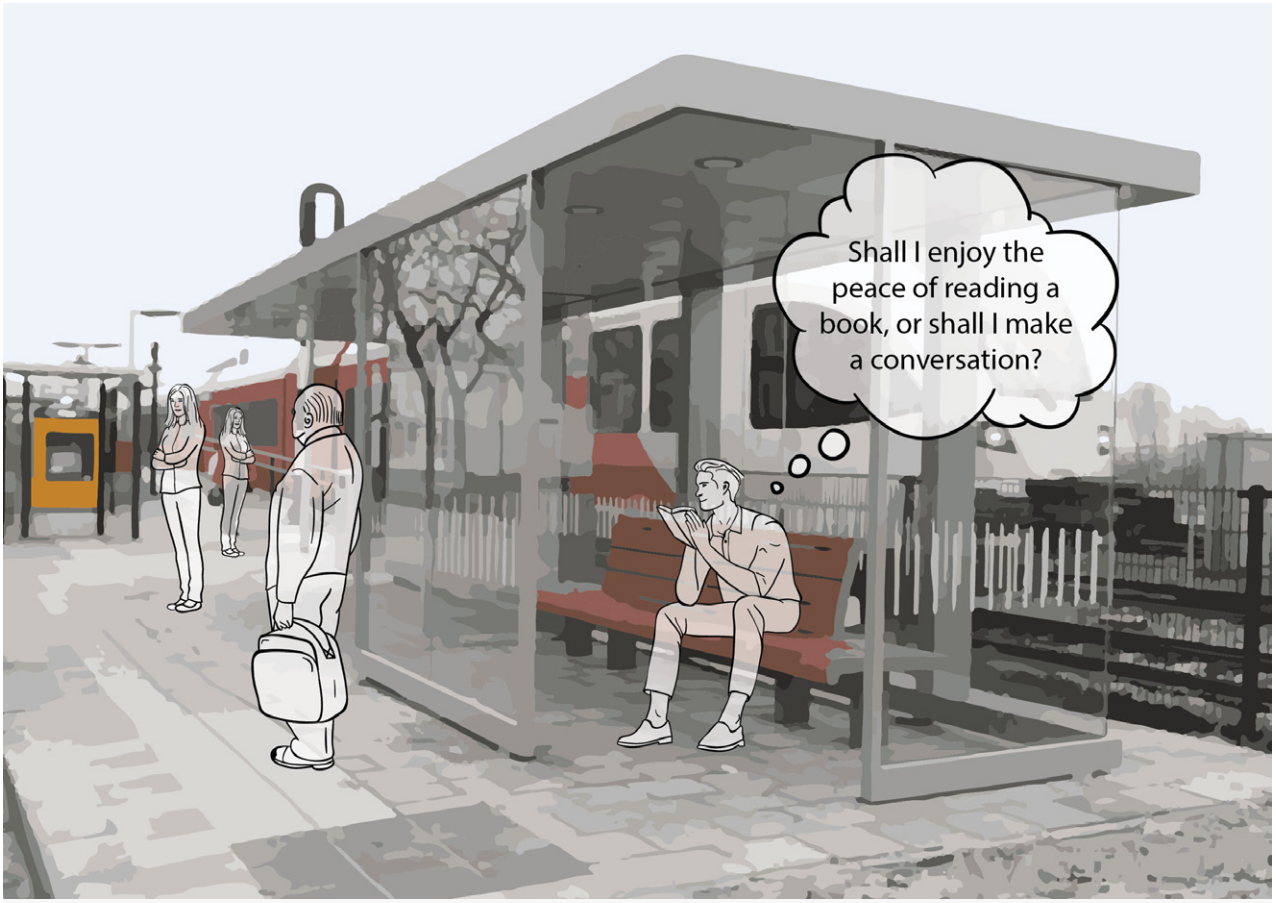
Appreciation
5. We make it personal
6. We take the trip together

Figure 3.34: Dilemma Belonging vs Boarding Efficiency

Social Comfort vs Inspiration

This dilemma (figure 3.35) is about the activities passengers long for while waiting. Seeking social comfort as well as seeking inspiration contain emotional gain and pain. Passengers experience **joy** when making contact with others, but are **fearful** of rejection as well. When choosing to read a book, passengers experience a sense of **dreaminess** and **inspiration**, but also **loneliness**.

This dilemma inspires a design space in which design principles 5, 6, 7, 8 and 9 could play a role in (figure 3.35). Principle 5 and 6 has the potential to make traveling a joint experience in which passengers feel seen and are comfortable with each other's presence. Principle 7, 8 and 9 have the potential to evoke feelings of freedom in which passengers can experience dreaminess and inspiration while they choose for an activity of their interest.



Appreciation
5. We make it personal
6. We take the trip together

Freedom
7. We always offer choice
8. The journey time is your own time
9. We create a sense of adventure and inspiration

Figure 3.35: Dilemma Social Comfort vs Inspiration

Facilities vs Price

This dilemma (figure 3.36) shows that the emotion of **satisfaction** is experienced when choosing for more facilities. However, this raises emotional **worry** about the costs of traveling as well. Passengers feel **unworried** when costs are low, but also experience **boredom** while waiting at the station. This dilemma can be seen as a general factor that is relevant for every intervention at stations.

This dilemma inspires a design space in which design principles 4 and 9 could play a role in (figure 3.36). Principle 4 could make waiting at small stations less boring, since it aims to make the environment more pleasant. Another way to resolve feelings of boredom is to implement surprises that create a sense of adventure and inspiration, principle 9.

Appreciation
4. We offer a pleasant travel environment

Freedom
9. We create a sense of adventure and inspiration

Figure 3.36: Dilemma Facilities vs Price

Time Control vs Fascination

Passengers perceive the gates as a barrier between the station and the outside of the station, which results in a high threshold to wait outside the station (figure 3.37). This dilemma depicts the choice of waiting on the grey platform or exploring the fascinating environment outside the station. Passengers perceive the first option as **boring,** but are **unworried** about catching the train. The second option provides **fascination**, but passengers also **worry** about whether they can catch the train.

This dilemma is about choosing between two sections of the customer needs pyramid, namely control and freedom. Design principles that could play a role within this dilemma are 1, 4, 7, 8 and 9 (figure 3.37). The convenience and accessibility in principle 1 could lower feelings of worry about catching the train. Principle 4 has the potential to resolve the dilemma by facilitating fascination at the station. Principle 7, 8 and 9 are relevant for providing an exerpience that is fascinating.

Control
1. Always and everywhere convenient & accessible

Appreciation
4. We offer a pleasant travel environment

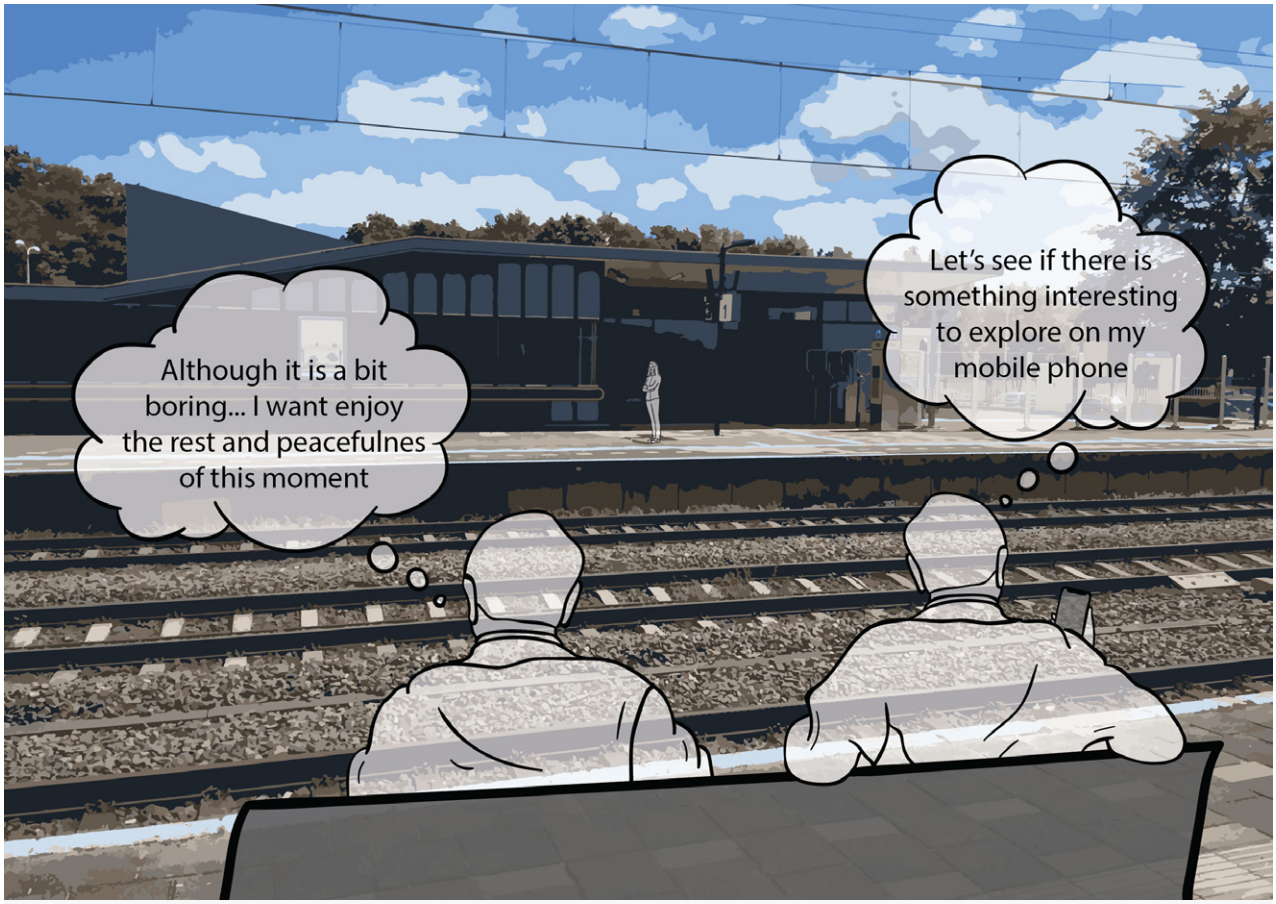
Freedom
7. We always offer choice
8. The journey time is your own time
9. We create a sense of adventure and inspiration

Figure 3.37: Dilemma Time Control vs Fascination

Mindfulness vs Seeking Distraction

This dilemma (figure 3.38) is about the choice between using time as a moment of rest (e.g. thinking or daydreaming) or as a moment to seek more stimuli (browse on internet). In the first option the concern of peacefulness is valued most. The passenger is in a state of **dreaminess** and **inspiration**. However, feelings of **boredom** are present as well. The second activity contains distraction that offers **fascination**, but the passenger feels **guilty** about the urge for constant stimulation.

This dilemma revolves around the emotional need for freedom in which design principle 7, 8 and 9 could play a role in (figure 3.38). All these principles are about enabling passengers to make their travel time meaningful. This could mean a mindful experience for one passenger and a fascinating experience for the other (or perhaps both).



Freedom

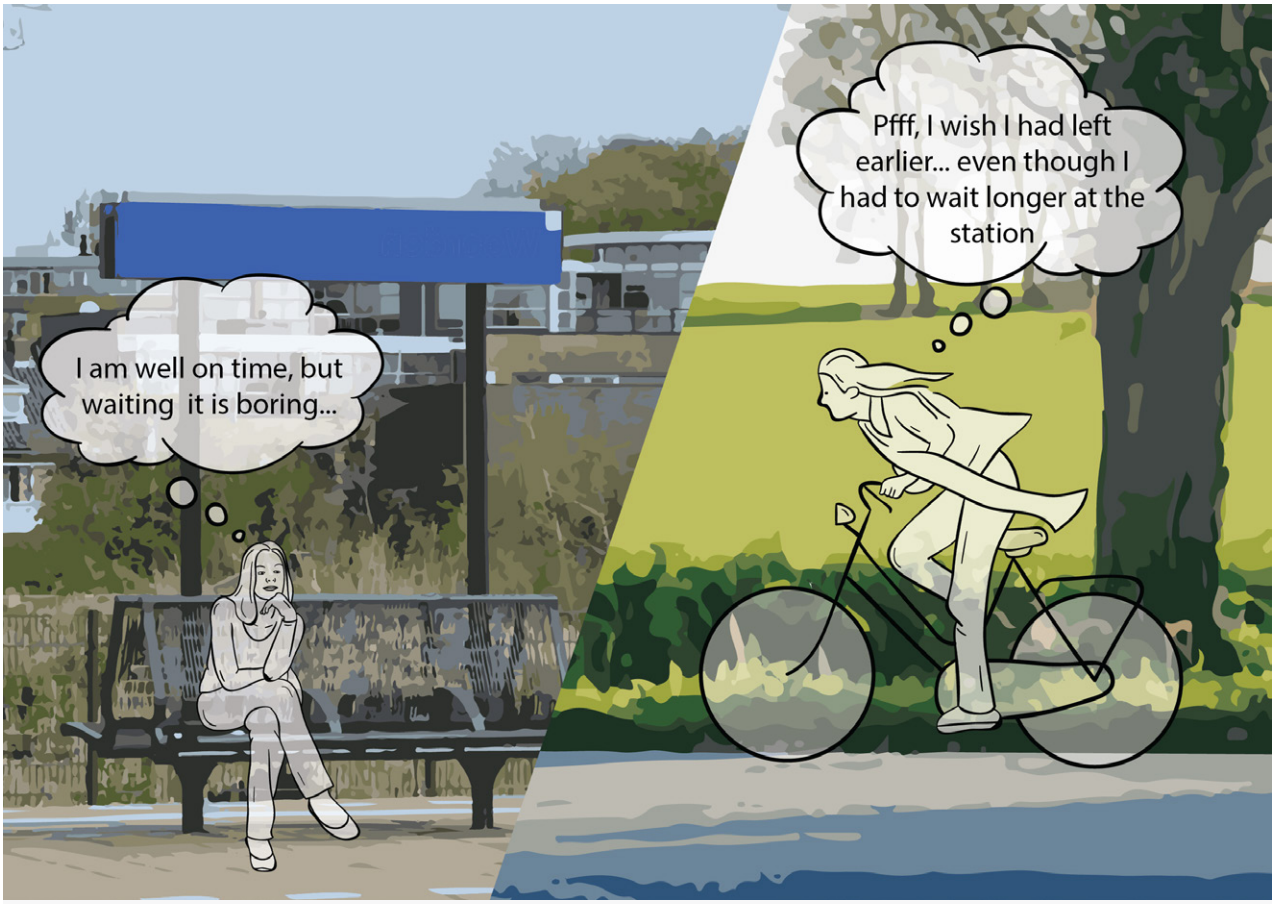
7. We always offer choice
8. The journey time is your own time
9. We create a sense of adventure and inspiration

Figure 3.38: Dilemma Mindfulness vs Seeking Distraction, the image portrays the same person making two different choices

Control vs Time Efficiency

Passengers long for time efficiency in order to wait as little as possible, but they want to avoid stress as well. A feeling of **confidence** of the ability to catch the train is experienced when the value of minimum waiting time is pursued. However, feelings of **stress** are likely when time falls short. Passengers experience a sense of **unworriedness** when choosing to be well on time for the train, but **boredom** while waiting on the platform is experienced as well. The dilemma is illustrated in figure 3.39.

This dilemma inspires a design space in which design principles 1, 7, 8 and 9 could play a role in (figure 3.39). Principle 1 could make passengers feel in control of their timing in order to catch the train. Principle 7, 8 and 9 could resolve boredom and enhance meaningful experiences at the stations. In this way, one may no longer feel the need to wait as little as possible.



Control
1. Always and everywhere convenient & accessible

Freedom
7. We always offer choice
8. The journey time is your own time
9. We create a sense of adventure and inspiration

Figure 3.39: Dilemma Control vs Time Efficiency

3.8 CHOOSING A DESIGN-WORTHY DILEMMA

All the dilemmas contain starting points for concept ideation. However, the project can only prioritize a few dilemmas. The following criteria influenced the dilemma choice: (i) relevance for passengers, (ii) potential to inspire design ideas and (iii) meaningful formulation of conflicting concerns (Ozkaramanli, Desmet, & Özcan, 2017).

The three chosen dilemmas include: social comfort versus inspiration, mindfulness versus seeking distraction and control versus fascination (figure 3.40). The three dilemmas include needs that are located in the top of the consumer needs pyramid, i.e. needs that revolve around the core emotion of freedom. These dilemmas are relevant for the project, since the aim of the project is to improve the experience at small stations, which is currently least achieved at stations. The 'station experience monitor' (*Stationsbelevingsmonitor*, 2019) shows that the aspects of ambiance and waiting experience are scoring significantly lower than other aspects that small stations are evaluated upon. The chosen dilemmas have the potential to improve both of these aspects.

The dilemmas are inspiring as well since they define a design space that has the potential to add societal value to small stations, e.g. the station is not only a place to board trains, but also to meet others, to work on mental health or to explorer fascinating things. This way, waiting time develops into meaningful time.

The chosen dilemmas are meaningful as well since they are abstract enough to form a broad design space that includes many ways to respond to these dilemmas.

This section describes considerations why some of the other concepts have not been chosen.

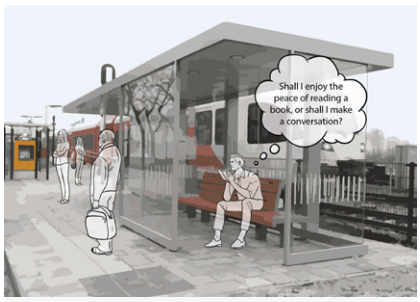
The dilemma of facilities vs price (figure 3.36) has not been chosen because although it is a relevant dilemma (i.e. resources are limited on stations, especially at small stations), it is not inspiring and meaningful. Therefore, this dilemma is an overarching dilemma that is relevant for all interventions at small stations.

The dilemmas of social safety vs physical comfort (figure 3.32) and social safety vs mobility (figure 3.33) are both dilemmas that address a real problem that passengers experience. However, this dilemma only applies to a specific user group (mostly females and elderly). That being said, the three chosen dilemmas could end up resolving the issue of safety as well, since improving the top of the customer needs pyramid has the potential to positively influence the bottom of the pyramid.

The dilemma of belonging versus boarding efficiency (figure 3.34) is not formulated in a meaningful way, i.e. the dilemma lacks abstraction, which results in a limited design space that is aimed at passengers standing together or apart from each other.

CONTROL vs **FASCINATION**

MINDFULNESS vs **SEEKING DISTRACTION**



SOCIAL COMFORT vs **INSPIRATION**

Figure 3.40: Chosen Dilemmas

CONCEPT IDEATION

Chapter 4
Pages 58-73

4.1 Design ambition
4.2 Design building blocks
4.3 Concepts
4.4 Concept reflection
4.5 Concept choice

04

from insights to ideas

The generative research (chapter 3) resulted in three chosen dilemmas that define a design space for concept ideation. This chapter describes the process and results of the concept ideation. It firstly describes the approach of the concept ideation, which includes dilemma-driven design, scenario based design and a set of design guidelines. Secondly, five building blocks are described that provide insight into the dynamics of the chosen dilemmas and are a source of inspiration for the ideation. Subsequently, the chapter presents four concepts, a reflection on these concepts and a concept choice. The concept development phase (chapter 5) will materialize the chosen concept.

4.1 DESIGN AMBITION

This section describes the vision statement and the methodologies that give direction to the concept ideation. The vision, the methodological approach and the results of research (chapters 1, 2 and 3) have led to the formulation of six design guidelines.

Vision

The chosen dilemmas define a design space that has the potential reframe sub-purposes of small stations. I.e. the station is not only a place to board the train, but is a place that adds value to each individual passenger and to society in general as well. It can become a place in which people take full advantage of the calmness of the station, since rest seems to be scarce in a busy work day or perhaps in general in western society. A place in which passengers feel comfortable to meet and interact with (familiar) strangers. Or perhaps it can be a place that allows people to explorer fascinating things and look at the world differently. With this reframing of what a station is and what it means to its passengers, it is made possible to improve the waiting experience, or even better to replace waiting time with meaningful time.

Dilemma-Driven Design

The three chosen dilemmas are the starting points for the concept ideation. Ozkaramanli (2016) identified three different approaches to design for dilemmas, namely resolving interventions (aim to fulfil conflicting concerns simultaneously), moderating interventions (aim to explicitly prioritize one concern over the other) or triggering interventions (aim to create more awareness to the dilemma itself). These three approaches are applied in order to create concepts.

Scenario Based Design

The previous phases provided information about the current use situation of small stations. On the basis of these insights, the concept ideation focuses on creating future practice scenarios with the aim of improving the experience at small stations. The scenario based design approach entails that the concepts not only incorporate the product or service, but also focus on how it relates to diverse actors and the context of small stations.

Preliminary Design Guidelines

The following challenges have been formulated for the concept ideation:

1. Design reacts to the three chosen dilemmas in a resolving, moderating or triggering manner. These are three common design strategies that can be applied to dilemmas (Ozkaramanli 2016).
2. Design is harmonic with the context of the station as a whole (and outside the station). This holistic approach originates from the scenario based design approach (Anggreeni & Voort, 2007).
3. Design aligns with at least one of the 9 NS design principles (Van Hagen & Van der Made, 2017) (chapter 1.3). This challenge has been chosen, since these principles enhance the three core emotional needs that passengers desire (i.e. control, appreciation and freedom).
4. Design replaces waiting time with meaningful time. This challenge is relevant since the three chosen dilemmas have the potential to make waiting time more meaningful and to add value to society.
5. Design does not interfere with the core functionalities of the station domains (chapter 1.1). This challenge originates from the guidelines regarding the five stations domains (Bureau Spoorbouwmeester, 2012).
6. Design is preferably fulfils multiple different needs that are represented by the needscope segments (chapter 1.2). This guideline is relevant, since the three chosen dilemmas mainly focus on the upper part of the customer needs pyramid (i.e. satisfiers); these are needs that are diverse of nature, dependent on the needscope segment (Van Hagen, 2009).

4.2 DESIGN BUIDLING BLOCKS

This section describes five design building blocks that aim to give a better understanding of the dynamics of the three chosen dilemmas. The building blocks include: mindfulness, flow, social comfort, fascination and nature. While the dilemmas are only based upon the experiences of everyday people, the building blocks will also incorporate academic theories to even better understand the dynamics of the dilemmas. The building blocks do not result in a strict set of rules, but merely function as a source of inspiration in order to create meaningful concepts. The building blocks of mindfulness and flow are mostly related to the dilemma 'mindfulness vs seeking distraction', social comfort to 'social comfort vs inspiration' and fascination and nature to 'control vs fascination'. The following paragraphs describe the design building blocks and end with a conclusion on how these building blocks have an effect on the concept ideation.

Mindfulness

Mindfulness is most commonly described as the state of being attentive and aware of what is taking place in the present. Davis and Hayes (2011) defined mindfulness as: "a moment-to-moment awareness of one's experience without judgment. In this sense, mindfulness is a state and not a trait. While it might be promoted by certain practices or activities, such as meditation, it is not equivalent to or synonymous with them."

Research indicates that mindfulness has many positive effects on the wellbeing of people. Effects that could be fitting for small stations are for example, increased perceived empathy (Shapiro, Schwartz, Bonner, 1998), increased perceived autonomy (Brown, Ryan, 2003), reduced perceived stress (Oman, Shapiro, Thoresen, Plante, & Flinders, 2008), reduced perceived work stress (Bostock, Crosswell, Prather, & Steptoe, 2019) and reduced perceived anxiety (Shapiro et al., 1998).
Most of these studies incorporated intensive interventions that requires its participants to do multiple activities over a long period of time. Therefore, it is still unknown whether mindful activities at small stations could have similar effects. However, it does show potential of how mindfulness can have a beneficial effect on the wellbeing of passengers.

Flow

Csikszentmihalyi developed a psychological concept named flow. Flow is the pleasant, energized experience in which one is fully immersed in an activity and nothing else seems to matter (Csikszentmihalyi, 2008). In this state people are so absorbed in the activity that they lose sense of time and are not self-conscious. Examples of such activities are making music, dancing, sailing and painting. Csikszentmihalyi explains that flow activities are activities that lie exactly between fear and boredom. In order to get into a flow state the activities must be organised in a way that provides clarity in its goals and processes, clear and immediate feedback and a balance between the ability of the practitioner and the difficulty of the activity.

Now that we know what mindfulness and flow entails, we can better understand the dilemma of mindfulness vs seeking distraction. Although mindfulness is about being aware of one's experience while flow is about losing oneself in an activity, there are commonalities as well. It can be argued that mindfulness is a flow activity in itself, since it requires one to fully focus. Perhaps this is most clear in mindful applications which are designed in a way that meet Csikszentmihalyi's conditions of a flow activity. I.e. these apps include clear boundaries through well-defined exercises, feedback about what activities are done and a wide selection of activities to progress in. It would presumably be logical to react to the dilemma of mindfulness vs seeking distraction in a resolving manner, since the two dynamics can synergize with each other.

Social Comfort

Social comfort is the extent to which one feels familiar with people and the environment that surrounds them (Paulos, Goodman, 2004). Positive social contact allows people to become more familiar with fellow passengers (figure 4.1). This is especially relevant for small stations, since research shows that passengers are more receptive to make eye contact with strangers at a suburban station than at the city train station (McCauley, Coleman, De Fusco, 1978). This shows great potential for social interventions at small stations, as opposed to a larger stations where people more often experience interpersonal overload (McCauley et al., 1978).

Image 4.1: Piano increases social comfort since people are more aware of the presence of others and can often relate to the music

Fascination

Two types of fascination can be distinguished, namely soft fascination and hard fascination (Kaplan & Kaplan, 1989). Nature is a great source of soft fascination, while hard fascination is often present in urban areas. Soft fascination can be described as effortless attention, i.e. no forced attention (Kaplan et al., 1989). Soft fascination provides a high level of autonomy, i.e. one is able to walk through nature without the obligation to pay attention to where one walks or looks (figure 4.2). At the same time, in case of boredom, one has the opportunity to turn one's attention to the great amount of soft fascination that nature has to offer (e.g. millions of colours and textures and lively progressions).

Hard fascination is so powerful that one cannot pay attention to anything else, i.e. it decreases autonomy (Kaplan et al., 1989). Hard fascination requires effort and often include loud sounds and harsh contrasts. Many examples can be found in an urban environment such as traffic lights, signs, bicycles and cars (figure 4.2).

Soft fascination has a positive effect on psychological well-being and cognitive ability. The theory of attention recovery (Kaplan et al., 1989) states that nature helps people to concentrate better after spending time in nature. Research with physiological and verbal measures showed that after a stressful event, people recover considerably faster and more fully in natural settings in comparison with urban environments (Ulrich, Simons, Losito, Fiorito, Miles, Zelson, 1991).

With the framework of soft and hard fascination we can see that stations often underrepresent soft fascination, while hard fascination can be found in many objects (figure 4.3). This is a missed opportunity since Ulrich et al. (1991) who showed that in nature people can recover from stress in the span of a few minutes, also suggests to implement short-term interactions with nature in the public domain. Train stations have the potential to become such a place in which these short-term interactions with nature can take place, since people stay at stations for small periods of time anyway.

Figure 4.2: Soft (a) and hard (b) fascination in nature and urban environments

Nature

One of the reasons why nature lends itself to soft fascination are its aesthetics. Nature's beauty is widely praised throughout history in art and literature and seems to have an fundamental appeal to people. One way of explaining this appeal is the biophilia hypothesis which argues that people are nature and therefore respond to nature (Wilson, 1984).

Interacting with nature has many measurable human benefits: positive effects on physical health (Hartig, Mitchell, De Vries, Frumkin, 2014; Ulrich, 1984), psychological well-being (Kaplan, 2001; Ulrich et al., 1991), cognitive ability (Berman, Jonides, Kaplan, 2008) and social cohesion (Shinew, Glover, Parry, 2004). Research also shows that interactions in which people feel themselves 'small' in relation to the endlessness in vast settings inspire awe and trigger prosocial behaviour (Piff,

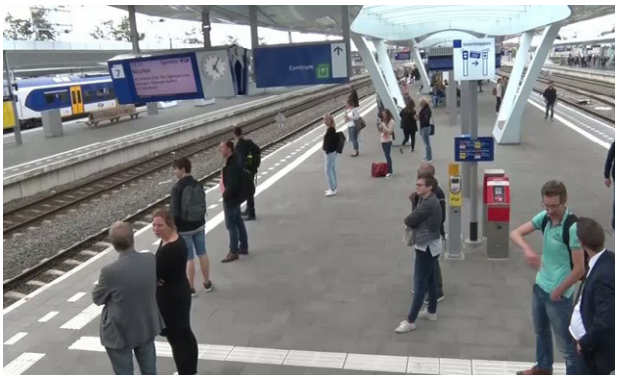


Figure 4.3: Hard fascination at stations through harsh contrasts and forced attention (e.g. clocks, check-in gates and travel information)

Dietze, Feinberg, Stancato, Keltner, 2015). These effects show how nature can provide meaning and value when incorporated in the lives of people.

Conclusion

With the use of academic literature five design building blocks have deepened our understanding of the three chosen dilemmas. The design building blocks contain brief definitions of relevant dynamics and describe its effects on people. This way, the building blocks show how valuable they are for small stations. Following paragraph briefly summarizes relevant insights for the concept ideation.

The building blocks of mindfulness and flow showed that these dynamics are able to synergize with each other. For the conceptualisation of the dilemma of mindfulness vs seeking distraction (figure 3.38, page 55), it is hypothesized that this dilemma can be best approached in a resolving manner.
The building block of social comfort emphasized the importance of familiarity in order to increase social comfort. It also showed that there are opportunities for social comfort at small stations, since people are not likely to experience interpersonal overload.
The building block of fascination emphasizes that soft fascination is desirable, since it is unforced and has a positive effect on the wellbeing of people. It also advocated that it would be beneficial to implement more soft fascination at stations, since this type of fascination is underrepresented and can already have a positive effect within a few minutes waiting time. The building block of nature closely relates to fascination, since nature provides environment stimuli that promote soft fascination.

4.3 CONCEPTS

The following pages present four concepts. The concepts are presented within the context of small stations and interact with passengers to demonstrate what the holistic experience entails. The style of the concepts is low in detail to emphasize the conceptual experience and not the technical details. The visualisations of the concepts use the same style for easier comparison.

Figure 4.4: Concept praatbank and stiltebank

PRAATBANK AND STILTEBANK

The praatbank and stiltebank (chat bench and silent bench in English) moderates the dilemma of Social Comfort vs Inspiration by making people more conscious about the choice of activity they would like to participate in while waiting (figure 4.4). The praatbank can help people to feel more socially comfortable as they familiarize themselves with the people around them when interacting with each other (Paulos & Goodman, 2004). Passengers like to talk to others to make time go faster, but they experience a high threshold to start a conversation. The praatbank aims to lower this threshold by giving passengers explicit permission to get in contact with each other. The second bench, the stiltebank, is the opposite of the praatbank as its aims to facilitate a place of silence to, for example, read a book, listen to music or enjoy the peacefulness of the station.

Micro Zones

The benches create micro zones that each attract passengers with different needs. Comparable with the 'silent coupe' in NS trains which are coupes that do not allow talking.

Couleur Locale

The benches connect with the local culture by writing the text in the local language or dialect (figure 4.5). This has the aim to increase social comfort since people feel more familiar with their surroundings (Paulos & Goodman, 2004).

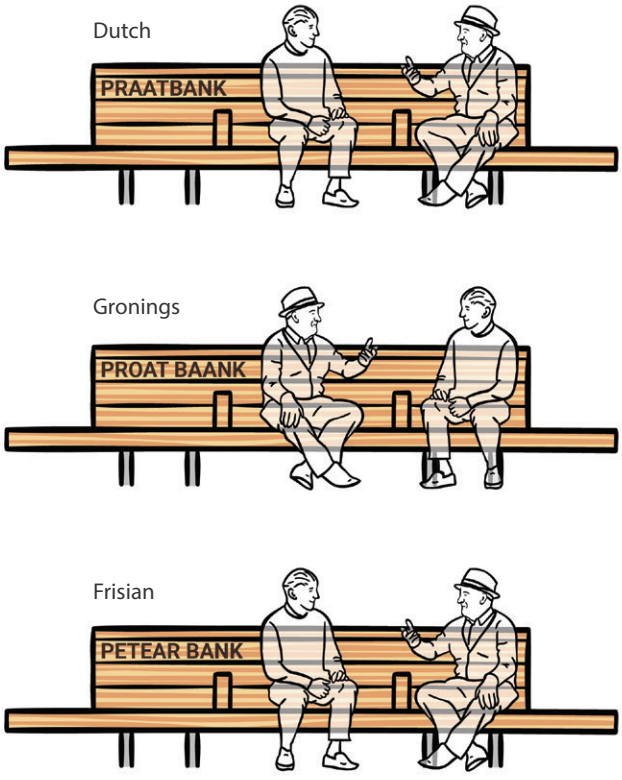
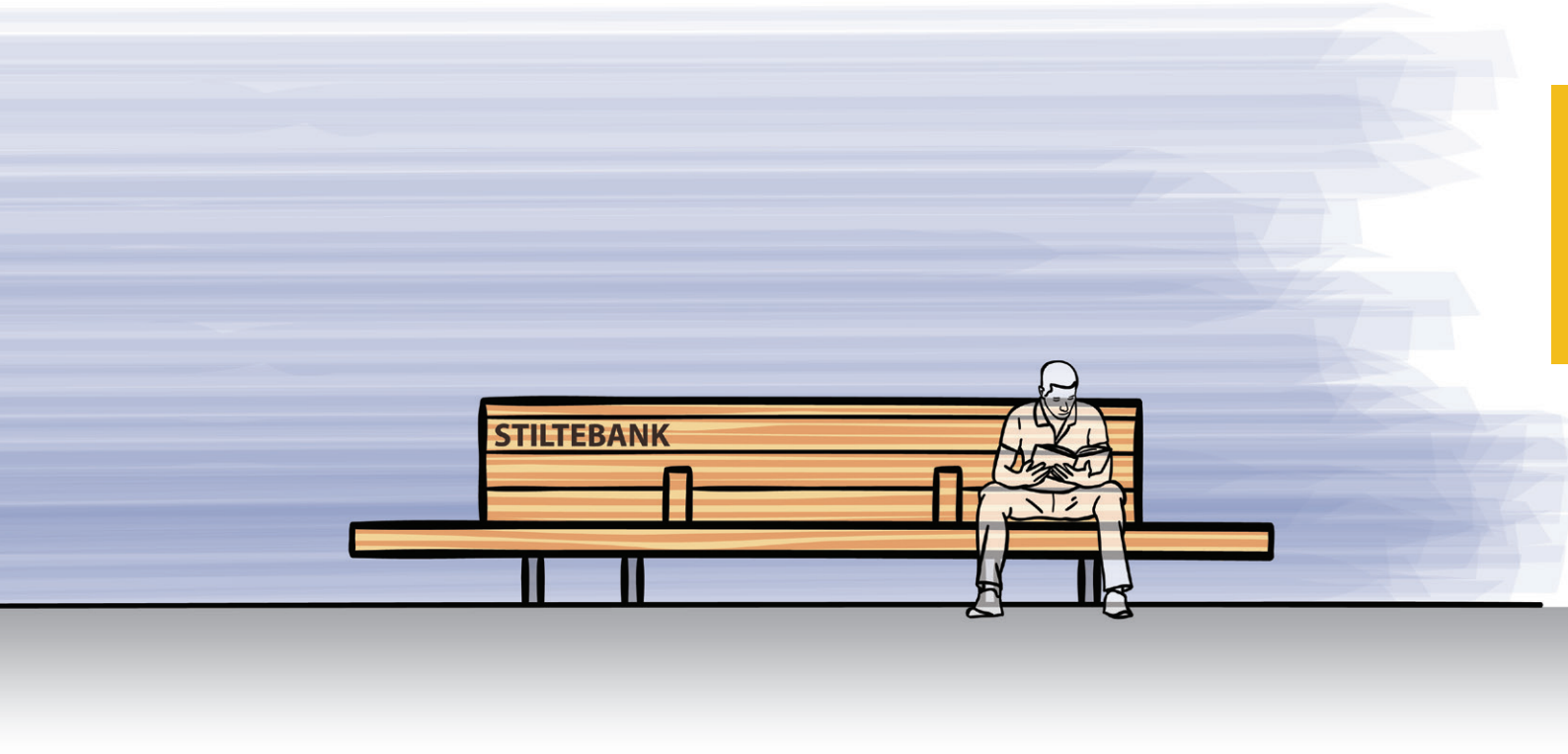


Figure 4.5: Benches with local language



Praatbank Topics

Topics to think or talk about are engraved in the benches (figure 4.6). Positive and fun conversation starters that are appropriate to talk about with strangers are put on the praatbank, such as: In which book would you like to be the main character? What did you laugh about today? What inspires you? What is your dream job? Or where are you going today?

Figure 4.6: Praatbank with questions to trigger conversation

Wood Engraving

Wood laser engraving in benches can be used to indicate the type of bench (figure 4.7). This can be applied to the current benches of stations.

Figure 4.7: Engraved station bench

Implicit Design Cues

The main strength of the benches concept lays in the explicitness of the text which gives people clear 'permission' to initiate a conversation with fellow passengers or to have a moment to oneself. However, this explicit message could be strengthened by the addition of implicit design cues that indirectly stimulate people to be more focused on their fellow passengers or more focused on individual activities such as reading a book. Figure 4.8 illustrates a bench with such implicit cues: the inside is the praatbank in which passengers are focused on each other, while the outside is the stiltebank in which seats are directed outward and are separated by handrails. In this way, the different parts of the bench, that respond to different passenger needs, are arranged in a way that makes the bench more intuitive. The physical greenery between the inside and outside creates a natural separation between two zones. This way it can also resolve the dilemma of Time Control vs Fascination as it makes the benches more fascinating.

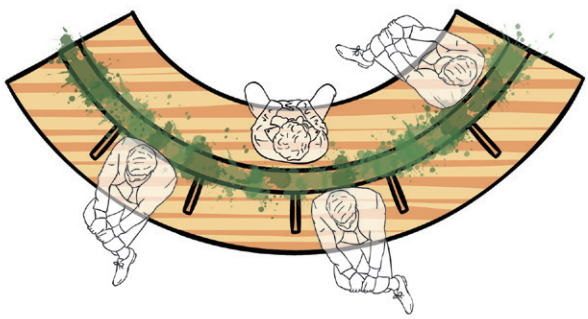


Figure 4.8: Bench organised in a way that encourages chatter or silence

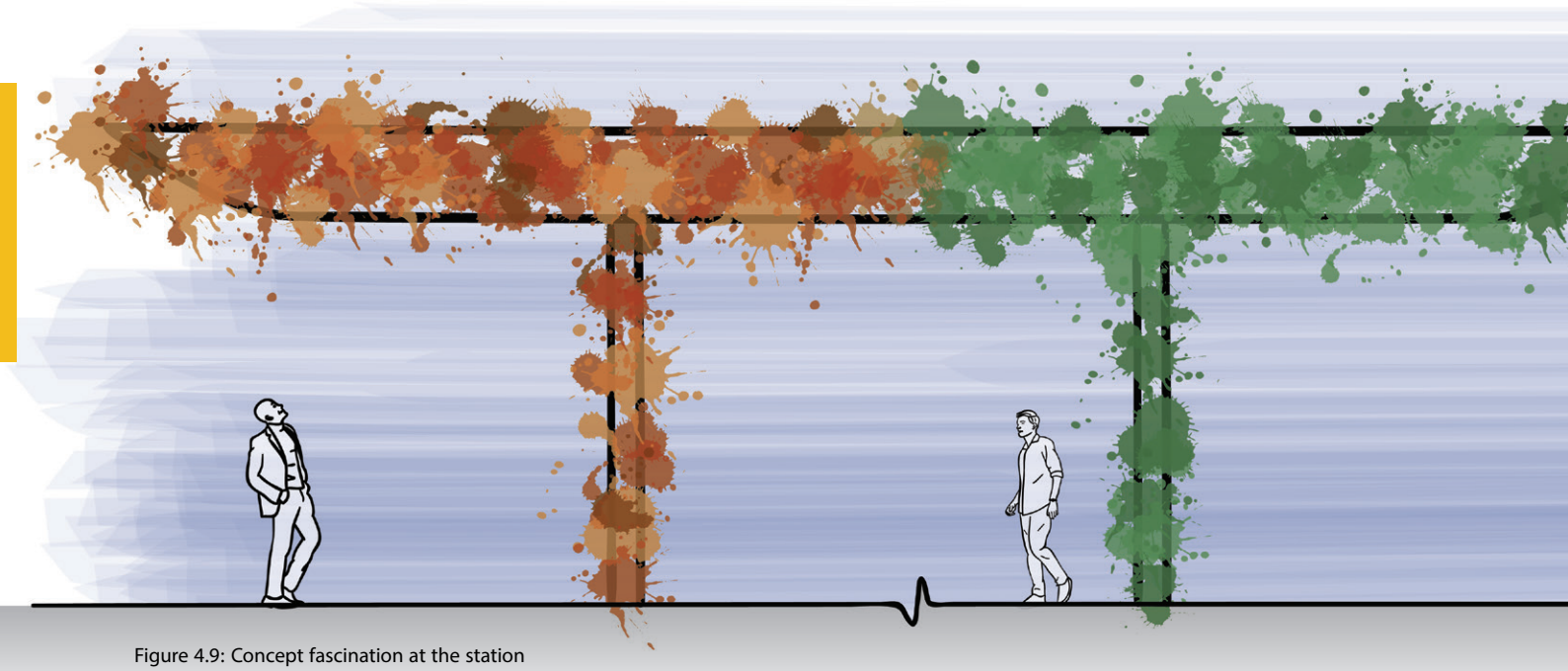


Figure 4.9: Concept fascination at the station

FASCINATION AT THE STATION

The concept of fascination at the station resolves the dilemma of Time Control vs Fascination as it uses greenery to make the station itself more fascinating (figure 4.9). Nature provides fascinating surprises as it has millions of details and for each season the greenery progresses during the year. A station beautified by nature creates more soft fascination which does not only prevents boredom, but can be mentally beneficial as well, since it takes approximately seven minutes with nature to mentally recover from stress (Ulrich et al., 1991). In addition to these benefits there are other well-being benefits associated with nature (see chapter 4.2). In this way, stations not only act as a place to board the train, but also as a place for passengers to be fascinated and to mentally recharge.

Couleur Locale

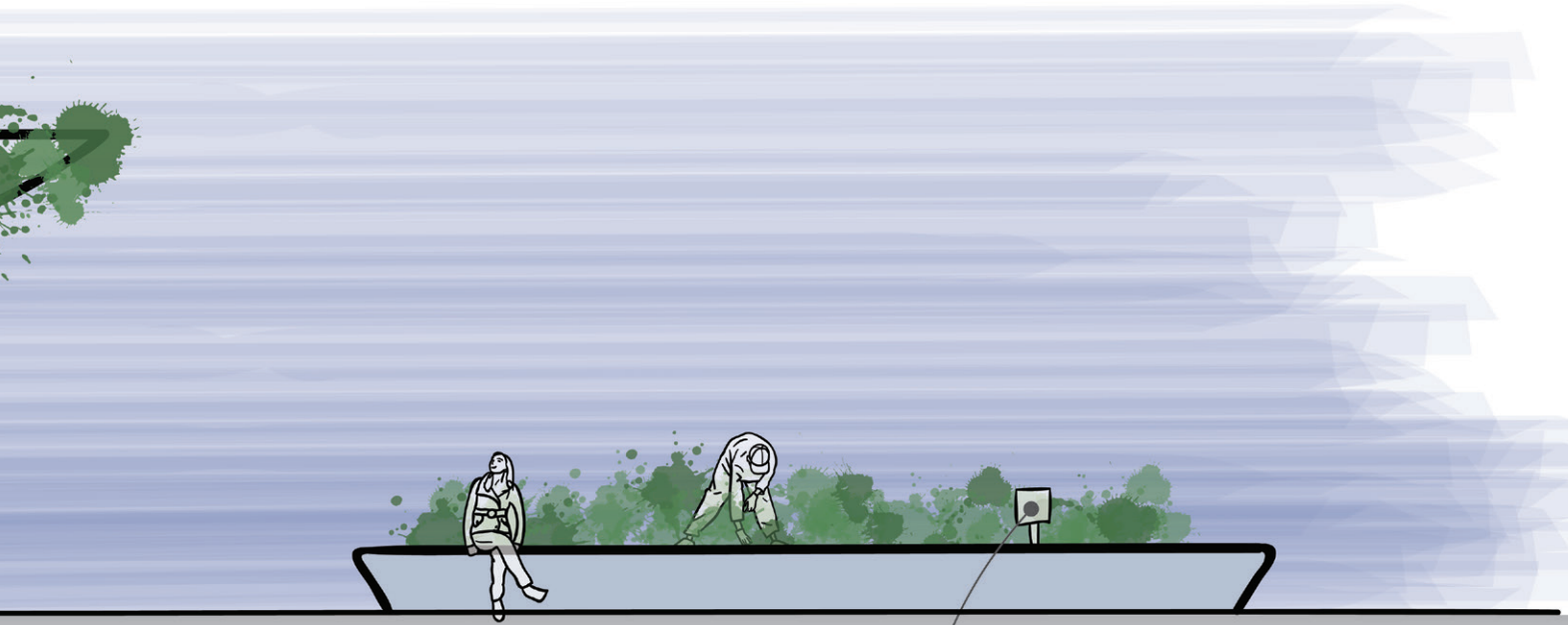
Different types of greenery can be applied in order to connect with the local environment of the station (figure 4.10). This increases social comfort since people feel more familiar with their surroundings (Paulos & Goodman, 2004).

Figure 4.10: Different types of greenery to fit the local context

Greenery on Functional Objects

Green plants can be attached to functional objects such as walls, pillars and roofs in order to make the station more fascinating. This has the advantage of hiding functional objects, which are often perceived as boring due to grey colours and the use materials that or not fascinating, without using additional space. An example in which functional objects are beautified by nature are noise barriers at highways (figure 4.11).

Figure 4.11: Noise barriers at highways beautified by nature



Collaboration

The next three sections show how collaboration with third parties enables synergy. This way, the stations become more part of society and costs or efforts can be shared between stakeholders.

A. Vogel is a company that makes medicines from herbs that they grow themselves. Their gardens are freely accessible for everyone, which can be a day out to experience nature as they write: "Let your senses come to life and go on a journey of discovery through the brightly colored herb fields. Feel the earth under your feet on the Barefoot Path. Taste nature in the Smultuin. And relax in the Herbal Tea Court while enjoying your home-made herbal tea" (*A. Vogel*, 2019). These experiences could take place at stations as well, this way the station becomes also a place to enjoy nature and a source for medicine.

Intratuin (2019) is a garden center that surprises and inspires people with new ideas regarding plants. It is their ambition to connect people closer to a more natural way of living. This natural way of living includes more green, fresh air, relaxation, peace and beauty. They do this by providing advice that inspires people with the right product.

A collaboration with Intratuin could not only mean that passengers connect better with nature at the station, but it could also be a platform in which they inform people and promote gardens in a meaningful way.

Small stations could be a place in which in which students who practice the gardening education can learn. Internships could be organised in which students are managing the gardens at the station. An example of a school that perhaps could provide gardening students is the MBO-school Helicon.

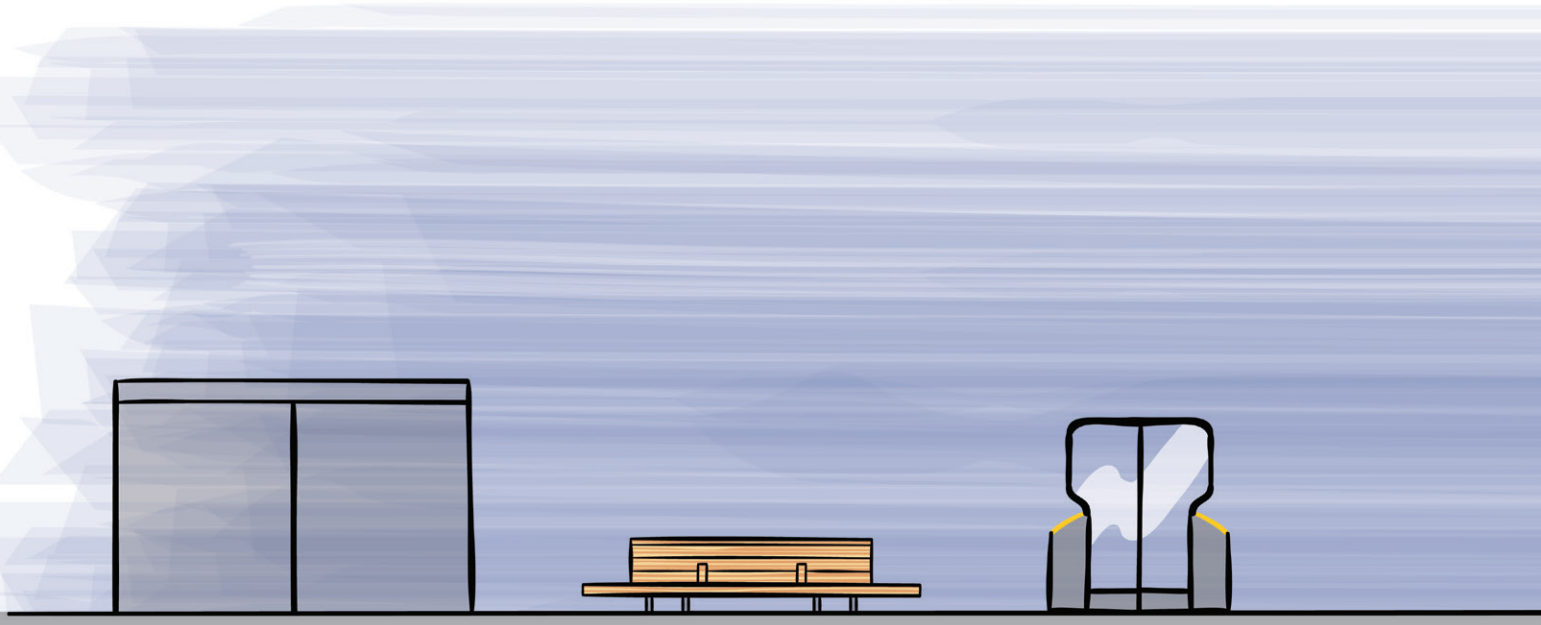


Figure 4.12: Concept fascination around the station

FASCINATION AROUND THE STATION

The concept of fascination around the station resolves the dilemma Time Control vs Fascination by giving insight into the time it takes to make a detour around the station (4.12). This way people can take a short walk in a way that satisfies the need for freedom while also satisfying the need for control at the same time. Additional exercises are provided to help people to be more mindful about the fascination that nature has to offer. This way, the concept touches upon the dilemma Mindfulness vs Distraction as well.

Exercises Contact with Nature

Exercises that stimulate to experience nature in different ways with all of the senses are shown in figure 4.14. The purpose of these exercises is to help people see nature through a different lens than the one they are familiar with (Gooley, 2015). This is done by inviting passengers to use all their senses while experiencing nature.

Social Dimension

Nature evokes a sense of awe and makes people realise that they are part of something bigger, which stimulates prosocial behaviour (Piff et al., 2015). To even more stimulate social comfort people can share their experiences on a magnet board (*StationsTaal*, Corver, Bruins, 2018) or via social media. This makes people more aware of fellow passengers and provides the opportunity to learn from each other since everybody experiences nature differently.

Application

Exercises that invite people to interact with their environment are incorporated into the NS application (figure 4.13). Passengers are guided through activities that contain assignments or audio fragments. Passengers are notified well on time when they need to get back to the platform in order to catch the train. Passengers can share their experiences via social media.

Collaboration

Collaboration with organisations such as VVV or the local municipality can help to connect the micro walks with the couleur locale of the station's environment.

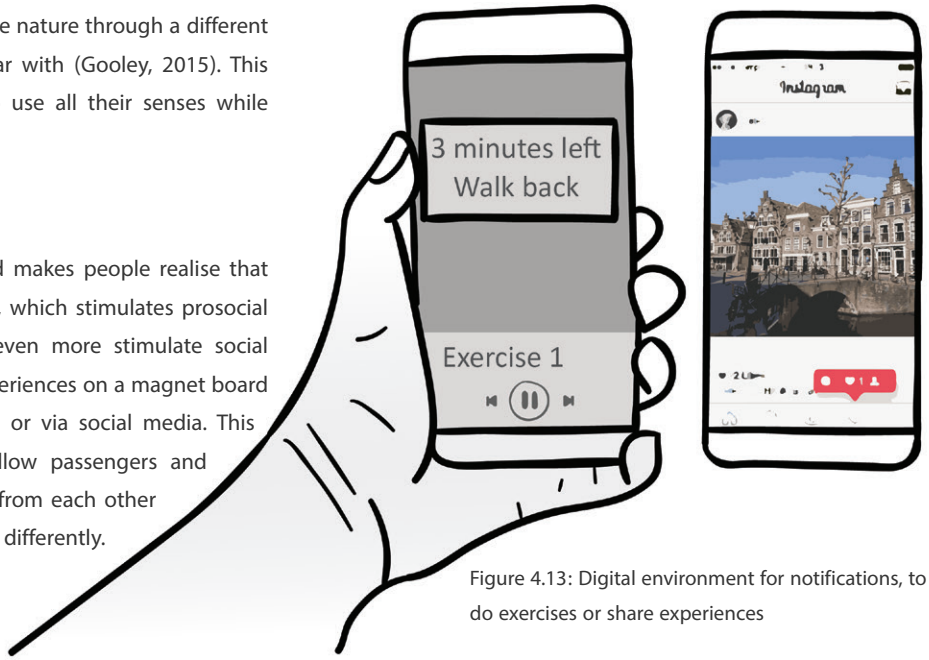


Figure 4.13: Digital environment for notifications, to do exercises or share experiences

Figure 4.14: Micro walks to visit local highlights and do exercises that invite people to look at their surroundings differently. Magnetic sharing board placed at the station for more social comfort

Figure 4.15: Concept fascination above the station

FASCINATION ABOVE THE STATION

The concept of fascination above the station invites passengers to look at the sky through a transparent roof of the waiting cabin (figure 4.15). The concepts aims to resolve the dilemmas of Mindfulness vs Distraction, Control vs Fascination and Social comfort vs Inspiration. The sky is something that is constantly changing and spacious which inspires fascination.

Rural Stations

The concept is especially suitable for stations located towards more the outside of the urban area, since these areas contain less light pollution. This way the darkness of the context of small stations, which is often negatively perceived, becomes an aspect that has benefits; i.e. the dark environment allows people to admire the stars during the evening.

Collaboration and Events

This idea lends itself to involve astronomy enthusiasts. Events can be organized with natural phenomena such as the longest night or shooting stars.

Transparent Roof

The transparent roof is the trigger and lens through which passengers observe the sky (figure 4.16).

Figure 4.16: Glow in the dark text that lights up in the evening

Slanted Roof

Facilitate shelter while having an inspiring waiting experience, even when leaves are falling (figure 4.17).

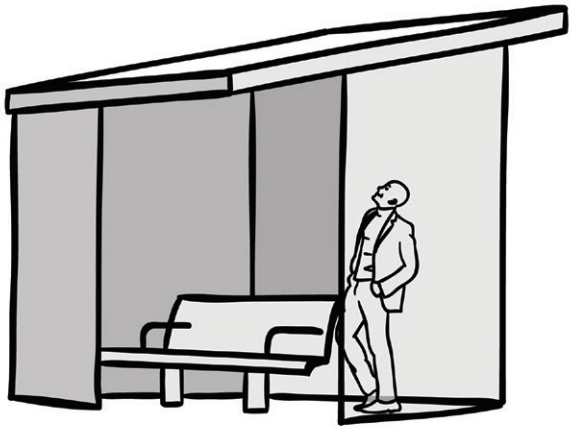
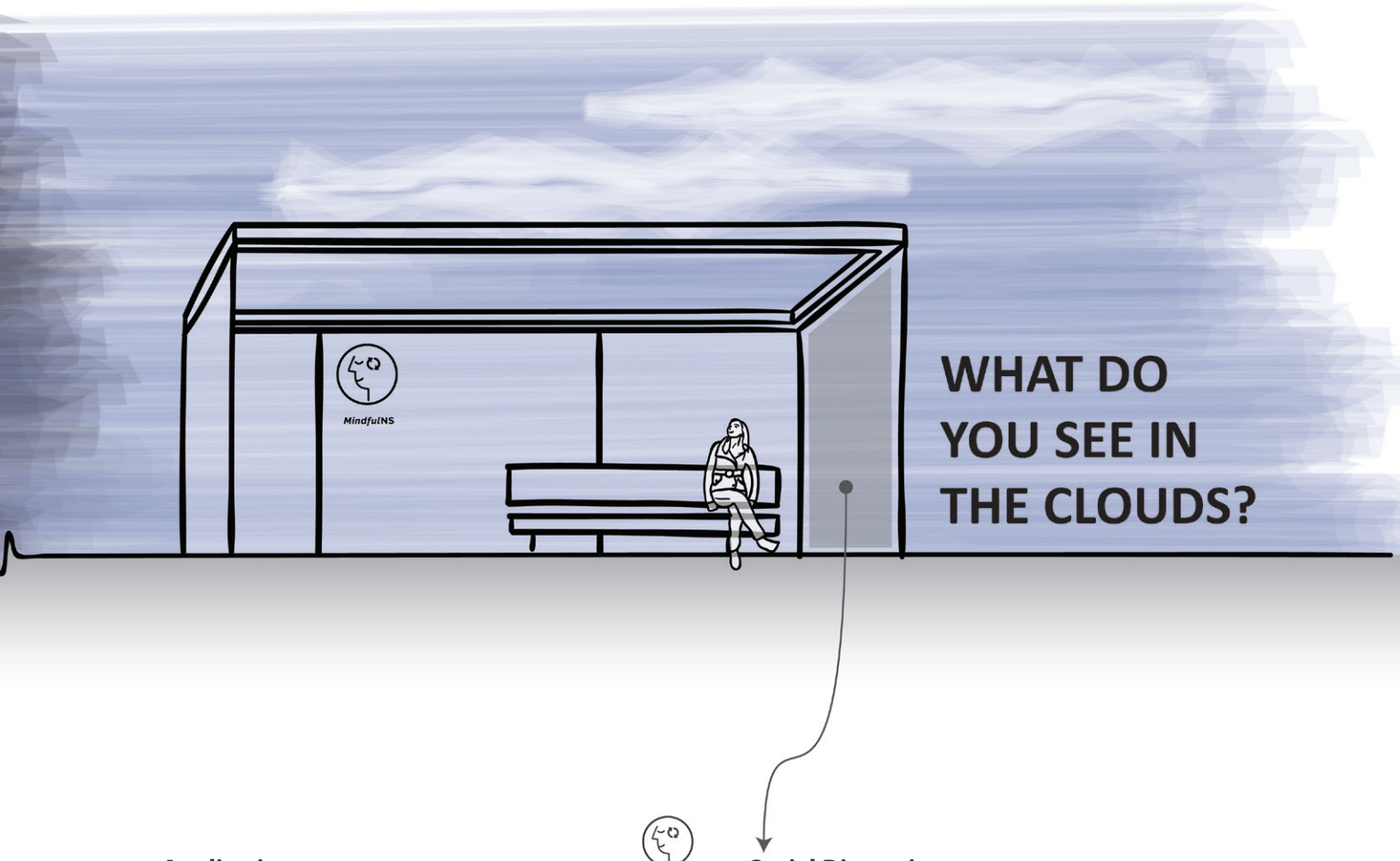


Figure 4.17: Slanted roof prevents accumulation of leaves



Application

Basic exercises are displayed at the waiting cabin, while the NS application offers more advanced exercises (figure 4.18). These exercise include invitations to make observations or to be mindful about the sky. MindfulNS is an existing beta application functionality of the NS which provides passengers with mindfulness exercises that are custom made for the train. The concept of fascination above the station could synergize with the MindfulNS application. For example, the body-scan is a is an exercise that is done in the train, but a sky-scan could be developed in which the user is invited to become more aware of the sky above the station.

Figure 4.18: Application with mindfulness exercises and exercises to challenge people to observe the sky

Social Dimension

The sky evokes a sense of awe and makes people realise they are part of something bigger which stimulates prosocial behaviour (Piff et al. 2015). To even more stimulate social comfort people can share their experience on a magnetic board (figure 4.19) with stations language developed by Corver and Bruins (2018). This way people become more familiar with each other.

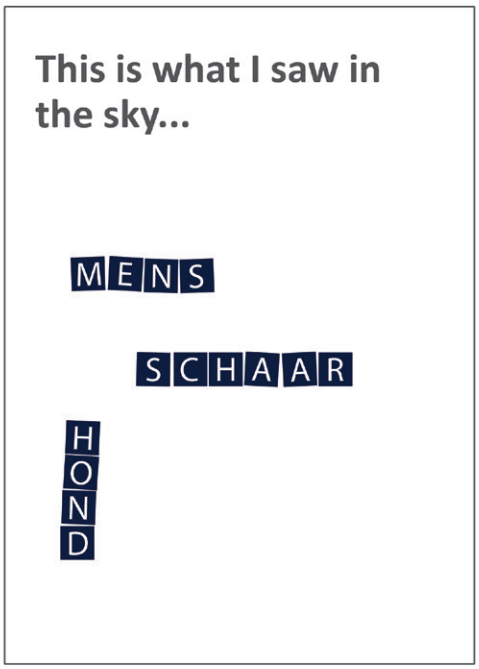


Figure 4.19: Magnetic sharing board placed at the station to increase social comfort

4.4 CONCEPT REFLECTION

This section reflects upon the four concepts that are presented in the previous section. The reflection discusses the strengths, weaknesses and questions that surround the concepts.

Praatbank and Stiltebank

The concept of the praatbank and the stilte bank uses explicit textual information to communicate its intension. This explicitness stimulates passengers to make a conscious choice about how they want to make use of their waiting time. The explicitness has the negative side effect of increasing hard fascination, since passengers consciously read the text. This raises the question whether passengers would like communication that is explicit or rather implicit of nature. The variation of the concept (figure 4.8) shows a more implicit twist to the concept that could partly solve this issue. This could be taken further by adding sounds that are inspired by social places (e.g. a café) or by calm environments (e.g. a forest stream). Another concern is whether the praatbank sets unrealistic expectations for the intensity of the social interaction.

To conclude, the concept aims to design benches that stimulate passengers to interact with fellow passengers or, the opposite, to do an individual activity. However, it is uncertain what level of ambiguity is appropriate for the small station context. Therefore, it would be interesting to experiment with different types of benches (varying from implicit to explicit design cues) to see how passengers react to these differences and to examine whether people like to participate in conversations with fellow passengers.

Fascination at the Station

The concept of fascination at the station uses nature to beautify small stations. This contains great value since small stations are often perceived as boring due to grey colours and boring material use. The concept aims to implement greenery in an efficient way by adding it to existing functional objects. The concept proposes to cooperate with third parties in order to organise greenery at small stations. However, from a business point of view this contains risks, since NS has less or no control over third parties which could potentially harm the NS brand identity. It would be interesting to learn from Rijkswaterstaat how to plant and maintain green spaces on functional objects in an efficient manner.

To conclude, an important challenge that this concept offers is to organise greenery at stations in such a way that it is cost effective.

Fascination around the Station

The concept of fascination around the station invites passengers to take a short walk. The concept aims to facilitate an alternative activity for passengers to experience a feeling of freedom while maintaining control. For this concept to work, it is crucial that passengers maintain a sense of control, otherwise the threshold to take a short walk is too high.

Therefore, the main challenge for this concept is to design short walks in such a way that it has a low threshold. It would be interesting to investigate what the conditions need to be organised in order for passengers to be sufficiently in control to take a short walk. Questions that arise are: (i) how long do passengers have to wait in order to feel enough in control for a short walk, (ii) what information systems need to be set up and (iii) what type of wayfinding guides do people prefer in order to feel in control?

Fascination above the Station

The concept of fascination above the station aims to trigger passengers to look for fascination in the stars at night and the clouds during the day. The dark environment of small stations at night and the diversity of clouds in the Netherlands during the day make good conditions to seek fascination in the sky. This way, darkness becomes an advantage of small stations instead of a disadvantage.

The concept fascination above the station is perhaps the boldest concept, because this concept is farthest from the traveling theme. One could argue that the concept has nothing to do with travelling which can make the concept feel a bit random. However, this can also spark feelings of surprise and fascination among passengers.

To conclude, the concept fascination above the station facilitates an alternative activity while waiting at the platform. However, it does raise the question whether passengers would appreciate the concept in the context of a small station.

Concept	expected efficacy	fitting to context	feasibility	interest
Praatb. and stilteb.	?	+	+	+
Fascination at.	+	+	+	+
Fascination around.	+	++	++	++
Fascination above.	+	-	+	+

Figure 4.20: Evaluation concepts

4.5 CONCEPT CHOICE

All four concepts contain strengths, that could enhance the experience at small stations, and elements that would be interesting to further explore. The four concepts even could be combined, since they originate from the same vision (chapter 4.1) and are not conflicting each other. However, the project allows for only one concept to be further developed.

The chosen concept is fascination around the station (figure 4.21). The reflection gave input for the considerations that have been made to choose this concept. Figure 4.20 contains an overview of these considerations that includes the criteria of (i) expected efficacy of the concept to adequately respond to the dilemmas, (ii) the fitting of the concept within the context, (iii) the feasibility of the concept and (iv) the (personal) interest in the challenges and development process of the concept. The following paragraphs will further elaborate on the considerations.

One of the reasons is that the chosen concept seems to be feasible, i.e. the concept generates great value while using little resources. The aim of the concept is not to improve the experience by massively changing the environment, but to organise the experience of passengers in such a way that they are stimulated to seek fascination in the already existing world around them. In this way the concept makes use of the existing context of small stations.

Another reason for choosing this concept is the dynamic between the needs for control and freedom. The concept shows how design for small stations can take both core emotional needs into account at the same time. It does this by inspiring passengers to participate in a freedom experience while facilitating control as well. This dynamic is interesting to further explore during the development of the concept. The main challenge is how to facilitate short walks in a way that gives passengers sufficient control over their journey.

A personal reason to choose this concept is that the concept lends itself well for designing an interactive application prototype. A skill that the graduation student would like to learn.

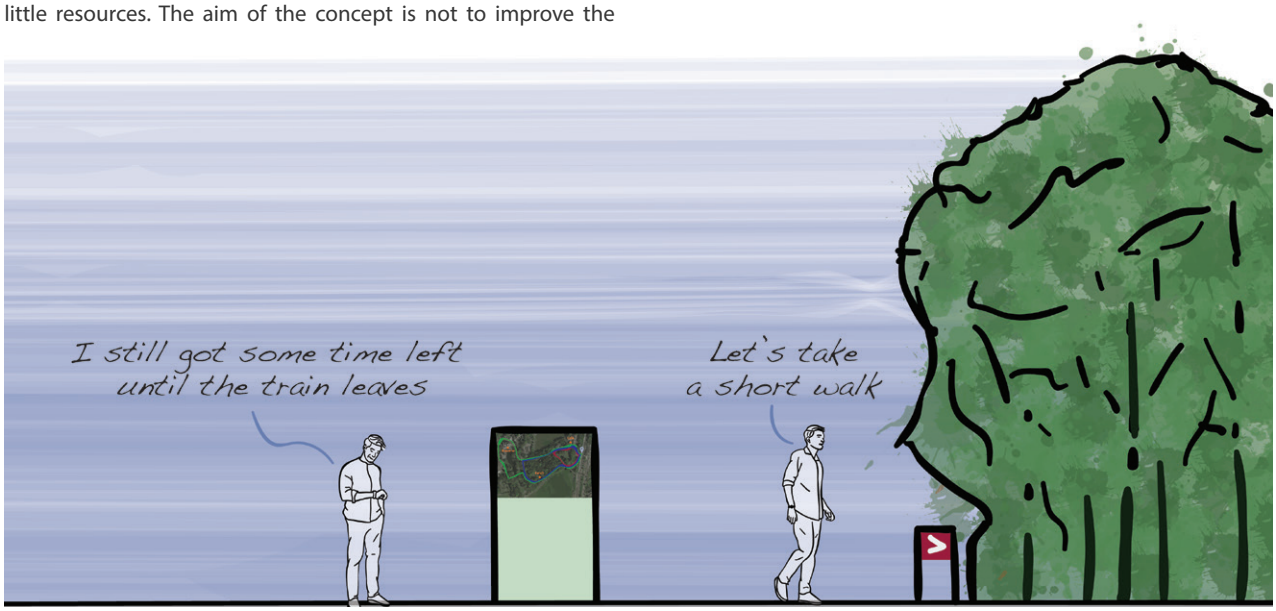


Figure 4.21: Fascination around the station is the chosen concept to further develop

CONCEPT DEVELOPMENT

Chapter 5
Pages 74-83

5.1 Observation station Nunspeet
5.2 Concept components

05

StationsOmmetje

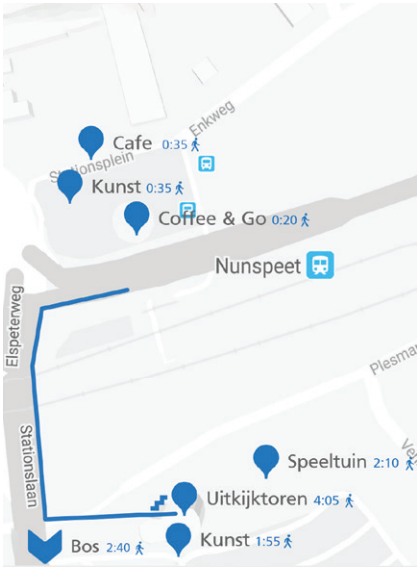
This chapter contains the design iteration for the chosen concept of fascination around the station (chapter 4). The concept development focuses on further detailing the concept for the station of Nunspeet. This materialization includes the design of three main components, namely triggers, physical guides and features within the NS-app. The designs generate visualizations that will be used during the concept validation (chapter 6).

The chosen concept of fascination around the station continuous under the name of StationsOmmetje. Ommetje is a typical Dutch word that can be described as a short walk around the block, just for the sake of taking a walk.

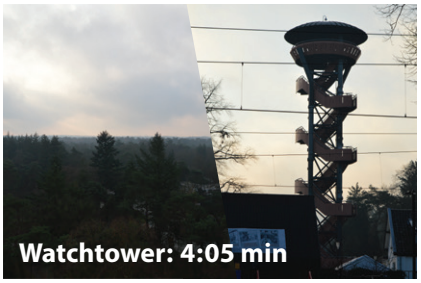
5.1 OBSERVATION STATION NUNSPEET

The concept development will focus on a specific station. This focus on a particular station allows for more depth and realism of the concept materialisation. The chosen station for which the concept will be further developed is the station of Nunspeet. This station is chosen because its environment contains many opportunities that inspire fascination. However, this does not mean that StationsOmmetje is only suitable for stations that have a diverse environment, since the concept is also about seeking fascination in everyday things.

An observation has been executed to gain insight into the opportunities for developing StationsOmmetjes around the station of Nunspeet. The station Nunspeet is located right at the border of the inhabited area and a nature reserve called the Veluwe. Therefore, its surroundings has a lot to offer to inspire fascination and comfort. The observation focuses on identifying interesting attraction points as well as mapping walking distances to these locations (figure 5.1).




Cafe: 0:25 min


Watchtower: 4:05 min


Artbox: 0:35 min & 1:55 min


Forrest: 2:40 min

Cup of Coffee: 0:20 min.


Cafe: 0:35 min


Stations huisje: 1:55 min


Playground: 2:10 min


Pancake house: 1:00 min

Supermarket: 2:35 min

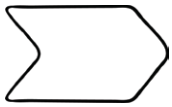
Figure 5.1: Walking distances to interesting locations around the station of Nunspeet (one-way)

5.2 CONCEPT COMPONENTS

The evaluation of the chosen concept (chapter 4.4) argued that passengers must have sufficient control before they are confident enough to participate in a short walk. Another aspect that is important is that passengers need to feel invited to do a StationsOmmetje. Three components have been identified to facilitate the StationsOmmetje while taking the concerns of above into account. The three components include triggers, physical guides and features within the NS app. Below, an overview briefly describes these components, after which each component is further elaborated and visualised.

Triggers

Triggers raise awareness and invite people to explore fascinating elements around the station. These triggers can take many forms, such as, proactive notifications on smartphones, advertising columns and advertising videos in trains.



Physical Guides

Physical guides give information about directions and walking distances. In this way, passengers remain a sense of control because they receive direct feedback in the real world.

Features within the NS-app

Features within the NS-app are able to give customized information for each individual passenger. The features enable passengers to; (i) *be informed* at all times about fascinating facilities that are present at the local station, (ii) *manage timing* of their StationsOmmetje by giving up to date feedback about the expected arriving time of the station and (iii) *enjoy content* through exercises that stimulate to interact with their surroundings in an explorative manner.

Triggers

Figure 5.2 and 5.3 show how passengers can be triggered via advertising channels at the station and in the train.

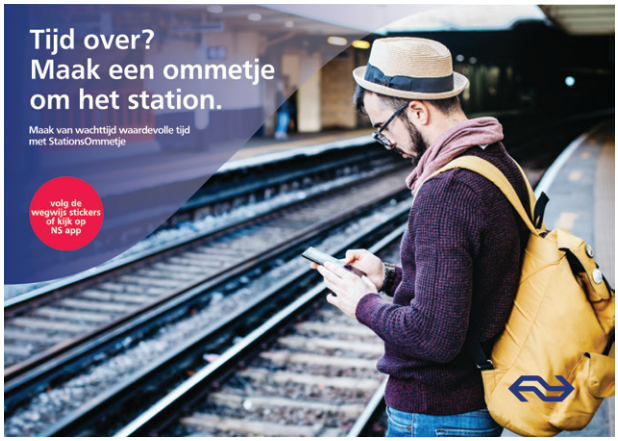


Figure 5.2: Call to action poster invites people to do a StationsOmmetje

Figure 5.3: Call to action poster in context of station and train

The content of these triggers could also be varied to answer to different types of needs people have. See chapter 6.2 for information on how the different need segments extract different meanings from StationsOmmetje.

Figure 5.4 shows how passengers can also be triggered via the NS-application. Data such as the location, travel plans and time within the application allows to give an personal invitation to do StationsOmmetje.

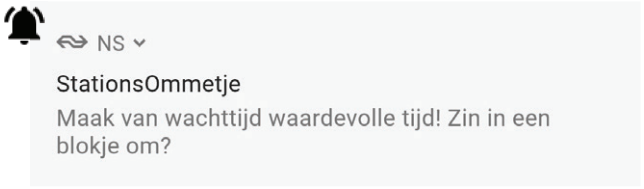


Figure 5.4: Proactive notification before StationsOmmetje: Turn waiting time into valuable time. Feel like taking a short walk?

Physical Guides

Physical guides allow people to stay fully immersed in the real world without having to look on the phone for directions. The guides provide information about directions and walking distance. This way, passengers are empowered to stay in control while participating in a StationsOmmetje.

Inspiration has been sought in public signages. Figure 5.5 shows how signages can blend in the public domain. Another inspiration are the monument signs (figures 5.6) that do not ask much attention, but are hard to ignore once one knows the meaning behind these signages.

Figure 5.5: Signages that blend into the public environment

Figure 5.6: Once you know what the sign means you see it everywhere

Three wayfinding guides concepts (figure 5.8) contain different levels of recognizability and placement. These include: tiles, signs and stickers. This divergence has been done since it is unknown what type of wayfinding guides passengers prefer. The visualisations of the three concepts make it possible to conduct a conversation with passengers during validation interviews (chapter 6) about what wayfinding guide is the best in terms of usability.

Two design features are consistent throughout all three wayfinding concepts. Namely colour; orange to move away from the station and green to move towards the station, and shape; circles for destinations and arrows for directions (figure 5.7).

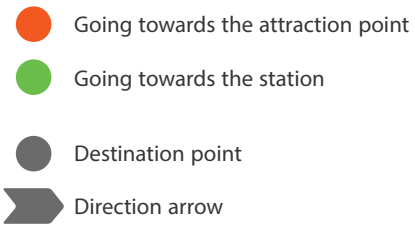


Figure 5.7: Recognizability through consistency in colour and shape

Figure 5.8: Three concepts for wayfinding: tiles, signs and stickers

Figure 5.9: Wayfinding guides in the style of NS

All three concepts are designed in the corporate identity of NS as well (figure 5.9). The validation interviews (chapter 6.1) include two style variants in order to discover how the two different designs changes the perception of passengers towards the StationsOmmetje.

Features within the NS Application

Figure 5.10 shows how notifications in the NS application can be used to inform passengers about how much time it takes to get back to the station and the value they get out of doing a StationsOmmetje.

Figure 5.10: Notifications after (left) and during (right) StationsOmmetje

Features within the NS application can also provide information about what facilities and activites are present around the station. An interactive prototype has been made to show how these functionalities could be integrated within the application of NS. This section provides visualisations of the application.

Every station has its own facilities, such as a bicycle locker, a kiosk or a taxi service. Within the concept the additional facilities of StationsOmmetje, Coffee & Go and StationsActiviteiten (Station Activities in English) are incorporated in the NS application (figure 5.11). This way, the environment of a station becomes a facility since it offers value within the customer journey of passengers.

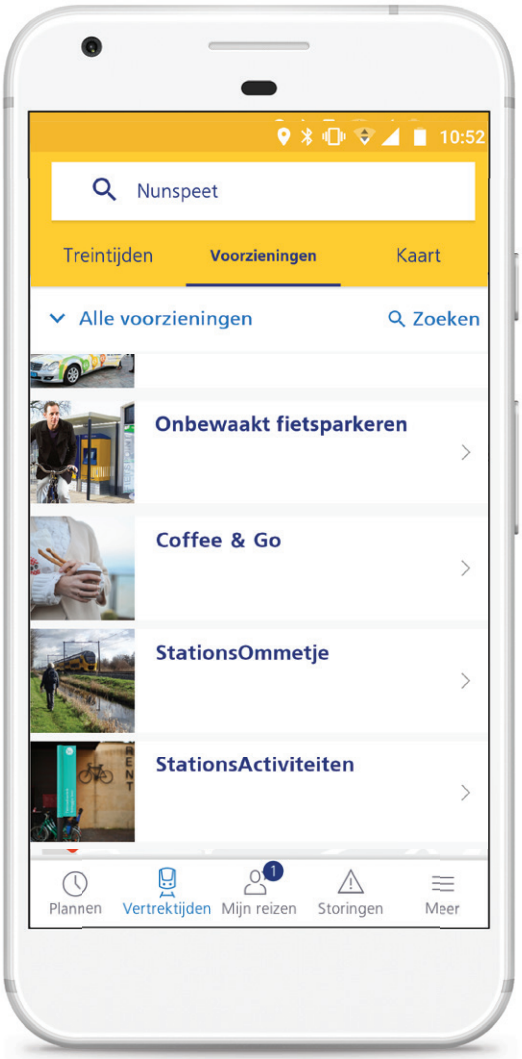


Figure 5.11: The facilities of StationsOmmetje, Coffee & Go and StationsActiviteiten incorporated in the NS application

StationsOmmetje

When one navigates to StationsOmmetje within the NS-app (figure 5.12), one discovers interesting locations that are near the station. These are presented with estimated walking distances and routes. When one touches a location, the shortest walking route is displayed. This way, passengers can prepare even before they arrive at the station, because they can see if StationsOmmetjes are available at that station.

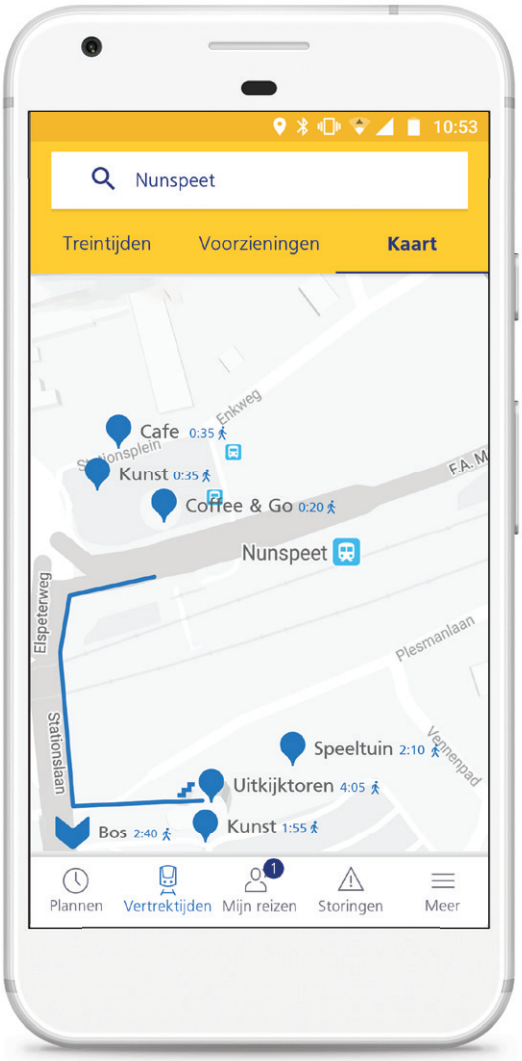


Figure 5.12: StationsOmmetje with estimated walking distances

Coffee & Go

Coffee & Go (figure 5.13) is a service that lets passengers order drinks and food at a nearby restaurant. This way the passenger can be assured of a fast service and catch the train on time.

Figure 5.13: Fast service with Coffee & Go

StationActiviteiten

StationActiviteiten (figure 5.14) contains of different kinds of activities that invite people to use their senses and experience their environment differently than they are used to. The short exercises can be done either during a StationsOmmetje or while staying at the station. What once was a boring environment can become fascinating when looking at it with different eyes (Gooley, 2015). Smith (2018) and Gooley (2015) inspired the design of StationsActiviteiten.

Figure 5.14: Exploration with StationsActiviteiten

The StationsActiviteiten include five exercises (figure 5.15 - 5.19).

Figure 5.16: *Geluid in kaart brengen* (i.e. mapping sounds) in which passengers are invited to take a seat and collect and count sounds

Figure 5.15: *Geur in kaart brengen* (i.e. mapping smells) in which passengers are invited to collect smells and identify their sources

Figure 5.17: *Constructie* (i.e. construction) in which passengers are challenged to discover objects that are not noticed at first sight

Figure 5.18: *Kleurenzoeker* (i.e. colour seeker) in which passengers are challenged to collect all kinds of colours

Figure 5.19: *Mindfulness* in which passengers can listen to audio fragments that includes exercises that let them become more mindful about their surroundings

CONCEPT VALIDATION

Chapter 6
Pages 84-90

6.1 Validation interviews
6.2 Target group analysis

06

user feedback

The concept development (chapter 5) designed three main components of StationsOmmetje. The visualisations of these components are used within the validation research. This chapter describes the process and results of the concept validation. It firstly describes the setup of the validation interviews. Secondly, the results of the interviews are presented which give insight into the perceived interest and preferred usability of StationsOmmetje. Subsequently, the chapter describes how StationsOmmetje is versatile and adds value to a broad target group. The insights that the concept validation generated provide input for the recommendations that are described in the concept roadmap (chapter 7).

6.1 VALIDATION INTERVIEWS

Goal Validation Interviews

The goal of the validation interviews it to execute a first exploration to examine whether passengers are interested in StationsOmmetje and whether the usability design is how they would like to use the concept. The validation of the concept examines whether passengers interpret the design as intended (Crilly, Moultrie, Clarkson, 2004). This is especially important for scenario based design since there are many environmental factors that influence how the concept is received. The research questions of the validation include:

- To what extent are passengers interested in StationsOmmetje?
- Do passengers appreciate the entire concept, or are certain parts (e.g. StationsOmmetje and StationsActiviteiten) more interesting in comparison with others?
- Is the usability interaction compatible with the travel flow of passengers?
- What is the preferred medium for physical guides?

Methodology Validation Interviews

The validation research included twenty interviews with passengers. These interviews took place at the station of Nunspeet on 14, 15 and 16 January 2020, respectively at the times 12:30-14:00, 09:30-11:30 and 14:00- 15:30. The interviews contained three sections, namely (i) StationsOmmetje (ii) physical guides and (iii) StationsActiviteiten. Each part contained a short introduction that presented the concept component with the use of A3 posters and a series of questions. The interview skipped some the questions when a participant did have no perceived interest in StationsOmmetje and/or StationsActiviteiten. Appendix 12 shows the visualisations and questions that the interviews included. The interviewer wrote the answers down on answer sheets and digitalised them afterwards. The interviewer did not inform the participants who had designed the concept.

Results

StationsOmmetje

Figure 6.1 shows the perceived interest of passengers in StationsOmmetje. Fourteen out of twenty passengers showed moderate to serious interest. The main motive for passengers to do a StationsOmmetje is to kill time (figure 6.2). However, many other motives were mentioned as well, such as exploration, drinks, exercise, culture, nature and meeting people.

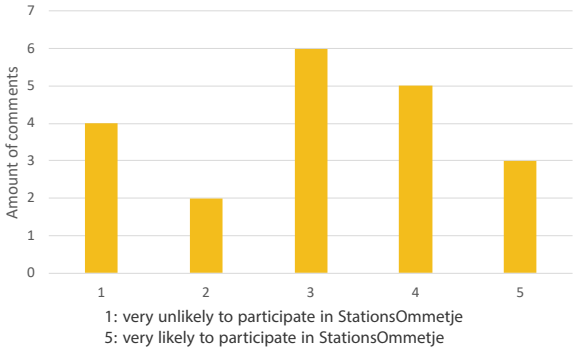


Figure 6.1: Perceived interest in StationsOmmetje

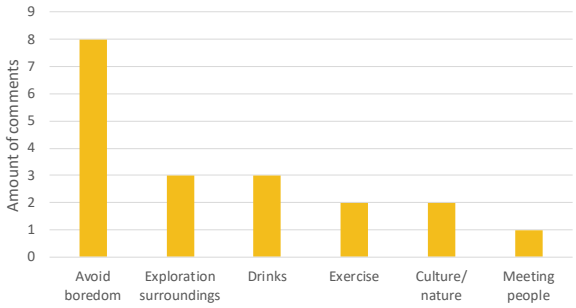


Figure 6.2: Motives for doing StationsOmmetje

Barriers to that can prevent passengers from being interested in StationsOmmetje include: familiarity of surroundings, bad weather and time shortage (figure 6.3). Regarding the last barrier, time shortage, it has been found that many passengers are comfortable in doing a StationsOmmetje when having to wait ten or fifteen minutes (figure 6.4). A passenger mentioned that a four minute walk is desirable when having ten minutes time. Four passengers would be interested to do a StationsOmmetje when they have to wait during the bus-train transfer which takes twenty minutes at the station of Nunspeet. Three passengers can only be tempted to do a StationsOmmetje when missing the train or in case of a malfunction of the train.

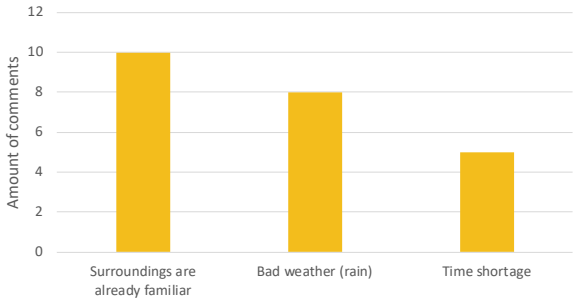


Figure 6.3: Barriers for doing StationsOmmetje

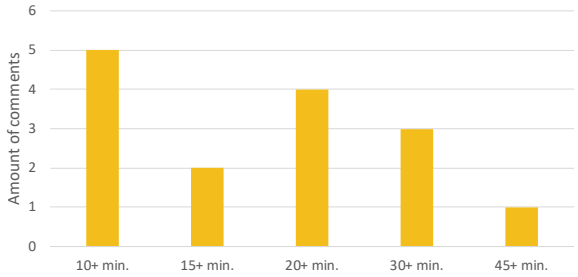


Figure 6.4: Perceived amount of minimum time needed to do StationsOmmetje

The passengers mentioned that they see value in incorporating StationsOmmetje into the NS app since it allows them to be better prepared before arriving at the station. It is enhances control, since one can see his or her own location in regard to the station and can always rely on the app when physical wayfinding guides are broken.

Physical Guides

The signs are perceived to be the most noticeable medium (figure 6.5), they are the most preferred medium of wayfinding guides as well (figure 6.6). The participants found that the signs are most noticeable since the placement is at eye-height. Among passengers there is a concern whether the tiles would be visible after snow or leaves had fallen. For the stickers passengers were concerned that it would not be durable and that other stickers could be pasted on top of it.

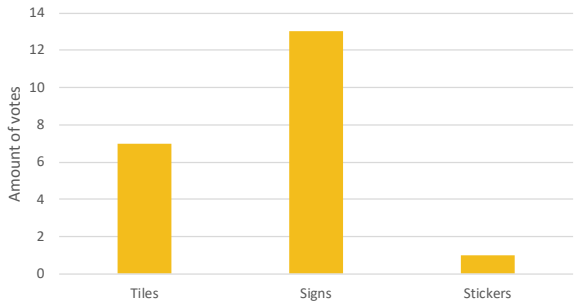


Figure 6.5: Perceived attention to the medium of guides

Figure 6.6: Preference to the medium of guides

Half of the passengers could tell that the meaning of the two colours indicated the direction to the station or away from the station (figure 6.7). This interpretation was as the design was intended to communicate. Some participants thought the colours indicated differences in distance.

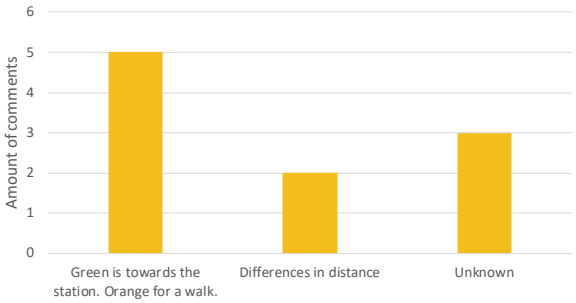


Figure 6.7: Perceived meaning of two colours

An alternative design with the NS corporate identity was presented during the interviews as well. The NS style scored equally well compared to the green/orange style (figure 6.8). However, passengers that chose for the green/orange design preferred it because of the colourful, cheerful and inviting look. When passengers opted for NS styling, they thought the NS style is more coherent with the station. They also feel more included because they felt that the NS style was specifically aimed at passengers.

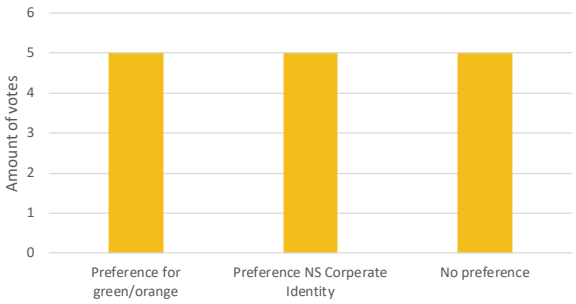


Figure 6.8: Preference for styling of wayfinding guides

StationsActiviteiten

Figure 6.9 shows the perceived interest of passengers in StationsActiviteiten. Eight out of nineteen passengers showed moderate to serious interest. Motives for passengers to do a StationsOmmetje is to avoid boredom, curiosity, moment of rest or social activity (figure 6.10). People who are not interested in StationsActiviteiten said that they are already familiar with this way of thinking or said that it is just not for them (six passengers mentioned the latter).

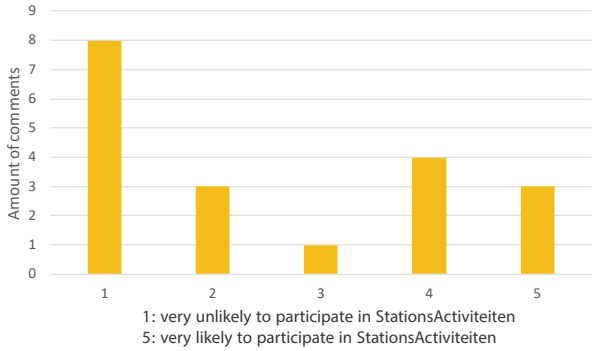


Figure 6.9: Perceived interest in StationsActiviteiten

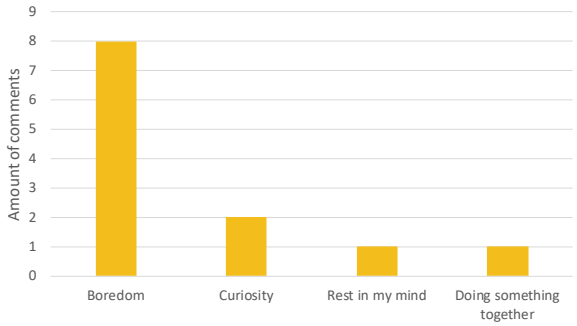


Figure 6.10: Motives for doing StationsActiviteiten

The amount of waiting time that passengers need in order to be interested in doing StationsActiviteiten is diverse (figure 6.11). While some would do it in any timeframe, others would only do it when they need to wait for long periods of time (e.g. 30 minutes).

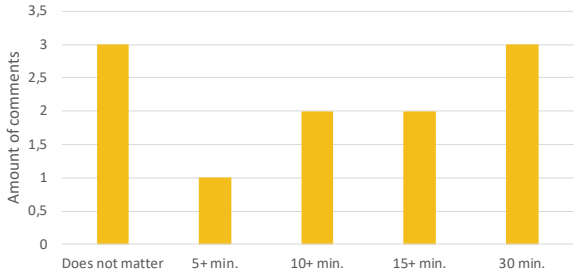


Figure 6.11: Perceived amount of minimum time needed to be interested in StationsActiviteiten

Figure 6.12 shows the preference to individual exercises of StationsActiviteiten. The 'mapping sounds' and 'colour seeker' are most popular. Participants said that these are the most concrete and easy to do since sounds and colours are always around stations. The activities 'mapping smells' and 'mindfulness' were sometimes perceived as too far out of the comfort zone.

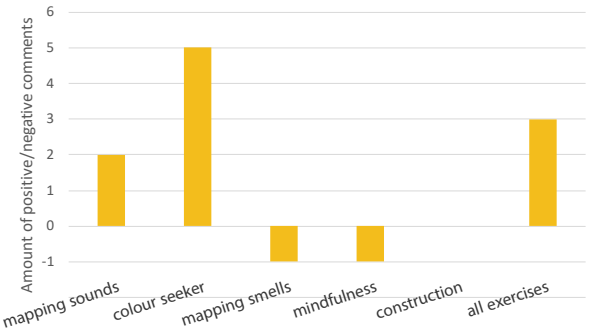


Figure 6.12: Preference to individual activities of StationsActiviteiten

Conclusion Validation Interviews

The results of validation interviews indicate that fourteen out of twenty passengers show moderate to serious perceived interest in StationsOmmetjes. This interests starts from ten minutes or more waiting time. Passengers have many different motives for doing a StationsOmmetje, ranging from killing time, to exploration and culture. It can be said that StationsOmmetje appeals to many kinds of passengers. Signs are the most preferred medium of wayfinding guides, due to the fact that passengers are used to paying attention to sights. There was no preference among passengers regarding the style of the wayfinding guides, even though the perception of the two different style is different. The incorporation of StationsOmmetje into the NS app is valuable for the preparation and facilitating extra control.

There was less interest in StationsActiviteiten in comparison with StationsOmmetjes. Eight out of nineteen passengers showed moderate to serious interest in StationsActiviteiten. The main reason for passengers to show disinterest was simply that it was just not for them.

6.2 TARGET GROUP ANALYSIS

Diversity in Meaning

Validation interviews showed that participants have many reasons to participate in a StationsOmmetje. These motives include killing time, exploration, drinks, exercise, culture, nature and meeting people. This diversity also aligns with the needscope segments (Van Hagen, 2009) (see section 1.1). Figure 6.13 shows how StationsOmmetje contains different meanings for different needscope segments.

Diversity in Promotion

In order to include all kinds of passengers it is important to diversify promotion messages of StationsOmmetje. A diverse set of advertisements could contain messages such as: explore the surroundings with StationsOmmetje (targeted at the explorer), enjoy the peacefulness of a StationsOmmetje in nature (targeted at the individualist) or enjoy the surroundings together with StationsOmmetje (targeted at the socializer).

needscope segment	values	meaning extracted from StationsOmmetje
explorer	For the explorer the trip itself is a challenge and sees traveling as an inexhaustible source of inspiration. The explorer hates waiting, but always ensures that the time spent at the station is as enjoyable as possible	To explorer and enjoy inspiring surroundings and to avoid waiting
individualist	The individualist sees the trip as a moment to oneself. The individualist does not like to be disturbed and prefers calm surroundings that allows him/her to concentrate or listen to music	To find a calm environment that allows him/her to be with himself/herself
functional planner	The functional planner is goal-oriented and considers the train journey to be purely functional. It is the aim to go from A to B as fast as possible	To fulfil a purpose, such as doing a healthy exercise or to mentally recharge in nature
certainty seeker	The certainty seeker craves a journey that is safe and secure. They often arrive half an hour early at the station and need constant confirmation of going the right way	To spend long waiting times less boring while also staying in control
socializer	The socializer sees the train journey as an enjoyable part of outing. They like to meeting fellow passengers and enjoy talking to them as it gives them a sense of togetherness. They also enjoy wandering around and browsing their environment	To wander and browse the environment of the station and to experience a sense of brotherhood
convenience seeker	Comfort is most important for the convenience seeker. The convenience seeker does not want to worry and craves information that is easily accessible. The convenience seek goes to the station unprepared	To take comfort in taking a walk or to go shopping

Figure 6.13: Different needscope segments (Van Hagen, 2009) extract different meanings from StationsOmmetje

Target Group in Numbers

Figure 6.14 shows the distribution of waiting times of the month November 2019 at the station of Nunspeet (source: Reisbeeld NS). The data includes the amount of arriving waiting times of station Nunspeet which are based on check-in times and realised departure times. Temperatures do not have an effect on waiting time, since the months of January and July were analysed as well but did not significantly differ in terms of distribution.

The data shows that a total of 33.200 arriving journeys occurred in November 2019 at the station of Nunspeet. The validation interviews showed that passengers start to be interested in StationsOmmetje when waiting for ten minutes or longer. This group includes more than a third of the passengers or 11.400 instances. Figure 6.15 shows the amount arriving journeys in relation to minimum waiting times. To conclude it can be said that these numbers show that StationsOmmetjes has the potential to be relevant for many passengers at the station of Nunspeet.

Minimum waiting time	Percentage of instances	Amount of instances
10+ min.	34,4%	11.429
13+ min.	20,5%	6.814
15+ min.	9,4%	3.133
20+ min.	7,0%	2.323
30+ min.	1,2%	392

Figure 6.15: Number of arriving journeys regarding waiting times at station Nunspeet, November 2019

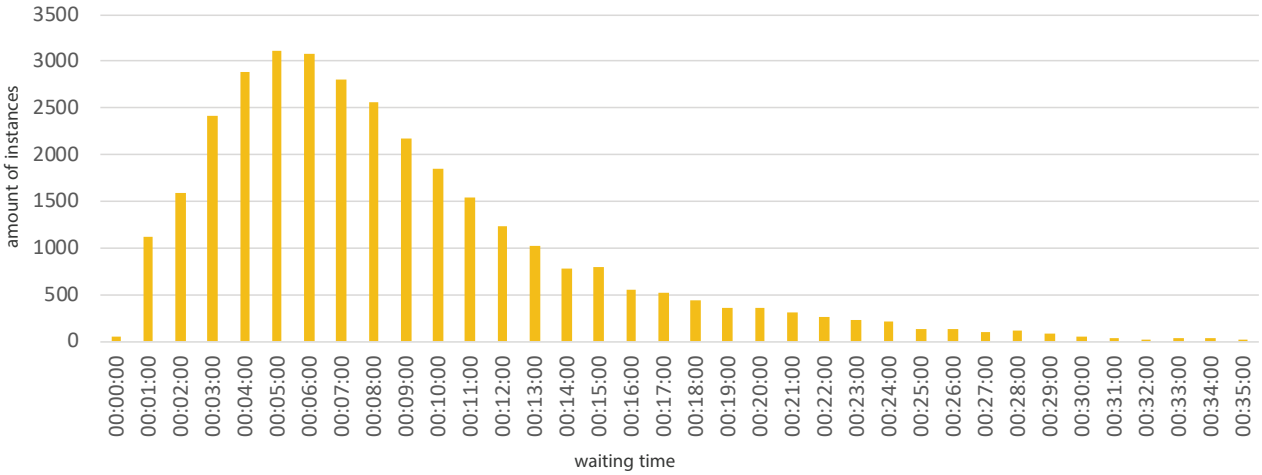


Figure 6.14: Distribution of waiting times at station Nunspeet, November 2019. Source: Reisbeeld NS

CONCEPT ROADMAP

Chapter 7
Pages 92-93

7.1 Pilot
7.2 Post Pilot

07

This section first describes the recommendations for the first pilot of StationsOmmetje. Secondly, it describes the necessary considerations to further exploit the concept of StationsOmmetje.

7.1 PILOT

The validation interviews gained insight into the perceived interest and preferred usability towards StationsOmmetjes. The next step is to explore the actual interest of passengers with the use of a pilot. The small scale of a pilot also makes it possible to quickly adapt to feedback on usability. The graduation project has led to the following recommendations:

Location: StationsOmmetje is designed for small stations. Therefore, it is advised to do the pilot at a small station (type four, five or six). During the graduation project a case study has been done at the station of Nunspeet. Nunspeet is an ideal station for StationsOmmetje due to the combination of nature and city (chapter 5.1). However, StationsOmmetje could be applied to many stations. It is the challenge to exploit fascination at the surroundings of small stations that are available.

Walks: Waiting durations are widely diverse and the durations of StationsOmmetjes should be as well. The validation interviews (chapter 6.1) showed that the interest starts from ten minutes at which a six minute StationsOmmetje is appropriate. Therefore, the shortest StationsOmmetje should have a maximum walking distance of four minutes. It would be ideal if the StationsOmmetjes could be divers in terms of meeting different needs (e.g. nature, drinks, art). It would be additionally be interesting to do further usability research during the pilot to gain more insights in how the walks exactly should be given shape. Should the StationsOmmetjes be defined in circles (which is clear and simple) or should StationsOmmetjes be a network of attraction points (which facilitates more autonomy)?

Wayfinding guides: Wayfinding guides that communicate directions and walking distances are necessary to facilitate control. It is recommended to use signs, since the validation interviews showed that signs are the most preferred by passengers due to its familiarity and visibility (chapter 6.1).

Triggers: Triggers are necessary to inform and inspire passengers to take a StationsOmmetje. Ideally promotion should communicate how StationsOmmetje adds value to all kinds of different passengers and trigger people to discover the surroundings of the station (chapter 6.2).

Branding: The validation interviews did not show a preference regarding the style of wayfinding guides (chapter 6.1). However, passengers often did feel more included when the guides had the NS styling. The branding is also dependable on who is to organise and maintain StationsOmmetje (see next section).

7.2 POST PILOT

The first pilot tests the actual interest and usability of StationsOmmetje. When successful, the pilot is not the end for StationsOmmetje, but will lead to bigger ambitions in which more small stations in the Netherlands will facilitate StationsOmmetjes. In this case it becomes increasingly important to structure its exploitation, in which the following considerations need to be made:

Templates: It would be useful to develop a template in which people can analyse how StationsOmmetjes could contribute to the experience of a specific station. This could include a series of questions to explore opportunities for a specific station. The template could also provide guidelines for defining the routes of StationsOmmetjes. Templates for triggers and wayfinding guides need to be provided as well.

Organizer: NS can play a great role of inspiring people to organise StationsOmmetjes. It is still the question whether NS will maintain the StationsOmmetjes or that it will be maintained by others. Perhaps NS could maintain a subset of the StationsOmmetjes, just as is the case with the 'NS Wandelingen'. It would be interesting to explore the possibilities of locals who can manage StationsOmmetjes themselves with the use of templates. Or perhaps StationsOmmetjes could be an open source tool in which passengers can organise and maintain their local StationsOmmetje themselves.

Application: StationsOmmetje features within the NS application can be a great way of providing individual passengers with customized information. This is especially interesting when StationsOmmetjes are implemented on a large scale. StationsOmmetje can be considered a facility since it adds value to passengers. Therefore, it would be recommended to label StationsOmmetje as a facility within the NS application. To even get more value out of StationsOmmetje it would be interesting to further explore the opportunities with StationsActiviteiten. The beta application of NS, called NSLab, would be a great platform for testing and generating feedback from passengers about StationsActiviteiten. The Dutch Design Week would lend itself also well for evaluating StationsActiviteiten.

REFLECTION

Chapter 8
Pages 94-97

8.1 Methodology
8.2 Value to NS

08

time to reflect

This chapter firstly reflects on how the methods of scenario based design, context mapping and dilemma-driven design supported the graduation student during the project. Secondly, the chapter reflects on how these methods managed to add value to NS.

This chapter firstly reflects on how the methods of scenario based design, context mapping and dilemma-driven design supported me as researcher and designer. Secondly, the chapter reflects on how these methods managed to add value to NS.

8.1 METHODOLOGY

This section reflects upon how the three methodologies used during the project supported me as a researcher and designer.

Scenario Based Design

Scenario based design allowed to approach the project in an holistic manner. Many factors and actors have an influence on how passengers experience small stations. Scenario based design allowed to capture how these factors and actors relate to each other, i.e. the scenario that includes the story of passengers, activities, events and context of small stations. This opened up a role for me, as a researcher and designer, to firstly, map and understand the current story and secondly, to appropriately direct the story in order to address challenges and opportunities. The thorough understanding of the current situation and the desires of passengers made it possible to design a feasible final concept that fits the experience world of passengers and that is in harmony with its context. The final concept only slightly changes the scenario, but does this in a way that reframes the meaning of the small station experience.

Context Mapping

Deep knowledge about what passengers feel and long for regarding the experience at small stations was one of the main knowledge gaps of current practice scenarios. During this project, context mapping provided the methodology to successfully extract latent knowledge through active passenger involvement that fulfilled this knowledge gap. Before starting the project, I was only familiar with my own experiences at small stations. However, the public domain of public transport naturally consist out of a very diverse set of people. Context mapping enabled me to emphasize with how passengers experience small stations. Context mapping provided the tools to collect necessary pieces of knowledge in order to identify dilemmas. After the interviews and observations during the explorative research, I tried to identify dilemmas with the use of the explicit information (i.e. what people say & think). However, this became a mere hypothetical exercise, since deep insight into the emotions and concerns was still missing. Only after the analysis of the generative sessions I was able identify dilemmas.

Dilemma-driven Design

Bridging the gap between research insights and concept ideation is a complex and crucial step within human centred design. In this project, design with dilemmas has proven to be useful to bridge this gap, since it moulds abstract knowledge, into a framework that inspires design. It does this without reducing much of the depth of the insights, because dilemmas incorporate emotions, personal conflicts and contextual factors. Another strength of dilemma-driven design that benefited the project is that it not only maps a singular concern of a passenger, but portrays how this concern relates to another (competing) concern. This way, dilemma-driven design is, just like scenario based design, a tool that approaches the experience in a holistic manner.

To conclude, scenario based design allowed me to approach the project holistically, context mapping allowed me to dig deep into the experience of passengers and dilemma-driven design enabled me to frame research insights into dilemmas that defines a meaningful design space. This way, all three methods complemented each other within the project and supported me as a researcher and designer.

8.2 VALUE TO NS

Over the years NS has executed research that resulted in a thorough understanding of, for example the needs of passengers, the core emotions that passengers long for and what design principles need to be carried out in order to satisfy these needs (see chapter 1). This raises the question what the methods, that are discussed in the previous section, add to this extensive set of knowledge. The following paragraphs elaborate on two beneficial characteristics of the applied methods, namely its qualitative and specific nature.

Qualitative research

The qualitative nature of the methods allowed to collect stories and latent knowledge about the experience of passengers. NS's quantitative research, such as the station experience monitor, allows to gain insight in how passengers perceive explicit information (i.e. what people think). Although this provided direction to what themes need to be improved, it does not inspire how these themes, such as waiting experience or

ambiance, can be improved. However, the results originated from qualitative research, do provide this inspiration, since the methods allow to gain insight into the stories, emotions and dilemmas of passengers. This is a crucial piece of knowledge that formed a design-space in which meaningful concepts, that react to the experience world of passengers, have been designed.

Specific Research

Another characteristic of the methods is its specificity. NS's research is often more global of nature since it incorporates the whole experience of public transport. However, the applied methods in the project focused on researching the experience of a specific touchpoint. This focus allowed to gain overview of factors and actors and resulted in a detailed understanding regarding the experience at small stations. This detailed understanding of contextual factors and dynamics of the experience at small stations allowed to design concepts that are in harmony with its context.

To conclude, NS's research provided global and quantitative knowledge that formed a solid foundation on which the graduation project could further build upon. The project applied an approach that focused on a specific touchpoint in a qualitative manner. This way, the project managed to collect deep and rich insights that inspired meaningful concepts that react to the experience world of passengers and are in harmony with the context of small stations.

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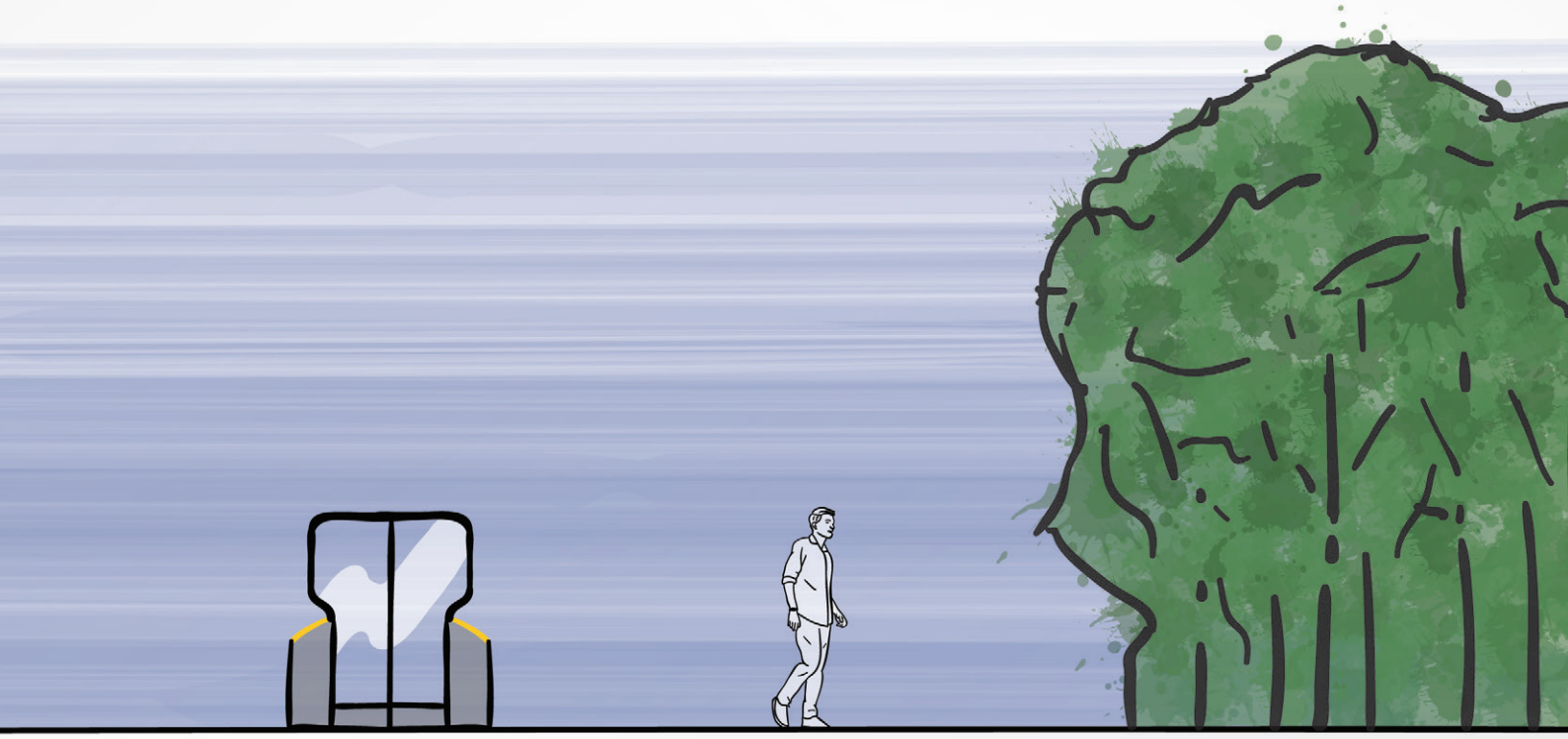

Research on Experience of Small Stations and Design of StationsOmmetje

Master Thesis Appendices | Marijn Kleijer

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1. PLAN OF APPROACH

Problem Statement

The Dutch Railways (i.e. Nederlandse Spoorwegen or NS) has the ambition to improve the quality of the public transport journey as a whole (Visie Nederlandse Spoorwegen, 2018). The station is an important touchpoint of this holistic journey, since 25% of the experience of this journey is influenced by stations (Stationsbelevingsmonitor, 2019; van Hagen & de Bruyn, 2015). Due to this influence, it is profitable to improve the experience on stations, especially since the social and recreative travelers are sensitive for the experience on stations and can be tempted to travel more often (Van Hagen & De Munck Mortier, 2003). This insight has led to the implementation of interventions at large stations with the result that customer experience are scoring very positively on these large stations. However, small stations score significantly lower in comparison with large stations (see appendix 13). The difference between large and small stations show that there are still many opportunities within the segment of small stations to further heightening the scores of the 'stationsbelevingsmonitor'. To conclude, enhancing the experience of small stations is a priority in order to further improve the experience of the holistic public transport journey, to heighten the scores of the 'stationsbelevingsmonitor' and to increase profitability. In order to maximize the impact of interventions on small stations, the scope of this project will include small stations with a building. I.e. the large stations of the small stations.

The problem of above raises the question what passengers are longing for regarding the experience of small station and how these stations can be improved. The following two themes are hypothesized to be relevant to this question:

Connectivity: Emotional connectivity between the station and its surroundings can be beneficial for improving the experience on stations. This can be accomplished by incorporating for example, people, activities, history or nature characteristics of the direct environment into the station. The emotional connectivity could benefit the comfort of stations, since research has shown that people in public environments feel more comfortable when they are familiar with their surroundings (Paulos & Goodman, 2004). It also could improve the ambiance of the stations, which is an category which scores low on stations (Stationsbelevingsmonitor, 2019). An example that aligns with the hypotheses is a recent pilot named Buitenpoorten, which aims to improve the experience of small stations with the use of elements of nature that emphasize the beauty of the environment that is characteristic to the area.

Liveliness: The liveliness of stations has a large influence on the ambiance of stations. Often stations have quiet periods in which not many people are present at the station, this is especially the case with small stations. The waiting experience is, together with ambiance category, scoring significantly lower in comparison to other categories (Stationsbelevingsmonitor, 2019). In these waiting situations additional stimuli can make the waiting experience of passengers more agreeable and useful (Van Hagen, 2011). It can also be argued that adding functionality (e.g. terrace or consultation service) to stations creates more liveliness as it attracts people to the station. An example is the station of Deurne in which many inspiring interventions are applied, such as ornamental images on technical objects and a small kitchen garden.

Approach

The project applies a scenario based design approach (figure 1) in which research has the aim to map the current scenario and to validate new scenarios that are designed. This approach has been chosen since small stations are public spaces in which various factors and actors play an important role. The first phase of the project is the departure phase in which literature will be conducted to gain better understanding of the people and the stations. The following two phases will consist out of research that will explore and go deeper into the experience of the passengers regarding small stations. The insights of the explorative will be the input for the deepening phase. The deepening research will intensively involve passengers to gain rich and deep insights about their experience. Themes and dilemmas will be identified. Subsequently these research insights will be used to generate ideas and scenarios. Validation research will be done for the final concept.

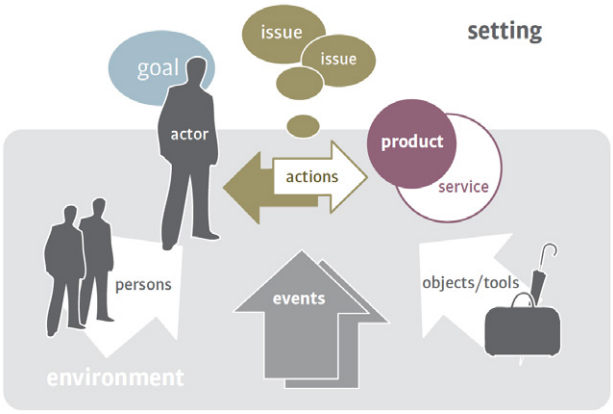

Figure 1: The scenarios based design (Carroll, 2000).

1. Departure phase

Desktop research will be conducted during the departure phase in which literature will be consulted to gain understanding of two elements that are crucial for the experience of small stations, namely: people and the station itself. This will give insight in the current knowledge that is available and to give direction in the upcoming phases.

People: To gain more insight in what kind of people are located on small stations various literature can be conducted regarding the socio-demographic and the social identity and emotional desires of travellers. The Needscope (Van Hagen & Hulster, 2009) can be used to gain insight into the 6 personas of passenger needs. A stakeholder map will be made that states all relevant stakeholders and how they relate to each other.

Station: For the exploration phase it is important to select a diverse set of smaller stations regarding to lower and higher customer satisfaction, amount of daily passengers, type of passengers and the location of station (e.g. neighbourhood or remote area). The document of the Stationsbelevingsmonitor (2019), Station experience monitor in English, and information about the categorization of stations will be conducted. Information about the physical structure of stations will also be explored.

2. Exploration phase

Research question 1: What do people say regarding the experience of small stations? What do small stations look like?

This phase will be explorative of character in which information about stations will be gathered. A diverse set of 5 stations, namely Nunspeet, Raalte, Rijssen, Culemborg and Santpoort-Noord, at which the explorative research will be conducted have been chosen. These stations vary in types of people, different surroundings and different features of the station. The purpose is to collect data of aspects that could positively or negatively influence the experience of small stations and to gain insight into the context of the station. Observation with the use of photographing the station will be executed. Additionally, interviews will be conducted to conversate about how the passengers experience the station. The result of this explorative research is to gain insight in themes that are often mentioned and to make collage of the 5 stations.

Tasks

Preparation of generative interviews Research on the stations, creation of interview form

Observation Photographing the 5 stations and their environment

Generative interviews Conversations will be made with passengers about how they experience the station

Theme analysis To identify common positive and negative experiences

Relation mapping to structure how the themes relate to each other

Station collaging to give insight in what small stations look like

Deliverables

Themes that represent the important topics people experience regarding small stations

Relation maps that give structure how the themes relate to each other

Station collages that give insight in what small stations look like

Documentation of the process and summary of the main insights of each station and theme

3. Deepening phase

Research question 2: What are important themes, emotions and personal dilemma's regarding small stations?

The deepening phase will further investigate the experience in which latent experiences of passengers become apparent with the use of context mapping methods. The insights of the explorative research will be the starting point of the deepening phase. The context mapping method (figure 2) will be used, since it allows people (which are the experts of their own experience) to express themselves in a structured manner. The knowledge gets gradually deeper and deeper; from explicit knowledge (what people say and do) to latent knowledge (what people know, feel and dream) (Stappers & Sanders, 2012). The Scenario Based Design approach will be used during this research to gain insight in how different actors and factors interact with each other.

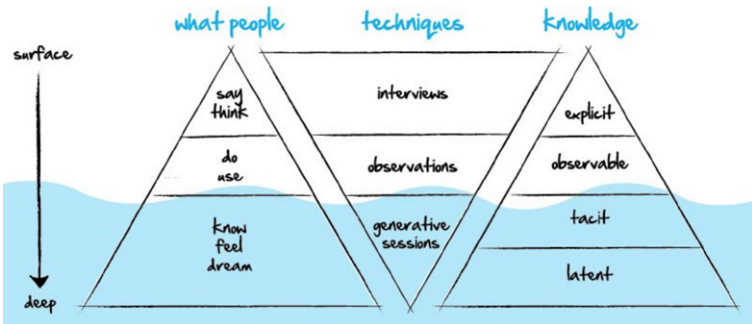

Figure 2: Context Mapping (Stappers, Sanders, 2012)

The deepening phase consists out of two parts that involve participants: (1) the participants will be sensitized with the help of exercises done on their own and (2) generative group sessions. The sensitizing material prepares the participants for the generative session since the exercises stimulates them to reflect upon their own experiences. It is unrealistic to ask participants for instant creativity, therefore these methods guide people to various stages of the creative process; preparation, incubation, intimation, illumination and verification (Stappers & Sanders, 2012). The sensitizing material consist out of three exercises in which the participants have to make pictures of a pleasant and unpleasant experience, finish sentences to put how they experience small stations into words and make a timeline that shows their activities and emotions during a public transport journey. The generative sessions include exercises such as (1) collage making to recall memories and explore ideal scenarios, (2) current scenario roleplaying to identify problems and longings, (3) future scenario roleplay and (4) low-fi prototyping to explore first idea directions. The results of the generative sessions will be used to make rich descriptions of important themes that are supported with raw data of the generative sessions. Personal dilemmas will also be identified in order to guide rich insights and emotions of passengers into a framework that defines an appropriate design space (Ozkaramanli et al., 2017). Dilemmas consist out of conflicting concerns, mixed emotions and mutually exclusive choices (Ozkaramanli et al., 2017). This information will be the starting point to generate ideas of new scenarios of small stations.

Tasks

Research on methodology Gaining knowledge about context mapping, moderating skills and dilemma-driven design

Recruitment Collecting a diverse set of research participants that fit the screening criteria

Sensitizing Facilitating sensitizing material to facilitate the preparation for participants

Preparation generative sessions Session script, collecting materials/probs

Generative group sessions Executing 5 co-creation sessions with 5 to 6 participants. The sessions consists out of a warm-up, and make and say exercises.

Thematic Analysis Raw data will be analysed to extract patterns of meaning

Dilemma-driven Design Generating dilemmas and selecting a design-worthy dilemmas

Documentation of the process and results

Deliverables

Themes that are supported with raw data and describe the dynamics the experience at small stations

Inspiring Dilemma Visualizations Dilemma's will be presented in a way that describes the concerns of the actor within a certain situation and context

4. Design phase

Research question 3: How can we design to improve experience of small stations?

The final part of the project has the aim to translate insights of the research into new near future scenarios in which the experience at small stations with buildings are improved. It has been chosen to work with scenario's, since this way of working incorporates not only the solution, but also how it interacts with the actors, actions, events and context. With the use of the dilemma's, new ideas and scenarios are generated in a resolving, moderating or triggering manner (Ozkaramanli et al., 2016). The final designs will be developed in an iterative manner in which feedback of stakeholders will be incorporated. Validation scenarios that cover design aspects are used to assess whether the intention of the design aligns with the user's interpretation and to identify points of improvement. The final concept should fit the following scope:

- The design has to be something that influences the station context as a whole, i.e. no collection of small separate concepts, but create a harmonic contextual ambiance
- The concrete design has to be something that is widely applicable and that can be replicated

Tasks

Ideation Generating ideas on the basis of the dilemmas

Concept Scenarios The interaction design between concept, actors and context

Final Concept Validation Conducting validation interviews in reaction to visuals of the final concept

Definition of Final Concept Final concept design

Deliverables

4 concepts Defined by visualisations of how concept functions within the context

Validation of the concepts based on validation interviews

Final concept A concrete final design to increase the experience at small stations

Documentation of the process and results

Planning

Week	Activity 1	Activity 2
19	Desktop research	Plan of approach
20	Desktop research	
21	Desktop research	Plan of approach
22	Desktop research	Finalizing Plan of approach
23	Desktop research	Prep. exploration phase
24	Desktop research	Conducting observations
25	Prep. generative interviews	
26	Conducting generative interviews	
27	Analysis interviews	Prep. recruiting
28	Documentation	
29	Prep. sensitizing material	
30 & 31	-- Holiday --	Recruiting
32	Prep. sensitizing material	Sending sensitizing material
33	Prep. generative session	
34	Collecting sensitizing material	1st generative session
35	Conducting generative sessions	
36	Conducting generative sessions	Thematic analysis
37	Thematic analysis	
38	Thematic analysis	
39	Communication results	
40	Documentation	
41	Documentation	Presentation gen. research
42	Documentation	
43	Conceptualisation	
44	Conceptualisation	
45	Conceptualisation	Concept choice
46	-- Holiday --	
47	Development final concept	
48	Development final concept	
49	Development final concept	
50	Development final concept	
51	Development final concept	Prep. validation interviews
52 & 1	-- Holiday --	
2	Prep. validation interviews	
3	Conducting validation interviews	Evaluating feedback
4	Evaluating feedback	
5	Defining final concept	
6	Documentation	
7	Documentation	
8	Documentation	
9	Documentation	

Figure 3: Planning graduation project

Organisation

Guidance during the graduation project will be provided by the NS as well as the University of Twente.

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Lead time

The project will start 6 May. Marijn Kleijer will commit 150 working days to the project.

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2. STAKEHOLDER MAPPING

Designing for a public space, such as a train station, requires collaboration with many partners. To map these partners a stakeholder analysis matrix has been made (see figure 4). The stakeholders are identified by looking at previous projects in which small stations are renovated.
Figure 5 on the next page shows the analysis regarding interest and influence on improving the experience at small train stations of each stakeholder.

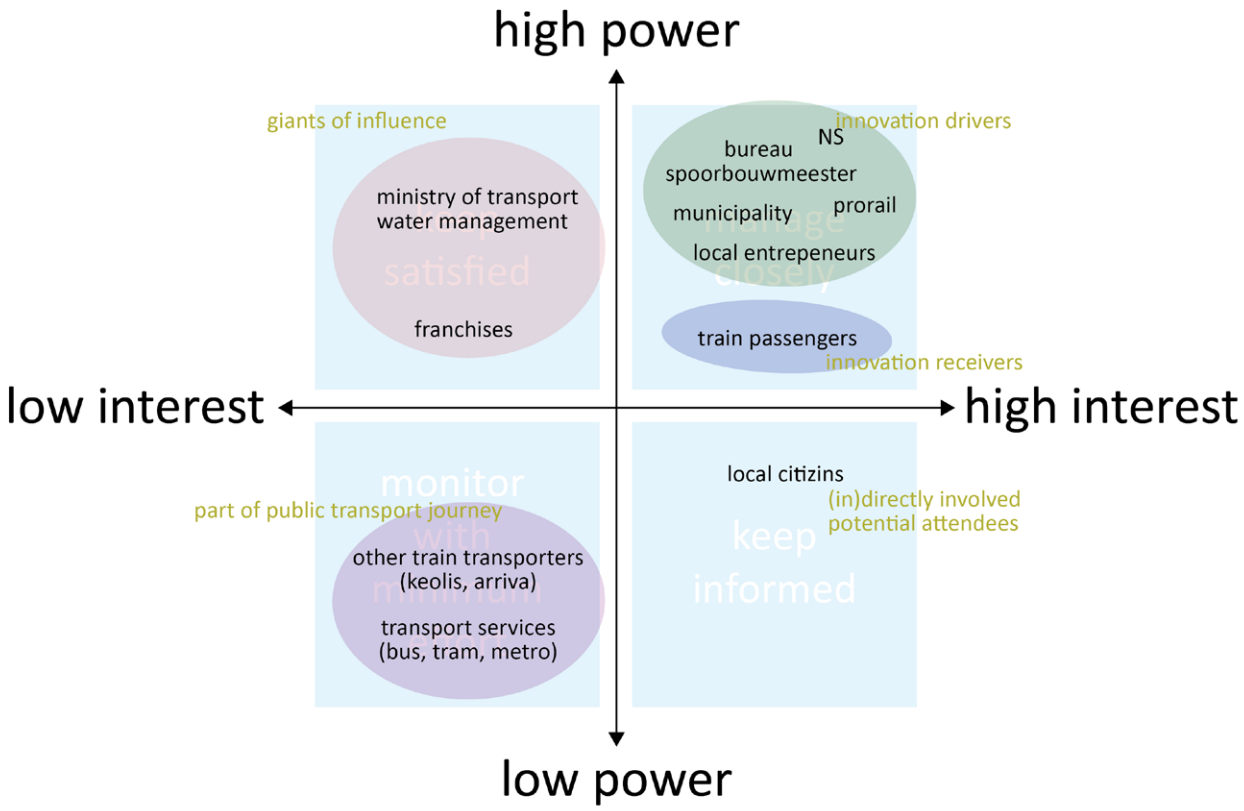


Figure 4: Stakeholder mapping on innovation at small stations

stakeholder	interests	estimated project interest	power	estimated project impact
NS	increase sales, NS views the public transport journey as a whole in which stations are an important part of the experience of train passengers	high	owner of many station buildings and actively works to improve the experience	high
prorail	increase sales, an improved experience for train passengers, prorail is committed to create comfortable stations	high	owner of rail traffic infrastructure (including platforms and tunnels)	high
bureau spoorbouwmeester	an improved experience for train passengers and locals, enhancing coherency of stations	high	is an independent organisation that has an advisory role to many stakeholders	high
municipality (or province)	a station that is coherent with its surroundings and that benefits the community	high	is responsible for policy of the city or village	high
train passengers	have needs and expectations regarding the experience of small station	high	the needs and dilemma's of passengers play a central role in the project	high
local entrepeneurs	a means by which they can export their specialties	high	can potentially contribute to the experience on stations	medium
local citizins	pleasant and safe living environment, are affected by changes of the station, these people can become additional customers/ attendees of the station	high	are involved in the neighbourhood	medium
franchises	a means by which franchises can sell consumers goods	low	can provide facilities to the station, but are mostly only suitable for large stations	medium
BTM transport services (bus, tram, metro)	increase sales of public transport	low	are not much involved in innovation of stations	low
other train transporters (e.g. arriva, keolis)	increase sales of public transport	low	are not much involved in innovation of stations	low
ministry of transport, public works and water management	guarding policy on national scale	low	are not directly involved, has the ability to obstruct the execution of the solution	high

Figure 5: Stakeholder mapping considerations

3. SELECTED STATIONS EXPLORATIVE RESEARCH

Figure 6 shows the characteristics of the chosen stations selected for the eplorative research. Each station has its own specialties resulting in a varied set of stations.

Station	Customer Experience[1]	Travel motive	Distribution of age classes[2]	Amount of daily passengers[3]	Specialties
Nunspeet Type 4	77,6% 7.2	school/study: 14% social/recreative: 48% work/business: 38%	0-19: 32% 20-24: 23% 25-44: 16% 45-64: 20% 65+: 9%	workday: 4.157 weekend day: 1.802	- Historical monument (1906) - Located between nature (forest) and a neighborhood - Many social/recreational passengers - Relative height score on ambiance and waiting experience
Rijssen Type 4	55,3% 6.5	school/study: 12% social/recreative: 45% work/business: 43%	0-19: 43% 20-24: 29% 25-44: 14% 45-64: 9% 65+: 5%	workday: 3.668 weekend day: 1.097	- Many young passengers, average age is 26,2 years - Station has grown rapidely; 40% between 2008 and 2015 regarding amount of passengers
Raalte Type 4	60,5% 6.6	school/study: 27% social/recreative: 23% work/business: 50%	0-19: 35% 20-24: 33% 25-44: 14% 45-64: 15% 65+: 3%	workday: 3.173 weekend day: 1.208	- Cafetaria/restaurant - Average age is 25,7 years
Culemborg Type 4	75,8% 7.0	school/study: 16% social/recreative: 35% work/business: 49%	0-19: 21% 20-24: 17% 25-44: 23% 45-64: 30% 65+: 9%	workday: 12.441 weekend day: 5.533	- Has experience interventions on the station such as the station livingroon - Large station
Santpoort-Noord Type 6	48% 6.1	school/study: 3% social/recreative: 52% work/business: 44%	0-19: 19% 20-24: 16% 25-44: 24% 45-64: 30% 65+: 11%	workday: 1.404 weekend day: 949	- Recently released Buitenpoorten project pilot - Many social/recreative passengers - Low scores on cleaniness and safety - Small station

1. Stationsbelevingsmonitor (2018) 2. KTO (NS) 3. NS-Relation matrix (NS, 2016)

Figure 6: Diverse selection of small station for the exploration research, extraordinary characteristics are marked

4. EXPLORATIVE RESEARCH INTERVIEW SETUP

The section below shows the setup of the explorative research interviews.

Marijn Kleijer
Graduation student Industrial Design Engineering
m.kleijer@student.utwente.nl

Let me introduce myself…
I am Marijn and I study 'Industrial Design Engineering' at the University of Twente. I am currently doing a graduation project at the NS. In this project I focus on the experience of small stations.

You are probably wondering what this is all about…
Great that you want to answer a few questions, I appreciate the effort. The goal is to gain insight in how people experience this local station. Feel free to share your experiences, there are no right or wrong answers. The answers will be processed anonymously and will only be used for research purposes only.

What was a pleasant experience at this station, and why?
……
……
……
……

What was an unpleasant experience at this station, and why?
……
……
……
……

Location: Date: Time:

5. THEME SCORES INDIVIDUAL STATIONS

This appendix gives insight in the results of the explorative research in which 59 passengers were interviewed at five small stations. The images below show the percentages of positive and negative comments mentioned at an individual station. I.e. the percentage is the amount of times a theme was positively or negatively mentioned divided by the amount of interviewed participants at the concerning station.

	1 ambiance	2 waiting area	3 accessibility	4 arrangement	5 food/ drinks	6 bicycle/ car storage	7 cleanliness	8 safety	9 seating	10 travel info	11 toilet	12 Smoking
Rijssen	9%	36%	27%	18%	0%	18%	9%	27%	9%	0%	0%	0%
Raalte	0%	18%	27%	36%	0%	27%	0%	18%	27%	0%	0%	0%
Nunspeet	50%	58%	25%	17%	0%	33%	17%	17%	8%	0%	8%	0%
Santpoort-Noord	58%	42%	33%	33%	8%	0%	0%	17%	17%	0%	8%	0%
Culemborg	23%	38%	38%	23%	15%	23%	8%	0%	15%	23%	0%	0%
Average	29%	39%	31%	25%	5%	20%	7%	15%	15%	5%	3%	0%

Figure 7: Percentage positive comments per participant per station

	1 ambiance	2 waiting area	3 accessibility	4 arrangement	5 food/ drinks	6 bicycle/ car storage	7 cleanliness	8 safety	9 seating	10 travel info	11 toilet	12 smoking
Rijssen	27%	36%	9%	9%	18%	0%	0%	9%	0%	9%	18%	0%
Raalte	18%	18%	0%	9%	18%	36%	0%	9%	0%	0%	0%	0%
Nunspeet	33%	0%	0%	17%	75%	0%	0%	0%	0%	0%	25%	0%
Santpoort-Noord	25%	25%	0%	0%	17%	0%	58%	17%	0%	0%	8%	0%
Culemborg	38%	0%	15%	0%	0%	0%	23%	0%	0%	15%	0%	31%
Average	29%	15%	5%	7%	25%	7%	17%	7%	0%	5%	10%	7%

Figure 8: Percentage negative comments per participant per station

6. THEME RELATION MAPPING

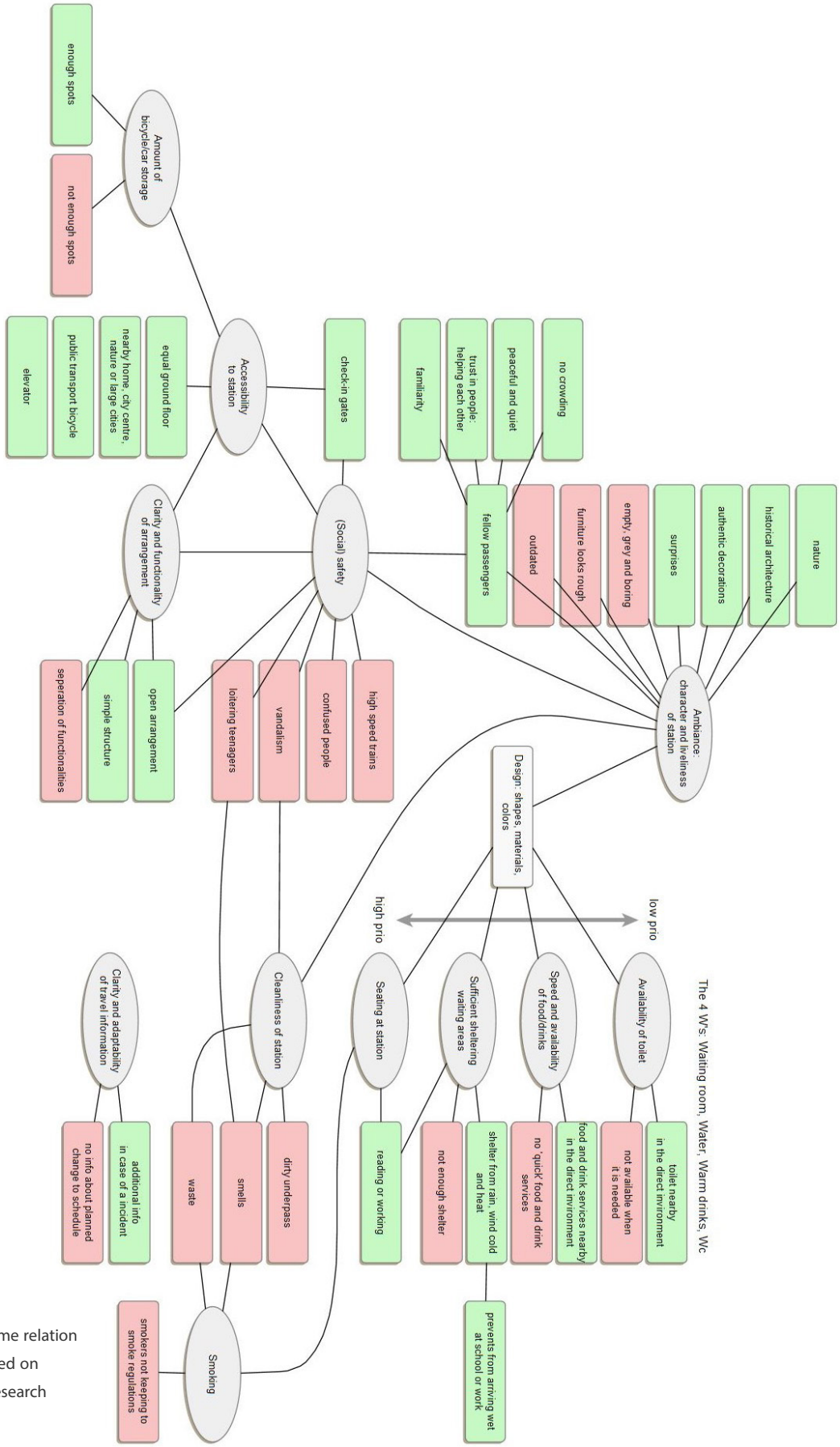


Figure 9: Theme relation mapping based on explorative research interviews

7. RECRUITED PARTICIPANTS

A diverse set of participants have been selected for the five generative sessions (figure 10).

21- aug	station	age	gender	occupation	travel motive
1	Veld Gld	52	female	student	business, commuting
2	Meppel	48	female	employed	commuting
3	Oisterwijk	41	female	freelancer	commuting
4	Heerhugowaard	60	male	employed	-
5	Wierden	65	male	retired	-
27- aug					
6	Schagen	47	female	employed	commuting
7	Zaandijk Z.S.	60	male	student	visit friends/family
8	Hengelo	56	male	unemployed	-
9	Veenendaal C.	49	female	employed	commuting
10	Zaltbommel	67	male	retired	-
11	Utrecht Zuilen	26	female	employed	visit friends/family, commuting
28- aug					
12	Utrecht Overvecht	50	male	employed	-
13	Hollandse Rading	21	male	student	from and to school
14	Driebergen-Zeist	56	female	employed	commuting
15	Alkmaar Noord	72	female	retired	for hobby/sports
16	Utrecht Zuilen	28	male	employed	visit friends/family, commuting
30- aug					
17	Helmond	67	male	retired	-
18	Driebergen-Zeist	55	female	employed	commuting
19	Gaanderen	24	male	student	from and to school
20	Zwijndrecht	22	male	employed	commuting
21	Veenendaal C.	43	female	-	commuting
2-sept					
22	Abcoude	24	female	student	visit friends/family
23	Almere Buiten	52	male	unemployed	visit friends/family
24	Kampen Zuid	60	male	unemployed	visit friends/family
25	Naarden Bussum	65	male	retired	-
26	Hengelo	24	male	student	from and to school

Figure 10: Recruited participants generative research

8. SENSITIZING BOOKLET

Figure 12: Sensitizing booklet front, page 1

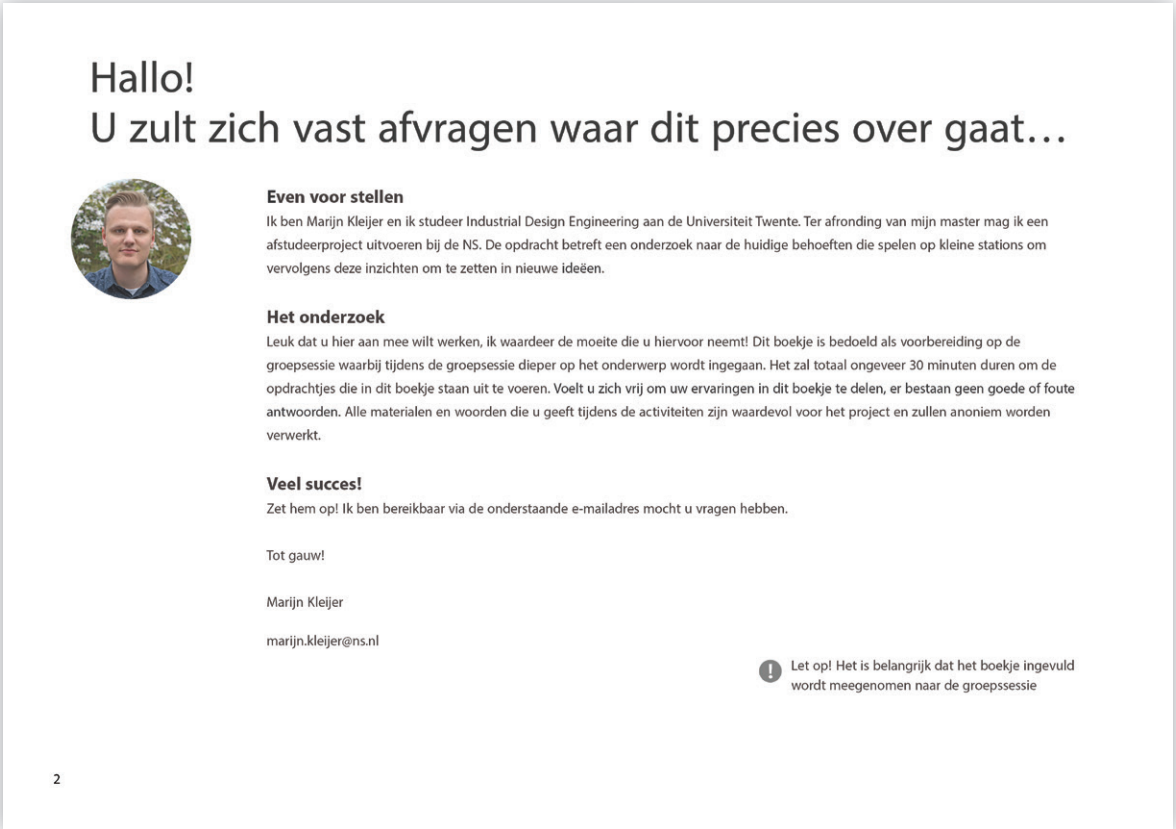
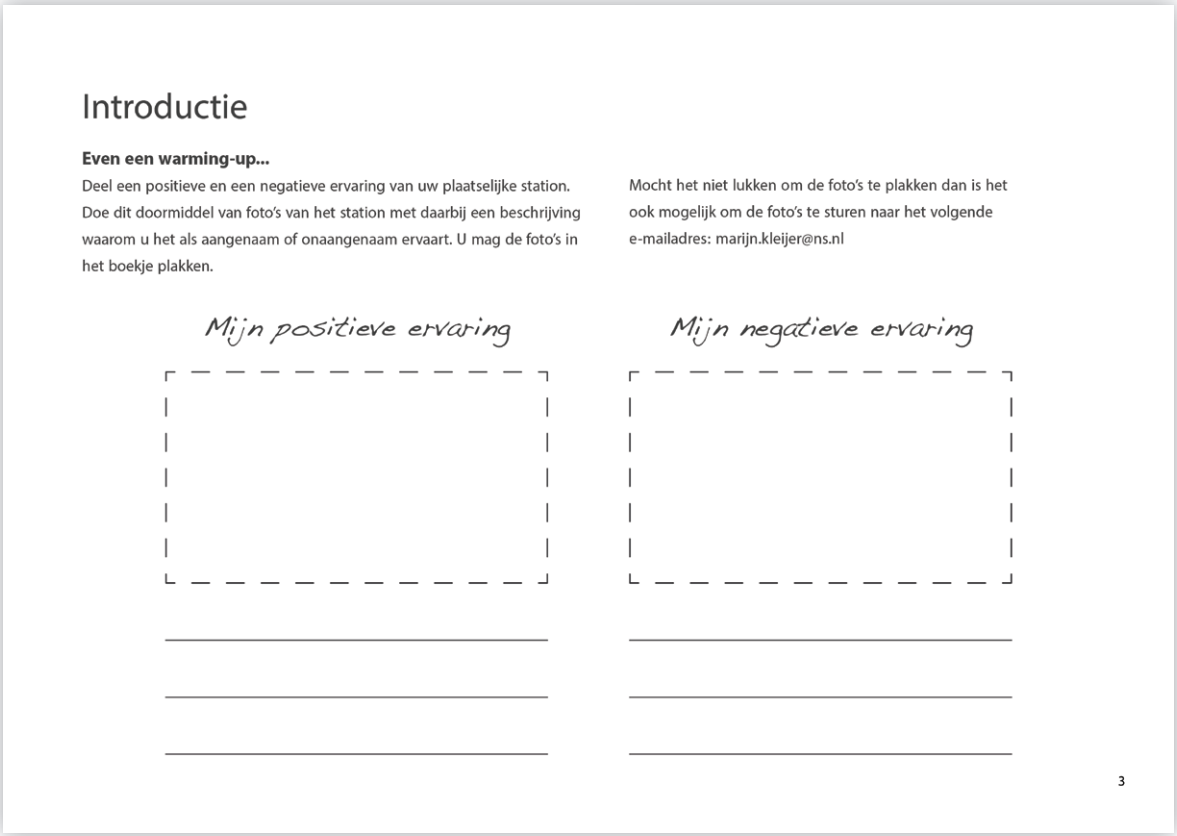


Figure 13: Sensitizing booklet page 2



Introductie

Even een warming-up...

Deel een positieve en een negatieve ervaring van uw plaatselijke station. Doe dit doormiddel van foto's van het station met daarbij een beschrijving waarom u het als aangenaam of onaangenaam ervaart. U mag de foto's in het boekje plakken.

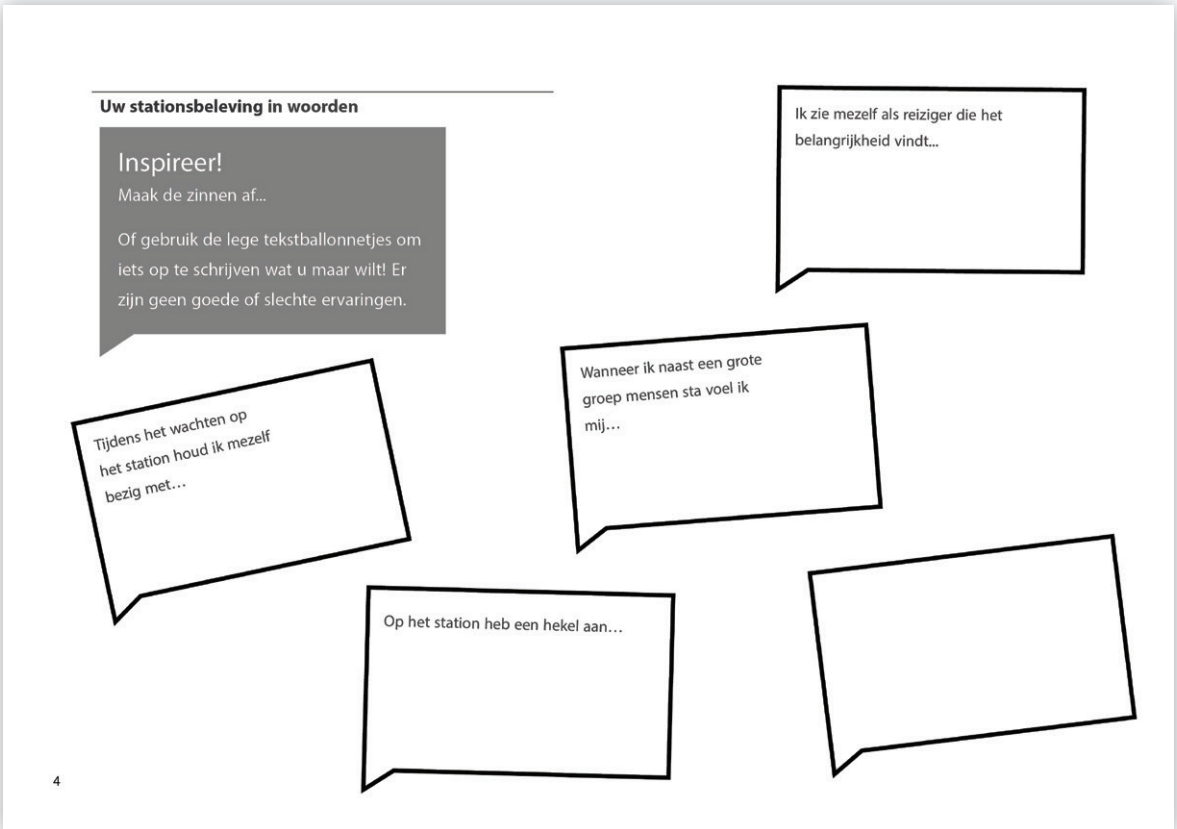
Mocht het niet lukken om de foto's te plakken dan is het ook mogelijk om de foto's te sturen naar het volgende e-mailadres: marijn.kleijer@ns.nl

Mijn positieve ervaring

Mijn negatieve ervaring

3

Figure 14: Sensitizing booklet page 3



Uw stationsbeleving in woorden

Inspireer!

Maak de zinnen af...

Of gebruik de lege tekstballonnetjes om iets op te schrijven wat u maar wilt! Er zijn geen goede of slechte ervaringen.

Ik zie mezelf als reiziger die het belangrijkheid vindt...

Wanneer ik naast een grote groep mensen sta voel ik mij...

Tijdens het wachten op het station houd ik mezelf bezig met...

Op het station heb een hekel aan...

4

Figure 15: Sensitizing booklet page 4

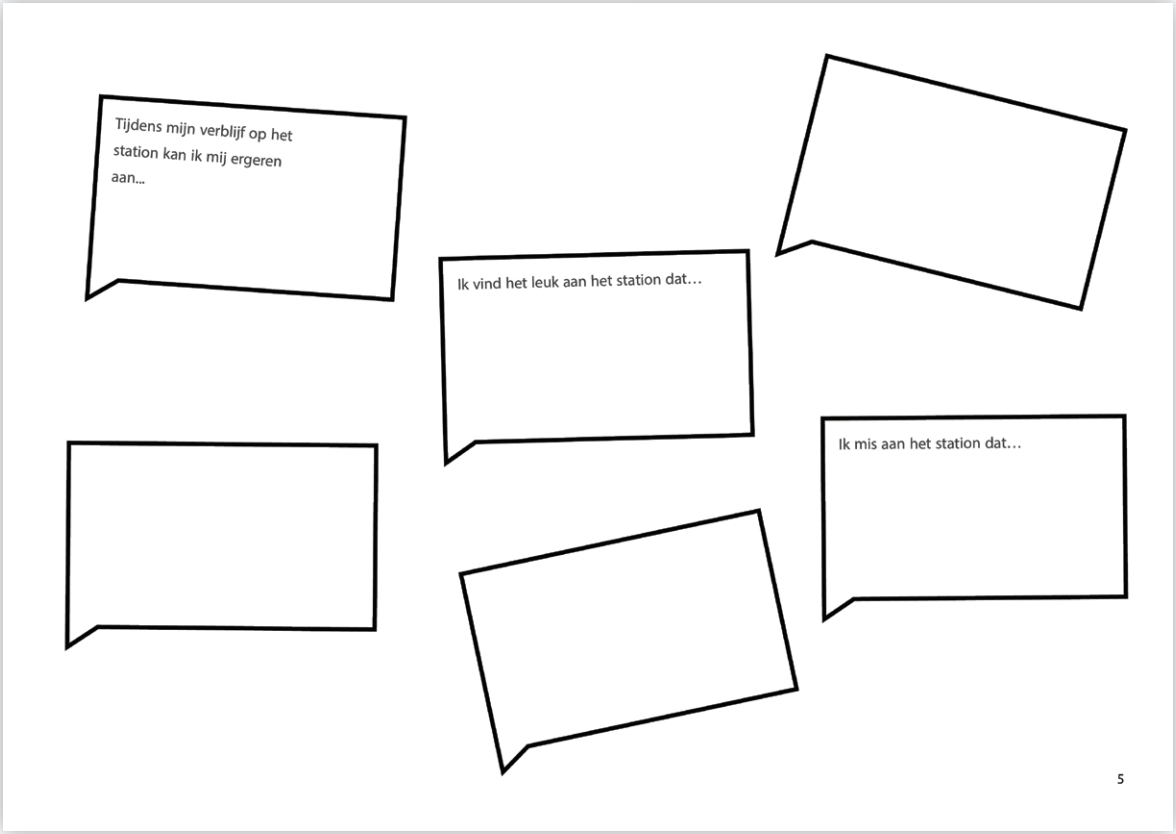


Figure 16: Sensitizing booklet page 5

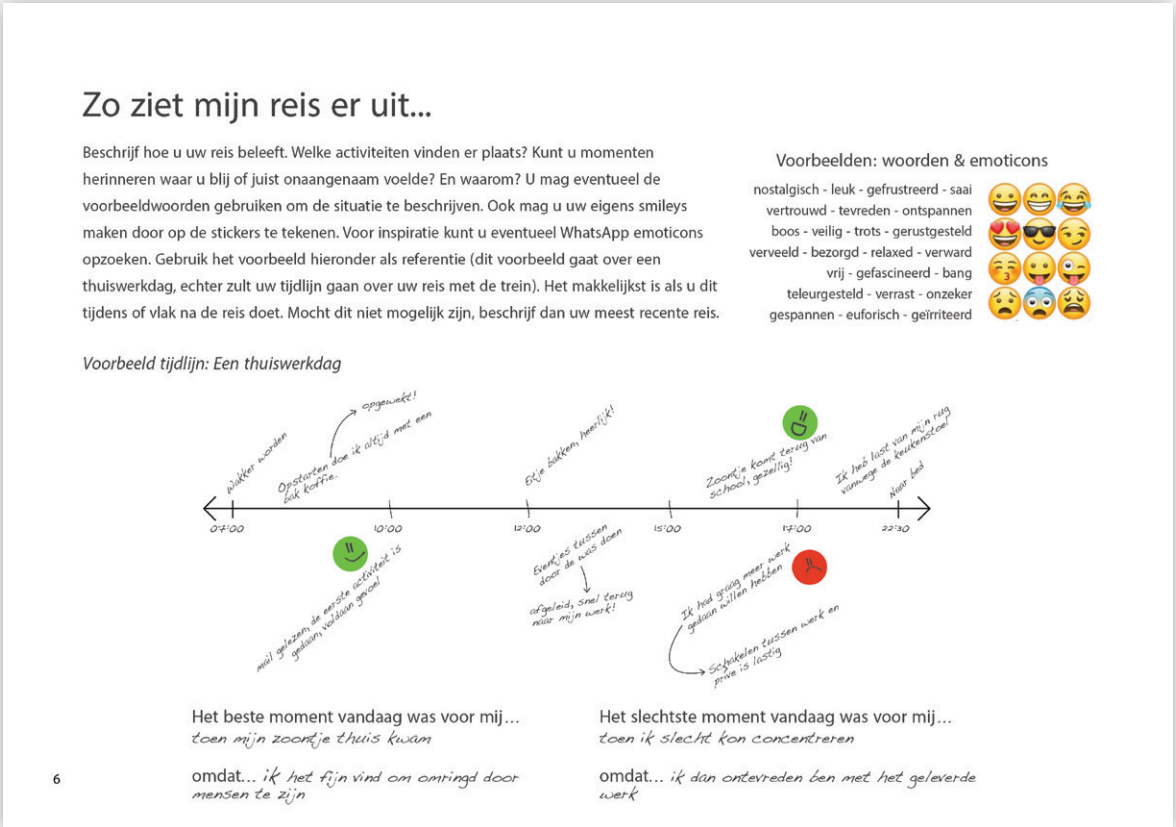


Figure 17: Sensitizing booklet page 6

Het beste moment tijdens de reis is voor mij…

omdat…

Het slechtste moment tijdens de reis is voor mij…

omdat…

7

Figure 18: Sensitizing booklet page 7

Bedankt voor het delen van uw ervaringen! Tot snel!

Vergeet niet om dit boekje mee te nemen naar de groepsessie.

Bij eventuele onduidelijkheden kunt u uw vragen kwijt door te mailen naar marijn.kleijer@ns.nl

Vragen of opmerkingen

8

Figure 19: Sensitizing booklet page 8

9. SESSION SCRIPT

All five sessions have the same setup that consists of an introduction, a warm-up, a main part and a meal. However, the main part consists out of 'make' and 'say' activities' that differ between sessions. The main part of session one contains collage making, while the other sessions contain some form of scenario enactment. Figure 11 shows the session script of the fifth session.

starts	duration	activity	checklist
14:45	0:30	preperation of CX Lab	Put tables together. Setup miniature world.
15:15	0:15	participants arrive	The arrived participants offered something to drink and attach their namecard on their chest
15:30	0:07	introduction	Introduce myself and explain what the research entails. Explain the today´s schedule and goal: - 1. Warm up: Sharing an exercise out of sensitizing booklets - 2. Enact current scenarios to explore needs - 3 Enact ideal scenario where those needs have been met. We will also do this by playing the ideal scenario based on rough models made by the participants. Step 2 and 3 are repeated for another scenario. 4. Dinner You are all experts of your own station experience. It is important that everyone gets the change to share their experiences. Participants fill in consent forms
15:37	0:20	warm-up	Introduce yourself and share your journey that you have filled in your sensitizing booklet. We take 3 minutes per person so that everyone can get their turn. Follow up questions: - What is the best / worst moment of the timeline? - What do you find important when it comes to traveling? - What do you use the train for? - Have you learned something new that you were not aware of before?

Figure 11.a: Session script session five

starts	duration	activity	checklist
15:57	0:20	enact current scenario	Game rules: - You can choose a miniature passenger and enact what you would do if you were in this situation. - We will focus primarily on the station, so the scenario starts when arriving at the station and ends when leaving the station. - Improvising is allowed. - You can also choose to use tools if that fits the story. One of the four scenarios are enacted first. A particpant that is familiar with the scenario is chosen to enact the scenario. While one participant enacts the scenerio. Others are asked to observe what is happening. Which problems arise? What could we improve here? Do others recognize this situation too?
16:17	0:05	summarize & instructions	Write the challenges that occured during the enactment on flip-over. Does anyone want to add anything to this? Instructions Low-fi Prototyping: And for this round the participants are going to make a raw prototype. Use the tools and probs available. While making a model it can help to think about what would the ideal situation look like for me? It is not about whether it is all technically feasible, but about making the move to the first ideas that suit your own desires. A challenge is assigned to each individual participant (preferably related who have those experiences).
16:22	0:10	low-fi prototyping	Partipants use tools and probs to make low-fi prototypes
16:32	0:15	enact future scenario & discussion	Present the ideal situation on the basis of your rough prototype. The scenario is enacted again, but this time with the prototpye. Play out how you would use this model if it were on the station. How does it work in this situation? How does the problem resolve? What inspired to make this so? Inspire each other, now that we see this, we might come up with other ideas together. Would this also be a solution / of added value for others? Reflection: And what would the journey through the station look like? What emotions would be created? What need does it answer? Could this new new situation also have other side effects or create a conflict?
16:47	0:50	round 2	Choose a new scenario and repeat the steps of above
17:37	0:30	dinner	Partipants can eat and drink. Rewards are handed out. Clean the room.
18:07		end session	

Figure 11.b: Script of session five

10. SCENARIO CARDS

Figure 20: Four scenario cards used during generative sessions

11. DILEMMA FRAMEWORKS

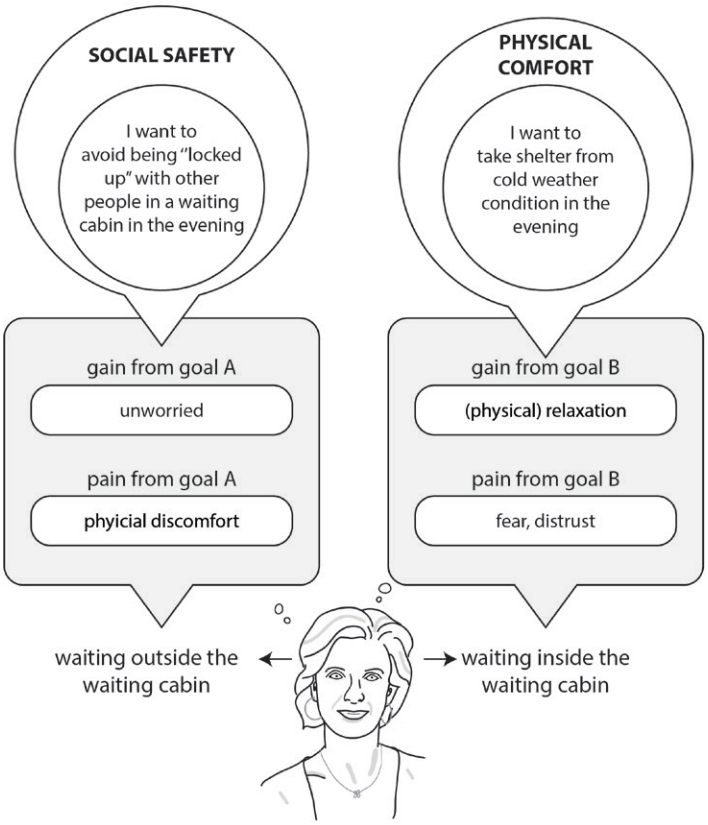


Figure 21: Dilemma Social Safety vs Physical Comfort

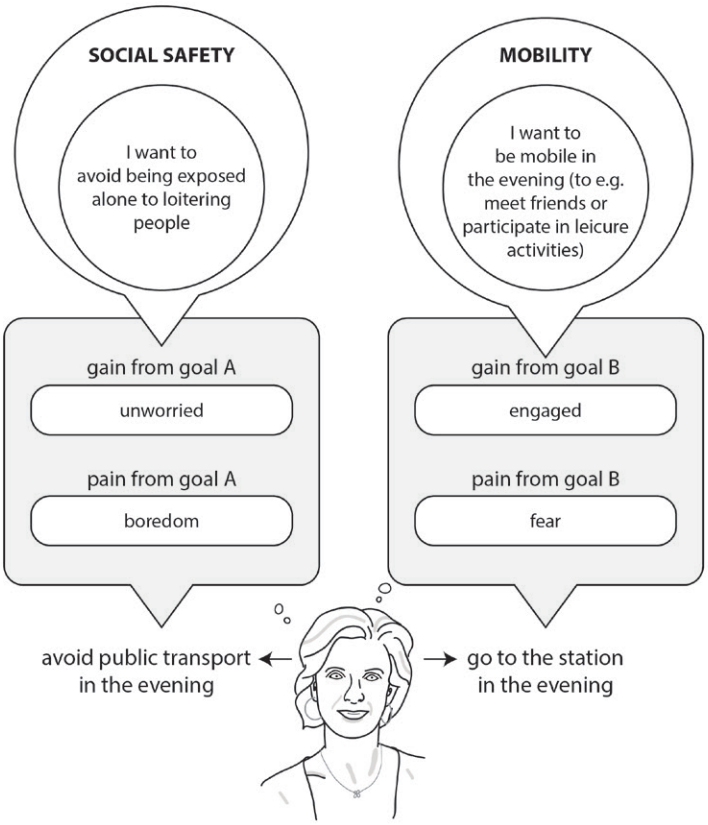


Figure 22: Dilemma Social Safety vs Mobility

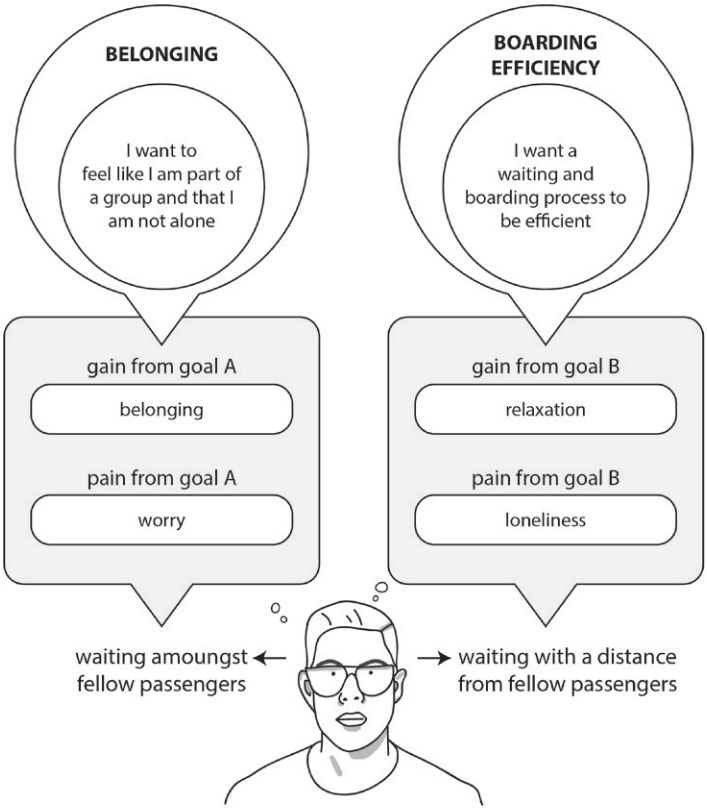


Figure 23: Dilemma Belonging vs Boarding Efficiency

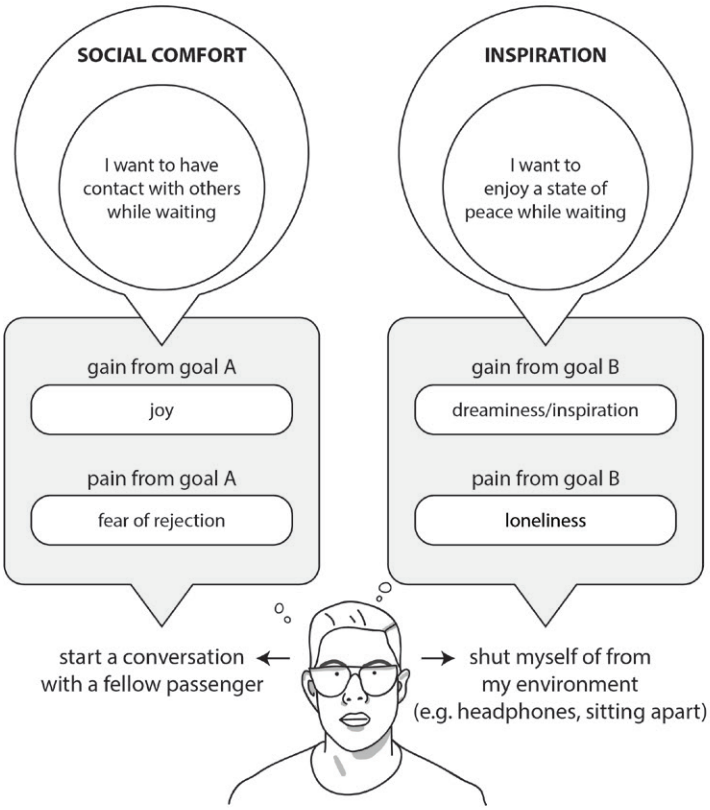


Figure 24: Dilemma Social Comfort vs Inspiration

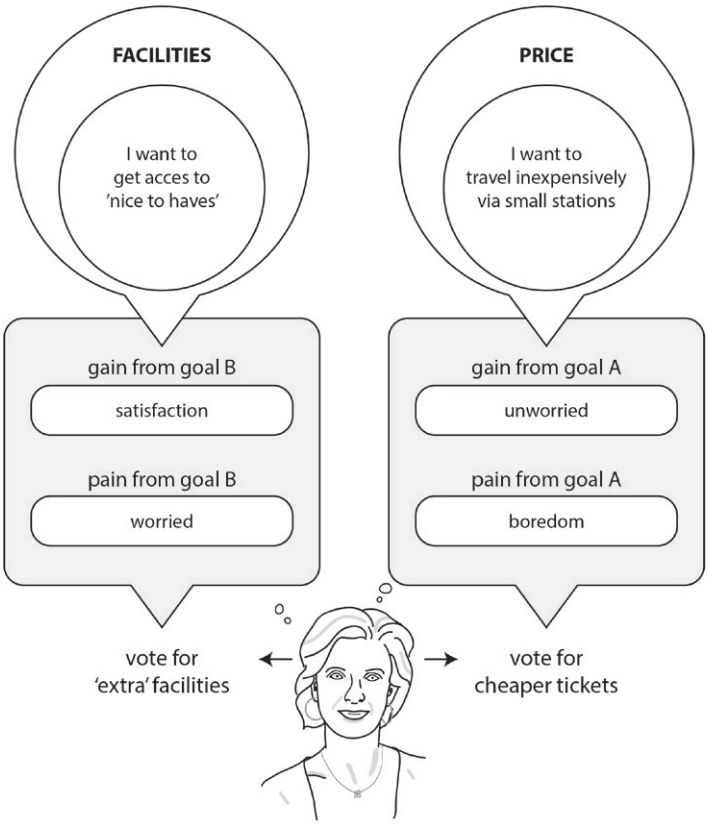


Figure 25: Dilemma Facilities vs Price

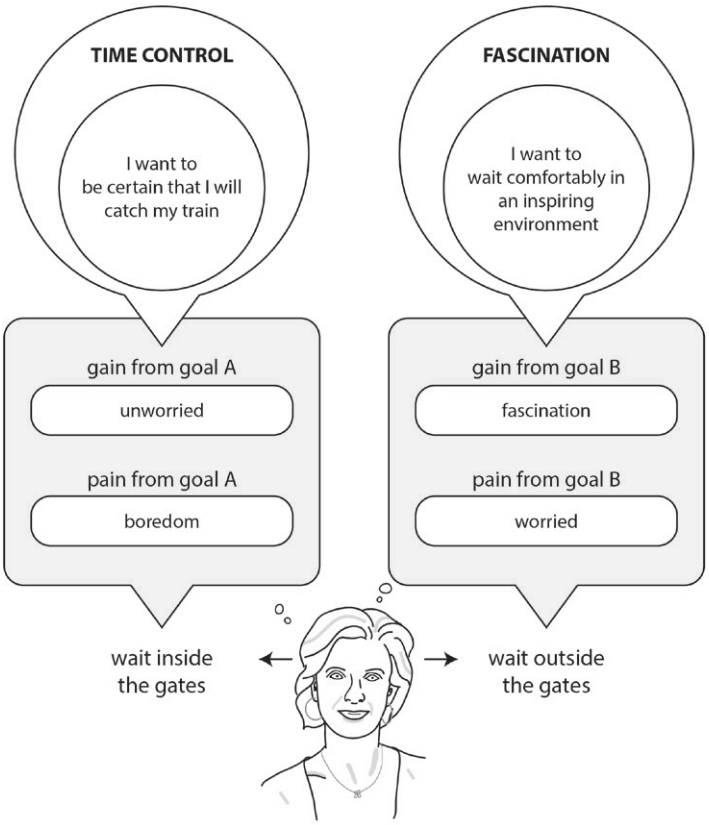


Figure 26: Dilemma Time Control vs Fascination

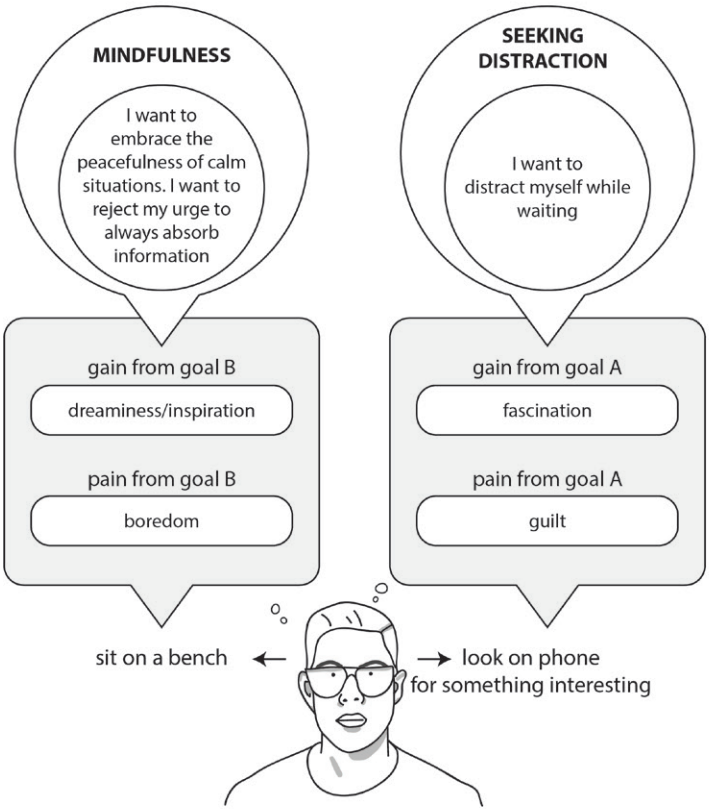


Figure 27: Dilemma Mindfulness vs Seeking Distraction

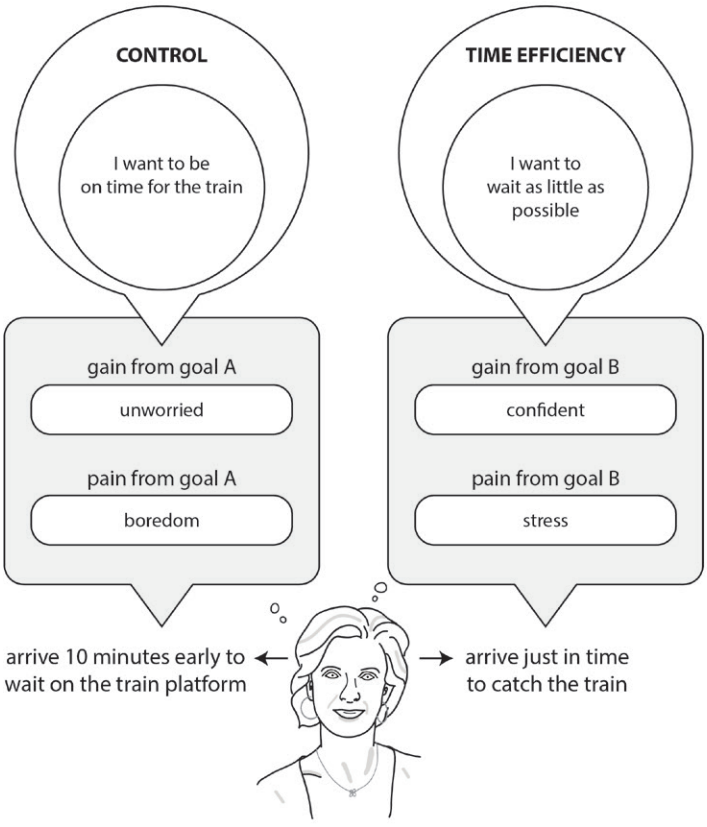


Figure 28: Dilemma Control vs Time Efficiency

12. VALIDATION INTERVIEWS SETUP

The validation interviews contained the setup described in this appendix. The images shown in this setup were printed on four A3 size posters that the participants could hold themeselves.

You are probably wondering what this is all about…

The goal is to gain more insight in how passengers react to the concept called 'StationsOmmetje'. Feel free to express your opinion, there are no right or wrong reactions. The answer will be used for research purposes.

StationsOmmetje

StationsOmmetje is a concept that invites people to also seek fascination outside the station. In this way, waiting time becomes meaningful time. A StationsOmmetje can take a couple of minutes to 15 minutes, depending on the walking distance. The station of Nunspeet is very suitable for facilitating StationsOmmetjes:

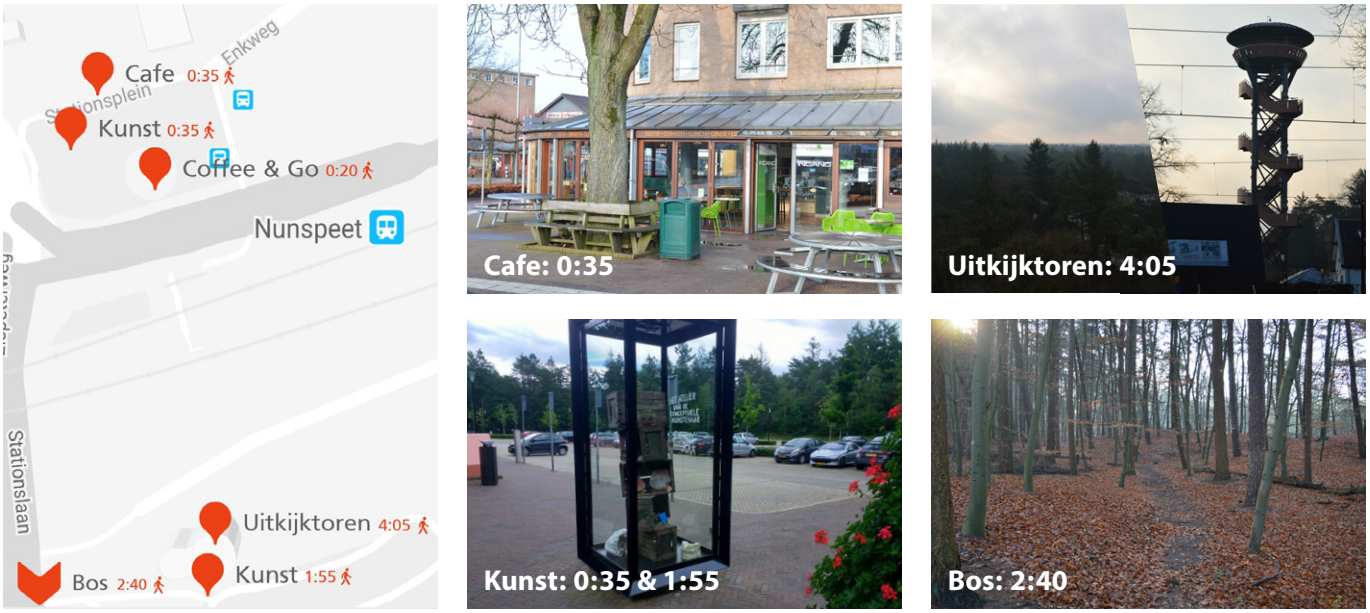


Figure 29: Locations suitable for a StationsOmmetje, walking distances in minutes

Questions about StationsOmmetje:

1.1 In which situations would it be interesting for you to make a StationsOmmetje?

1.2 In what timeframe would it be interesting for you to make a StationsOmmetje (number of minutes)?

1.3 What would be the main reason for you to make a StationOmmetje?

1.4 What could prevent you from making a StationOmmetje?

1.5 How likely are you to use StationsOmmetje?

very unlikely				very likely
○ (1)	○ (2)	○ (3)	○ (4)	○ (5)

Wayfinding guides

To ensure that passengers are back on time for their train, it can be useful to gain insight into the walking distance and direction of the station. Below are a number of ways to provide wayfinding guides:

Figure 30: Concepts for wayfinding guides

Questions about wayfinding guides:

2.1 Are all signposting concepts sufficiently visible?

2.2 Do you prefer signposting on tiles, signs or stickers? And why?

2.3 What do the 2 colours indicate?

2.4 Another style of the wayfinding guides is show. What is the difference? Which version is better and why?

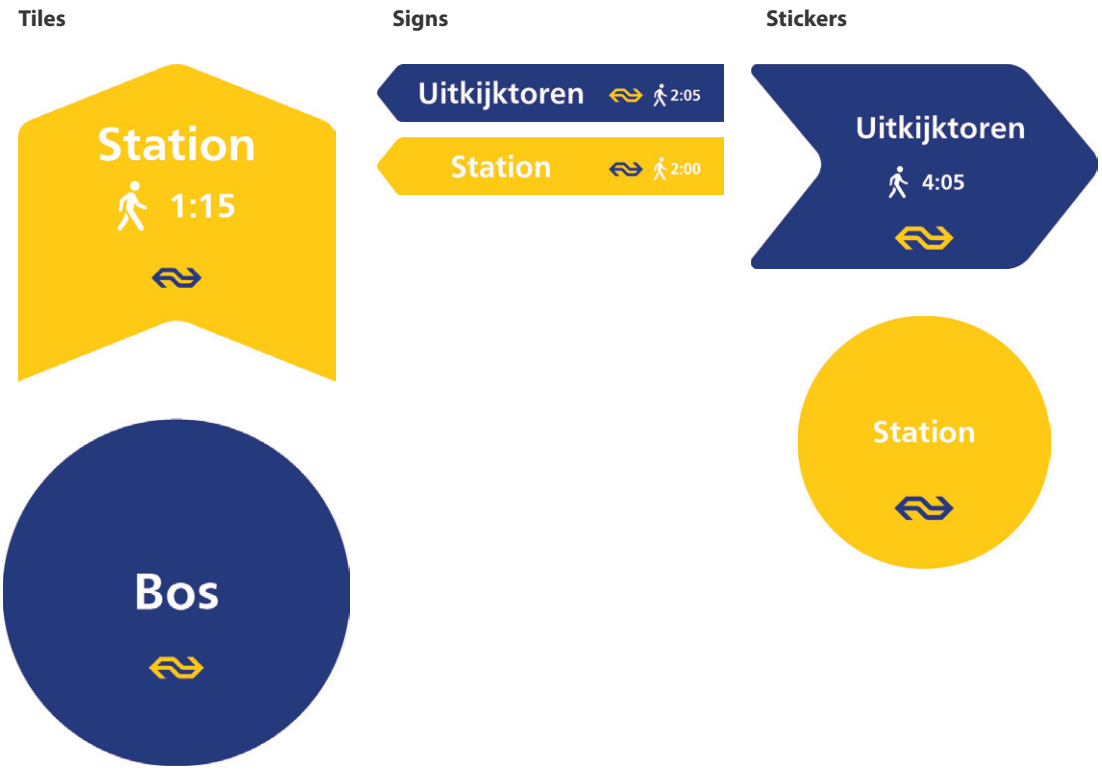


Figure 31: Alternative style wayfinding guides

StationsActivities

In addition to StationsOmmetjes, people are also invited to seek fascination with StationsActivities. With StationsActivities people are challenged to use different senses at the station or during a StationsOmmetje to look at their surroundings differently. Examples of these assignments are:

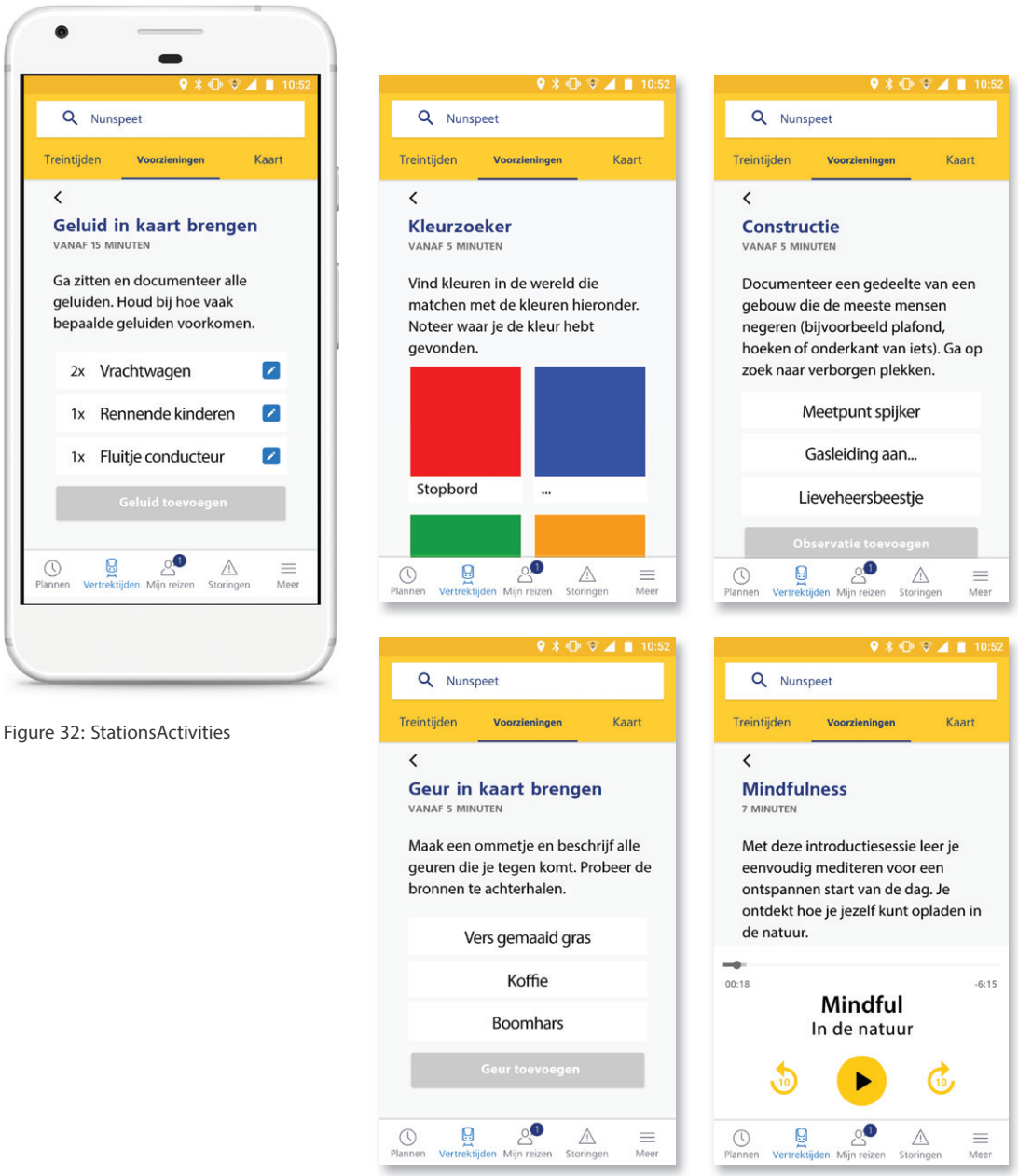


Figure 32: StationsActivities

Questions about StationsActivities:

3.1 In which situations would you feel the need to do a StationActivity?

3.2 In what time frame would it be interesting for you to do a StationActivity (amount of minutes)?

3.3 What would be the main reason for you to do a StationActivity?

3.4 Are all StationActivities interesting, or do you prefer certain activities?

3.5 How likely are you to make use of Station Activities?

very likely				very likely
○	○	○	○	○
(1)	(2)	(3)	(4)	(5)

13. STATION EXPERIENCE MONITOR

Station Experience Monitor

The station experience monitor (*Stationsbelevingsmonitor*, 2019) is the passenger experience research inquiry that measures the experience of passengers at each individual station. Each station is evaluated individually on the basis of seven themes. The themes consist out of dissatisfiers; flow, safety, cleanliness and orientation; and satisfiers; waiting time experience, inviting and ambiance. Figure 33 shows that small stations generally score lower than large stations. Figure 34 shows that the satisfiers of waiting experience and ambiance are scoring significantly lower than the other parameters. These insights show that there is room for improvement with regard to the experience at small stations, especially the waiting experience and ambiance.

References Appendix 13:

Stationsbelevingsmonitor. (2019). NS Stations & Prorail.

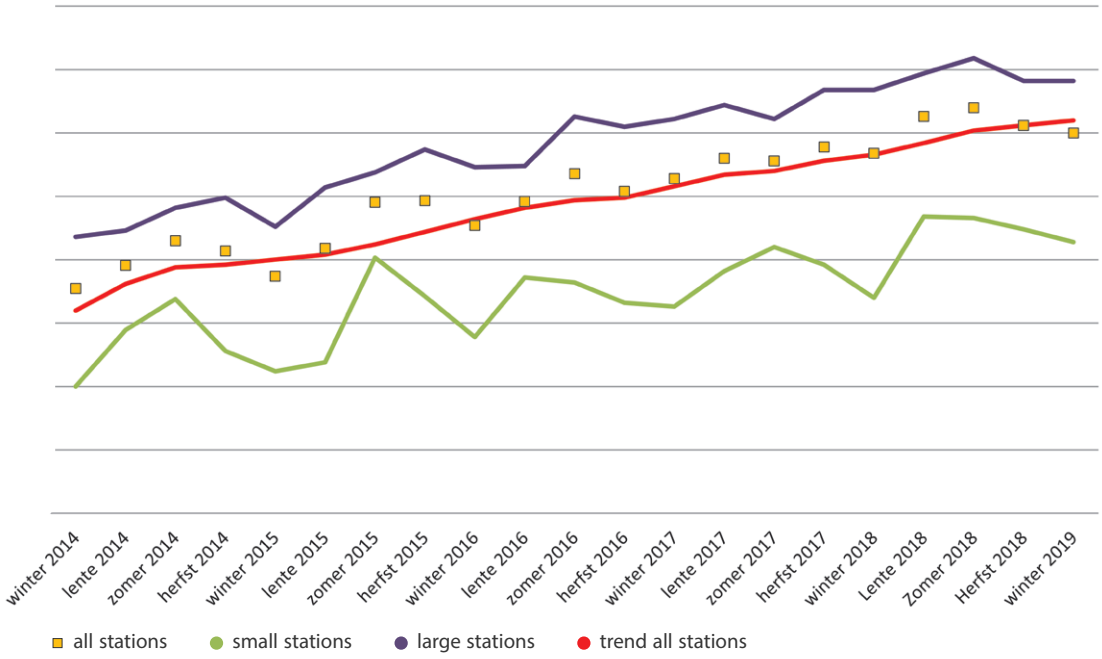


Figure 33: Percentages that scored a seven or higher (exact percentages have been omitted for confidentiality reasons)

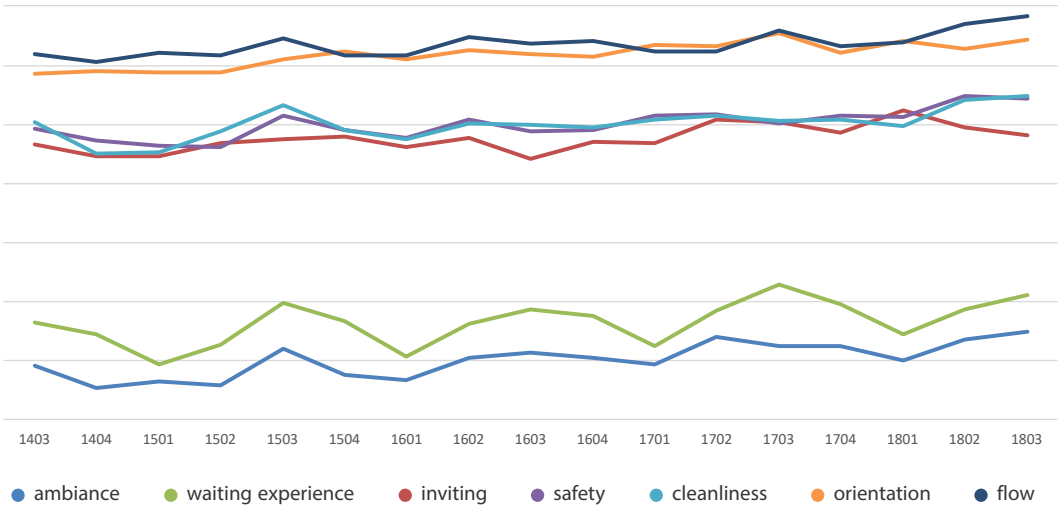


Figure 34: Percentages that scored a seven or higher at small stations (exact percentages have been omitted for confidentiality reasons)

14. SOCIAL DEMOGRAPHICS PASSENGERS

The social demographic characteristics of the customers of NS only slightly deviate from the average Dutchman (Van Hagen & Exel, 2012, as is shown in figure 35. The largest deviations that do appear are related to customers between the age of 18 and 35 and customers of 65 and older. It can be said that passengers are represented by all social demographic layers of Dutch society.

Gender	Customer NS	Netherlands	Deviation
male	48%	50%	-2%
female	52%	50%	+2%
Age			
4-11 years	10%	10%	-1%
12-17 years	8%	8%	+1%
18-24 years	13%	9%	+4%
25-34 years	15%	13%	+2%
35-44 years	15%	16%	-1%
45-54 years	15%	15%	-1%
55-59 years	7%	7%	0%
60-64 years	5%	7%	-1%
65+ years	12%	16%	-3%
	100%	100%	

Figure 35: Social demographic differences passenger NS versus Dutchman (Van Hagen & Exel, 2012)

The NS counts 9,4 million customers who take 400 million train rides each year (Salomé, n.d.). One of the customer variables that has a large influence on how stations are perceived is travel motive, which includes the segments; school commuters, work commuters, business and social/recreative. Within these groups school and work commuters take the largest amount of train rides (figure 36). However, the largest segment of customers are social/recreative passengers.

	school com.	work com.	business	social/ recreative
customers	9%	11%	6%	73%
train rides	29%	35%	4%	31%

Figure 36: Travel motive segments (Salomé, n.d.)

References Appendix 14:

Salomé, J. (n.d.). Klimaat V Reizigers en reizen onderzoek. NS.

Van Hagen, M., & Exel, M. (2012). De reiziger centraal: De reiziger kiest de weg van de minste weerstand.