

# A future vision and concept for NS train stations

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Master thesis Design for Interaction  
Delft University of Technology

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Utrecht, the Netherlands

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# acknowledgements

I want to express my sincere gratitude to all the people that supported me, guided and encouraged me and ultimately made this project a pleasure to work on.

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# executive summary

This report presents the process of defining a future vision and concept for NS train stations in 2030. This graduation project, in partnership with NS, seeks to explore the future context of NS train stations, taking into account various factors, including societal themes. The ViP method (Hekkert and Van Dijk, 2011) guided the process of exploring the future of NS train stations and shaping a vision on it.

The basis of this exploration phase where 133 context factors: stable and changing building blocks of the future context. They formed a set of clusters, from which a framework was created. This framework has resulted in 12 vision statements, all design challenges for the NS train stations in 2030.

From these 12 vision statements, strategic decision-making in collaboration with NS has led to the following design direction: **To let travellers at the station relate to each other more as part of a community, than as separate, individual travellers.** This design direction answers to the foreseen rising difficulties people will encounter when interacting with digital assets in the station environment. A simultaneous trend of rising individualism and flattened social connections, will lead to (increasing) social barriers in the station environment. These social barriers will hinder interactions between travellers and, more specifically, hinder travellers finding each other for asking and offering support. Connecting travellers by enhancing the community spirit on train stations, aims to counter rising individualism and the social barriers that rise with it.

A focus on unmanned train stations is decided upon, since the design direction is projected to be most needed here as people are more dependent on each other.

Ideation has led to 4 ideas, all based on the following social concept derived from a food cabin analogy: **connecting people while maintaining (the possibility of) anonymity.** An evaluation of the ideas by testing, has led to the focus on one of the ideas: Beleef de streek (Experience the region). This idea facilitates people to share their best tips for the environment surrounding the station and others to use these tips to discover this area.

The chosen idea is developed into a concept called **Ontdek 'n plek** (Discover a place). The concept is supported by a definition and theory of sense of community (McMillan and Chavis, 1986), as it addresses the four elements outlined in this definition.

Decisions regarding the concept's implementation, design, and materials are made to align with the following qualities: low-threshold, inviting, and valuable. The concept is envisioned to be placed in the glass waiting areas on unmanned train station platforms.

A hypothesis is set for the enhancement of the different elements of sense of community. The accuracy of the hypothesis is verified through a 0 and 1 measurement at the train station located in Hoorn.

The addition of the concept to the station has shown a positive impact on travellers' experiences and their sense of community. Questions about its value persist, but the potential of a social initiative for enhancing a sense of community is evident and remains vital for NS train stations in 2030.

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# 0

## project introduction

This chapter introduces the starting point and structure of this graduation project. It gives a description of the project partner, it describes the origin and ambition of the project, the designers' personal ambitions and the approach of the project.

## 0.1

# PROJECT PARTNER

This graduation project is done on behalf of Nederlandse Spoorwegen (NS).

Train travel plays a significant role in the Netherlands, offering a convenient and efficient mode of transportation for both domestic and international journeys. Trains are widely used by commuters, students, and leisure travellers, connecting major cities, towns, and rural areas throughout the country.

As the primary rail operator in the country, NS ensures the safe and reliable operation of trains, maintains the stations, and provides various services to passengers. NS strives to improve the overall travel experience by focusing on punctuality, comfort, and accessibility. NS takes social responsibility to ensure their goal of accessible mobility for all. This includes making stations and trains accessible to people with disabilities, providing assistance to passengers who need it, and promoting inclusivity and diversity within their operations.

Furthermore, NS contributes to the sustainability goals of the Netherlands by promoting train travel as an environmentally friendly alternative to cars and airplanes. The company invests in energy-efficient trains, uses renewable energy sources, and actively works to reduce its carbon footprint.

There are train stations in the Netherlands that serve as bustling hubs of activity, where people gather, embark on their journeys, and explore new destinations. They are not merely transit points but often function as multi-purpose spaces, housing shops, restaurants, and other facilities. While train stations in smaller cities and rural areas may be smaller and less lively compared to those in major cities, they still play a vital role in facilitating transportation and connecting communities.

Train stations are a vital component of train travel and our society. NS recognized an opportunity in this regard, leading to the initiation of this graduation project.

## 0.2

# PERSONAL AMBITION

This chapter describes my personal motivation for this graduation project and the goals I set out to reach throughout, to gain knowledge and get ready for the next chapter, after graduating.

## MOTIVATION

Throughout my student career I have formed my own personal interests when it comes to design. My main interests lie within sustainability, social design and human centered design. Since one of NS' core values is to move to a more sustainable future, sustainability will also be an important aspect in this project. Furthermore, since the project will focus on the context of the train stations and the interactions with its visitors, social design and human centered design will also be key elements. So, within this project, I get the opportunity to focus on all three subjects that interest me the most, which will make it a pleasure to work on.

## VIP

During my master program I became acquainted with the ViP method, but I had not yet had the chance to put it into practice. Since this project aims for a future vision of the NS Railway stations, the ViP method is a great fit as a future-oriented method. It offers a way to gain a broad understanding of the complex subject at hand and thus to move towards the goal envisaged by NS. This will therefore be a good opportunity for me to learn how to put this method into practice and what its value can be in a design project.

## SOCIAL DESIGN

After my studies, my ambition is to work at a social design agency. During my bachelor and master I worked on projects that focused on the topic of social design. However, I have never experienced working on a social design project from within a company. I think this graduation internship and project will let me experience, to a certain extent, what it will be like to work on such projects in the work field, also to see if this would indeed be a path I want to continue on in the future.

## 0.3

# PROJECT ORIGIN AND AMBITION

The reasons of NS to set up this project and the overall ambition of this project is described in this section. It gives a quick overview of the subjects to be addressed and the goal set to be reached.

## ORIGIN

NS desires to remain relevant in the society of the future. They do not want to lag behind in old values & technologies, while society is moving forward. In certain areas NS is already focusing on how to approach the future, e.g. with concepts for future trains. However, when it comes to their train stations, the future is something yet to be explored.

The end goal for NS is to gain an increase in demand, with the first aim to return to the passenger level reached in 2019 (before the pandemic), moving towards a more sustainable future. Passengers and their needs and wishes change; so to be able to reach this goal NS needs to change along with them.

## FOCUS

This project has a wide scope, in which various societal issues, such as polarisation, digitalization and cultural differences, and other developments, such as emerging technologies and the focus on sustainability, are addressed and explored within the context of the train journey and station. Ultimately, it looks into how NS can position themselves around these themes, to ultimately fit a future reality.

## GOAL

In this graduation project, I will work towards a future vision for NS train stations in 2030. By using the ViP method, a future vision, comprising an interaction vision and a consecutive product vision, will be created. This will be the basis for the next phase, in which a concept will be designed for the NS train stations (the type of concept yet to be determined).

## 0.4

# PROJECT STRUCTURE AND APPROACH

This project is divided into two parts. In Part 1 a future vision is defined and in Part 2 a concept is created from (a part of) this vision. Both parts take up about half of the project, with of course some overlap occurring. The timeline is visualised in Figure 1, where the numbers in the Part 1 timeline refer to the steps of the ViP process (see Figure 2).

Part 1 will be executed with the use of the ViP method. The steps of this future-oriented method will be followed to reach a future vision.

In Part 2, a process of diverging and converging will be used, in which various iterations lead to a final concept.



Figure 1: Project timeline

## PART 1: DEFINING THE FUTURE VISION

The Vision in Product design method, by Hekkert and Van Dijk (2011), helps designers to imagine possible futures and to subsequently discover the opportunities arising to create a product, service, or policy with meaning and value to its end-users. It focuses on defining a vision of what to create and why this will have value and meaning, instead of creating something in response to a problem or demand.

### Why ViP?

As mentioned earlier, NS is keen to obtain a future vision regarding their train stations in 2030. The NS train stations are strongly interrelated with Dutch society. This means that the future of NS train stations is also strongly interrelated with the future of the society in which they exist, both vast and complex fields to explore and comprehend. ViP helps to deal with this vastness and complexity by using a step-by-step approach. These steps

make the process of creating the vision of the future well-organised and comprehensible.

Moreover, it enables the designer to first establish the final design's reason for existence, from which a suitable interaction and in turn qualities emerge, serving as the foundation of the final design. This will enable the creation of a concept that has reason to exist and will have relevance, rather than being something nobody actually needs.

### Designer's responsibility and authenticity

"A designer is an individual with preferences, values, beliefs, and desires, like all other human beings."

*Hekkert and Van Dijk (2011)*

In a design process, the above may affect the decisions made and the priorities set. It is up to the designer to form a future reality from the

**GREENLIGHT**



**PART 2**

**ITERATION 1**

**ITERATION 2**

**ITERATION 3**

collected factors, and a designer's look on the world, plus their gut feeling telling them to pursue a certain direction, could influence this significantly. Meaning, two separate designers might come up with two very different future realities based on the same set of factors.

It is considered important that the designer is aware of the responsibility that designing entails and that they take personal responsibility for their design.

Where in the professional environment this method is used with a group of designers, all their views together bundled to form a future reality, in this project this process is executed by one designer only. The subjectivity this entails is taken for granted in this project, though it is something the be aware of.

Looking at it from a different point of view, ViP

gives room for the designer's beliefs and values in a way to stimulate authenticity, enabling the designer to make a personally sincere and unique contribution to the future domain.

An elaboration of all the ViP steps can be found on the next page.

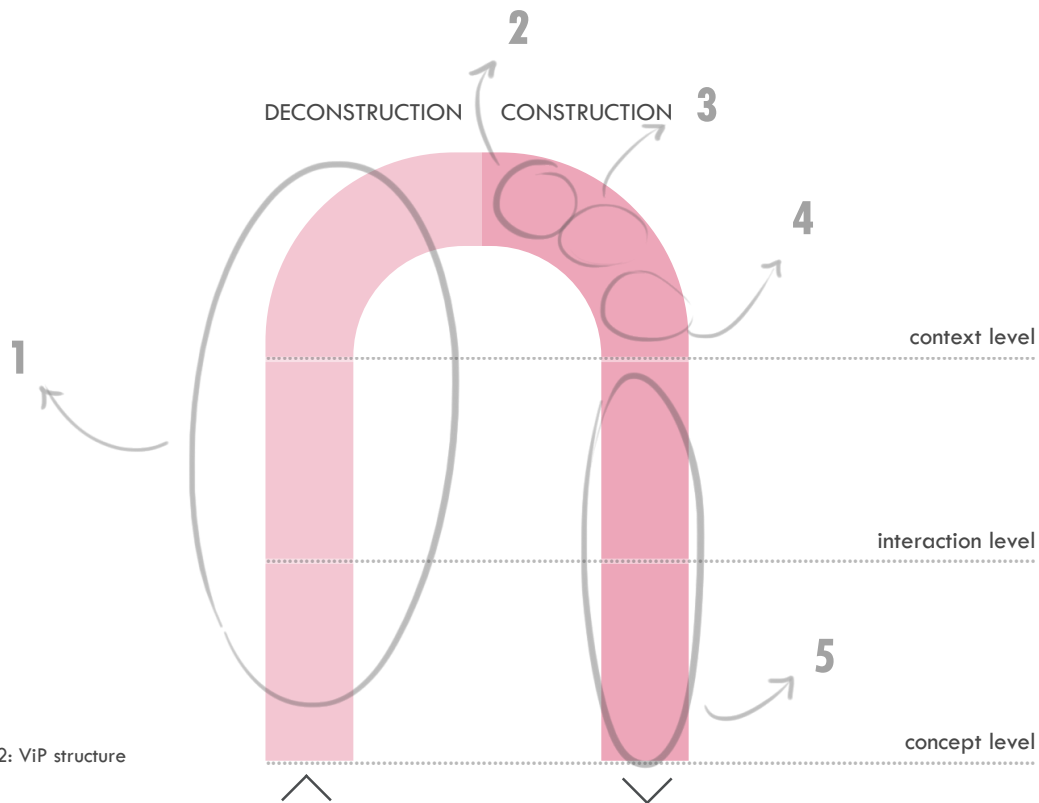


Figure 2: ViP structure

### 1. Domain definition & deconstruction

The goal of this first stage is to frame the scope of the research, and to get a clear view on what this scope entails. Before starting with the factor collection, it is necessary to know for which domain these factors need to be collected, to be able to assess whether the factors will be of relevance or not. A brief deconstruction is done to get a view on what this domain entails in the present. However, not too much time is taken for this step, as the aim is to focus on the future, rather than on what already is now.

### 2. Factor collection

To be able to create a future context, factors are collected that are believed to be true in the determined future time, each of them serving as building blocks for the full future worldview of the domain. A number of factors will be collected, which together should give the fullest possible picture of the future context, which ultimately will form the foundation for the design of the concept.

### 3. Factor clustering

Once the set of factors is deemed complete, the next step is to look for connections between them. These can be connections of strengthening, but also of contradicting one another. There is also searched for connections between the factors that will create directions that may not have

been visible beforehand. These clusters will give clarity about people's attitudes and values and first impressions on their behaviour in the future domain.

### 4. Building the framework

To translate these clusters into clear ideas of behavioural manifestations in the established domain, a framework is deemed necessary to take shape. Overarching themes in the clusters are sought, in order to structure the clusters into a matrix with two axes, each carrying various expressions. From the combination of these expressions, these behavioural manifestations will emerge. Taking a position around these manifestations, statements are formed for each of them, carrying the designers perspective.

### 5. Interaction & concept vision

Once a direction within this framework is decided upon, an interaction & concept vision will need to be formed. By first forming a vision of the desired interaction of people, which will ensure reaching the goal in the statement, it will be much more likely that this goal will be achieved. From the interaction vision, concept qualities will emerge that will be of guidance in the designing stage. These steps will be crucial to guarantee achievement of the envisioned goal.

## PART 2: DESIGNING THE CONCEPT

The second part of the project follows an iterative process of diverging, converging, creating and evaluating, as visualized in Figure 3. These steps are repeated until reaching the final concept, each iteration giving insights on how to improve and move forward.

Each iteration starts with the **divergence** of ideas; gathering various possibilities that can be of use for the concept. Hereafter, these possibilities will be narrowed down through **convergence**, working towards an outcome to be tested. Before the outcome can be tested, it should be translated into a testable presentation. This can be done, for example, by **creating** a storyboard, product sketches or a simple model. The **testing**, whether based on requirements, executed as a user test or in any other form, will give insights on how the outcome performs and if and how to revise it, adapt it or add to it to move towards the goal envisioned.

In this graduation project, 3 iterations were done to work towards the final concept. Based on the final evaluation, recommendations are made to NS to enable the continuity of this improvement process.

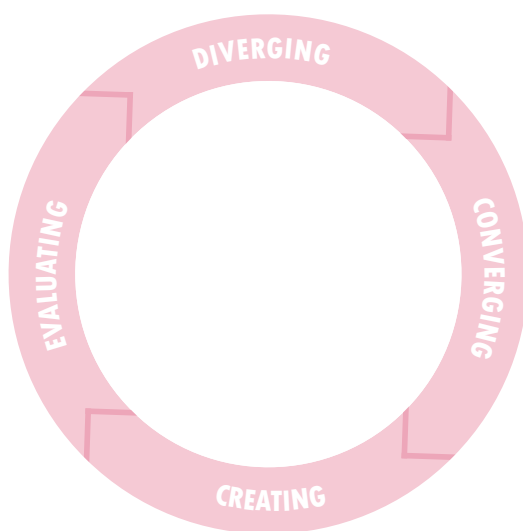


Figure 3: Process of iteration

## APPENDIX

Throughout this report, there is referred to the Appendix to fulfill the possible desire for deeper insight into the work presented.

As the project, in particular the ViP method, has produced a significant amount of information, the decision is made to create a digital Appendix in MIRO. This gives the reader the opportunity to zoom in and out and to move flexibly through the information at hand, always remaining a clear overview.

In the report, reference is made to specific Appendix numbers, which can be found in the MIRO board, giving you guidance in finding the associated content.

Scan the QR code or use the following link to reach the MIRO page:



[https://miro.com/app/board/uXjVM3UJh44=?share\\_link\\_id=941858760783](https://miro.com/app/board/uXjVM3UJh44=?share_link_id=941858760783)

# **PART 1**

## **DEFINING THE FUTURE VISION**



# 1

## domain definition & deconstruction

In this chapter the first steps of the ViP method are outlined. The domain, which will be the basis for the construction phase, is determined. Hereafter, this domain is deconstructed on a physical and purposive level to obtain a clear understanding of what it entails.

## 1.1

# ESTABLISHING THE DOMAIN

In order to set a directive for the process of ViP, first a domain is defined. NS wants to obtain a future vision specifically for their train stations. This is a very broad context, as train stations comprise many different functions, like eating, waiting, shopping, using the toilet, etc., and interactions, between visitors, visitors and the staff, visitors and the ticket machines, etc. Many stations are the focal point of the city, where all different ways of mobility come together, but also where all different kind of people come together. This makes that the train stations play an important role in our society.

Additionally, there is not one standard NS train station, as they are all customized to their own external environment and demand: there are big train stations that serve as hubs in big cities, but also smaller stations in rural areas (see Figure 4). It is not desirable to restrict the context, as many opportunities can be missed as a result. By focusing on the whole picture of NS train stations, it is believed with confidence that all possible areas for opportunities have been included, making the future vision all-encompassing and allowing NS to take real steps forward.

To be able to determine which factors should and should not be included in the study, it is important to establish how far into the future the vision will be projected. NS has its mind set on a vision for 5 to 10 years into the future. This leads to the following domain definition:

### *NS train stations in 2030*

Figure 4: hub train station Utrecht Centraal & rural train station Hoewelaken



## 1.2

# DECONSTRUCTION OF THE DOMAIN

Before diving into the collecting of factors, a clearer view of what this domain entails is needed. By taking apart the domain in terms of physical assets and functionalities, a clear overview of the domain is created which will lay a solid basis for moving on to the next phase of factor collection.

### PHYSICAL LEVEL

To start, the goal is to provide a clear overview of the physical assets that compose the station environment. From this, a first question immediately pops up: what does the term station environment actually encompass? This question is addressed first, before getting into the physical entities.

### STATION ENVIRONMENT

What the station environment entails can vary quite a bit based on the size of the train station and the space available for use surrounding it. But in most cases, the station environment can be divided into four areas: the area surrounding the train station, the train station prior to the gates/check-in posts, the train station subsequent to the gates/check-in posts and the platforms.

First of all, there is the area surrounding the train station, which technically is not part of the train station yet. However, it should be taken into account as the surrounding area can surely affect the train station. Not to mention, that this area surrounding train stations can also be included in regulations, for example the ban on the parking of bicycles in the area around some train stations.

Secondly, there is the area of the train station outside of the gates/prior to the check-in posts. Depending on the size and available space in the area, there may be some kind of square or entrance prior to the check-in facility. This is the space where people first arrive or leave the station, and in big cities it can be the city's hub where people meet up.

The third area is the area of the train station inside the gates/subsequent to the check-in posts. Here, people are on the move to their next connection, on their way home or waiting (while, in the case of big city hubs, visiting one of the many shops). Lastly, there is the area of the platforms. This is

the area where people spend most of their time at the train station, waiting for their train to arrive (Van Hagen, 2011).

### PHYSICAL ENTITIES

As it is now established what the term *station environment* entails, it is time to look into the physical assets at present here. An overview is shown in Figure 5. The physical entities shown are divided by three categories: interactive touchpoints, non-interactive touchpoints and other. In the Cambridge Dictionary, interaction is described as 'an occasion when two or more people or things communicate with or react to each other' (Cambridge Advanced Learner's Dictionary & Thesaurus, n.d.). Based on this definition, a distinction is made between interactive and non-interactive touchpoints.

The interactive touchpoints are assets people have to communicate with or react to, like a ticket vending machine or a service post.

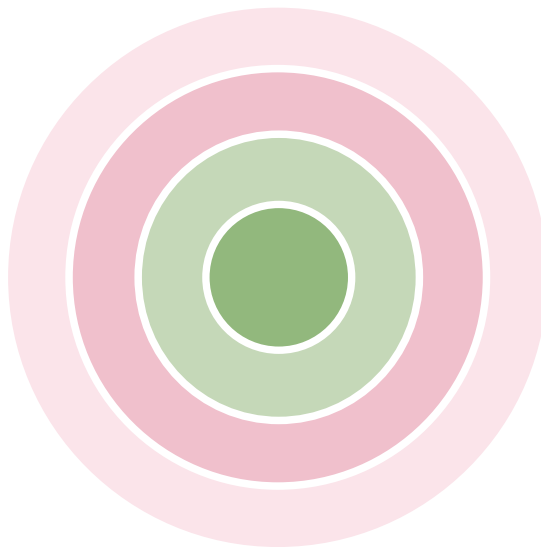
The non-interactive touchpoints are assets people use to only absorb information (as opposed to also giving information) or where an act from the user is needed. Think about info screens or multi-story bicycle parking.

The remaining assets are gathered in the category other, as there is no specific information exchange or action involved between the visitors and the physical assets.

With these categories, a clear overview of the kind of assets presented in each area, and how visitors of the station environment interact with them, is given. This overview can be found in Figure 5.

### NS AND PRORAIL

The four areas just defined are not all operated by NS. NS is the operator of the train station prior to the gates/check-in posts and the train station subsequent to the gates/check-in posts, but ProRail operates the platforms and everything that makes the platforms accessible (elevators, escalators). This does not preclude the project from utilising the platforms, however, it is good to be aware of this distribution. Therefore, in case the ultimate focus is on the use of the platforms, this will have to be done in consultation with ProRail.



	AREA AROUND	PRIOR TO CHECK-IN	SUBSEQUENT TO CHECK-IN	PLATFORM
interactive touchpoints		<ul style="list-style-type: none"> <li>Sliding doors</li> <li>Info hub</li> <li>NS ticket &amp; service shop</li> <li>OV bike rental</li> <li>OV chipcard charging machines</li> <li>Toilets</li> <li>Train ticket machines</li> <li>RET ticket &amp; charging machines</li> <li>Entrance gates</li> <li>Entrance poles</li> <li>ATM's</li> </ul>	<ul style="list-style-type: none"> <li>Info hub</li> <li>OV chipcard pickup point</li> <li>Service &amp; alarm pole</li> <li>Locker rental</li> <li>Toilets</li> <li>Shops</li> <li>Escalator/elevator/stairs</li> </ul>	<ul style="list-style-type: none"> <li>Escalator/elevator/stairs</li> <li>Surcharge posts</li> <li>Kiosk</li> </ul>
non-interactive touchpoints	<ul style="list-style-type: none"> <li>Signage to station</li> <li>Signage to local public transport</li> </ul>	<ul style="list-style-type: none"> <li>Signage</li> <li>Other public transport</li> <li>Taxi spots</li> <li>Kiss &amp; Ride</li> <li>Bicycle parking</li> </ul>	<ul style="list-style-type: none"> <li>Signage</li> <li>Info screens</li> <li>Waiting Rooms</li> <li>Flex working spaces</li> </ul>	<ul style="list-style-type: none"> <li>Signage</li> <li>Waiting Rooms</li> <li>Info screens</li> <li>Info panels/boards</li> </ul>
other	<ul style="list-style-type: none"> <li>Streets</li> <li>Bike paths</li> <li>Sidewalk</li> <li>City centre</li> <li>Rural area</li> <li>Local public transport</li> </ul>	<ul style="list-style-type: none"> <li>Square</li> <li>Seating (bench, stool)</li> <li>Trash bins</li> </ul>	<ul style="list-style-type: none"> <li>Seating (bench, stool)</li> <li>Trash bins</li> </ul>	<ul style="list-style-type: none"> <li>Seating (bench, stool)</li> <li>Trash bins</li> <li>Smoking area</li> <li>Shelter</li> </ul>

Figure 5: areas and physical assets in station environment

## PURPOSIVE LEVEL

From a first analyses of what the train station environment comprises in the form of physical assets, it becomes clear that, currently, the train station serves, or can serve, three purposes. Whether it does, depends on the size and demand of each train station and therefore the facilities it offers its visitors. The three purposes it can serve are: connecting (different ways of) travel, the temporary stay of visitors and it being a destination in itself (see Figure 6).

The main purpose served, which therefore is served at every train station, is connecting (different ways of) travel. The main reason people come to the station is to travel from destination A to destination B. All train stations offer other forms of transport/mobility options in addition to trains, but which type, to what extent and variety, differs depending on the demand and whether it is a rural or urban area, or something in between.

Aside from connecting (different ways of) travel, the temporary stay of visitors is also a prominent purpose of the train station. In the time between

their connections, visitors stay at the train station. Even though people spend most of their time waiting at the platforms, people also temporarily stay in the train station halls, if there is one. People are not always merely waiting in the time between connections, but also fill their time by doing some shopping, by eating or with leisure activities, like listening to the piano being played in the train station hall.

Lastly, and this purpose is less prevalent, the train station can also be a destination in itself when there are reasons to visit it aside from travelling. These reasons to visit are thus for other facilities present, like shops, a restroom or office spaces available for rent. Big train stations that serve as hubs in big cities may very well have this purpose, as there are a lot of facilities to be used aside from travelling, and therefore reasons to visit it just for these facilities. Small train stations in rural areas are unlikely to serve this purpose, as they typically offer little beyond transportation facilities.

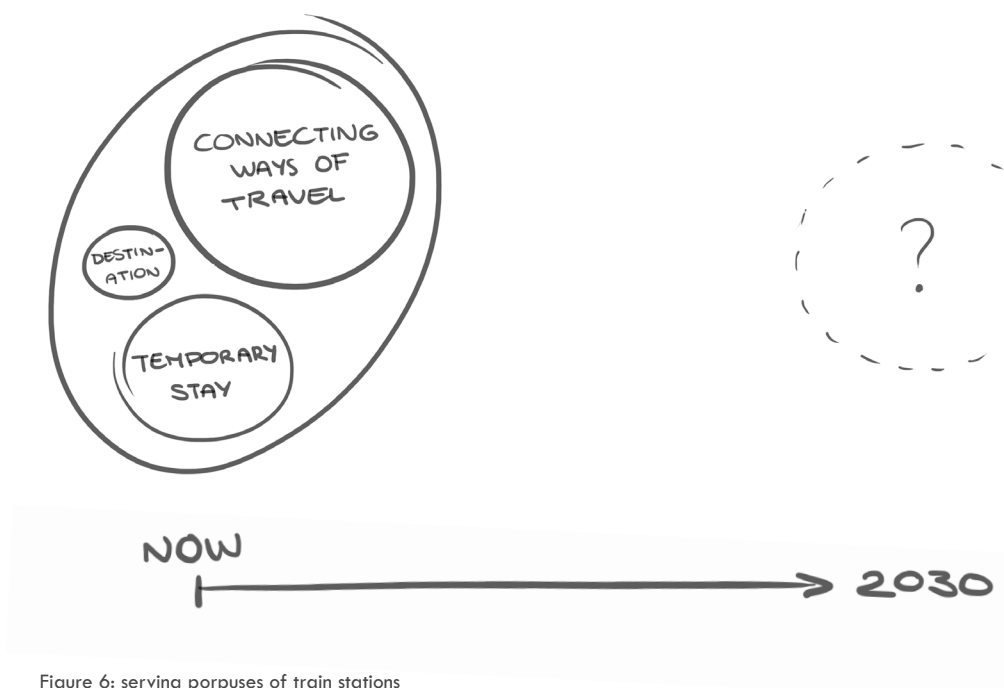


Figure 6: serving purposes of train stations

## SUMMARY

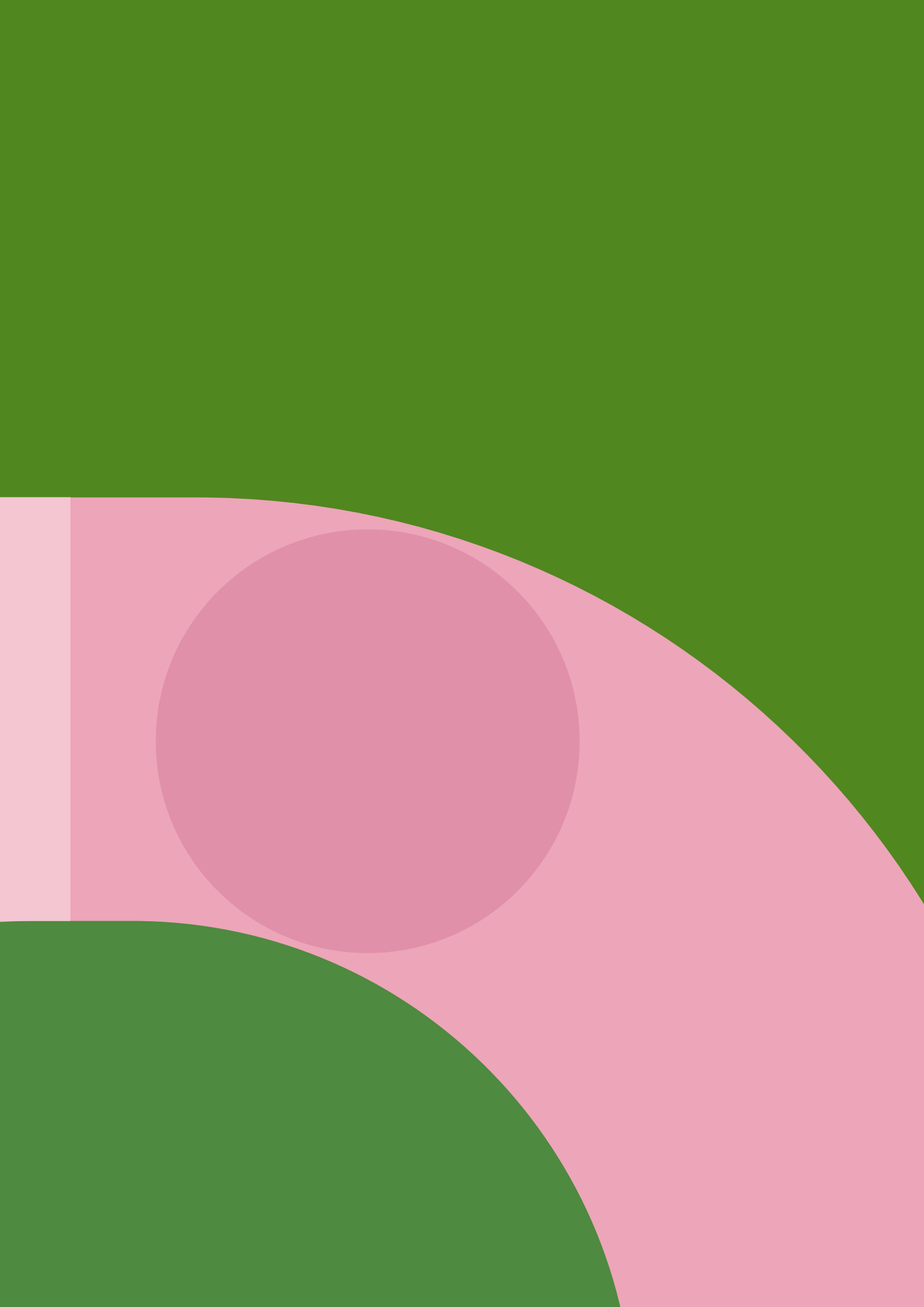
The established domain, set as a directive for the ViP process is:

### NS train stations in 2030

Within this domain, the area surrounding the train station, the train station outside of the gates and the train station inside the gates are the areas in scope of this project, with different kinds of physical assets at present in each area.

Currently, the three purposes train stations can serve are connecting (different ways of) travel, the temporary stay of visitors and it being a destination in itself.

To find out how this will be shaped in 2030, the following chapter will start the collection of context factors.





# 2

## collection of factors

In this chapter, the first step of the construction phase is outlined. First, clarification is given about what a context factor is: what is its purpose and what are their possible types. Hereafter, the stage for factor collection is set by determining the fields of research. The sources of the factor collection are elaborated on and finally, an overview of the collected factors is shown.

## 2.1

# WHAT IS A CONTEXT FACTOR?

The context factors will form the basis from which the vision of the future will be developed.

A context factor is a piece of information plausible to be true in the future context, as stated in the domain. All context factors together will be the building blocks from which the future world of the domain is build. That is why, in the collection of context factors, there should always be the feeling that the specific factor will be of relevance for the domain 'NS train stations in 2030'.

The factors that are collected can be of four different types, as visualised in Figure 7. Two of these types cover factors that are always changing, in flux in the world: trends and developments. The other two types cover factors that are fixed in (a part of) the world: states and principles. By collecting a variety of these types of factors it can be ensured that the future vision is all-encompassing, taking into account changing as well as stable world conditions.



Figure 7: Different types of context factors

## 2.2

# SETTING THE STAGE

As it is desired for the future vision to have foreseen the full range of possible scenarios, it is important that the collection of context factors will be diverse in the fields of research, which are: culture, psychology, economy, politics & democracy, ecology & sustainability, demography, finance & labor, sociology, biology & evolutionary, technology and experiential (see Figure 8). The majority of these research fields is derived from the ViP book (Hekkert & Van Dijk, 2011). However, some research fields have been added that seem relevant to the domain that will be investigated.

Since the train station plays an important role in our society, this research has put additional focus on societal themes that may be relevant in the context of NS train stations in 2030, such as unemployment & homelessness, cultural differences, inequality & poverty. As it is aimed to give NS a full picture of the future occurrences and attitudes of people at the stations, including these themes is deemed important.

The aforementioned directives set the stage for the search of context factors, retrieved from a wide range of (different types of) sources.



Figure 8: Research fields

## 2.3

# SOURCES OF COLLECTION

The context factors are retrieved from all different types of sources. Context factors are retrieved internally, from within NS, and externally.

### INTERNALLY

NS, being a major company, has already done a great deal of research internally regarding the train stations and the behaviour of its visitors. Additionally, NS has a lot of people walking around, possessing knowledge about the context in question. Consequently, factors are collected from internal reports, papers & dissertations and conversations & interviews with fellow NS colleagues.

#### Mark van Hagen

An introductory conversation with Mark van Hagen, researcher and principal consultant at NS, gave many insights on people's behaviour in the train station environment.

Additionally, two semi-structured, explorative interviews with NS colleagues gave some interesting insights (for the questions prepared for these semi-structured interviews, see Appendix A).

#### Do van Elferen

An interview with Do van Elferen, market researcher and manager of the Stations Belevings

Monitor, provided an understanding of people's experiences at train stations and what shapes and influences these.

#### Mirjam Schokker

An interview with Mirjam Schokker, manager of train stations Utrecht Centraal and Rotterdam Centraal, gave an even clearer picture of the setup, possibilities and regulations of a (big city, hub) train station and gave some insights on trends that will likely take place in the future context.

A more elaborate overview of the key insights retrieved from these interviews can be found in Appendix A.

### EXTERNALLY

As eventually, a complete view of the future domain is desired, factors collected externally are also of great importance. Types of sources used are:

- trend forecasting reports
- books
- journals
- news articles
- scientific literature/dissertations

## 2.4

# RESULT

The collecting process has resulted in a collection of 133 context factors, well spread across the different fields of research in the time available. In Figure 9, an overview is presented to show the diversity in types of factors and fields studied. In Appendix B, all factors with their specific type and reference can be found, shown per research field and numbered.

In the collection of factors, the designers' character can already be identified, since the decision whether or not to include factors is a process partly based on the designers' personal values and interests.

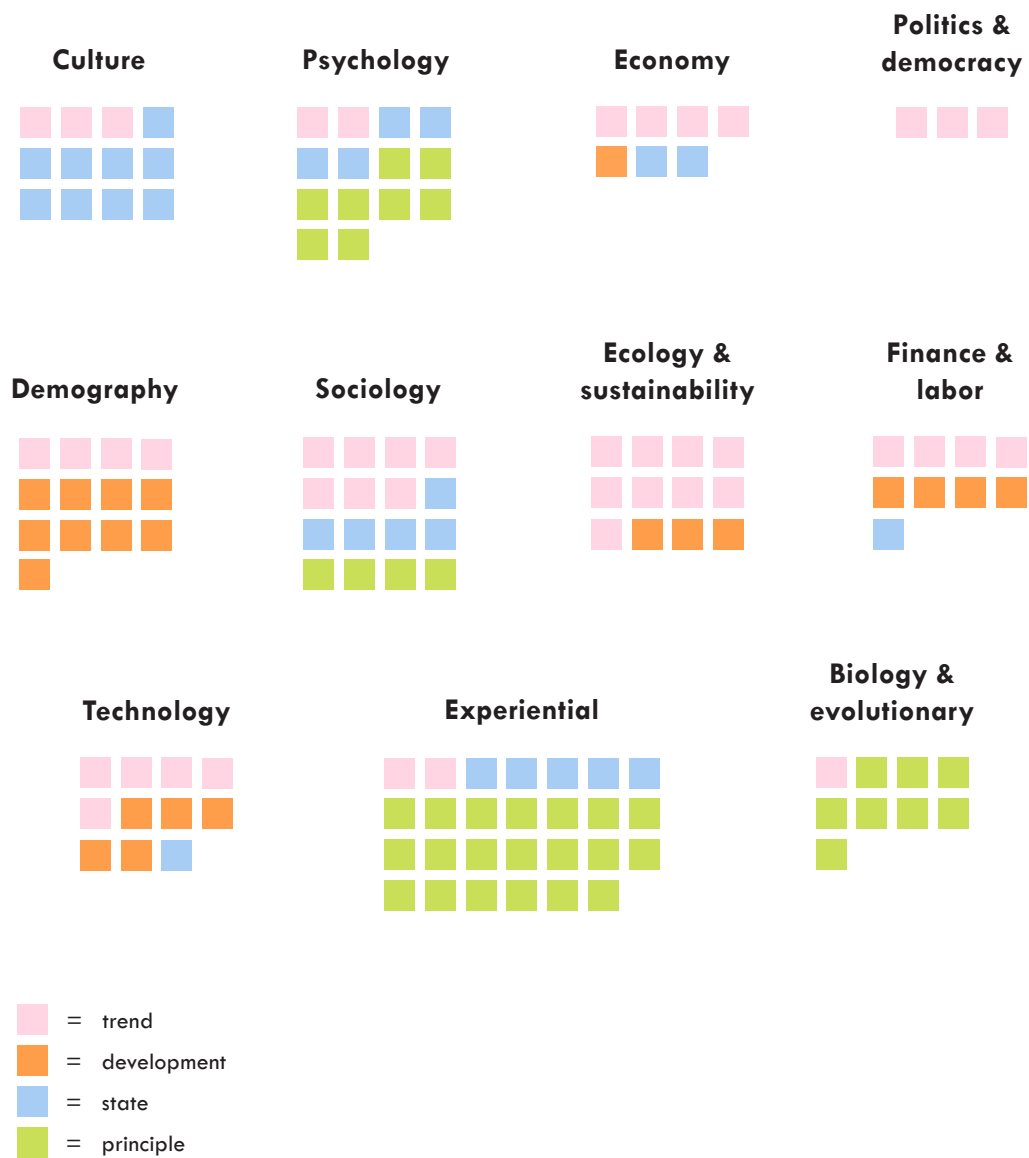


Figure 9: Overview of collected factors

## SUMMARY

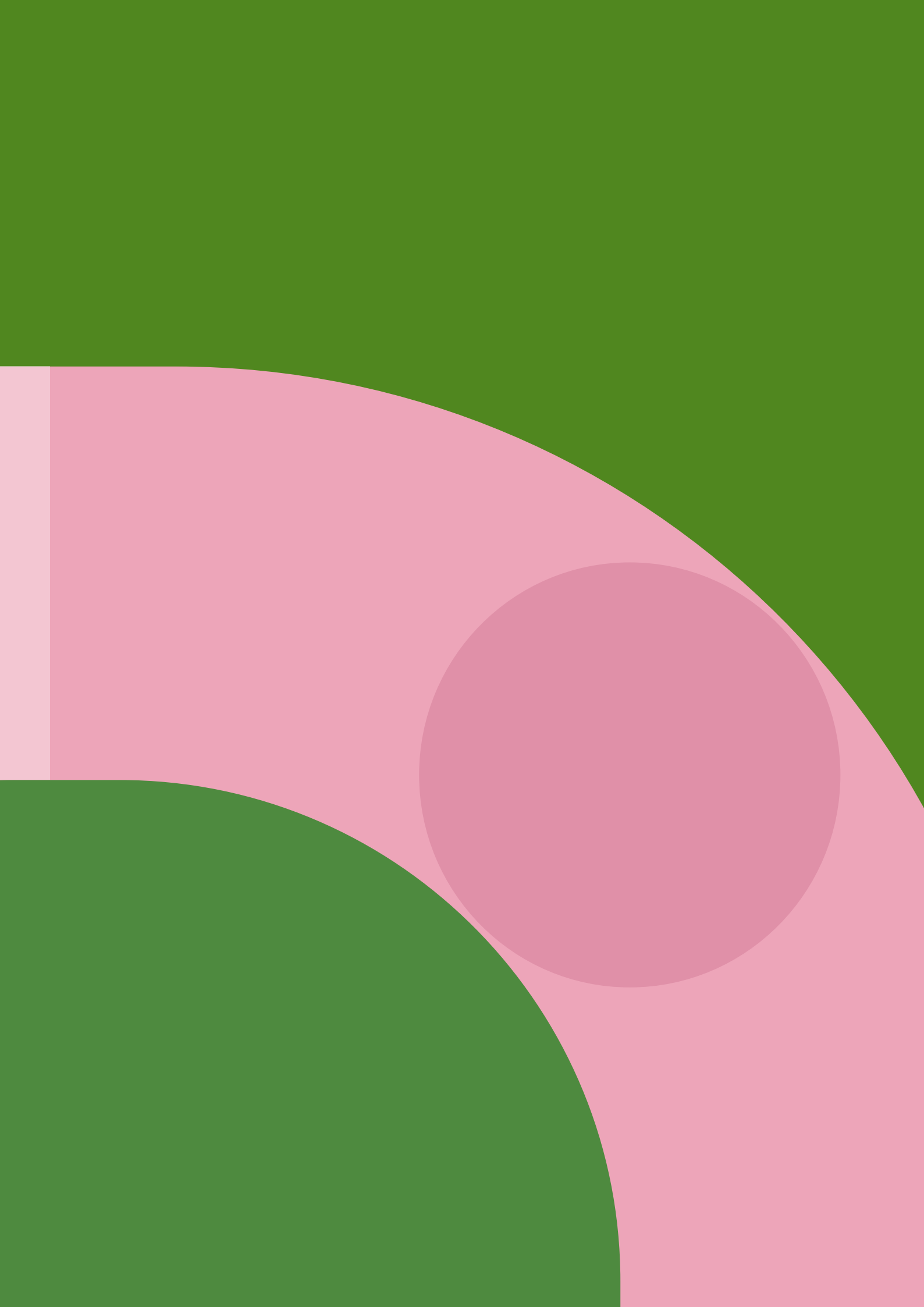
Context factors, the building blocks of the future world, come in four different types: trends, developments, states and principles.

To set a directive for the collection of factors, fields of research and an additional focus on societal themes are set.

Factors are retrieved from all different kinds of sources: internally, with an emphasis on information obtained from fellow NS colleagues, and externally.

In total, 133 context factors, of different types, are collected from a variety of research fields. These factors will be the base from which the vision of the future will be formed.

It will also be the basis for the clustering process, covered in the following chapter.



# 3

## clustering of factors

In this chapter, the process of clustering the previously collected context factors is outlined. First, the approach to clustering is explained and illustrated with one example cluster. Hereafter, all clusters are shown with their very own title and corresponding description.

## 3.1

# THE APPROACH TO CLUSTERING

To create order out of chaos, and make the collection of factors comprehensible, the sequential step is to cluster the factors. To do this, the first step is to let go of the categorisation by research fields, for the goal is to find connections between the clusters that will eventually tell a story, rather than linking the factors based on the subject matter they possess. It is deemed important that the search is directed towards clusters that evoke the feeling to be relevant to the domain, the need for awareness of the designer's responsibility surfacing, as what may feel relevant to one may not feel relevant to another.

The process of clustering moves forward factor by factor. A random factor is selected from the stack and placed in a cluster plane. A subsequent factor is randomly selected, whereafter it is checked if it has a connection with the factor in the first cluster plane. If not, it is placed in the next plane. Each time two (or more) factors are joined in a cluster plane, a title is given to this cluster, which of course can be updated along the way. This process repeats itself until all factors have formed into a set of clusters. However, it is an iterative process. Meaning, factors are again removed from clusters and relocated, clusters are joined together or taken apart, and titles are always evolving. This goes on until the future context can be comprehended through these clusters.

Whether a connection is found between two (or more) factors, is a decision that is made based on feeling and is therefore characteristic of the designer in question. Therefore it can be stated that the clusters eventually formed, will carry the designers values and beliefs.

To give some insight in the process of clustering and how the connections between factors form a cluster and its title, one such cluster will be unpacked in this section.

The connections between sixteen context factors will be shown, to explain the resulting cluster title, displayed on the right. First, a list of the factors with a short description is displayed on the next page, to give a better understanding of the factors at hand.

## CLUSTER 9

*INDIVIDUAL'S MINDSET SHIFTS  
FROM A FOCUS ON THE NOW &  
THE NEAR FUTURE TO A FOCUS ON  
THE MORE DISTANT FUTURE, IN  
TERMS OF SUSTAINABILITY AND  
HEALTH, BEING READY TO MAKE  
SACRIFICES*



## CONTEXT FACTORS

- 79** People are reading a lot more food labels; we think that will continue. They're looking to reduce their sugar intake. They're also looking for more sustainable eating.
- 81** We are eating much less meat.
- 80** Children will be taught to live in harmony with the environment.
- 89** Most likely, consumer adoption will exceed regulatory targets and Europe will reach around 75% Electric Vehicle market share by 2030.
- 93** It is assumed that there will be 1.9 million fully electric cars driving by 2030. This is crucial to achieve the 2030 ambition of no more sales of new fuel cars.
- 82** People want to eat healthier, but at the same time want to keep the option of an easy, fast-food meal. Variety is important
- 103** People will be more conscious about the waste they produce and how to minimize this.
- 102** Nature becomes more valued.
- 106** People will reduce buying behaviour and will obtain products through services
- 105** More and more people choose a sustainable international train ride over flying, even though it takes longer, is more expensive and often consists of various parts.
- 75** The wellness market is booming. Consumers intend to keep spending more on products that improve their health, fitness, nutrition, appearance, sleep and mindfulness
- 40** Our craving mood can make us care less about a future consequence and more about the present, thus making us rush for immediate gratification
- 66** Disposable income in the Netherlands will grow significantly until 2050: between 70% and 130%
- 76** We want more than a memory, we want to change and grow as our highest desire and are willing to sacrifice money, time and effort (physical and mental effort/pain) to do so
- 64** Companies capitalize on the psychology of instant gratification and encourage impulsive buying behaviour to increase profits
- 30** People know very well the difference between something that is new and something that is of good quality

-  = trend
-  = development
-  = state
-  = principle

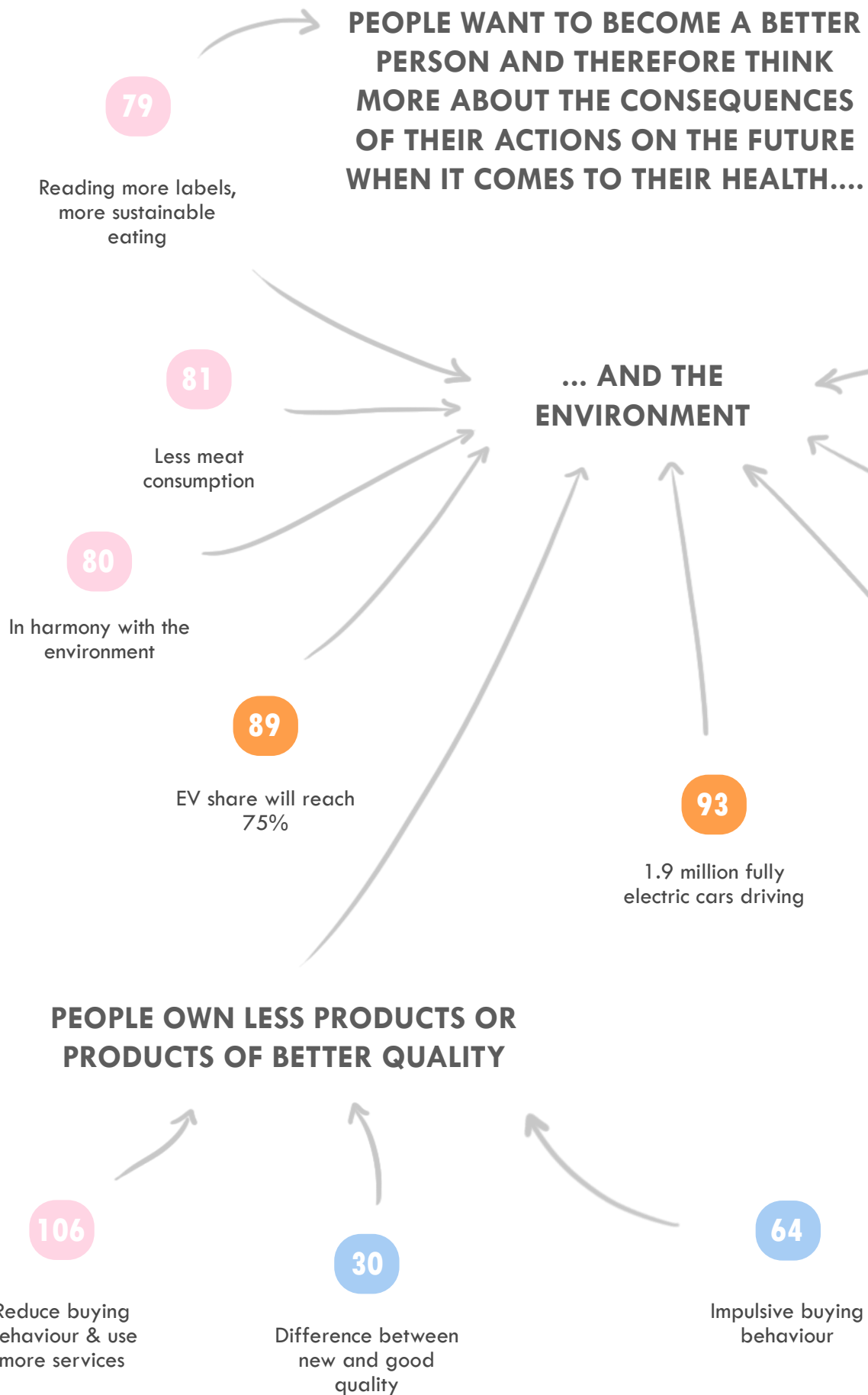


Figure 10: Patterns in cluster 9



As can be seen in Figure 10, a cluster can contain a considerable amount of context factors. When forming the cluster, the question is asked if a connection can be found between factors and from this, links emerge. A link can be found from one factor to another, but also to multiple ones (see the arrows in Figure 10). From these links, patterns are discovered, which in Figure 10 are indicated by capital text.

These patterns all talk about the probable desires and values of people in the future. They are the outcome of a thorough analysis of all context factors and these sixteen correlating ones, leading to the overarching cluster title:

**Individual's mindset shifts from a focus on the now & the near future to a focus on the more distant future, in terms of sustainability and health, being ready to make sacrifices**

This process of analyzing, searching for links and patterns is performed for each of the thirteen clusters.

A more elaborate description of the discussed cluster and the full set of clusters can be found in paragraph 3.2. Furthermore, an overview of all clusters including their underlying factors can be found in Appendix C.

## 3.2

# CLUSTERS

### 1. *THE DESIRE OF THE HEDONIC VISITOR TO EXPERIENCE SUSTAINABILITY*

In a world where people (especially millennials) care more about experiences, providing souvenirs of memories, than about belongings and where sustainable awareness increases, a story emerges of people's desire to experience sustainability. Looking specifically at the train station environment, this relates to the occasional, hedonic visitor, as they take their time more and are more open to new experiences (than those who use the same service on a regular basis).

### 2. *ADVANCING TECHNOLOGIES WILL EXPAND OUR RANGE OF CONTACTS AND WILL THUS PROVIDE GREATER OPPORTUNITIES FOR FINDING JOBS AND ACCOMMODATION*

In a hyperconnected world, new communication technologies are and keep emerging. This will ensure people's reach to increase greatly and will offer opportunities to change and improve their own situation and/or place in society. Needless to say, these opportunities do need to be grasped, as a digitalized world can also in turn be a competitive one and the ability to build and maintain relationships is more important than ever.

### 3. *LESS FACE-TO-FACE CONTACT AND MORE DIGITAL COMMUNICATION RESULTS IN LOW QUALITY, I.E. SUPERFICIALITY, OF SOCIAL CONNECTIONS AND MAY EVEN LEAD TO SOCIAL ISOLATION*

Digitalization will bring us a lot, in terms of flexibility, time-efficiency, the ease of communication, the reach of connections, etc.

However, as new communication technologies and virtual & interactive learning tools will emerge, the group of people that are increasingly living further away of their jobs and studies will see opportunities for less place bound learning and working. This will in turn result in the fact that people will be lacking the value of real human and physical contact. Social relationships between friends and colleagues will be built on digital devices and thus become increasingly efficient.

All in all, an increased risk of social isolation, which can be caused by a combinations of factors such as the breakdown of traditional social networks, increasing mobility, and the rise of digital communication, is something to watch out for.

### 4. *MANIPULATING INTO AN INCREASED SENSE OF CONTROL*

*"A sense of uncertainty about the future generates a strong threat or 'alert' response in your limbic system. Your brain doesn't like uncertainty - it's like a type of pain, something to be avoided."* Rock (2009)

The feeling of being in control is something people constantly reach for, to subsequently reduce feelings of stress and feel more at ease. In the train station environment, a great amount of factors can influence the feeling of being in control, such as sense of orientation, flexibility, the information at hand, clarity of communication. Logically, some people might need the feeling of being in control more than others, as they are more hurried or already stressed. Now, this need for control remains recognized and used to shape and influence the visitor's journey in such a way that contributes to a more positive experience. Research into environmental stimuli (like sound, temperature, colour, smell) and technological advancements involving more automated processes, including AI, will continue to provide ways to influence, that is manipulate, visitor's experiences, emotions and thus behaviour.

5. *MINORITIES GET BIGGER AND MORE VISIBLE, AND THEY WILL HELP US REALISE OUR CONVENTIONAL CULTURAL FLAWS, BRINGING US CLOSER TOGETHER AS A SOCIETY*

The Dutch culture has its flaws, coming from traditional and conventional ways of doing. Some ways are worth preserving, but some are also outdated. Sometimes a new point of view is needed to help us to come to such a realisation. Racism and discrimination is something that has been ingrained in Dutch culture, and although its utterance in the present is far from what it was in the past, it will still live on in the future. Together with a growing sense of political polarisation, our society tends to move farther apart. However, with the number of immigrants getting bigger and the black and LGBTQ+ community getting more visible, a lot of newly visible points of view will make our realisation of outdated cultural ways progress and make us more open to the adoption of new approaches and connections.

6. *EARNING LOYALTY BY ALL-INCLUSIVENESS OF PRICES, POSITIVE EMOTIONS AND SUSTAINABILITY*

Research has shown that accomplishing positive emotions and experiences in service users, can lead to greater loyalty and stronger approach behaviour towards the organization in question. These positive emotions can be evoked by various environmental stimuli, like music and colour, and are the reason a journey becomes a memorable experience. However, taking into account rising topics, positive emotions are not all service organizations will focus on to attain more users. Sustainability is and will continue to be an important topic in our society, which companies will use as a way to attract and retain new customers. Additionally, as the use

of products through services will only increase more, it will be essential for companies to offer their customers all-inclusive prices, attempting to take on the competition.

7. *HIGH VALUED LEISURE TIME, IN WHICH WE COMMUNICATE AND ABSORB INFORMATION, CAUSES A NECESSARY EFFICIENCY*

Efficiency is something the Dutch find highly important and take very seriously. And this is not only of significance in their jobs, but also in their social lives and in the time spend traveling. The Dutch tend to plan things strictly, from work meetings to social gatherings and they expect public transport to stick to the schedule. Moreover, the Dutch aspire keeping to rules and guidelines, aiming to live an organized life.

All this efficiency is not for nothing. It brings the Dutch a great amount of leisure time. In a hyperconnected world, it will not come as a surprise that a significant and stable proportion of this time is spend on media use. As the country with the lowest rate of people working very long hours in paid work and where people more than averagely spend time on personal care and leisure, additional physical and mental health benefits are a profit. It therefore stands to reason that the Dutch set great value to their free time, and that they do their utmost best to secure this.

8. *APPEARANCE AND COMFORT AS DRIVERS FOR CUSTOMERS*

It is in human nature to follow those experiences that are pleasant and avoid those that are unpleasant or even painful. It is like sensations of pleasure and pain that are useful for drawing attentions to basic relevancies in life. It is the reason humans

choose a comfortable route over the fastest one, why the weather impacts our choice of transport, why humans feel more comfortable in dimmed lighting and prefer a less crowded space. People even see the way the station is being treated as how they are being treated, which can either drive people away or draw them in. All of this points to appearance and comfort being factors that drive customers in their decisions.

#### **9. *INDIVIDUAL'S MINDSET SHIFTS FROM A FOCUS ON THE NOW & THE NEAR FUTURE TO A FOCUS ON THE MORE DISTANT FUTURE, IN TERMS OF SUSTAINABILITY AND HEALTH, BEING READY TO MAKE SACRIFICES***

People want to become better people when it comes to how they treat their body and health and how they treat the environment. They want to act in a way that will improve their health and have positive impact on the environment, even if they do not see results right away, letting go of the craving for instant gratification. People are eating healthier and spend money on products that improve their health, fitness, nutrition, appearance, sleep, and mindfulness. Moreover, people are eating more sustainably, are more conscious of their waste, use products through services and thus reduce buying behaviour, the list goes on. Not only do people sacrifice instant gratification by focusing on the future, people are also willing to make additional sacrifices to work towards their future goals. They are willing to put in more physical and mental effort, to sacrifice time and also money. Aside from the willingness to spend more money, people will also have a higher likelihood of being able to do so, powered by higher disposable incomes in the future.

#### **10. *PEOPLE NEED TO KEEP UP WITH TECHNOLOGICAL DEVELOPMENTS FOR THEM TO STAY RELEVANT & FLEXIBLE, WHICH MAY JEOPARDISE THE PARTICIPATION IN SOCIETY OF PEOPLE WITH A COGNITIVE, PHYSICAL AND/OR SENSORY IMPAIRMENT***

In a world where technological development is constantly ongoing and where people have to work until older ages, lifelong learning will be imperative to keep pace of these developments throughout a long life and thereby remain relevant and flexible in society. People will put trust in those who are able to show expertise and demonstrate competence in these matters.

Technological developments, e.g. in AI, smart wearables (enabled with AI), mobile payment, and increasingly automated processes can also cause people to be unable or struggle keeping up. Especially people with a cognitive, physical and/or sensory impairment run the risk of getting left behind in our ever-changing, digital world.

#### **11. *INCREASING LIFE EXPECTANCY COMBINED WITH URBANIZATION RESULTS IN MORE SOCIAL AND EMOTIONAL ISOLATION AND LONELINESS IN THE ELDERLY***

We are at a time in which the ageing of the population will only increase, including up to 2030. Increasing life expectancy can lead to elderly more often being single and living alone, mainly as a result of widowhood but also increasingly due to divorce. Moreover, while urbanization is on the rise, the number of people living in rural areas is projected to decrease. It does not come as a surprise that the percentage of elderly people is expected to be highest exactly in these

shrinking areas. These factors will increase the risk of loneliness among the elderly, and may even have more worrisome implications such as feelings of social or emotional isolation.

## 12. *OPPORTUNITY IN MORE CITIZEN PARTICIPATION & COOPERATION TO INCREASE THE SENSE OF COMMUNITY IN CROWDED CITIES, AND TO ADDRESS OTHER SOCIETAL AND CLIMATE ISSUES MORE BROADLY*

Increasing individuality and anonymity in growing urban societies can decrease our feeling of responsibility and generosity towards each other, as there is no benefit from our actions if the probability is that people won't cross paths again. Within the gaining attention and importance of citizen participation and the demonstrated helpfulness and ability to cooperate of Dutch citizens, there lie opportunities to address these issues arising in crowded cities. Not only these aforementioned issues, but also other climate and societal issues can be addressed and gain benefit from citizens' involvement.

## 13. *AS THE DEMAND FOR MOBILITY INCREASES, PEOPLE WILL ADAPT TO DIFFERENT WAYS AND MOMENTS OF TRAVELING*

With a rising population, the demand for passenger transport is projected to increase. While the rural areas are shrinking and urbanization continues, the job growth in big cities will be too significant to be filled by existing residents. As people outside of these hubs will need to account for this, the demand for mobility increases. Moreover, as fuel

prices go up, people will seek out cheaper ways of traveling, increasing the demand for public transport.

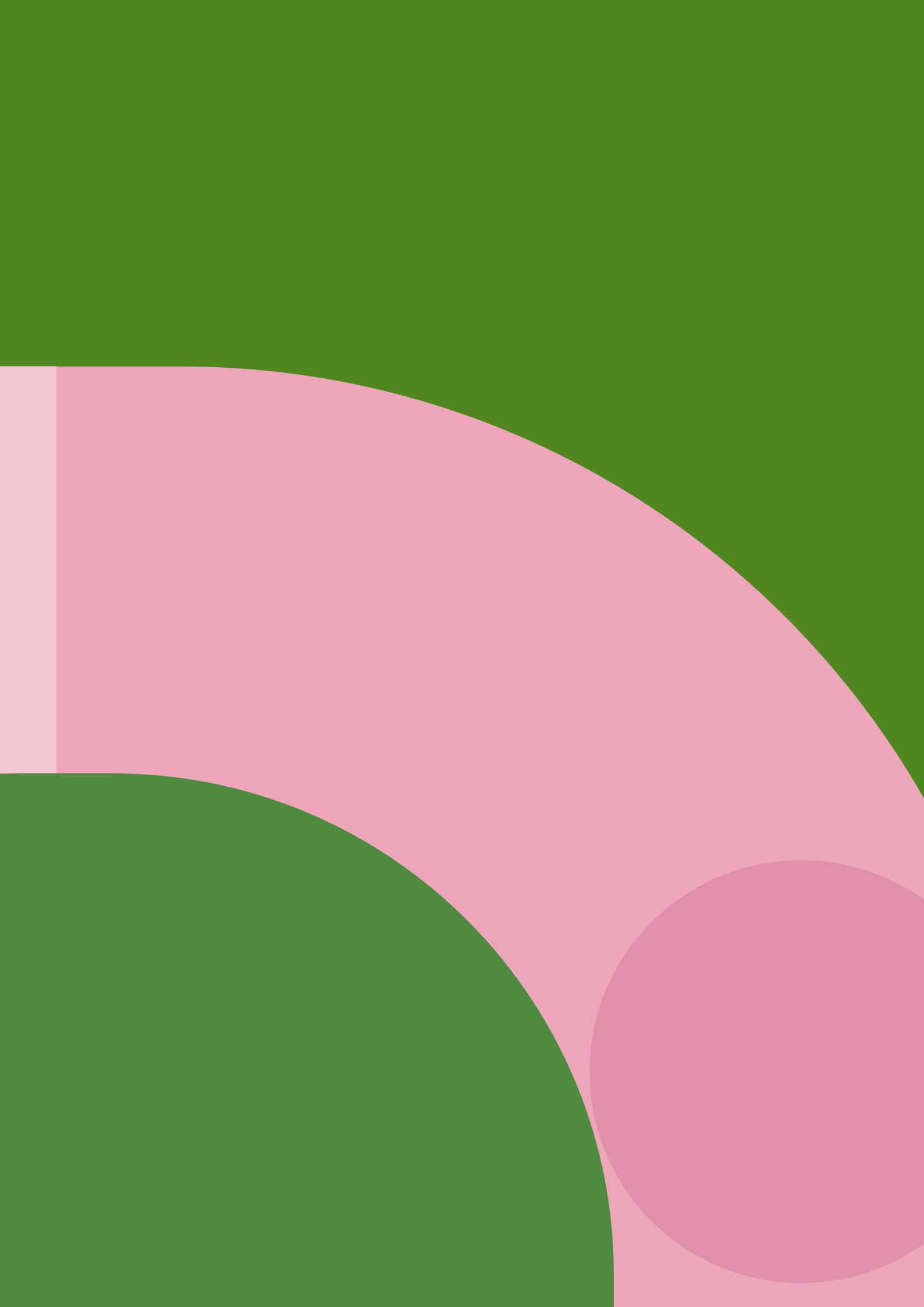
All of these transformations call for adjustments in peoples habitual mobility behaviour. More common flexible working hours and the ageing population will increase mobility outside peak hours and will somewhat smoothen out the peaks and dips. Additionally, for people to remain able to reach their destinations, they will adjust to different means of mobility. People will be more open to the use of ACES (Automated, Connected, Electric and Shared) vehicles and will develop a less positive attitude towards owning modes of transport, which will result in less clinging to and dependence on cars.



## SUMMARY

Clusters are formed from the collected context factors. To do this, the categorization by research fields is abandoned in favor of narrative-driven connections. Clustering is an iterative process that continues until the future context can be comprehended through the set of clusters.

**The result of this clustering process is 13 clusters**, all presented with their own title and description.



# 4

## framework & vision statements

This chapter comprises the process of building the framework from the clusters and the designers vision on its content. The approach to building the framework is shown and the found axes are elaborated upon. The future prospect of NS train stations in 2030 is outlined, from 12 behavioural manifestations with a corresponding elucidation. Finally, the designer's viewpoint on these behavioural manifestations is presented, leading to 12 vision statements regarding the train station environment in 2030.

## 4.1

# BUILDING THE FRAMEWORK

Now that all clusters have taken shape, it is time to find out how they are interrelated and how they will together form the narrative of the NS train stations in 2030. To find a common thread in the clusters, clusters that feel of great importance are taken as a starting point. It is questioned what the main theme of these clusters is, and if these themes are also seen emerging in other clusters. If so, these themes will form the foundation on which the framework is built.

Let's take a look at what this process has brought about. First, the following clusters are taken from the stack, for they evoke the feeling of significance.

CLUSTER 3: Less face-to-face contact and more digital communication results in low quality, i.e. superficiality, of social connections and may even lead to social isolation

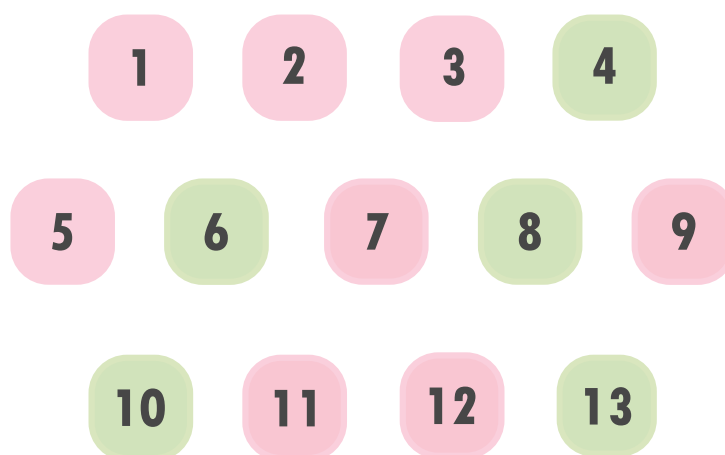
CLUSTER 5: Minorities get bigger and more visible and will help us realize our conventional cultural flaws & get closer as a society

CLUSTER 9: Individual's mindset shifts from a focus on the now & the near future to a focus on the more distant future, in terms of sustainability and health, being ready to make sacrifices

Now, the question is asked what underlying theme can be found in these clusters. Two themes emerge: *sense of connectedness* (CLUSTER 3 & 5) and *realisation of mortality* (CLUSTER 9).

With these themes as a starting point, clusters are added to the themes, the theme titles are changed, more themes emerge and the clusters are rearranged, to see if two overarching themes can be found that can act as driving forces of the framework. See Figure 11 for the process of building the framework, in which the blue post-its are the clusters and the yellow post-its are potential theme titles.

Finally, two overarching themes are found in all clusters, which from now on will be called our driving forces and which will act as the foundation of the framework:



**CONNECTEDNESS & OWNERSHIP OF LIFE**

overblijven  
aan (nieuwe)  
technologie  
↳ wie houden  
geven

13 As the demand for (non - food) mobility increases, people will adopt to different ways and moments of travelling

14 Manipulating into an increased sense of control

green built?   
↳ green smpen technologie   
first + well

= green yield   
↳ most go   
die manier

10 People need to keep up with technological developments for them to be relevant & feasible, which may separate the participants in society and affect their ability to make a necessary improvement

(sense of)   
connectedness

8 Less face-to-face contact and more digital communication results in low quality, i.e. superficiality, of social connections and may even lead to social isolation

11 Increasing life expectancy combined with urbanization results in more social and emotional isolation and loneliness in elderly

5 Priorities get bigger & more visible and will help us realize our concentrated cultural flaws & get closer as a society

12 Opportunity in more citizen participation & cooperation to increase sense of community in crowded cities and to address other social and climate issues more broadly

2 Advancing technologies will expand our range of contacts and will thus provide greater opportunities for finding jobs and accommodation

vertrouwen   
↳ niet alleen   
↳ lichaams/leven   
↳ natuur

bewustzijn

18 Appearance and comfort as drivers for customers

7 High natural leisure time, in which we communicate and absorb information, causes a necessary efficiency

1 The desire of the hedonic visitor to experience sustainability

2 Earning loyalty by all-inclusiveness of prices, positive emotions & sustainability

9 realization of mortality   
care for our descendants   
grant a better life

3 Individuals' mindset shifts from a focus on the now & near future to a focus on the more distant future in terms of sustainability and healthy societies

grateful for ~~the~~ living & all life

gratitude

↳ of clarity   
gratitude   
for   
longuit   
of   
life

attitude to life

waardering voor   
vrijheid?

danbaarheid   
↳ onderliggend aan   
verbondenheid

Figure 11: Process of building the framework

## CONNECTEDNESS

What stands out in a large number of clusters is the driving force *connectedness*. In this driving force, the focus of this ViP research comes to the surface. The research focuses on societal themes that are relevant to the domain, and people's connectedness to each other and the world plays a large roll in how people operate as a society. From these clusters, it becomes clear that the way in which people are connected to each other, to their environment, to the world and to themselves is of great significance for NS train stations as being public spaces, where large numbers of city



people or small communities come together. Our state of connectedness is diverse across the different clusters associated with this theme. It spans from a decline of connectedness to the rise of it. This diversity is now being further elaborated.

In the train station environment, people may travel on their own, but they are never really alone. However, what emerging more and more is how digital communication and individualism affect social connections. People are focused on themselves, their own goals and interests, and have limited and superficial interactions amongst each other. This observation will form one expression of the driving force: *flattening social connection*.

In the opposite direction, people want more social connections, which creates opportunities for people to join forces and address societal issues. People have concerns about a growing sense of polarisation and separation and, while this phenomenon occurs, people still are in need of connections and mutual understanding. This combination of events puts people in the on-mode, seeking these connections and mutual understanding, to the point where they can make

societal changes to the benefit. This brings along the next expression of the driving force: *building social connectedness (for societal improvement)*.

Going even further in this direction, people are even chasing connectedness. Connectedness with others, but also connectedness with the world they live in. As people in the Netherlands live efficient and very organized lives, they get a good amount of leisure time in exchange, in which they can chase connectedness with others in their social lives and with the world through various forms of media. This leads to the following expression of the driving force: *chasing connectedness*.

Lastly, people are looking to experience connectedness with life. Life, however, is a broad concept. This is meant in the sense of life on earth, nature and the life they live themselves, the body in which they do so. People show appreciation and gratitude for the life they are privileged to live and the planet on which they are able to do so, and for that want to take good care of both their own life and body and the planet. This brings along the last expression of the driving force *connectedness: experiencing connectedness with life, with a feeling of gratitude*.

## OWNERSHIP OF LIFE

Alongside, the driving force *ownership of life* is seen emerging. People are living their lives day by day, but do they truly have their lives in their own hands? Are they pulling the strings, or are there sometimes things/people influencing or interfering their decisions or even making the decisions for them? To what extent people are in control of living their own life or pursuing the life they want, runs apart in this driving force. From people taking matters into their own hands, to those who are no longer fully in control of their lives.



In a digital world with technology constantly developing, people have to keep track of these developments to stay relevant and flexible in this society. Additionally, a growing demand for mobility calls for people to adapt to other forms of transport and therefore keep up with new, upcoming ones. If they do not keep up, they might risk the ability to fully participate in society. By this logic, they are in a way forced to keep up and live by the standards that this society deems paramount. This leads to the first expression (carrying a negative connotation) of this driving force: *ownership of life consciously taken away*.

Following up, the manipulation of people by technology is used in people's advantage, in order to create positive experiences for them while on the move. This means that people will be influenced without them being aware of it. In this sense, they are not in control over what they want and do not want to be influenced by, but they do not realize it since these influences only have unconscious effects on them. Importantly, this is not a negative event occurring, as these unconscious influences are purely intended for positive impact. However, it does occur, bringing along the following expression of the driving force: *unknowingly losing ownership of life*.

The last expression changes the course to the other end of the driving force. Here, people are not lost or losing control, but instead are pulling the strings. They make demands in a world where a lot of options present themselves and rather ensure that other people or businesses are forced to adapt in a competitive world. They assure themselves of a comfortable path through life, the path of which they can decide for themselves. This constitutes the final expression of the driving force *ownership of life: taking ownership of life, not settle for less*.

From these driving forces with different expressions, a framework emerges. The driving forces form two axes, using the various expressions to create a matrix, as can be seen in Figure 12. In the following chapter, it is explained how this matrix is filled with behavioural manifestations, emerging from the combinations of the different expressions, occurring in the train station environment.

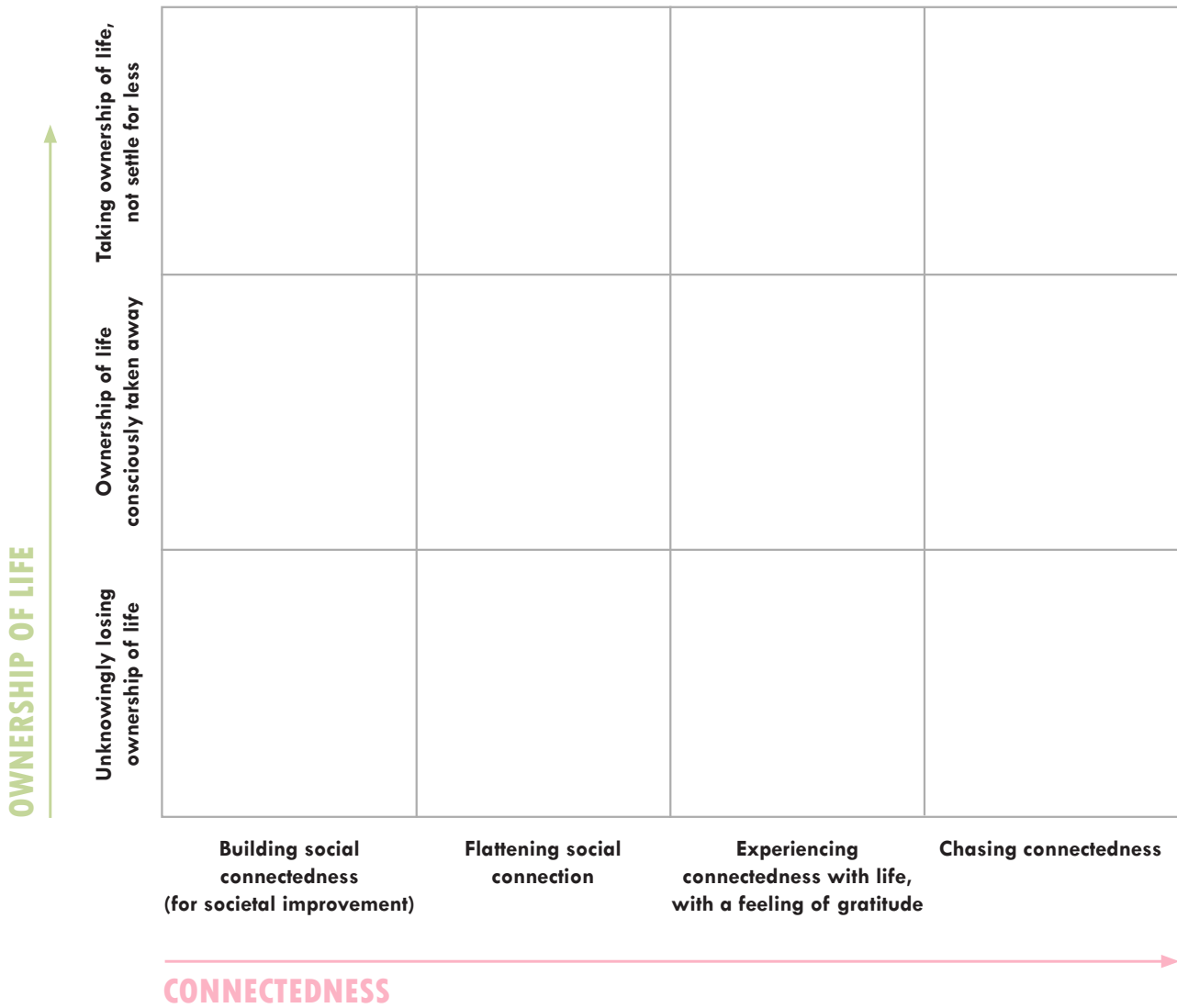


Figure 12: Matrix formed from driving forces and their expressions



## 4.2

# A FUTURE PROSPECT OF NS TRAIN STATIONS

Now that the outline for the framework has been formed, the subsequent step is to fill it in. The aim is to bring about a behavioural manifestation in each cell by combining the two expressions on the axes. The question each time asked is: *If you combine those two expressions, what behaviour ensues from it in the context of the domain?* This process requires the ability to imagine these future situations, which takes some practice to master. Since the behavioural manifestations come about from a process of imagining and contemplating within the mind of the designer, they are unique to the designer and their way of thinking and reasoning. Hence, if another designer would have gone through this same process of forming the behavioural manifestations, something completely different might have come out of it.

Within this process, no behaviour is judged positively or negatively yet. This is because it is neither desired nor considered credible to exclude manifestations that surface from the framework simply because they are not considered desirable. Thus, all behavioural manifestations coming to the surface are placed in the framework.

All cells are filled with behavioural manifestations, resulting in a completed framework, that is, a prospect of NS train stations in 2030. This completed framework can be seen in Figure 13. The behavioural manifestations will be explained in more detail, starting from the top left corner. It is important to remember that all the manifestations in these cells, are imagined to take place in the train station environment.

**People take initiative in building connections they find valuable, in the context of societal improvement, and judge this value by the information or image that someone reveals**

When combining the expressions attached to this cell, people are seen to take initiative in building connections with regard to societal improvement, but only connections that these people will find valuable/worthwhile because they will not settle for less. But how to judge if a connection to be made is worth the effort? This will be judged on the initial image or information someone reveals from first contact. Only logical, for how else would someone need to make this decision?

**People are looking to connect in order to feel more heard and less alone**

People who experience the negative consequences of the flattening of social connections (social/emotional isolation) will step up and will feel the need to take initiative themselves to prevent, counteract or overcome these consequences. In this regards, people are seen wanting to connect to let out their worries, feel more heard and less alone.

**While traveling, people strive to make the most sustainable and healthy choices and address others on socially unacceptable behaviour regarding these topics**

Through the combination of the expressions, it can be seen that people are actively looking for ways to experience connectedness with life and will shy away from and counteract opposing experiences. How they will fulfill this desire to experience connectedness is by making decisions that will benefit themselves and nature the most in the long run. And because they will not settle for less, they will act on opposing experiences by addressing others on behaviour that is socially unacceptable and in conflict with this desired connectedness.

**People's own agenda is dominant over society's, they decide how to organise their day and therefore have a more relaxed attitude**

Resulting from these expressions, is the ultimate desire of people to be connected and the sacrifices they are willing to make for this. They are willing to take on part time jobs or to work different, sometimes less convenient, hours in order to receive more opportunities for connection in return. All in all, they will manage their own unique agenda and, as a result, they will feel less pressure from society's guidelines and will have more relaxed and open attitudes.

**People are more considerate of each other and offer help when they meet someone who needs it**

With the ownership of life consciously taken away from people, they may encounter problems or difficulties for which they will require some help from the people who are still in control. These problems or difficulties arise from ever ongoing technological developments and hence, the possible trouble keeping up and being able to cope with these developments, especially by people with a cognitive, physical and/or sensory impairment. Additionally, people may encounter difficulties in adapting to different, new modes of transport, which seems to be required as the demand for mobility increases.

Combining this with the expression of building social connectedness, the people still in control and able to offer support are paying better attention to the ones who are not and offer their help when seemingly needed.

**People desire guidance in adapting to new ways of doing things, but get limited response to this: people are friendly and helpful as long as it does not interfere with their own interests**

In this combination of expressions, the need for help once again emerges, but this time gets limited response. People who can offer their support are in most cases friendly and helpful, but only to a certain extent. As social connections flatten and people are mostly focused on themselves, they will primarily put their own interests above the needs of others. In the train station environment, where classic Dutch efficiency plays a major role and people are in a hurry to catch their train or appointment, the needs of others quickly interfere with the interests of people who could offer support.

**People want to make the best choices in terms of sustainability and health, and do so, including making sacrifices, to their ability**

As people want to feel connected to their own lives and nature, they strive to make the best choices when it comes to their own health and the health of their planet. By doing this, they want to express their gratitude for the life they are privileged to live and, in a way, give something back. However, with the loss of control interfering with this goal, they will at least try to make the best choices in their ability and will even make sacrifices to pursue their desire of connectedness.

**People are willing to overcome obstacles during their journey to be able to reach their destination and are thus also open to new modes of transport**

From this combination of expressions, people are seen as determined to chase connectedness with the world and in their social lives, making them committed to travel to their destinations of connectedness. But once again, obstacles are encountered from their loss of control and can make the execution of these journeys troublesome. However, with their highly motivated attitudes, this does not stop them from trying and will make them also consider new, alternatives modes of transport.

**People are more open to social contact and are curious about each other's stories**

People relinquish their ownership to automation and technology, and are left with a carefree feeling that gives opportunities to focus on social aspects instead of practical matters. They can spend their saved time investing in connections and are therefore more open to contact with people, with curiosity about their life stories.

**People see the train journey as a time for relaxation or to be productive and are hence not concerned with fellow travellers**

Resulting from these expressions, people have a distant attitude and are mostly self-absorbed. As their ownership is in the hands of automation and technology, they do not have to think for themselves anymore. They can live their lives, focusing on other matters and expect the same carefree thinking from other people: they probably will not require any help. This will only further distantiate people from each other, leading to an even more efficient use of their travel time by taking the chance to do productive work or relax, while surely not concerned with their fellow travellers.

**People no longer rely on their own intellect/intuition but blindly follow the information they receive when it comes to making good choices for themselves and nature**

People want to do good for their own and their planet's health, but have a passive attitude when it comes to making up their own mind on what is good and bad. They base their decisions in these matters on what they read, hear and see from people and (social) media, without doing further investigation to verify the claims made. Hence, they think that the decisions they are making have positive influence, but maybe this is not (always or entirely) the case.

**People focus on being connected through digital means, but unconsciously reduce/miss opportunities to connect in the here and now by doing so**

Connection through digital means appears to be treacherous, giving people the feeling of enjoying the highest attainable state of connectedness, while truly missing out on vast amounts of real-life interactions and connections. While on the move, people are constantly lost in their digital devices, chasing online connectivity, unaware of the opportunities they are missing out on if they would just look up from their screens.

All these behavioural manifestations that arise from the combination of expressions, together form a future prospect on human behaviour at NS train stations in 2030. Forming a judgement around these manifestations has yet been left out. This is done in the next step, where the designer takes a position on the behaviour that occurs, and on the basis of which statements are formed.

# OWNERSHIP OF LIFE



**Unknowingly losing ownership of life**  
**Ownership of life consciously taken away**  
**Taking ownership of life, not settle for less**

<p>People take initiative in building connections they find valuable, in the context of societal improvement, and judge this value by the information or image that someone reveals</p>	<p>People are looking to connect in order to feel more heard and less alone</p>
<p>People are more considerate of each other and offer help when they meet someone who needs it</p>	<p>People desire guidance in adapting to new ways of doing things, but get limited response to this: people are friendly and helpful as long as it does not interfere with their own interests</p>
<p>People are more open to social contact and are curious about each other's stories</p>	<p>People see the train journey as a time for relaxation or to be productive and are hence not concerned with fellow travellers</p>

**Building social connectedness**  
**(for societal improvement)**

**Flattening social connection**

---

## CONNECTEDNESS

<p>While traveling, people strive to make the most sustainable and healthy choices and address others on socially unacceptable behaviour regarding these topics</p>	<p>People's own agenda is dominant over society's, they decide how to organise their day and therefore have a more relaxed attitude</p>
<p>People want to make the best choices in terms of sustainability and health, and do so, including making sacrifices, to their ability</p>	<p>People are willing to overcome obstacles during their journey to be able to reach their destination and are thus also open to new modes of transport</p>
<p>People no longer rely on their own intellect/intuition but blindly follow the information they receive when it comes to making good choices for themselves and nature</p>	<p>People focus on being connected through digital means, but unconsciously reduce/miss opportunities to connect in the here and now by doing so</p>

**Experiencing  
connectedness with life,  
with a feeling of gratitude**

**Chasing connectedness**



Figure 13: Completed framework

## 4.3

# VISION STATEMENTS

Now that it has become clear what the future of the domain will look like, the designer takes a stand around this. As the framework has become a matrix containing twelve cells and with that twelve behavioural manifestations, the designer has to take a stand around all these twelve behavioural manifestations. This in the end will lead to twelve statements, which will be elaborated further shortly.

What is questioned in the process of taking a stand, is if the behavioural manifestations are considered desirable or should be acted upon to change how people will behave in the future. Sometimes a manifestation is clearly positive or negative, but sometimes it is also not this blatant. With these kinds of manifestations, it is sometimes necessary to take a step back and come back to it later or to ask someone else's view on it, in order to see a behaviour in a different light. This can help to, finally, take a stand and form a statement around it.

In forming the statements by the process described above, the values and beliefs of the designer will play a significant role. What the designer considers to be right and wrong will in some cases be translated directly into these statements. That is why it is important that the designer is aware of the responsibility they have to take on in this regard.

In Figure 14, an overview of all the statements inserted in the framework can be found.

**People take initiative in building connections they find valuable, in the context of societal improvement, and judge this value by the information or image that someone reveals**

Thinking about this behavioural manifestation, the initial thought is that judging whether or not to connect with someone based on what someone reveals from the outside is a negative trait. However, it makes perfect sense for this to happen, because where else would someone need to base this decision on? This being said, it is thought to be a shame if people will look for connections only on such shallow grounds, and which is why in the statement the behaviour is desired to change by enabling people to make this decisions on peoples more in-depth qualities:

**I want to enable people to make the selection of people to connect with depend not (only) on what someone reveals from the outside, but on, initially hidden, valuable traits/common interests**

**People are looking to connect in order to feel more heard and less alone**

While the people in this behavioural manifestation uncover their negative emotions, the behaviour they display has a positive ring to it. They are taking control over the situation and try to deal with these feelings by seeking out connections. The need for less digital and more face-to-face communication calls for the facilitation of connections, which can be already existing ones. Although the facilitation of already existing connections can be of great value to the majority of people, the group of elderly will possibly not benefit from this as their existing connections are already thinning. They will feel a greater need for making new connections, leading to the following statement:

**I want to make people feel more heard and less alone by facilitating already existing and new connections (new connections especially between elderly)**

**While traveling, people strive to make the most sustainable and healthy choices and address others on socially unacceptable behaviour regarding these topics**

This behavioural manifestation can clearly be considered very positive. These specific people want to do good things for their own health and the planet, and go even one step further by being critical to others who work against this mindset. There is no desire to change the positive behaviour of making good choices for health and environment. However, it is desired to make something positive of the behaviour with a negative tone to it: the fact that people are being critical to others. In the statement, this behaviour is desired to transform with a positive note, by not being critical but inspiring to others.

**I want people who make sustainable and healthy choices not to counteract opposing behaviour, but to empower them to transfer this mindset to others**

**People's own agenda is dominant over society's, they decide how to organise their day and therefore have a more relaxed attitude**

As a first thought, the relaxed attitude coming forth from this is seen as a positive one, this can have a positive effect on the train station environment. Als working positively for the train station environment, is the fact that by this occurrence the number of people travelling in peak hours is expected to diminish. By these predictions, it is decided to stimulate this occurring behaviour, as it will only make our society more diverse and better balanced.

**I want to encourage people to pursue an alternative agenda (versus the agenda of most of society)**

**People are more considerate of each other and offer help when they meet someone who needs it**

Also this behavioural expression is considered positive. By being more considerate of each other, a more pleasant atmosphere is created in the train station environment. However, this can be taken one step further into a more active state of looking and assisting, which is what is aimed for in the statement described beneath:

**I want people not only to be considerate of each other but also to look after each other more and thus more actively offer their help, by making people aware of obstacles other people experience**

**People desire guidance in adapting to new ways of doing things, but get limited response to this: people are friendly and helpful as long as it does not interfere with their own interests**

This behavioural expression is considered to be rather negative. While people are friendly and helpful, they express these qualities only to a certain extent as it will often and quickly interfere with their own interests. The mindless choice to place one's own interests above another's is something that is desired to change. The desire is that people who could offer support will think more seriously and consciously about this decision: are my own interests at this moment truly more important?

However, it has to be a two-way street, where rapprochement is needed from both parties. This is why it is desired that help seekers overcome the social barriers arising from individuality occurring in the train station environment, to feel less constrained to ask for help.

**I want to give potential helpers the opportunity to make a more serious, conscious consideration about helping others and help seekers to feel fewer social barriers to ask for help**

**People want to make the best choices in terms of sustainability and health, and do so, including by making sacrifices, to their ability**

The behaviour and motivation these people display is thought to be very positive. However, it can be imaged that, while these people are motivated, this motivation will not stop at nothing. If people are repeatedly discouraged by the inability to make the decisions they want to make, this motivation can be expected to regress, and this is an undesirably prospect desired to prevent. This leads to the following statement, in which a way of doing so is presented by providing people with guidance.

**I want people staying motivated to make the best choices in terms of sustainability & health and to make sacrifices in this regard, by guiding them in doing so**

**People are willing to overcome obstacles during their journey to be able to reach their destination and are thus also open to new modes of transport**

This behavioural manifestation is seen as positive, as people are at least not hold back by the obstacles they encounter and will try to overcome them. However, these obstacles are still present, and for that it is desired that help is offered to together overcome these obstacles and to support these people in their desire to reach their destinations.

**I want people to keep a motivated attitude to travel from A to B, by offering help in overcoming obstacles**

**People are more open to social contact and are curious about each other's stories**

As from this behavioural manifestations a more pleasant and open train station environment will arise, it can only be considered a positive outlook. The idea is to respond to this positive mindset by facilitating and thus also encouraging opportunities for social contact. Having found these connections, opportunities to share or exchange stories emerge.

**I want to facilitate and encourage opportunities for social contact in the station environment**

**People see the train journey as a time for relaxation or to be productive and are hence not concerned with fellow travellers**

At first thought, this manifestation it is not necessarily considered positive or negative. Wandering of into your own world and not taking in fellow travellers, is not a very social demeanour, but does a journey has to be? Social interactions are of course welcomed, but not perse required. However, taking fellow travellers into consideration is the minimum form of social interaction that would be sought-after, leading to the following statement:

**I want people to be able to arrange/ use their travel time as they see fit, as long as they continue to take their fellow travellers into consideration**



**People no longer rely on their own intellect/intuition but blindly follow the information they receive when it comes to making good choices for themselves and nature**

Taking a stand around this manifestation took some deliberation. The question arises if this behaviour is thought to be desired or not. On the one hand, it can be argued that it is fine if people go along with opinions or statements made by others. It can even make people feel part of a group and connected to other people, think about politics. However, on second thought it appears to have a negative consequence for these people no longer relying on their own intellect/intuition, since it may come at the expense of their desire to make good choices for themselves and nature. People may think they are making the good choices, but since they are basing these choices on information that they themselves are not verifying, it may not be as positive as they think. This is truly a waste, as their mindset is in the right direction, but it does not do it justice as a result. Hence, the following statement comes about:

**I want people who want to do good for the environment and their own health not to blindly accept all the information handed to them, but to check for themselves what is right (and what is not)**

**People focus on being connected through digital means, but unconsciously reduce/miss opportunities to connect in the here and now by doing so**

People might be connected through the online world, but they are not living in the moment, in the here and now. Social isolation is on the rise in cities around the world, due to a combination of factors such as the breakdown of traditional social networks, increasing mobility, and the rise of digital communication (Klinenberg, 2002). It is quite clear that the behaviour manifesting here is not desired. By chasing connectedness through digital means, these people miss out on opportunities to connect with other people or to feel connected in the environment at present. It is thought that these people likely do not realize the beauty in these (small) real-life interactions and the beauty surrounding them. From this, an opportunity is seen arising, as stated underneath:

**I want to destimulate people being buried in their digital devices and make them more immersed in their environment, by making people aware of what they are missing while on their phones**

With the twelve statements now formed, the first part of the future vision is created. Before moving on to the creation of the interaction & product vision and thereby completing the full vision on the future, a direction in this framework of twelve statements must be decided upon. In the following Chapter, a strategy for further development is determined and reasoned.

# OWNERSHIP OF LIFE



**Unknowingly losing ownership of life**  
**Ownership of life consciously taken away**  
**Taking ownership of life, not settle for less**

<p>I want to enable people to make the selection of people to connect with depend not (only) on what someone reveals from the outside, but on, initially hidden, valuable traits/ common interests</p>	<p>I want to make people feel more heard and less alone by facilitating already existing and new connections (new connections especially between elderly)</p>
<p>I want people not only to be considerate of each other but also to look after each other more and thus more actively offer their help, by making people aware of obstacles other people experience</p>	<p>I want to give potential helpers the opportunity to make a more serious, conscious consideration about helping others and help seekers to feel fewer social barriers to ask for help</p>
<p>I want to facilitate and encourage opportunities for social contact in the station environment</p>	<p>I want people to be able to arrange/use their travel time as they see fit, as long as they continue to take their fellow travellers into consideration</p>

**Building social connectedness**  
**(for societal improvement)**

**Flattening social connection**

---

# CONNECTEDNESS

<p>I want people who make sustainable and healthy choices not only to counteract opposing behaviour, but also to empower them to transfer this mindset to others</p>	<p>I want to encourage people to pursue an alternative agenda (versus the agenda of most of society)</p>
<p>I want people staying motivated to make the best choices in terms of sustainable and health and to make sacrifices while traveling in this regard, by guiding them in doing so</p>	<p>I want people to keep a motivated attitude to travel from A to B, by offering help in overcoming obstacles</p>
<p>I want people who want to do good for the environment and their own health not to blindly accept all the information handed to them, but to check for themselves what is right (and what is not)</p>	<p>I want to destimulate people being buried in their digital devices and make them more immersed in their environment, by making people aware of what they are missing while on their phones</p>

**Experiencing  
connectedness with life,  
with a feeling of gratitude**

**Chasing connectedness**



Figure 14: Framework with vision statements

## SUMMARY

The process of creating the framework consists of finding common threads among clusters. Two main themes emerge:

**Connectedness** focuses on how individuals are connected to each other, the environment, the world, and themselves.

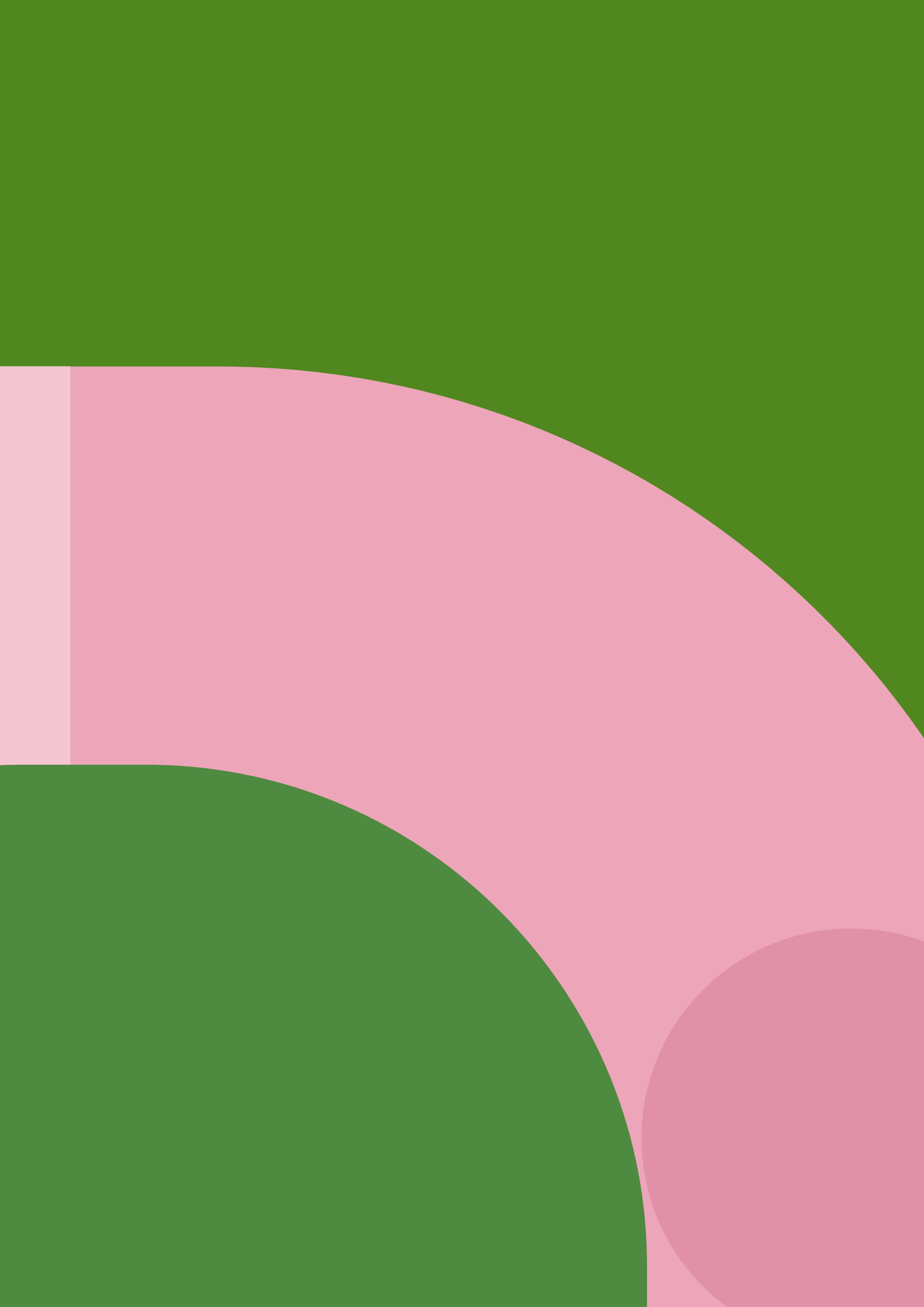
**Ownership of Life** explores the extent to which individuals have control over their lives.

These overarching themes serve as the foundation of the framework for understanding the future of NS train station in 2030.

Different expressions from these themes create the cells in the framework. In these cells, the people's future behaviour is predicted by combining the expressions on the axes of the framework, **resulting in 12 behavioural manifestations.**

The designer takes a stand around these 12 behavioural manifestations, **leading to 12 vision statements.** These 12 statements complete the first of three parts of the future vision.





# 5

## strategy

In this chapter, the strategy for choosing a direction in the framework with 12 vision statements is outlined. At first, NS' strategy is plotted onto the framework, to see if NS is already answering to some of the goals in the statements. Hereafter, ideas and directions around the statements are devised, to discover interesting directions in the unanswered cells.

From this, an interesting direction emerges, which finally leads to the focus on one of the statements. Finally, a clarification is given around the goal described in the chosen statement, before moving on to the creation of a corresponding interaction & concept vision.

## 5.1

# PLOTTING NS STRATEGY

To find out if and how NS is already answering to (some of) the created statements, the NS strategy (with its products and services) is plotted onto the framework in collaboration with NS. Existing strategies of services and products are found, (partly) fitting four of the statements. Figure 15 visualizes the statements in question.

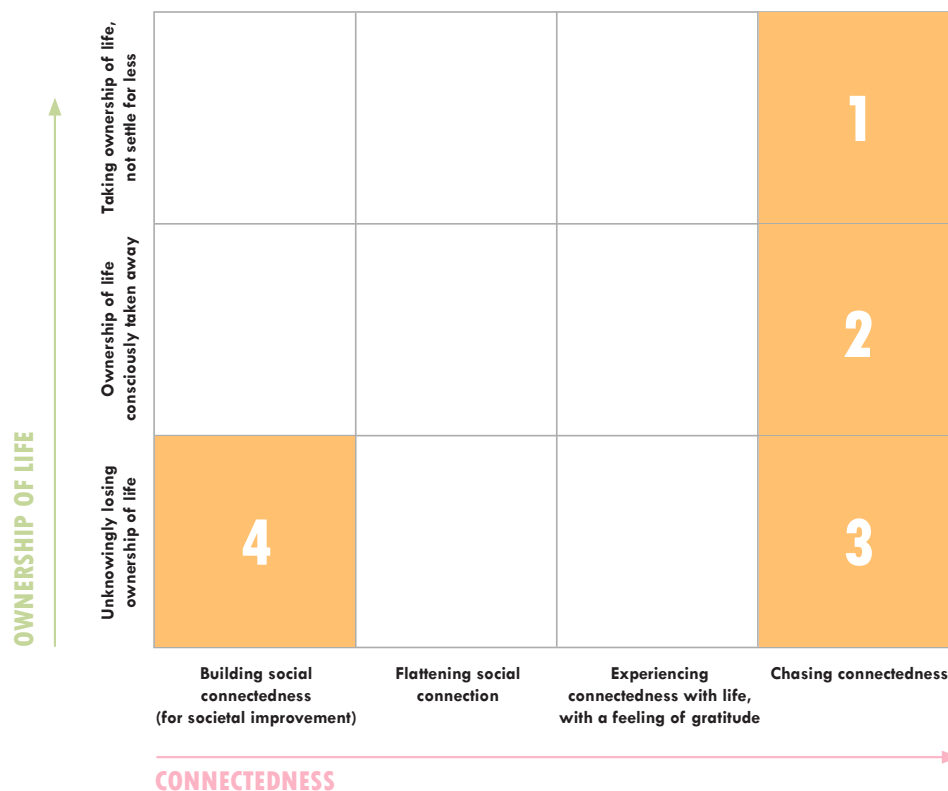


Figure 15: Plotting NS strategy onto the framework

**1** Statement: I want to encourage people to pursue an alternative agenda (versus the agenda of most of society)

NS already encourages people to pursue an alternative agenda by offering **monthly subscriptions to travel for reduced prices in off-peak hours**. People will adapt their agenda to fit the terms for reduced pricing, and as a result will provide reduced crowding in peak hours.

**2** Statement: I want people to keep a motivated attitude to travel from A to B, by offering help in overcoming obstacles

This statement is considered to be partly answered by existing strategies. On big train stations, NS offers various ways to answer its users questions or requests. Think about **service and ticket shops, service desks, service posts** and other **staff present at the train station**. However, small



train stations are often non-staffed, which means people can only fall back on the **service posts**, through which you can reach a customer service employee by phone. These service posts have been found to be used minimally, partly due to the unawareness of their existence. When these posts are identified, it can provide its users with the required assistance, but not in the way real life one-to-one communication can. Hence, the NS strategy still lacks at the small train stations, in regard to above statement.

**3** Statement: *I want to destimulate people being buried in their digital devices and make them more immersed in their environment, by making people aware of what they are missing while on their phones*

This third statement is considered to be partly answered by the **station pianos**. People playing music on these pianos will catch people's attention, making them look up from their phones and making them, for the time looking up, more immersed in the environment in which they find themselves. However, this immersiveness will not necessarily be long-lasting. To add to that, the station pianos are only present at a limited amount of train stations, not providing all train travellers with this opportunity.

**4** Statement: *I want to facilitate and encourage opportunities for social contact in the station environment*

Also this fourth statement is regarded partly answered by the **station pianos**. They can serve as an icebreaker for social contact, encouraging it as a result. However, it is not necessarily also facilitating social contact, thus making it partly coherent with the statement.

Now that the NS' strategy is plotted onto the framework, it becomes clear that there are still a lot of directions and opportunities to be explored. These directions all bear interesting opportunities for expanding NS' strategy. However, since the end goal in this graduation project is to create a concept, there is a need for focus in this comprehensive framework.

To discover interesting directions in the cells yet unfilled, ideas and opportunities were devised by brainstorming statement by statement, in a joint effort with NS. This led to an overview of ideas and opportunities, which can be found in Appendix D. From this brainstorm session, one direction emerged that seemed potentially valuable to both NS and society: *reducing social barriers in the train station environment*. This direction will be elaborated on further in the following section.

## 5.2

# REDUCING SOCIAL BARRIERS

From the brainstorming session together with NS, the direction to *reduce social barriers in the train station environment* emerged. What surfaced more than once in the brainstorming session is that people encounter problems and have to overcome obstacles in the train station environment. In this instance, there is referenced to obstacles related to advancing technologies, which can be difficult or challenging to keep up with for people with a cognitive, physical and/or sensory impairment. Additionally, people may encounter difficulties with the adaptation to new, emerging modes of travel. These obstacles could be addressed by looking for help in fellow travellers, since there are generally a lot of them at present

who seem to effortlessly manoeuvre through the system. However, a pattern emerges of a society becoming more and more individualistic. This movement will stand in the way of this anticipated solution of dealing with the obstacles people encounter by relying on each other. From this realisation, it is observed that there are not only physical and mental obstacles, that is barriers, to overcome, but also social barriers.

So, from where in the framework are these social barriers then emerging? This is seen happening in the column of *flattening social connection*, as visualized in Figure 16.

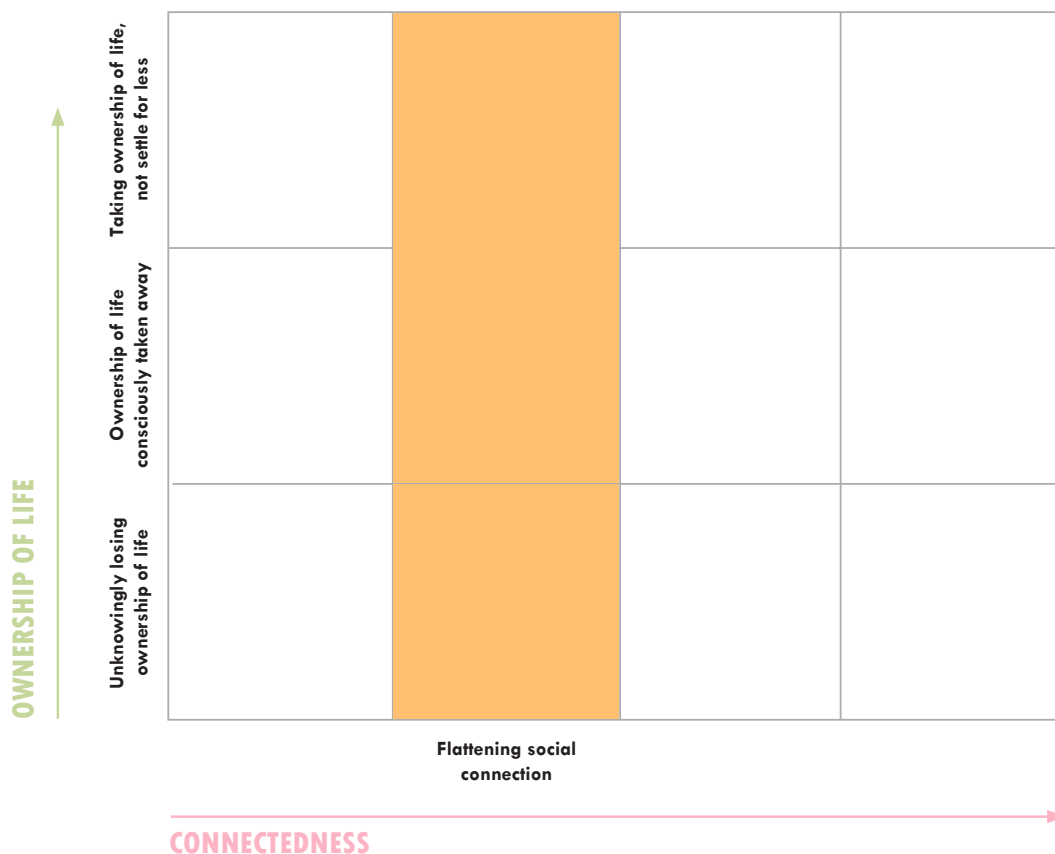


Figure 16: Column of "reducing social barriers"

## **VALUE FOR NS & SOCIETY**

Within this direction, value is recognized for both society and NS. As stated previously, a more and more individualistic society can be seen on the rise, where people are focused on themselves and their own interest. By reducing social barriers in the train station environment, people will be able to increase their chances and willingness to connect with others, receiving or providing others with support, helping each other navigate through ongoing developments in the station environment. As NS train stations play a significant role in Dutch society, positive changes in the way people interact with each other in the station environment, in turn will be beneficial for the way people will co-exist in Dutch society.

Moreover, by decreasing social barriers and therefore increasing the chances and willingness to seek and offer support, NS train stations will increase their accessibility to people now projected to encounter physical and mental obstacles in the future. Lastly, by being able to rely on each other more in the station environment, feelings of social safety will likely increase.

### 5.3

## MOST VALUABLE STATEMENT

As even more focus is desired before moving on to the creation of the interaction and product vision, the next step is to select one out of the three statement in the column *flattening social connection*.

In an effort to make a decision amongst these statements, the question is asked which statement can yield the most impactful results. While looking to answer this question, one observation strikes the attention. By looking at the different expressions of *connectedness*, it is evident that the expression *flattening social connection* brings about the most negative future development of all these expressions. To see if the cell with the most negative future development can be found, the search is out to the expression of *ownership of life* with the most negative development occurring. This is found in the expression *ownership of life consciously taken away*, as the two other expressions are considered positive and neutral. This brings us to the cell and the statement where

these two expression, with the most negative developments occurring, cross (see Figure 17):

**I want to give potential helpers the opportunity to make a more serious, conscious consideration about helping others and help seekers to feel fewer social barriers to ask for help.**

The behaviour in this cell is deemed to carry the most negative development and therefore, could be most impactful when acted upon as envisioned in the statement.

The decision for this final direction of focus is validated by NS. Likewise, NS sees in this cell and statement the greatest opportunity for positive change and impact for both NS and society, thus confirming and finalizing the choice of this direction.



Figure 17: Most valuable statement

## 5.4

# CHOSEN STATEMENT

Before moving on to the next chapter, a brief explanation is given of what the chosen statement entails. As can be read in the statement on the previous page, there is talked about *potential helpers and help seekers*. This may bring up the question what it is that help seekers need help with. As mentioned in Chapter 4.2, where the behavioural manifestations are elaborated upon, this need for help arises from people being unable to cope/keep up with ever ongoing technological developments, as well as difficulties coming from the need to adapt to different, new modes of transport. The latter will incidentally also be caused/influenced by the inability to keep up with technological developments, as new modes of transport arising most often make use of these developments.

Hence, the difficulties that *help seekers* are

foreseen to stumble upon in the train station environment will be mostly in association with digital assets, as visualised in Figure 18. Think about charging machines, check-in/out gates or posts, mobility apps, etc. And thus, *potential helpers* will be the people who do not or seldom encounter difficulties with these digital assets, and therefore can provide their fellow travellers with support.

Connecting fellow travellers for this purpose, can support NS in their movement of digitalisation and reduction of staff present at the stations.

Now that the problem and the kind of help that will be sought for has been clarified, the search for an appropriate interaction and product vision can begin.

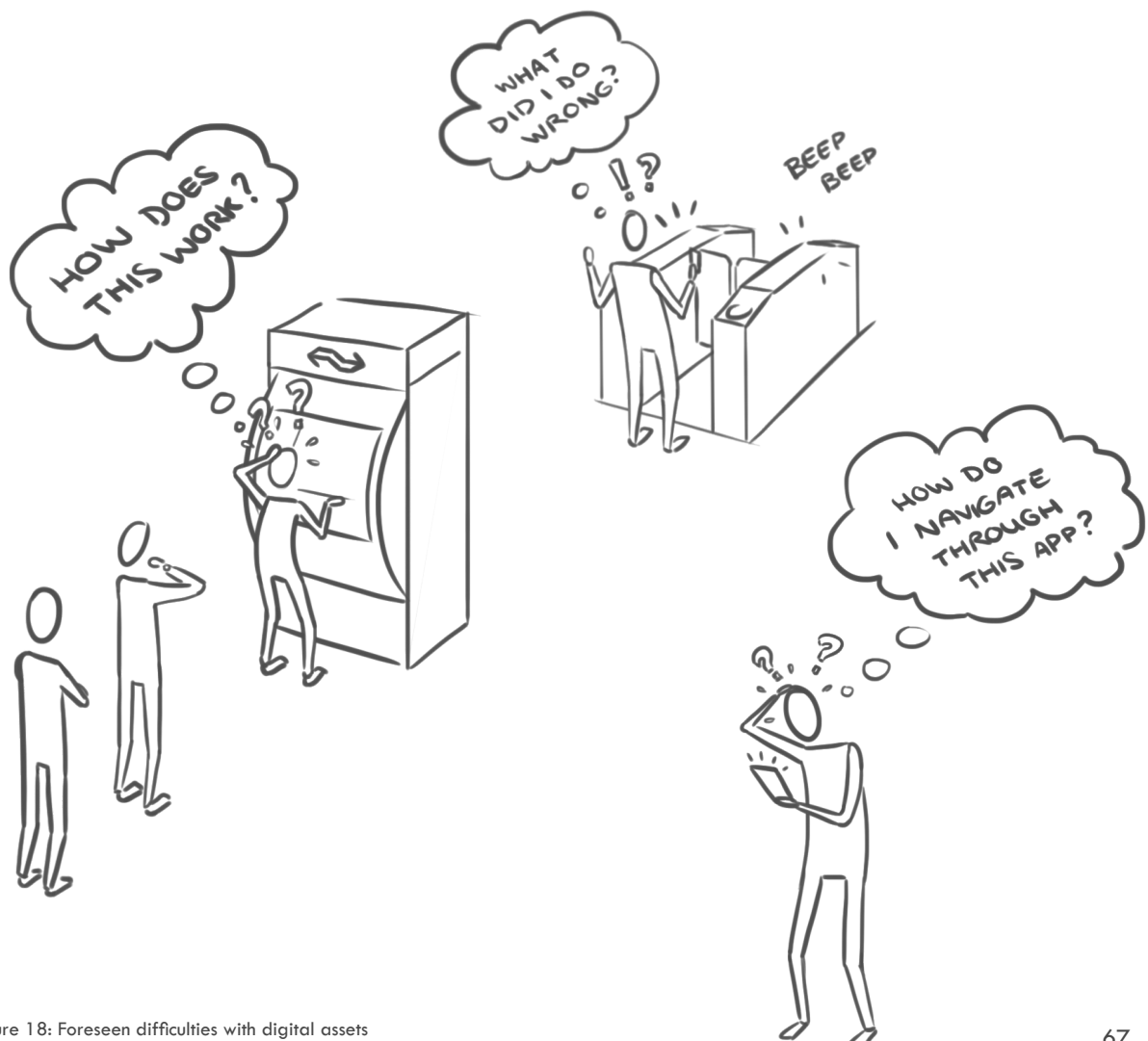


Figure 18: Foreseen difficulties with digital assets

## SUMMARY

The NS strategy is plotted onto the framework. Four statements seem to (partly) align with NS's current strategies, which means there still lie a lot of opportunities within the framework

There in brainstormed around the remaining statements, to discover ideas and opportunities.

The direction of *reducing social barriers in the train station environment* emerged, which brings focus to the column of **flattening social connection**. Within this direction, value is recognized for both NS and Dutch society.

In order to create more focus, the following statement is chosen, as the behaviour in this cell is deemed to carry the most negative development and could therefore be most impactful when acted upon:

*I want to give potential helpers the opportunity to make a more serious, conscious consideration about helping others and help seekers to feel fewer social barriers to ask for help.*

The need for help as mentioned in the statement, comes from difficulties associated with digital assets, that help seekers stumble upon in the train station environment







# 6

## interaction & concept vision

In this chapter, the next steps of establishing the desired interaction and the resulting concept qualities are described. A vision is created on the desired interaction by the use of an analogy. Hereafter, this analogy is used for deriving the qualities that the to be designed concept should possess in order to reach the envisioned interaction.

## 6.1

# INTERACTION VISION

Now that a direction for further development has been decided on, the desired interaction needs to be established. Instead of directly trying to come up with a concept that can reach the goal written in the statement, the interaction between the user and the concept will first be sought for. By first envisioning the desired interaction, it will become clear how the concept can be used and experienced in order to reach the goal. With this clear in mind, a concept can be designed that will aim to afford this specific interaction.

### ANALOGY

To be able to establish what this desired interaction will be, an analogy is used. There is looked for a situation in a different domain, in which the same effect takes place as written in the chosen statement.

The challenging part of finding a suitable analogy is the fact that in this statement, the vision for two different groups of people must be represented in one analogy. Let's take a look at the statement, in which the two different end-users are highlighted:

I want to give **potential helpers** the opportunity to make a more serious, conscious consideration about helping others and **help seekers** to feel fewer social barriers to ask for help

So, an analogy needs to be found in which both the vision for the potential helpers, as well as the vision for the help seekers are represented. Finding the right analogy was a process of trial and error, exploring multiple analogies to finally come up with one that feels right for the statement in question. The following analogies were considered:

*In a student group, a **student** asking **fellow students** for feedback.*

Most of them would want to help out their fellow student, except for the ones with an upcoming deadline. This analogy seems suitable, only a bit too similar to the domain in question.

*Someone asking a **fellow smoker** for a cigarette.*

Smokers among themselves seem often willing to give out cigarettes to fellow smokers, even if they are strangers to them. Their mutual addiction to smoking ensures their empathy for the other. Addiction, however, feels like a strange and perhaps inappropriate element to pursue.

*A **volunteer** coming at **someone else's** door to collect money for a charity.*

The someone else will consider donating some money, as it will be for a good cause. However, while some people will be willing to listen to the volunteer and donate some money, others are likely to get irritated by yet another collector at the door. This is not a desired interaction to aspire.

Eventually, the following analogy is chosen as best suited:

**A person leaving food in a food cabin for someone who needs it to take it out**

This analogy is deemed best suited, because the person leaving food is enabled to see the importance of the cause, and the someone who needs it is supported to feel less or no social barriers to ask for help. It is most likely by each considered a sympathetic initiative and not as an intrusive appeal for help.

The analogy of the food cabin is derived from the one shown in Figure 19, located in a small town called Ingen. This food cabin is the initiative of a person or a household residing in Ingen, placed in their front yard. This food cabin invites people who can afford missing something to leave it in there, then someone who is having trouble paying for these products can take it out. In the next chapter, the analogy is analysed in more depth to find out what qualities it possesses that ensure this interaction to take place and this food cabin to work.

It is notable that in the analogy, there is no direct interaction between the two persons described. At the same time, this is also not specifically mentioned in the formulated statement, making it not seen as a problem to use this analogy.



Figure 19: Food cabin located in Ingen

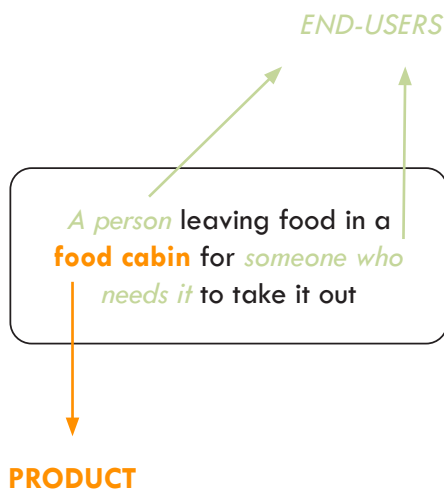
## 6.2

# CONCEPT VISION

To find out why this initiative works and how it provides the interaction desired, the analogy is analysed in more depth. By first establishing the end-users and the product in this analogy, it can hereafter be questioned what the specific qualities of this product are, that ensures this interaction to take place in the desired way. By finding out what these qualities are, a basis is laid from which the ideation process can start. Because, by ensuring the concept also possesses these qualities, it can be assumed that the same effect occurring in the analogy, will occur in the concept.

### CONCEPT QUALITIES

To start of, the end-users and the product are located in the analogy, as shown underneath.



As stated before, the two groups appointed in the statement need to be represented in the analogy. Hence, there are two end-users: the person leaving food and the person who needs the food left. Furthermore, the product in this analogy is the food cabin, as this food cabin is the bridge between the two end-users.

Now that the end-users and the product are established, the interaction with and the pictures of the food cabin are analysed to look for the product qualities: what is it that makes this food cabin successful? The following product qualities are found as the reasons for success:

### LOW-THRESHOLD

### VALUABLE

### BRIDGING

### INVITING

### NON-BINDING

With the product qualities made clear, the ideation phase can take off. In the process of ideation, the above product qualities should always be kept in mind. By ensuring the final concept also possesses these qualities, the intended interaction is envisioned to be accomplished.

## SUMMARY

The desired interaction between the users and the to be designed concept will be established before designing the concept itself. An analogy is used, looking for the same effect as stated in the statement to occur in a different domain. The following analogy is found best fitting, involving both potential helpers and help seekers:

**A person leaving food in a food cabin for  
someone who needs it to take it out.**

This analogy forms the vision on interaction and will subsequently bring about the concept vision. The analogy is analysed, to discover which qualities it possesses that make the interaction occur in the desired way. The following concept qualities are found as the reasons for success:

**low-threshold  
valuable  
bridging  
inviting  
non-binding**

By ensuring the final concept also possesses above qualities, the intended interaction is envisioned to be accomplished.

**PART 2**  
**DESIGNING**  
**THE CONCEPT**



1

# 7

## ideation

This chapter describes the process of ideation, consisting of two loops of iteration and an in-between evolution of the statement. First the ideation process of the first loop is explained, with an added exploration of NS train stations of different sized. Concepts emerge and are evaluated. The first loop is reviewed, which leads to an evolution of the statement. With the evolved statement, the second loop launched is described, consisting of ideation, the emerging concepts, their evaluation and the conclusion.

2

3

## 7.1

# FIRST LOOP

With a clear goal within the chosen statement and a suitable analogy, the ideation phase is initiated. To get idea generation going, the ideation method How-Tos is used. With the use of How-Tos, the problem is taken apart and reformulated to stimulate the ideation process. By formulating the main question and thinking of how this can be taken apart into sub-questions, coming up with ideas is made less of a complex task, after which ideas from different How-Tos can come together to form one idea or concept.

### HOW-TOS

First of all, the main question arises from the statement and is formulated as the following:

**How-To give potential helpers the opportunity to make a more serious, conscious consideration about helping others and how-to let help seekers feel fewer social barriers to ask for help?**

This main question is quite comprehensive, and therefore it would not be so easy to come up with ideas to solve this. Hence, there is looked for sub-questions that could be useful to gather ideas that could be or become (sub-)solutions to this main question.

From this the following How-To arises: **How-To connect or pair the potential helpers and the help seekers**, so that they can together look for a solution. When thinking of ideas that answer this question, it is important to always keep the analogy and its qualities in mind. It so happens that at first, ideas naturally go into the direction of the help seeker: how can they ask for help or let people know they need help? But, taking a look at the analogy, it is noticed that the potential helper actually makes the first move, by placing a product in the food cabin. Having realized this, the aforementioned How-To is in addition taken apart, to be able to come up with ideas from both the perspective of the potential helper and the help seeker. This leads to the following How-Tos: **How-To make potential helpers able to offer their help in an approachable and non-binding way?** and **How-To make help seekers able to ask for help in an approachable manner?**

The ideation on the basis of these questions has already brought up various ideas. However, it

is noticeable that these ideas are often based on technology, which is precisely what the help seekers experience difficulties with. That is why there is decided that ideation from the following How-To is also necessary: **How-To connect or pair people in the physical domain**, rather than digitally?

Now, the train station environment has been deconstructed in the starting phase of the ViP process. However, there is more clarity needed on how train stations of different sizes look and differ, the space that would be available to place a physical product and if there are other things that need to be taken into account or that may offer opportunities.

### EXPLORING NS TRAIN STATIONS

A clearer view on the different sized train stations is needed. Hence, various NS train stations are visited, all varying in size but scaled under three sizes: big, middle-sized and small. The following train stations are visited:

<b>Large</b>	Rotterdam Centraal (see Figure 20)
<b>Middle-sized</b>	Gouda, Driebergen-Zeist (see Figure 21)
<b>Small</b>	Bunnik, Maarn, Rhenen (see Figure 22)

#### Large

Within the scale of large train stations, there is referred to stations that have a large station hall with multiple retailing facilities, like stores and food & drink spots. There are 6 or more platforms, which means a significant amount of people visiting the station each day and therefore the well-needed space in the station hall for these people to move about.

#### Medium-sized

The medium-sized stations are stations with fewer platforms and fewer available space. With five platforms or less, fewer space is at present and needed for people to move about. However, these stations still have some kind of station hall or square, with some food & drink and bathroom facilities at present. The right bottom picture in



Figure 23 shows station Driebergen-Zeist. While there are only two platforms present, there is quite a big area surrounding it, with space available beyond the platforms with the aforementioned facilities at present.

### **Small**

The small train stations are considered the ones where there is no station hall or space available to stay beyond the platforms. Other than bicycle facilities, there are no other facilities at present. From the bike or car parking you walk directly onto the platform, this being the only place to stay and wait.

### **Take aways**

The train station visits gave some interesting insights into the possibilities for concepts in the physical domain.

First of all, at the large train station there is naturally a lot of space available to place physical products. How smaller the station gets, how fewer space there is and thus how smaller the product to be placed must be. On the small train stations, most of the time only the platform is available for placing a product, and this product should then naturally be small enough to fit the space available.

Noticeable are the blindlines (the lines on the floor guiding blind people the way) that at present at all train stations. There should always be paid close attention to these lines and that they are not being interrupted. At middle-size to small train station this needs even closer attention, as fewer space means bigger changes of interrupting it. It goes without saying that the walking path of travellers should not be disturbed in any way by an installed product.

Lastly, attention was caught by shielded, roofed or sheltered spaces at the train stations, as can be seen in Figure 23. This was mostly seen at the small train stations, as there are no other indoor spaces available, like station halls. These spaces could potentially provide spots for placing physical products at small train stations.



Figure 20: Large train station



Figure 21: Middle-sized train station





Figure 22: Small train station



Figure 23: Shielded, roofed and sheltered spaces

## IMPORTANT QUALITIES

From the ideation with How-Tos and the train station visits, some qualities come to the surface that are deemed important in the ideas arising. In the ideation process, ideas emerge that may or may not possess these qualities, and if so they may possess them on different levels. The qualities referred to are: **accessibility to the digital illiterate, real-life contact, indicating preferences** and the **reach**. They are ranked in order of importance, starting with the most important quality. These qualities will be used in the first loop, but not elaborated on further, as the qualities will be cast aside later on in the process.

## THREE DIRECTIONS

From the ideation with How-Tos and the information gathered from the station visits, three directions are produced. All these directions facilitate the pairing of train travellers and thereby the attempt to find solutions among their selves. During the ideation, the product qualities from the analogy are always kept in mind in order to create an idea that indeed has a low-threshold, is bridging and inviting and facilitates a non-binding and valuable interaction.

In all directions, the aim is to first give the help seeker the opportunity to look through Frequently Asked Questions (FAQ). By encouraging this, people might find an easy answer and can solve their problems fairly quick. If they do not find their questions among the frequently asked ones, this could strengthen the sense of significance of their question, as apparently it is not such a common one. This perhaps could take some of their shame and thus social barriers away to initiate contact.

The three directions and their compliance with the important qualities will now be presented.

## 1 NS Community app for digital contact

The first direction is an app which facilitates the pairing of a potential helper and a help seeker and digital contact between them. In Figure 24, the functionality of the app and the interaction with the app is visualized.

People can sign up for the app as a helper or a help seeker, and they can optionally enter preferences, which will influence who they will get in contact with. When a help seeker has looked in the FQA, but has not find their question, they can request help from a fellow traveller. They can then choose how they want to get in contact with them: by phone call, videocall or chat. Once chosen, the request will be send out to any signed up helper who meets the preferences of the help seeker. The helper then has the option to accept or decline the request. When accepted, the pair will get into contact by the chosen means and will together attempt on solving the issue the help seeker is facing. When the helper declines, another helper will step in to offer their support.

ACCESSIBILITY	—
REAL LIFE CONTACT	—
INDICATING PREFERENCES	+
REACH	+

As this app can only be used with the use of a smartphone, it is not deemed compliant with the quality of accessibility for digital illiterate people. Furthermore, the contact facilitated by the app is exclusively digital contact. Although video calling can offer sight to non-verbal communication, it can not hold up to real life contact. Hence, also this quality is not considered compliant.

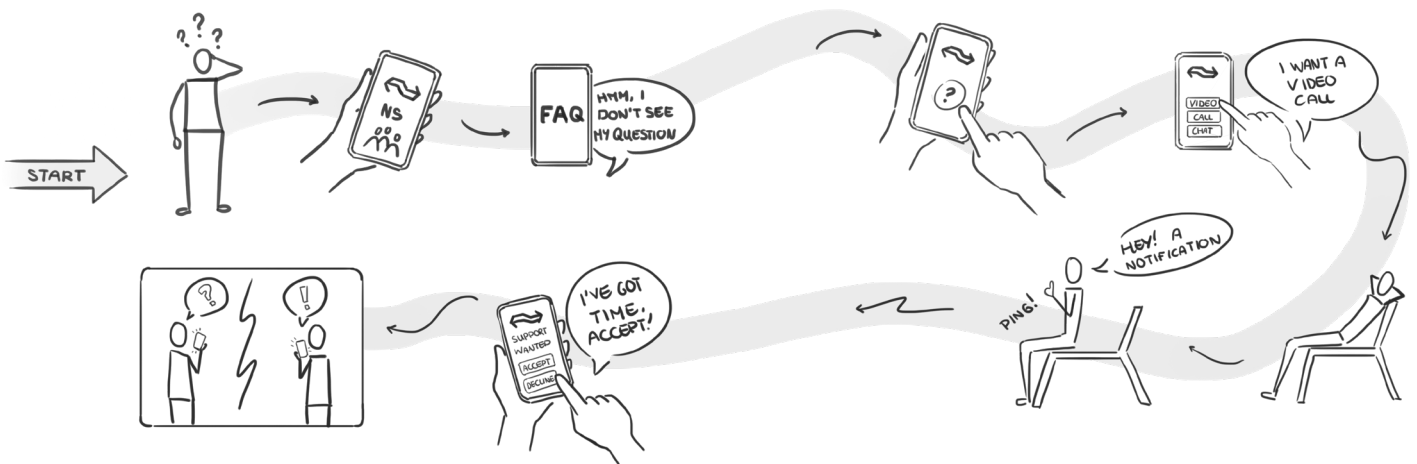


Figure 24: NS community app for digital contact

## 2 NS Community app for real life contact

The second direction is again an app which facilitates the pairing of a potential helper and a help seeker, but this time facilitating real life contact. In Figure 25, the functioning of and the interaction with the concept is visualized.

Potential helpers can sign up for the app as wanting to offer support. They can optionally enter preferences, which will influence who they will get in contact with.

For the help seekers, there are two possible scenarios:

1. As can be seen in the top starting point, the help seeker also signs up for the app and enters preferences if deemed needed. When the help seeker encounters a problem, they first look through the FAQ. If their question is not found, they can request support from a fellow traveller ...
2. In the second scenario, visualized in the bottom starting point, help seekers who do not want to be dependent on an app are taken into consideration. In this scenario, the help seekers find themselves facing difficulties at one of the digital appliances at the train station. Again, the help seekers are given the opportunity to look through FAQ. When needed anyway, they can request support from a fellow traveller with the possibility to enter preferences, at the digital appliance they are located ...

... A helper in (the vicinity of) the station area who meets the preferences of the help seeker is searched for. When found, a request is send to them. The helper receives a notification of the requested support, and has the option to accept or decline. When accepted, the helper will find their way to the help seeker with the location indicated in the app. Once found, they will together attempt to solve the issue the help seeker is facing. When the helper declines, another helper will step in to offer their support.

ACCESSIBILITY	—
REAL LIFE CONTACT	+
INDICATING PREFERENCES	+
REACH	—

Slight clarification is felt necessary for the above score. Although the second scenario described above shows that the accessibility for digital illiterate help seekers is taken into account, the accessibility for helpers is not considered compliant. A helper cannot offer their help without the use of a smartphone, which may exclude potential helpers who do not want to be dependent on a smartphone.

Furthermore, the reach is not considered compliant, since it is limited to helpers at the station and in the surrounding area.

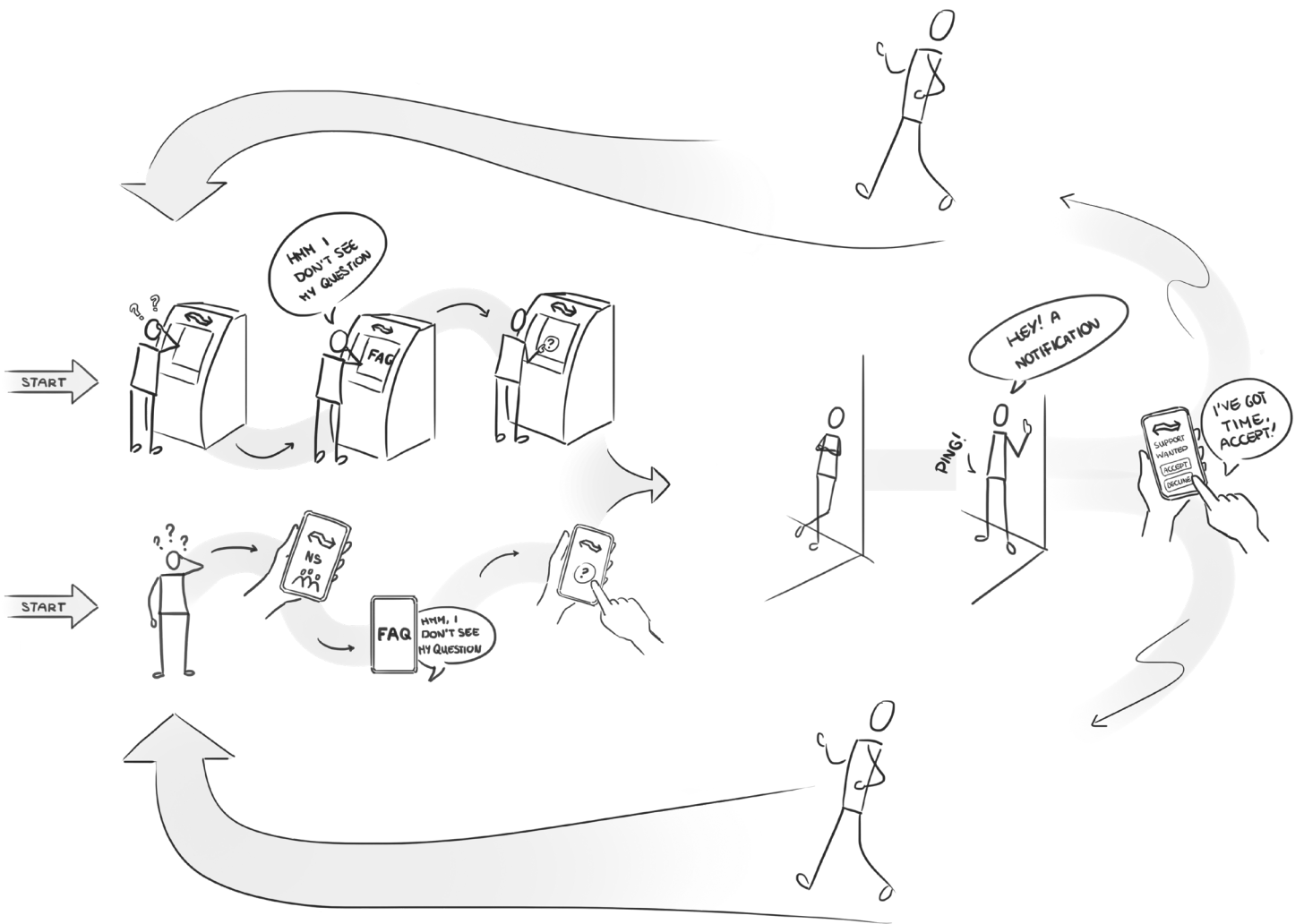


Figure 25: NS community app for real life contact

### 3 Physical place for getting together

The third direction is a physical space in the station environment where the pairing of helpers and help seekers is facilitated. It is fully accessible without the use of digital devices.

The thought behind this direction is that both the potential helper and the help seeker can initiate contact, and that it is clear for people passing if this initiator is a helper or a help seeker. The idea is that there is a designated spot for the person offering support and for the person seeking it. As visualized in Figure 26, a potential helper can offer its support by taking a seat on the Answer chair. Someone who is looking for support spots the helper sitting in the answer chair, and can decide to take a seat on the Question chair. Similarly, when the help seeker initiates contact. As the helper and help seeker are now paired, they will together attempt to solve the issue the help seeker is facing.

As this concept direction is placed in the physical domain of the station environment, thought has to

go to different shapes and sizes to fit the specific location. Where at some stations multiple coupled chairs can be placed in the station hall, at other station there may not even be space for one couple of chairs and a different form should be considered.

ACCESSIBILITY	+
REAL LIFE CONTACT	+
INDICATING PREFERENCES	-
REACH	-

As opposed to the first two concept directions, this physical place does not offer the possibility to specify your preferences for contact. Additionally, the reach of this concept is limited to the people passing by and seeing this physical place in the train station environment, and therefore not considered compliant.

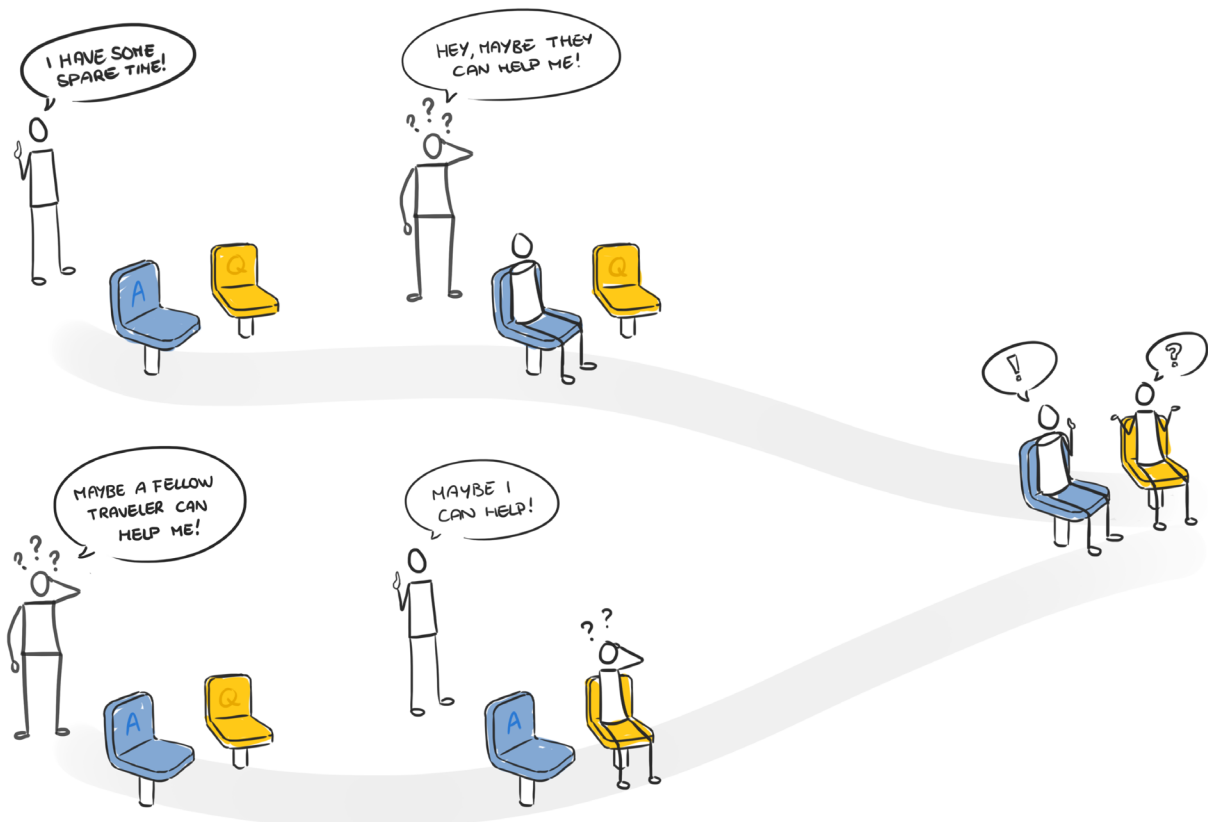
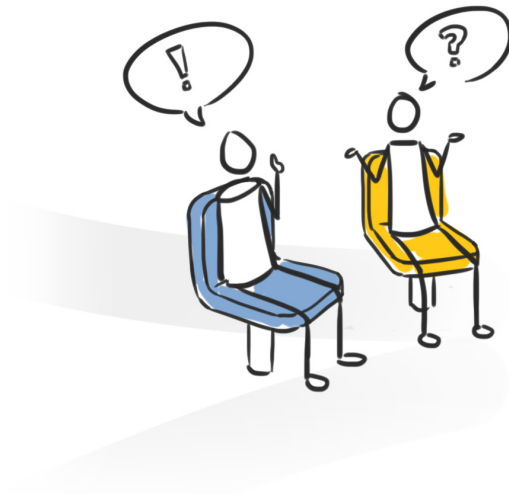


Figure 26: Physical place for getting together



## CHOICE OF DIRECTION

Now that 3 directions are produced, a choice needs to be made for which concept direction to continue with. Looking at the compliance of the qualities and their order of importance, the third direction seems to score best. Based on this assessment and NS' stated preference for the same direction, the decision is made to continue into the direction of the physical place for getting together.



## REVIEWING FIRST LOOP

After deciding on a direction to continue with, the process of ideation and the resulting concepts with the direction of choice are presented to the graduation team.

The actions taken and decisions made are discussed, and the conclusion is drawn that the basis on which is ideated seems to have drifted too far of from the analogy. The analogy and its qualities are there to use as a basis for coming up with ideas that will enable the desired interaction. It would be disadvantageous if the analogy takes a back seat and, as a result, the conceived directions do not achieve the interaction desired. Therefore, it is recommended to take a step back to the beginning of the ideation phase, and to gather ideas on the basis of the analogy and its qualities.

### Analogy

Striking in the analogy, is the absence of direct human interaction. As someone places a product in the food cabin and someone else, later on, takes it out, these two people most likely have not seen and interacted with each other. However, this food cabin is deemed a very social concept. So, interestingly, there is talked about a very social concept, that does not involve direct human interaction. Taking a look at the concepts presented earlier, direct human interaction plays an important part for each of them. This raises the question if the analogy is interpreted in the right way. Before going back to ideating, a conscious decision needs to be made whether the interaction in the analogy is taken as a basis, making direct human interaction no longer the aim, or if direct human interaction is considered needed to reach the goal of the statement.

### What kind of help?

While thinking about the interaction in the analogy, the question arises what a person could leave behind in the train station area to help a fellow traveller. From this question, thoughts go in the direction of the kind of help people need and can offer. Is directly helping people with the difficulties they face regarding digital assets the only way they can be of help? Or are there other opportunities for helpers to be conscious and considerate of their fellow travellers and for help seekers to feel less constrained?

### Take aways from first loop

Despite having returned to the beginning of the ideation phase, this first loop of ideating and creating concept directions has most certainly not been for nothing. Some interesting take aways help to narrow down the scope for the next loop of ideating.

First of all, from the first loop of ideating the importance of diverse ways of communicating come to the surface. Real life contact was considered a high rated quality, to give access to this diversity. This brings us to focus on the physical domain, rather than on the digital world. The focus on the physical domain allows people to communicate with each other in a verbal and/or non-verbal way, or at least gives them the opportunity to do so.

Furthermore, the scope around the kind of train stations has been narrowed down. In the statement, the eventual goal is for people to help each other out. This is particularly needed on train stations where there are no NS employees at present to offer their supporting services. From this **the scope is set to unmanned train stations**, which are foremost the small but also the middle-sized ones.

## 7.2

# EVOLUTION OF THE STATEMENT

First of all, it is necessary to make a decision about what kind of social concept is desired and aimed for. The social concept coming from the analogy has as strong anonymity, and this raises the question if this is something that can be used or if this is not actually desired. To decide on this, the framework is once again used to clarify the fundamental problem in the statement. The need for connecting people to resolve difficulties regarding digital assets, comes from the fundamental problem of the individualism arising from the framework's expression *flattening social interaction*. Looking at the social concept of the analogy, the anonymity of it does not seem to get in the way of addressing this problem. A concept may be anonymous, but that doesn't necessarily make it individualising, the food cabin being a perfect example of this. People can be considerate or even caring of one another without the necessity of direct human interaction. It is considered a rather interesting way of approaching the problem, and therefore the decision is made to continue with the creation of a social concept similar to the one in the analogy:

### Connecting people, while maintaining (the possibility of) anonymity

After establishing the desired social concept, there is thought of what people can leave behind at the train station to help a fellow traveller in their encountered difficulties with digital assets. It is found to be challenging to think of something a person could leave behind in this regard, as the specific question of a help seeker is not predefined; it could be anything. The thing that makes the food cabin successful, is its clarity of the problem and the purposefulness for which someone leaves a product behind. Leaving something behind to help someone with an encountered difficulty regarding digital assets seems to lack this clarity of the specific problem and purpose. Hence, it is wondered whether the analogy can be

put to use in a different way, still enabling people to help each other out in the station environment, counteracting individualism. From this thought, the focus shifts from the framework's expression of *ownership of life consciously taken away*, to the expression of *flattening social interaction*. This means from a focus on the difficulties emerging from advancing technology to a focus on the rising individualism. Addressing the problem of individualism, brings on the idea of increasing the feeling of community amongst travellers. By increasing the feeling of community, people will supposedly be more likely to help fellow travellers, as people are more likely to help others believed to be members of the same community or to share similar attitudes (Täuber & Van Leeuwen, 2010). By achieving an environment in which people have less individualistic attitudes and are thus more open to and considerate of each other, the social barriers that are seen arising are estimated to diminish.

The above means that the difficulties emerging from advancing technology are not the primary focus anymore, but the goal devised to address this problem can still be achieved by focusing on the underlying problem.

From this new focus an evolved statement results. The statement is changed to read:

**I want travellers at the station  
to relate to each other more as part  
of a community, than as separate,  
individual travellers**

With this evolved statement, opportunities arise for the creation of ideas around the social concept derived from the analogy, to create a sense of community on unmanned train stations without the necessity of direct human interactions. This gives great inspiration to proceed to the next step, in which a second loop of ideation is launched.

## 7.3

# SECOND LOOP

With the evolved statement at hand, a new round of ideation is initiated. Let's take another look at the new statement to view what is aimed to be accomplished:

I want travellers at the station to relate to each other more as part of a **community**, than as separate, individual travellers

So, an increased feeling of community is what is aimed for. This raises the question, what does it mean to have a feeling of community? And how can it be accomplished?

To clarify the meaning of 'a community feeling', a Dutch dictionary is consulted. According to Instituut voor de Nederlandse taal (1886), community feeling is described as *the sense of connectedness with fellow human beings*. This definition is used as the basis for the search for ideas, in which there is aimed to **increase the sense of connectedness between fellow travellers at unmanned train stations**.

### HOW-TOS

Again, How-Tos are used to get the ideation process going. Essentially, there is ideated by means of two How-Tos.

The first one focuses on the aim to increase or create a sense of connectedness between the whole group of travellers: **How-To increase or create the feeling of connectedness between fellow travellers?**

The second one focuses on a subgroup of the whole group of travellers, the SUST traveller:

"In The Netherlands, during corona, 30% of NS panel members indicate that the environment is even a decisive reason for choosing the train."  
*Van Hagen and Temme (2021)*

With this subgroup of SUST travellers already existing, the thought arises of increasing the feeling of connectedness within this particular group. Hence, there is ideated using the following question: **How-To increase or create the feeling of connectedness between SUST travellers?**

Lastly, focus goes out to ideating around the

idea of sharing amongst travellers. In a study by Albinsson and Perera (2012) regarding sharing events (as an alternative way of consumption), discoveries suggest that a sense of community plays a dual role: it motivates people to engage and also emerges as a result of these occasions. This finding gives a confirmation of the potential value of looking into the direction of facilitating sharing amongst travellers, which can be of physical goods but also of knowledge or ideas. This leads to the final How-To: **How-to let travellers on the train station share knowledge or goods?**

### ANALOGY

Not only is the social concept, derived from the analogy, at all times guiding during the ideation, also the accompanying qualities are kept in mind. This is done with the aim to find ideas that have the potential to successfully reach the interaction envisioned. In this phase of ideation, foremost the fundamental aspects of the qualities are used, and not so much the exterior features that can enhance or provoke these qualities. A focus on these exterior features is utilised in the concept design phase, to enhance these qualities in the final concept.

With the How-tos and analogy as a basis, there is ideated by means of brainstorming and sketching.

## **FOUR IDEAS**

The ideation by How-Tos has resulted in four ideas, that all, to different extents, comply to the qualities derived from the analogy and that are all based on the social concept originating from the food cabin.

The idea is that all of these ideas are to take place on the platforms. According to a study by Van Hagen (2011), train passengers on average spend just over seven minutes at a train station, five of which are spent waiting on the platform.

“The moment passengers switch from moving to staying, their focus shifts from speed and ease to comfort and experience. Having arrived at the platform, the travel orientation changes from utilitarian to hedonic, which is why passengers on the platform are then more receptive to environmental stimuli. Distraction and a stimulating environment are now welcome.”

*Van Hagen (2011)*

As outlined above, travellers spend the majority of their time at the train station on the platform and are more open to distraction and stimulation at this location. This, in addition to the fact that small train stations often do not have an alternative place to stay and wait other than the platform, results in the platform being the optimal location for the ideas to take place.

The ideas will now be elaborated upon, before moving on to evaluate them through testing.

## 1 Deel 'n tassie (Share a bag)

This first idea is the result of ideation around the How-To that focused on SUST travellers. The idea behind it is the sharing of goods to minimize waste, with an additional feature to enhance the feeling of the collective goal to move to a more sustainable future.

With the use of this sharing facilitation, travellers can share reusable (fabric) bags and leave tips on the bags for living a more sustainable life. (see Figure 27). These tips could be written on the bags directly.

The collection of bags at the platform comes with an explanation (like the one on the right), so the travellers can get to know its way of use.

How does it work?

1. On the go and forgot to take a bag from home? Or do you have a load of bags lying around at home?
2. Grab a bag here or leave one behind.
3. Write your best tip for living more sustainably on the bag.
4. Learn from each other to make more sustainable choices.
5. Move towards a more sustainable future, together!

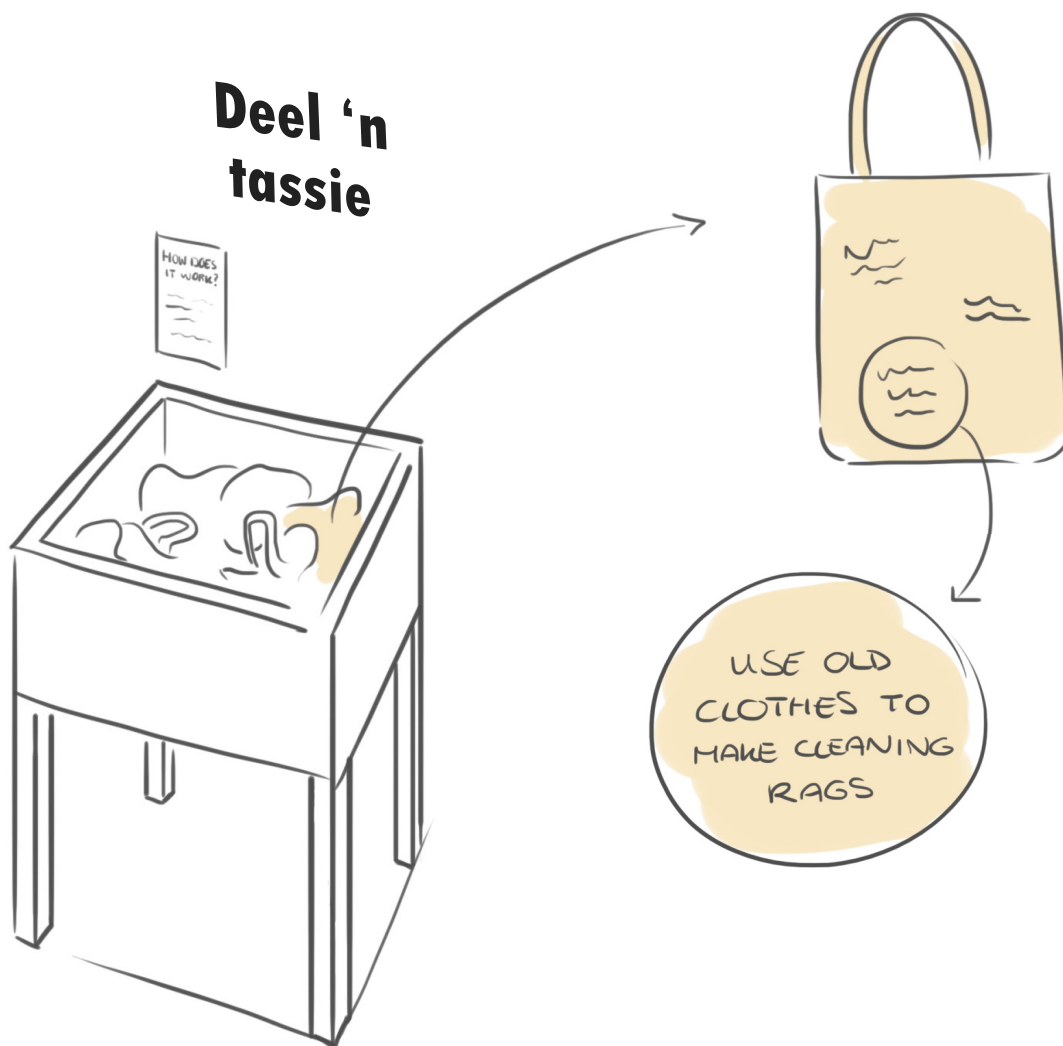


Figure 27: Deel 'n tassie

## 2 Beleef de streek (Experience the region)

The second idea is based on the thought of appreciating and feeling more connected to the area in which people, for example, work or live and with that feeling more connected to the people in it.

By using this facility, people can share or ask for tips and knowledge about the area surrounding the train station on a pinboard/magnetic board. There are blue and yellow cards, on which people can write tips or questions respectively (see Figure 28). Travellers can come to the board looking for tips and to get inspired, or to share their local knowledge about the area proudly.

Again, this board comes with an explanation, so the travellers can get to know how its way of use.

How does it work?

Do you want to explore?

1. Are you new in the region and curious to explore?
2. Take a yellow card, write down what you are looking for and place it on the board. Or, search through the tips on the blue cards.

Do you have tips?

1. Do you know the area well and do you have tips for the best spots?
2. Take a blue card, write your best tip on it and place it on the board. Or, reply to the yellow cards.

Share and appreciate the most beautiful, fun or serene spots in the region with each other!

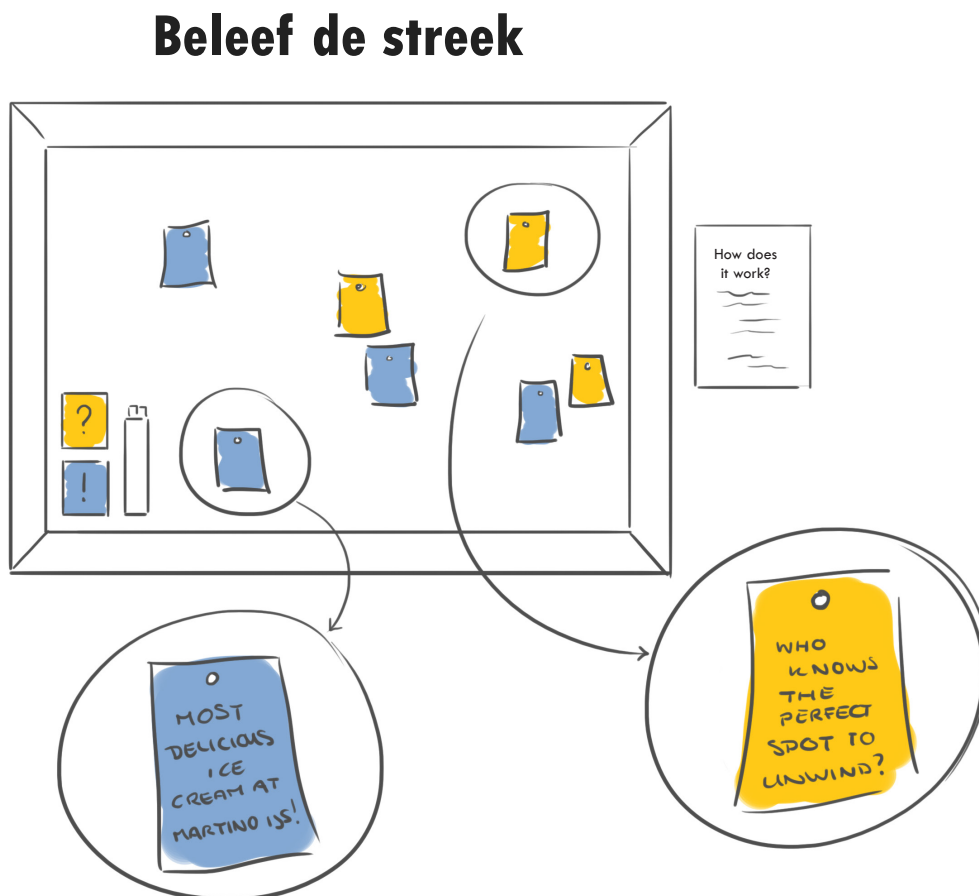


Figure 28: Beleef de streek

### 3 Music Match

The third idea is based on the connective power of music. Music is known for its power to connect or bring people together, which is used as the basis for this concept. Additionally, the concept stems from the idea that people will feel more connected to others when they feel accepted or heard by them.

With this idea, people can share or ask for music tips linked to their emotions/feeling on a pinboard/magnetic board. There are blue and yellow cards, on which people can write music tips or questions respectively (see Figure 29). Travellers can come to the board looking for music inspiration that fits their current state of mind, or to share a music tip which they think fits perfect with a specific mood.

Similarly, this board comes with an explanation, so travellers can discover for themselves how to use it.

How does it work?

Are you looking for inspiration?

1. Are you going through something difficult or are you very happy and looking for a song that fits this feeling?
2. Take a yellow card, write your feeling/emotion on it and place it on the board. Or, look through the blue cards!

Do you have music tips?

1. Do you have the perfect sad or happy song and would you like to share it with others?
2. Take a blue card, write down your tip and place it on the board. Or, reply to the yellow cards!

Relate to each other through music!

## Music match

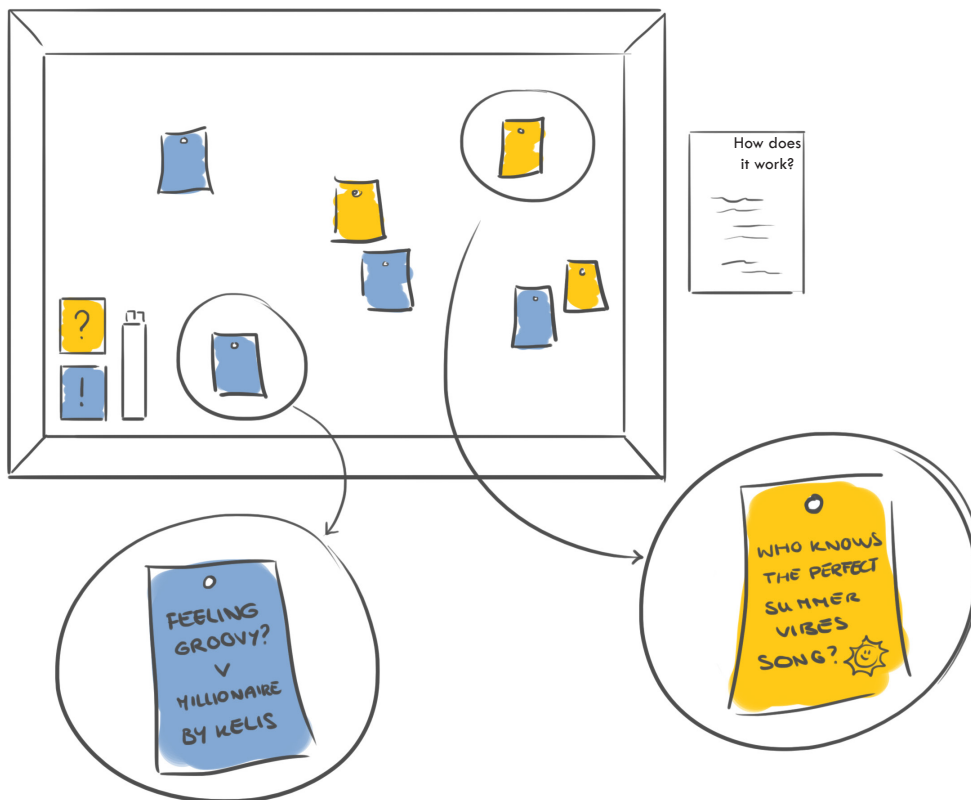


Figure 29: Music match



## 4 De deelhoek (The sharing corner)

Lastly, the fourth idea is based on the thought of sharing physical goods for entertainment, specifically to be used during the train journey. People can share something with their fellow travellers that they considered to be really interesting, fun or amusing and others can take a look into the interests of their fellow traveller, perhaps inspiring or introducing themselves to new things.

In this sharing corner visualized in Figure 30, people can leave items for entertainment during the train journey, think about magazines, a book with short stories, puzzle books or even a Rubik's cube. People can also take an item from the sharing corner to enjoy themselves during their journey. When they have finished for example reading the magazine or their journey has come to an end, they can place the item back in the same or in a different sharing corner (assuming

they are spread across the country/region).

Again, an explanation is giving to clarify the use of the sharing corner to the travellers.

How does it work?

1. Did you finish your favorite magazine or do you have a puzzle book lying at home? Or do you have a train journey ahead but nothing to do yet?
2. Leave your favorite entertainments for during your train journey behind in the sharing corner, or take something out to enjoy during your train journey.
3. Is your train journey over or did you finish the magazine? Put it back in the sharing corner for your fellow travellers to enjoy.

Enjoy your journey!



Figure 30: De deelhoek

## TESTING

In the ideation, the social concept derived from the analogy was leading and is pursued with each of the ideas. Additionally, each idea has been ensured to be non-binding and bridging, as are the qualities of the analogy.

However, whether the concepts have a low enough threshold, are inviting and are deemed valuable are qualities that needs to be evaluated, resulting in the question: *Would people like to use the idea or not?*

Moreover, the ideas' ability to reach the goal in the statement is desired to be evaluated. The following question arises: *Can the idea enhance the feeling of connectedness between fellow travellers, and thus make travellers at the station relate to each other more as part of a community, than as separate, individual travellers? And if it can, which specific aspect of the ideas makes this happen?*

To evaluate the ideas, a test at an unmanned train station is ideal, as it offers the possibility to observe people's interaction with and approach behaviour towards the ideas. Additionally, it immediately offers the opportunity to test it with the aimed target group: people who travel to and from unmanned train stations. However, because of the limited time available in this project and a possible long lead-time until the test can be conducted, the decision is made to test the ideas in an alternative way.

### Physical testing

A test in the physical domain is still deemed most desired, as it can give people the opportunity to try out an idea for themselves, experience it as much as possible like they would on a train station and to therefore best review the questions above. Therefore it is decided to produce basic prototypes of the ideas, create a testing area at the IDE faculty and test the ideas with fellow students.

Figure 31 shows the test area and the prototyped ideas. As shown in the pictures, each idea has an individual explanation, giving the participants the space to figure out how the ideas work themselves and thus letting them experience the ideas as they would on the train station.

The participants are giving the following explanation before starting the test:

"This test is part of my graduation project, in which the initial assignment was to create a future vision for the NS train stations in 2030. From this future vision, the following direction emerged: To enhance the feeling of connectedness between fellow travellers at unmanned train stations, to make them feel more as part of a community than as separate, individual travellers. To give an impression of these unmanned train station, I will show you two example pictures (the pictures in Figure 32 are shown). You should imagine these ideas to be placed at the platform. Furthermore, imagine that the two middle ideas would contain a pinboard or a magnetic board, this test only being composed of simple prototypes."

Once the explanation is given, the participants are asked to go by the ideas one after another, first reading the explanation and then using it like/if they would on the platform. Before moving on to each subsequent idea, they are asked to fill in a short form in a little booklet with the aforementioned questions and some space for additional remarks (see Figure 33).

When all four forms are filled out, one final question is asked: *Could you elaborate on which idea or ideas would enhance your feeling of connectedness with your fellow travellers the most?* This question is asked to collect some more in depth information about their 'favourite' idea and possibly why others are less favoured, which may not yet be mentioned on the form.

### Limitations

It is important to consider the limitations that this way of testing the ideas brings.

First of all, the participants in this test may not all fit the target group of traveling from and to unmanned train stations. The pictures of the unmanned train stations are shown to take this into account and make sure they can assess it to their best ability.

Additionally, the approach behaviour towards the ideas cannot be tested in this set-up, as people are of course asked to check off the ideas one by one and use them as they would on the platform. The possibility to observe whether they would

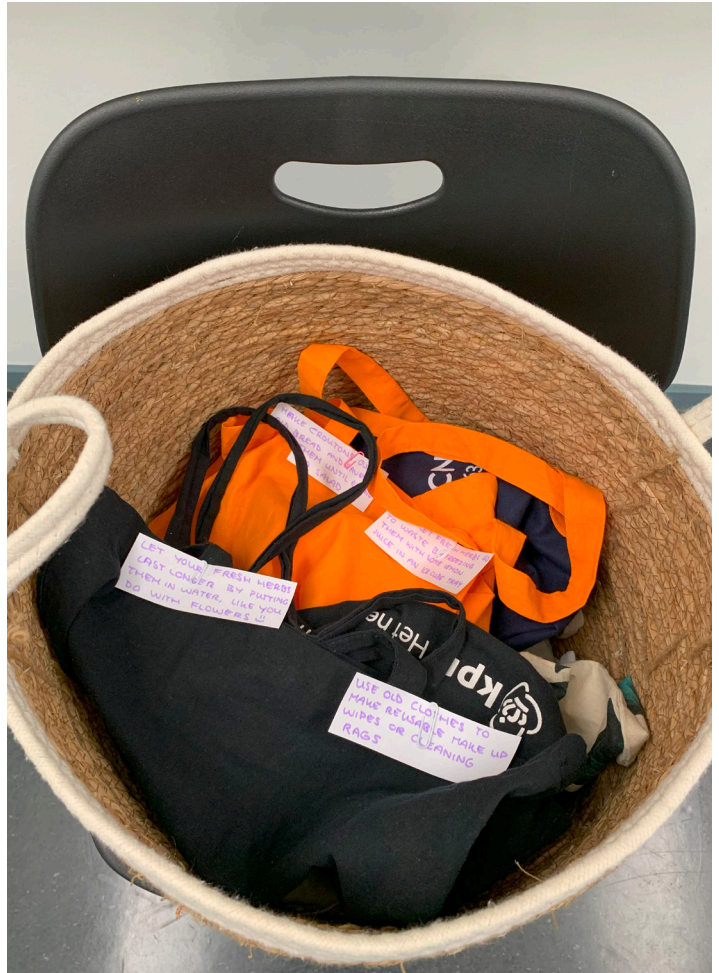
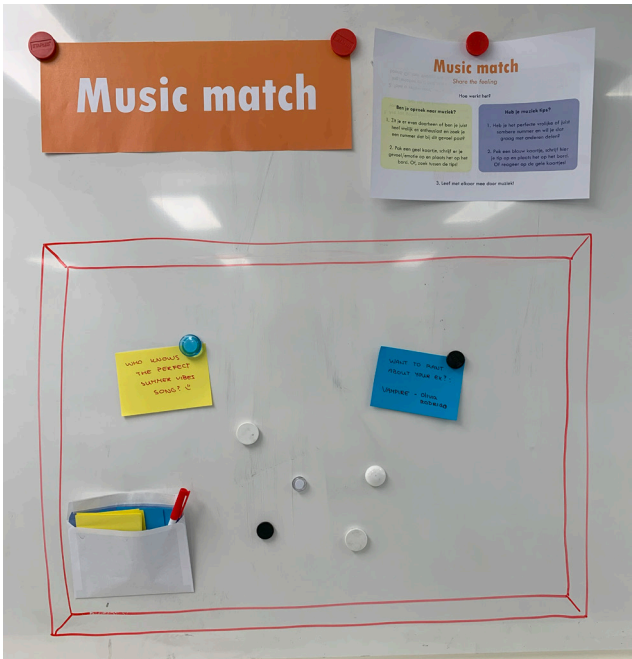


Figure 31: Testing of ideas

use it on their own accord is not available. To account for this limitation, the question is asked if people would like to use the ideas. Though, the answer people give to this may differ from their behaviour if this situation were really to occur.

### Results

The test has been conducted with 11 participants. All filled in forms can be found in Appendix E.

From the tests it became clear that a personal touch is a very important aspect for creating the feeling of connectedness. For example, for the Share a Bag concept, it was foremost the sharing of personal tips that created connectedness, rather than the sharing of the bags. Moreover, Music Match was three times voted not to be used, where the other ideas where in the contrary all voted to be used. This was explained as music being very personal and difficult to match with others and by it being too time consuming.

Eventually, the outcome of the last question asked (which idea enhanced the feeling of connectedness most) was the following (the total not adding up to eleven, as some people mentioned two ideas):

Share a bag:	2
Experience the region:	8
Music match:	2
The sharing corner:	3

Hence, Experience the Region comes out best in reaching the goal. Additionally, one person mentioned that someone wanting to share a regional tip felt “very communal” and another participant said it gave the feeling of a “community centre”, which both exactly matches the goal.

However, 11 participants is not a significant enough amount to fully rely on the results, so more results are desired. Though with the time and fellow students (at the faculty) available, these live tests are not the best choice for gathering enough results to get a clear and fair picture (approximately 20 more results). That is why the live test is complemented with a survey.

### **Survey**

To complement the results from the live test, a survey is conducted. This method offers an efficient

way of gathering a fair amount of results in the time available.

In the survey, the same explanation is given as was given to the participants in the live test, and pictures of the test set-up are added so that the respondents assess the ideas based on the same presentation.

One question is added to the survey, based on learnings from the live test. The terms ‘communal’ and ‘community centre feeling’ were mentioned, and this brings up curiosity as to what words people would use to describe the ideas further. Hence adding the question: *What three words would you use to describe this idea?*

The link to the survey can be found in Appendix F.

### Limitations

While a survey is an efficient method to collect more results in less time, it also has its limitations. Adding to the limitations from the previous test, the survey does not offer the respondents the opportunity to try out the ideas and really experience the use of it. This could mean that they are less capable of properly assessing whether the idea could create a sense of connectedness for them.

### Results

The survey has obtained 21 respondents. A full overview of the results can be found in Appendix F.

With this survey, the previously gained insight of the importance of a personal touch for enhancing the feeling of connectedness is proven not necessarily true. Respondents indicate that with Share a bag, the reason for an enhanced feeling of connectedness is the feeling of a common goal and the fact that you can share a bag with fellow travellers. Moreover, The sharing corner receives more appreciation and a higher score in this survey, substantiating that the personal touch of a handwritten note is not necessary to obtain a feeling of connectedness.

The question *What three words would you use to describe this idea?* is analysed, by searching for answers that confirm connectedness, sense of community or the qualities from the analogy. On the next page, an overview is given of the



Figure 32: Station Bunnik (left) and Rhenen (right)

<h2 style="text-align: center; color: #e67e22;">Experience the region</h2> <p>Would you like to make use of the experience the region board?</p> <p style="text-align: center;">Yes <input type="checkbox"/>      No <input type="checkbox"/></p> <p>Would using the experience the region board enhance your sense of connectedness with your fellow travelers?</p> <p style="text-align: center;"> <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/> </p> <p style="text-align: center;">Not at all <span style="float: right;">Very much</span></p> <p style="text-align: center;">If so, what aspect of the experience the region board causes this?</p> <div style="border: 1px solid black; height: 80px; margin: 10px 0;"></div> <p style="text-align: center;">Other remarks:</p> <div style="border: 1px solid black; height: 60px; margin: 10px 0;"></div>	<h2 style="text-align: center; color: #e67e22;">Music match</h2> <p>Would you like to make use of the experience the region board?</p> <p style="text-align: center;">Yes <input type="checkbox"/>      No <input type="checkbox"/></p> <p>Would using the music match board enhance your sense of connectedness with your fellow travelers?</p> <p style="text-align: center;"> <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/>   <input type="radio"/> </p> <p style="text-align: center;">Not at all <span style="float: right;">Very much</span></p> <p style="text-align: center;">If so, what aspect of the music match board causes this?</p> <div style="border: 1px solid black; height: 80px; margin: 10px 0;"></div> <p style="text-align: center;">Other remarks:</p> <div style="border: 1px solid black; height: 60px; margin: 10px 0;"></div>
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Figure 33: Survey for evaluating ideas

words (if used more than once) endorsing certain qualities and targets.

*Share a bag*

Valuable: helping, handy, sustainable (9), circularity (2)  
 Inviting: inviting  
 Low-threshold: easy  
 Connectedness: connection, connecting

*Experience the region*

Valuable: useful, efficient, practical, handy  
 Inviting: inviting  
 Low-threshold: easy (2), clear, approachable, simple  
 Connectedness: together (3), togetherness

*Music Match*

Valuable: purposeful  
 Connectedness: connecting (2)

*The sharing corner*

Valuable: helping, effective, recycle (2), sustainable (3), educational, useful, useable (2)  
 Low-threshold: low-threshold, easy (2)  
 Connectedness: together (2)

From the results of this survey, Music Match and Share a bag come in last place. Respectively, only 14 and 11 people would like to use the facilities and only 5 and 4 people indicate that these ideas enhance the feeling of connectedness most.

Experience the region and The sharing corner are the ideas with the most potential to enhance the feeling of connectedness and to be used. Experience the region has 9 votes for enhancing the feeling of connectedness most and 16 people have indicated that they would like to use the facility, where for The sharing corner this is 7 votes and 19 indications, respectively. Thus, Experience the region scores better on connectedness, where The sharing corner scores better on use.

To be able to make a decision on which idea will have most potential to succeed, the results of the two different evaluation methods are added together.

**Overall results**

Adding up the results of both evaluation methods, results in the following overview of numbers (with the numbers being the amount of people having indicated the following, out of a total of 32):

Enhances feeling of connectedness most

Share a Bag	5
Experience the region	17
Music Match	7
The sharing corner	10

Would like to use this idea

Share a Bag	25
Experience the region	27
Music Match	18
The sharing corner	30

Furthermore, the ideas score the following average on enhancing connectedness (out of 9):

Share a Bag	6,03
Experience the region	6,65
Music Match	6,15
The sharing corner	6,56

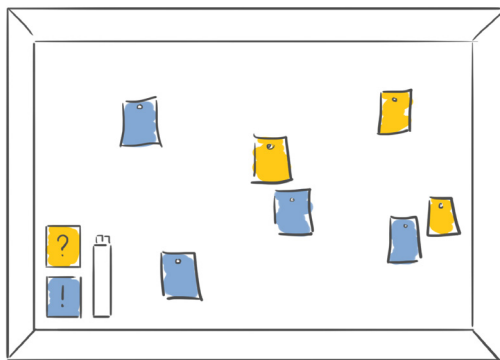
Since all these results clearly show that Experience the region and The sharing corner come out on top, a more in depth look is taken at the given ratings for enhancing connectedness. For Experience the region and The sharing corner, the amount of ratings beneath 6 are 4 and 9, respectively.

### Conclusion

The decision is made to continue with the second idea: Experience the region.

This idea has been most frequently indicated to enhance the feeling of connectedness most. Additionally, it has the highest average score for enhancing connectedness and the most ratings given of 6 and higher (out of 9, indicating enhancement).

## Beleef de streek



The only adverse factor is that it does not have the highest score for the amount of people who would want to use the facility. However, since this is only a small difference of 3 people out of 32, it is not seen as a major risk to achieve success. Moreover, the idea has brought up the terms “communal” and “community centre feeling”, along with supplementary words that indicate the endorsement of the goal of connectedness and (some of) the qualities.

Last but not least, the chosen idea is considered to be more novel and original than The sharing corner, as the idea of sharing books is already one that is adopted in our streets and public spaces, albeit not for during the train journey.

### Overall limitations

With 32 results obtained, the study can still be considered not very strongly substantiated. However, this is taken for granted due to the limited time available in this project. For a follow-up study, the aim is to test the further developed concept at a train station, which will most likely yield more test results and thus a more credible outcome.

Also important to note is that an average score of 6,65 out of 9 on the enhanced feeling of connectedness is not yet highly convincing. However, this rating is given on the basis of a one time use or even only a look at the ideas. A more extensive test is needed to obtain results that can be considered credible. For such a test, the further developed concept would preferably be placed on the platform for several days, after which it would be assessed whether people experience an increased sense of connectedness with their fellow travellers.

## SUMMARY

In the **first loop** of ideating there is by means of How-Tos, NS train stations are explored and three directions emerged. These three directions are evaluated using four important qualities that arise from the ideation process, which has led to one direction to continue with.

After reviewing the first loop, it became clear that a concept from this statement is particularly needed on train stations where there are no NS employees at present to offer their supporting services. From this **the scope is set to unmanned train stations**. Additionally, the first loop lacked presence of the analogy. Therefore, a second round of ideation is desired, focussing more on the social concept of the analogy:

**Connecting people, while maintaining  
(the possibility of) anonymity**

As the aim is now on the social concept stated above, the focus shifts from the difficulties emerging from advancing technology to a focus on the rising individualism. This brings about an evolution of the statement:

**I want travellers at the station to relate  
to each other more as part of a community,  
than as separate, individual travellers.**

The **second loop** also consists of ideation around How-Tos, which led to four ideas. All these ideas are envisioned to be placed on the platform. The ideas are evaluated with a test at the IDE faculty, using simple prototypes. From this test and an additional survey, the concept *Beleef de streek (Experience the region)* is concluded to have the most potential for enhancing the sense of community amongst travellers, and is therefore chosen to further develop in the concept design phase.







2

3

# 8

## the concept

In this chapter, the chosen idea will first be supported by a definition and theory of sense of community and subsequently be further developed into a concept, so that its functionality is clear and the concept qualities are reflected as closely as possible in the final design. The implementation of the concept within current facilities present at the platform is elaborated upon, as well as the materials used and methods of placement. Lastly, the social concept is highlighted and scenarios of use and misuse are outlined to clarify the concept.

## 8.1

# SENSE OF COMMUNITY

The decision for the chosen concept is supported by a definition and theory of sense of community by McMillan and Chavis (1986). McMillan and Chavis define sense of community composed of four elements:

“The first element is **membership**: the feeling of belonging or of sharing a sense of personal relatedness. The second element is **influence**: a sense of mattering, of making a difference to a group and of the group mattering to its members. The third element is **integration & fulfilment of needs**: the feeling that members’ needs will be met by the resources received through their membership in the group. The last element is **shared emotional connection**: the commitment and belief that members have shared and will share history, common places, time together, and similar experiences.”

How the concept aims to address all these four elements, is elaborated upon in the following sections.

### MEMBERSHIP

*Membership is the feeling of belonging, of being part of a group. Membership always comes with boundaries, meaning that there are people who belong, i.e. are a member, and people who do not, i.e. are not a member.*

In the context at hand, the community that is talked about is the group of people who travel by train, and thus a membership to the community is provided just by using this form of transportation. This commonality of the choice to travel by train can give the travellers a sense of personal relatedness, as described in the definition of membership above.

Additionally, McMillan and Chavis state that personal investment is an important contributor to a person’s feeling of membership and to his or her sense of community. The chosen concept provides people with the opportunity to invest in the community by sharing local knowledge, and can therefore enhance the sense of community.

### INFLUENCE

The second element talks about the influence that a member can have on the group and, simultaneously, that the group can have on its members. Important to note is that *members are more attracted to a community in which they feel to be influential.*

In the concept, giving people the opportunity to participate by making a personal contribution, as well as giving them the power to moderate the board together, can add to their sense of community:

“**Participation** in voluntary associations or in government programs yields a sharing of power that leads to **greater “ownership”** of the community by the participants, **greater satisfaction**, and **greater cohesion**”

The above demonstrates the influence of a member on the group, but subsequently, there can also follow an influence of the group on individual members. As in the concept, the group is given the power to moderate the board together, this collective contribution can once again influence the behaviour of individuals who come across the board.

### INTEGRATION & FULFILMENT OF NEEDS

This third element can also be described as reinforcement. The reinforcements that bind people together into a close community are many and diverse among different groups. It seems obvious that if a group is to maintain a positive sense of togetherness, the relationship must be rewarding for its members. This leads to the statement that *reinforcement and need fulfilment is a primary function of a strong community.*

Competence is one of these reinforcements, meaning that people are attracted to others whose skills or expertise they can in some way benefit from. The sharing of expertise and making use of this shared expertise is enabled with the concept by leaving tips based on local experiences and knowledge and using these tips to discover the area. These shared resources aim to meet the needs of members, fostering a rewarding relationship and reinforcing the community bonds.

## SHARED EMOTIONAL CONNECTION

McMillan and Chavis state that shared emotional connection seems to be the definitive element for true community. *Shared emotional connection emerges from the sharing of history, common places and similar experiences.*

The chosen concept facilitates the exchange of history and common places by leaving tips for places in the area based on peoples own former experiences. The use of these tips may lead to similar experiences between the community members, enhancing their bond and therefore their sense of community.

An important feature to the principle of shared emotional connection is the following contact hypothesis:

“The more people **interact**, the more likely they are to become **close**.”

The concept facilitates this interaction between community members, albeit not in a direct way. By leaving tips, reacting on other’s searches and expressing ones appreciation for tips, the bond between the community members is aimed to be enhanced.

Another important feature is the quality of interaction:

“The more **positive** the experience and the relationships, the greater the **bond**. Success facilitates cohesion.”

By enabling people to express their appreciation for other’s tips and therefore giving the tip sharer a feeling of success, a positive experience is aspired. Additionally, by letting the members monitor the board in case of negative or offensive writings, they are given the ability to create the most positive experiences for everyone involved and therefore to increase the bond between members.

## CONCLUDING

By addressing all four elements in the concept, some naturally to a greater extent than others, it is envisioned that an enhanced sense of community can be achieved.

The four elements will be used later on in the evaluation phase, to measure if an enhanced sense of community is indeed achieved by the use of this concept.

## 8.2

# PRIORITY DECISIONS

Before moving on to further detailing of the concept, two decisions need to be made determining the use of the concept: an analogue or digital form & the approach to moderation.

### ANALOG VS. DIGITAL

Whether the concept should take shape in analogue or digital form, is a primary aspect to be determined before moving on to further detailing. While a digital solution could offer opportunities for easy moderation and unlimited space and possesses the quality of no loose parts (safety regulations), an analogue form is still deemed best fitting. Since the goal is to make people feel more as part of a community, it is important that the concept is created to be most accessible, also for people who are less comfortable with digital appliances. To refer back to one of the concept qualities, the concept will have a significantly lower-threshold to this group of people if it takes

an analogue form, rather than a digital one. Making also this group of people feel included, will add to the probability of achieving the aforementioned goal.

Additionally, with an analogue form the entire board and its content can be taken in by someone at a glance, where with a digital form you cannot immediately see how much content there is (inside the appliance). In the case of the digital form, this could be experienced as a higher threshold or maybe even intimidating. This makes the analogue form a more transparent and approachable choice.

### MODERATION

A second aspect to determine is how the board should be moderated, in the quality and quantity of its content. The question arises if it should be moderated by NS itself, and if so, who's job this would be a part of. Alternatively, the users could



Figure 34: Stationstaal

moderate the board themselves.

In an experiment called Stationstaal, trialled at Eindhoven train station, people could create lines of text with magnetic letters on magnetic surfaces (see Figure 34). It was found that in the few cases that offensive lines were formulated, they were removed or changed fairly quickly by other travellers (Van Hagen & Ten Elsen, 2019). Since moderation by the travellers themselves has been found to be possible within this experiment, this direction is chosen for the concept.

Additionally, giving them the power to moderate the board amongst users can add to their sense of community, as they are given the ability to be influential to their community (McMillan & Chavis, 1986).

With this decision being made, two features have been devised to help travellers moderate the board collectively:

### Ground rules

With the explanation given with the concept, some ground rules will be presented. These ground rules should already moderate the appropriateness and relevance of the content placed on the board, and will hereby take some effort for moderation away from the travellers.

### Good tip!

People are given the ability to express their appreciation of certain tips on the board. If this appreciation is expressed by multiple people, the tip can be considered valuable to other travellers as well, giving reason for it to stay on the board. However, if the board is full of content and needs some tidying up, the tips that are less shown to be appreciated can be removed to make room for new ones.



## 8.3

# BOARD DESIGN

Before going into the details of the implementation, the design of the board, with its content and explanation, is shown (see Figure 35). The choice for measurements and material is elaborated upon, as well as how the design addresses the various concept qualities from the analogy.

### MEASUREMENTS

To decide on the measurements of the blackboard, thought goes out to the food cabin's appearance and the amount of content desired to have room for.

First of all, there is looked back at the analogy. The food cabin from the analogy is, amongst other things, considered to be inviting. It is believed that one reason for this, is that one registers it to

be small. The food cabin is a small cabin, very clear and convenient in size. This makes it inviting to approach, rather than intimidating if it would be a large building. For this reason, the choice would go out to a blackboard with a compact size, giving the users the ability to have a clear overview of its content at one glance.

Secondly, thought goes out to the amount of content desired to have room for on the blackboard. The blackboard requires to have quite some space for writings, as otherwise it could become full rather quickly, which might keep people from also adding their tips.

Taking both aspects into consideration, leads to the choice for a blackboard of 100 x 200 cm (Figure 36). This size seems to be still comprehensible and at the same time containing sufficient space. However, testing might conclude otherwise.

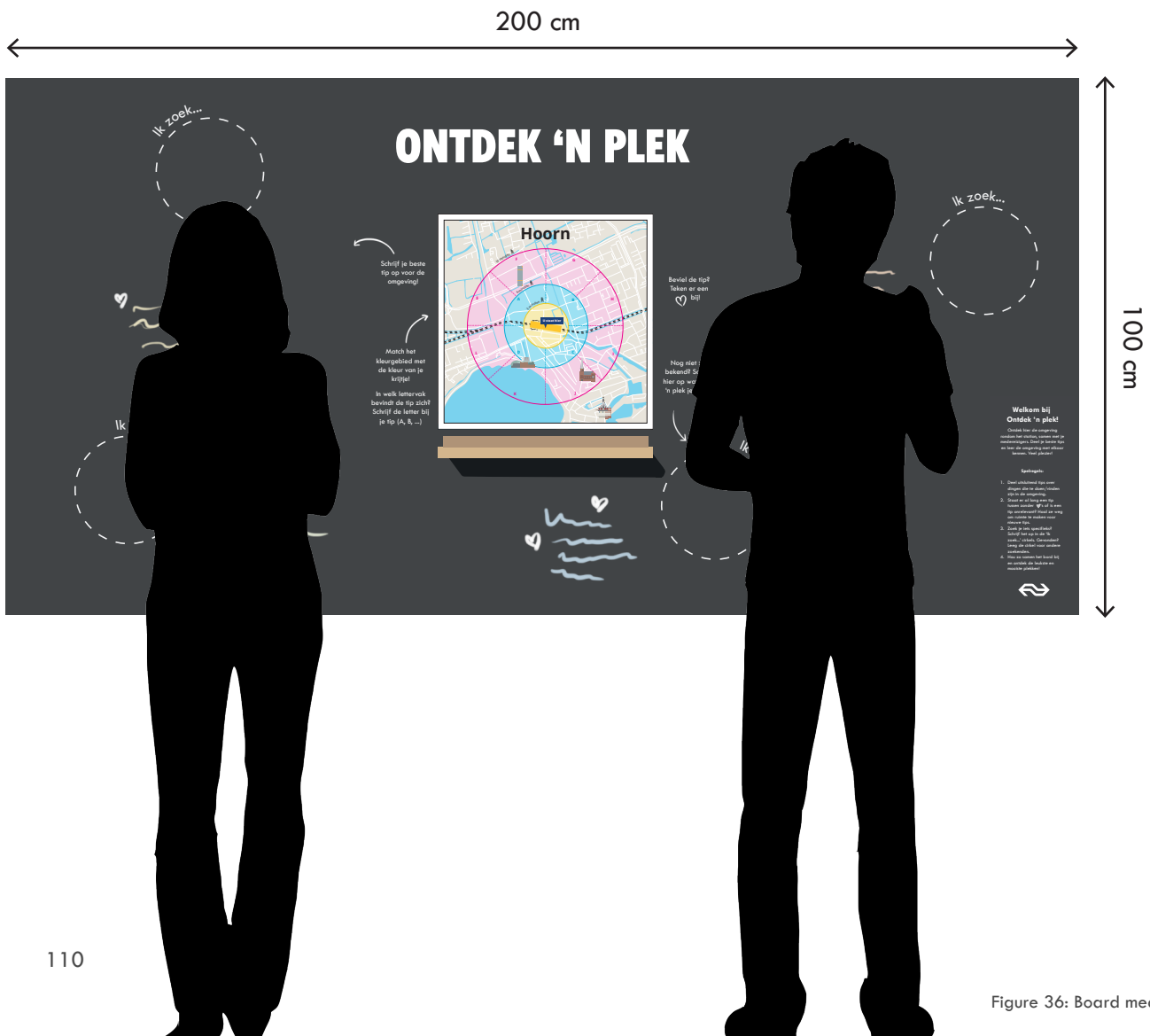


Figure 36: Board measurements



## MATERIAL

As the board is to be placed at the train station platform, there are safety regulations that have to be taken into account. One of these regulations encompass that the concept should not contain any loose objects. These could end up on the tracks or in nature around the station, which can harm our own safety and nature's. A whiteboard, pinboard and magnetic board are considered as options, but these seem to all contain harmful

loose objects (paper, magnets, pushpins, markers). A blackboard that uses chalks to write with seems to be the best option in this regard. The blackboard chalks are in fact loose objects, but they are manufactured from natural elements and therefore not considered harmful to the environment (Valentinuzzi, 2015).

To be able to erase the writings on the board, a blackboard eraser should be included.

dedicated  
search spot

inviting

valuable



low-threshold

chalk &  
eraser tray

help for moderating

Figure 35: Board design



Schrijf je beste tip op voor de omgeving!



Match het kleurgebied met de kleur van je krijtje!

In welk lettervak bevindt de tip zich? Schrijf de letter bij je tip (A, B, ...)

Beviel de tip? Teken er een  bij!

Nog niet zo bekend? Schrijf hier op wat voor 'n plek je zoekt



Figure 37: Zoom-in on map

## LOW-THRESHOLD

As based on the analogy, low-threshold to use the concept is aimed for. The following is intended to achieve this.

A map has been designed to be placed in the centre of the blackboard (see Figure 37). **The map shows the area around the specific station, up to a walking distance of 10 minutes.**

Figure 38 shows the relationship between staying and moving, with a difference in peoples desires in relation to the amount of time someone has to wait while on the move (Fieulaine and Van Hagen, 2023). When someone has to wait for 1 minute for their train to arrive, their focus is on the practicality of moving and they are fine with waiting while standing. The transition from standing to sitting occurs when someone has to

wait for 10-15 minutes. Now, the focus shifts more towards comfort. This focus on comfort will expand as the waiting time gets longer. The information on the transition between standing and sitting gives insight on the amount of time people would want to spend walking before their focus will shift to comfort. This information is used to decide on a map that shows the area around the station with a 10-minute walking distance radius, in order to accomplish a low-threshold to use the tips on the blackboard. Additionally, focussing the map on a 10-minute walking distance radius around the station makes sure the concept is strongly linked to the station, and therefore to NS.

With the radius of the map decided upon, some additional aspects will ensure a low-threshold.

As you can see in Figure 37, the map shows the **walking distance radii of 3, 6 and 10 minutes, each indicated by a different colour**. The tip-sharer will write the tip in coloured chalk, matching the corresponding radii colour. These coloured circles are again **divided into sections using capital letters**, allowing the possibility of indicating a tip's approximate location in the circle. The tip-sharer can add the letter of the section in question to their tip. Additionally, the map clarifies people's **current location and facing direction**, and shows tall buildings from the surrounding area serving as **landmarks**, to help people orientate from the place they are standing. These additions are aimed to lower the threshold of use, for both the explorer and the tip-sharer.

For the explorer, the colours of the written tips corresponding the different walking radii will give a clear overview of the tips that are in the desired walking distance, without having to look up the walking distance on their smartphone first. Additionally, the sections in the radii will give an idea of the direction a tip is to be found, to

help the explorer filter tips based on a certain direction. Lastly, the indication of their current position, viewing direction and the landmarks will add to their feeling of orientation and control, lowering the threshold of use.

The walking radii will enable the tip sharer to point out a tip's approximate location, thus without having to be precise. Being fairly familiar in the area, they will expectedly be able to locate their tip in a section without having to look it up on their smartphone, once again addressing a low-threshold. Furthermore, the indication of their current position, viewing direction and the landmarks will add to their feeling of orientation, helping them to locate the position of their tip on the map.

Lastly, to explain the use of the concept without displaying a long chunk of text, there is chosen for the explanation to be taken apart into a few concise instructions as can be seen in Figure 37. These instructions clarify the main elements of the concept, enabling them to use it as a explorer or as a sharer. A more elaborate explanation of the board's operation can be found in the bottom right corner.

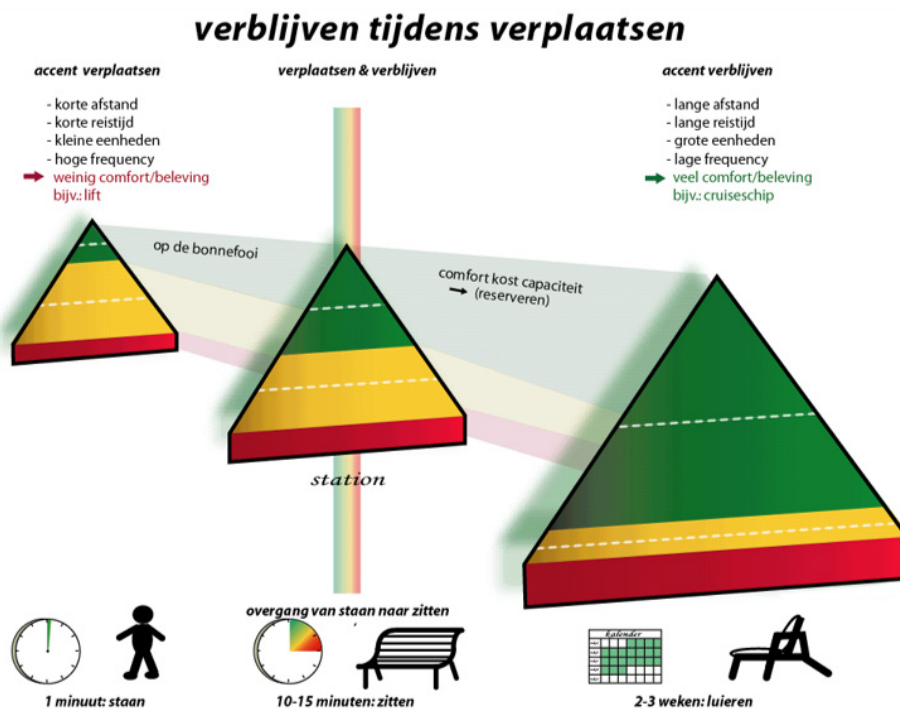


Figure 38: Relationship between staying and moving

## INVITING

From the analogy, also the importance of the concept to be inviting has arisen.

A flag beside the food cabin draws the attention of the people passing by (see Figure 39). With their attention being caught, the people will read the word 'voedselkast' on it, clarifying the function of the cabin next to it. What stands out, is the clarity of this word. It is believed that the word 'voedselkast' expresses its function very straightforwardly, so that people know immediately how they can use and what they can benefit from it. This is the reason that the name of the concept is changed into 'Ontdek 'n plek' (Discover a place). Together with the addition of the map in the centre of the blackboard, it will be immediately clear to the user that the concept concerns geography. Additionally, the word 'discover' is aimed to arouse curiosity in the user, to making them wonder what there is to discover.

Moreover, the size of the blackboard is determined to ensure the inviting quality of the concept, as mentioned in the preceding section discussing the measurements.

## VALUABLE

Lastly, the analogy inspires the concept to be perceived as valuable. In the analogy, the value of the food cabin is expressed on the plasticised piece of paper attached to the cabin, as can be seen in Figure 40. After reading the description and explanation that comes with the food cabin, it will be clear to the user why the use of it is believed to be important and that it is purposeful. This way of clarifying value is similarly implemented in the concept, by a concise explanation of value and use added to the blackboard (see Figure 41).

Furthermore, people can express their appreciation of a tip by drawing a heart next it, as elaborated upon in the section of moderation (Chapter 8.2). Seeing that someone appreciates your tip and help can add to the sense of value of your tip.



Figure 39: Food cabin with flag



Figure 40: Food cabin explanation of value and use

## Welkom bij Ontdek 'n plek!

Ontdek hier de omgeving rondom het station, samen met je medereizigers. Deel je beste tips en leer de omgeving met elkaar kennen. Veel plezier!

### Spelregels:

1. Deel uitsluitend tips over dingen die te doen/vinden zijn in de omgeving.
2. Staat er al lang een tip tussen zonder ♥'s of is een tip onrelevant? Haal ze weg om ruimte te maken voor nieuwe tips.
3. Zoek je iets specifieks? Schrijf het op in de 'Ik zoek...' cirkels. Gevonden? Leeg de cirkel voor andere zoekenden.
4. Hou zo samen het bord bij en ontdek de leukste en mooiste plekken!

Figure 41: Concept explanation of value and use

Lastly, the majority of the space on the blackboard is intended for writing tips. However, there are also a few spots created specifically to request tips, one shown in Figure 42. People are given the ability to clarify their search for a specific kind of place. This feature that enables answering someone's request can also add to the sense of value of their given tip.



Figure 42: Spots dedicated to requesting tips

## 8.4

# IMPLEMENTATION & SHAPING

The further implementation of the concept is developed for a first potential testing phase. Consideration was given to how the concept could easily be added to current stations with their available facilities, in order to make it easy and relatively cheap for NS to test the concept more extensively at a follow-up stage.

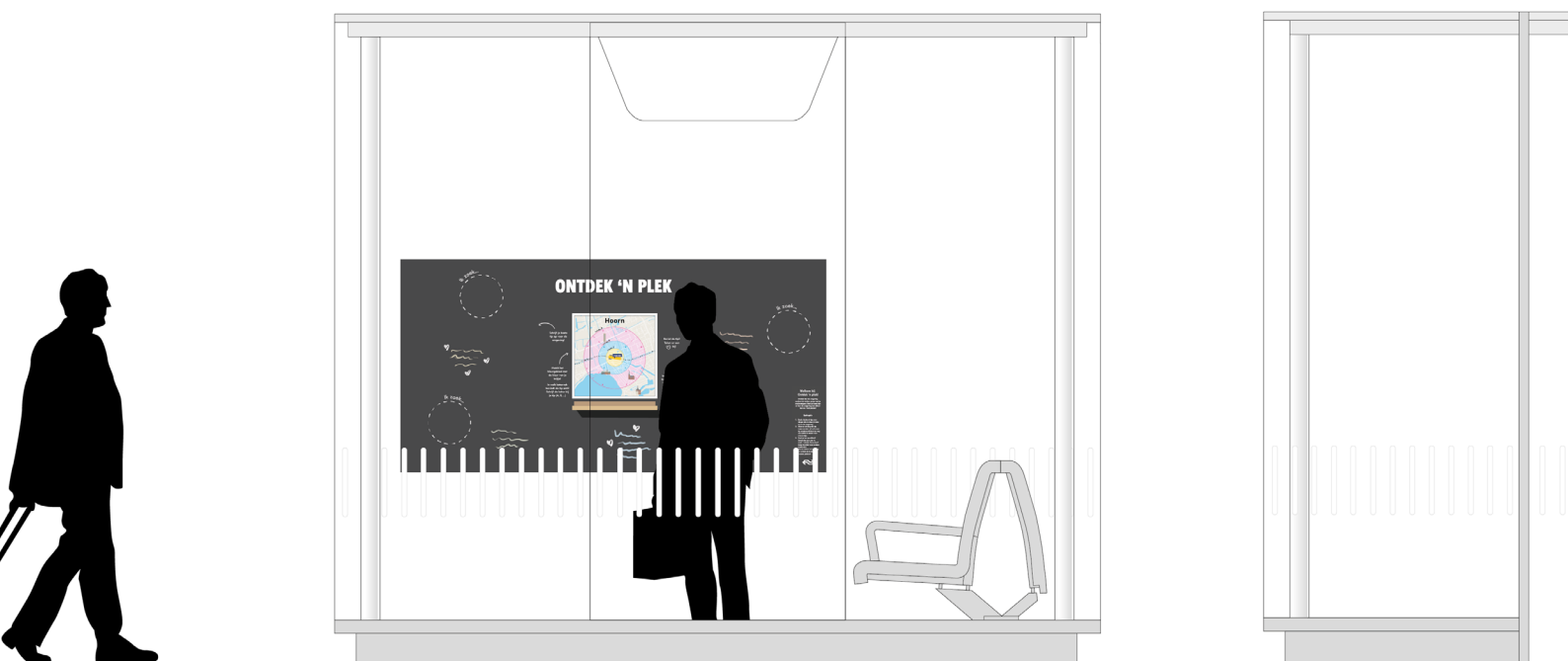
### POSITIONING

The concept will be placed in the waiting areas on station platforms. The waiting areas will provide protection from the weather, ensuring the users of the board to be shielded and the content on the board not to fade.

There is focussed especially on the full-glass variant managed by ProRail. These are the latest variants, already at present at a large number of stations. The assumption is being made that in



Figure 43: Full-glass waiting area in Bunnik



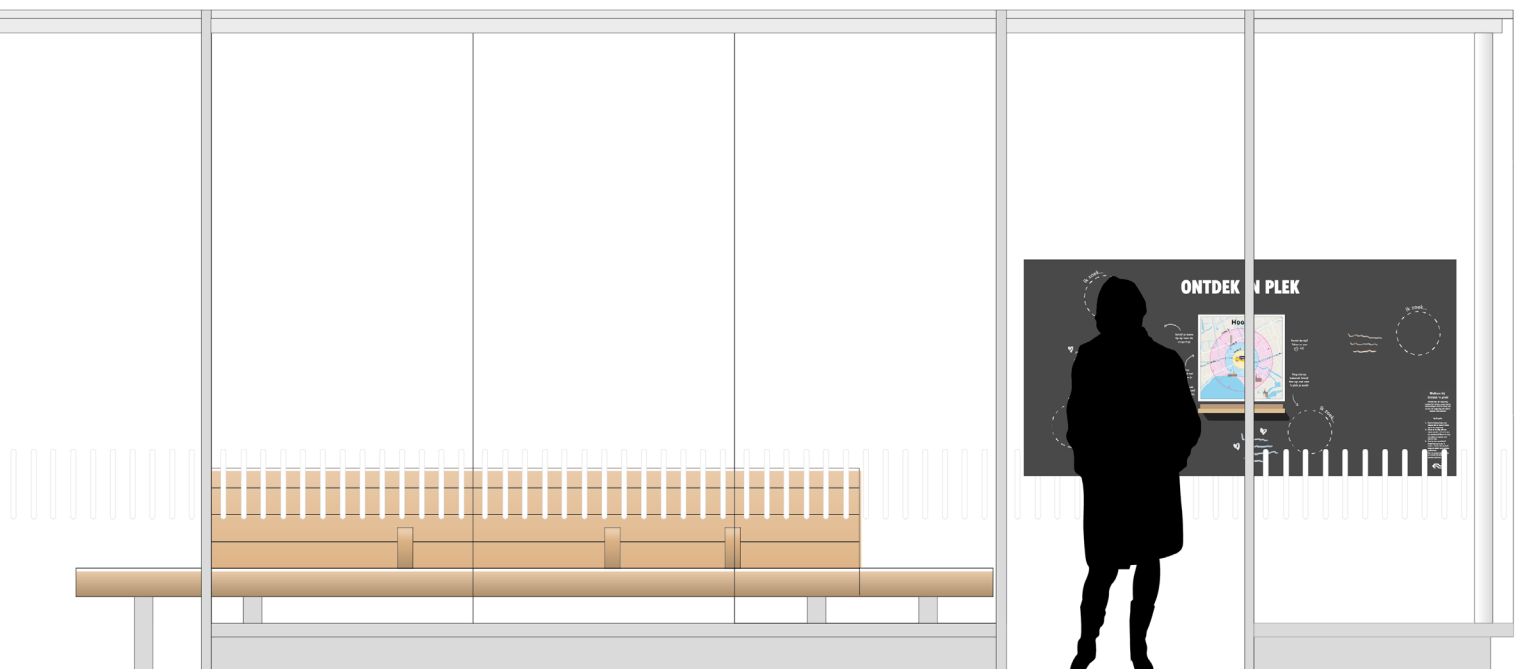


the following years, more and more waiting areas will be updated to these latest versions, making it possible to place and thus test the concept in more and more locations. Figure 43 shows an example of these full-glass waiting areas.

The blackboard will be attached directly to the glass back panel, using a blackboard foil (the material will be further elaborated upon in the next section).

The foil will be placed with the top edge at a height of roughly 185 cm, just under the minimum Dutch adult reach height of 188 cm (TU Delft, Faculteit Industrieel Product Ontwerpen, 1 B.C.E.). To make the blackboard most effortlessly accessible, the foil is preferably placed on the glass panel where no bench is placed in front of it. The ideal positioning of the foil is visualized in Figure 44.

Figure 44: Positioning of blackboard in waiting area



## MATERIALS

Decisions need to be made regarding the materials needed for the implementation of the concept. This includes the blackboard surface and the chalk and eraser tray placed on this surface.

### Blackboard surface

As previously mentioned, there has been decided on the application of a blackboard foil to create a blackboard surface, like in Figure 45. Consideration was also given to installing an actual blackboard or applying chalk paint, but since it will be positioned in a glass waiting area on the platform, a foil seems most appropriate: application of paint does not offer the possibility of easy removal and safety regulations by ProRail include no loose objects on the platform, eliminating a freestanding blackboard.

The foil will be placed in a roofed area, however still outside. Therefore, the foils quality when placed in a humid environment is tested. A sample piece has been placed on an outside window covered by a roof for 3 weeks. The before and after pictures in Figure 46 show no detachment or other defects. On this basis, it is assumed that the foil is suitable for installation for an first testing phase.

The design of the blackboard includes text and a map. By recommendation of Fleetshield, NS' producer of foil applications, UV printing is selected to print the text and map on the foil. UV printing provides direct curing of the ink by UV (ultra violet) light. This makes it possible to print on almost all substrates.

### Chalk & eraser tray

The waiting area is entirely made from glass, which offers limited possibilities for means to attach the tray. As drilling and clamping on the glass are not among the possibilities, there is decided on fixing the tray by means of 3M™ VHB™ Tape. This a strong double-sided acrylic foam tape, suitable for mounting on various kinds of substrates, resistant to heat, cold and cyclic temperatures, UV light and moisture.

For the chalk & eraser tray, a wood-like material is preferred for its warm and cosy look and feel. The choice goes out to water-resistant plywood of 9 mm thick, for its excellent resistance to moisture, its wide availability and easy processing abilities.



Figure 45: Blackboard surface with foil



Figure 46: Outside test foil sample  
(left = before, right = after)



In addition, the price is advantageous compared to solid wood.

### Limitations

What immediately comes to mind when thinking of a sticker placed in the public domain, is the risk of people peeling it off and thus damaging the installation.

The final evaluation of this graduation project will be able to already give some insight in if this will happen in the long term. Maybe this behaviour is confirmed with the test, or maybe it turns out that people behave well around the installation. During a first testing phase by NS, it can become even more apparent how people behave around this matter, and whether it might also be location-dependent.

Based on these insights, a decision can be made whether the sticker material is an option for long term implementation or whether an alternative material should be chosen.

Additionally, the subject of sustainability must not be overlooked. Since the installation of the concept for a first potential testing phase is envisioned with chalkboard foil, questions arise regarding its sustainable qualities. After the foil is placed in a waiting area, relocation of the concept is out of question: once removed, it cannot be reapplied.

Compared to a solution that can be moved and reused, this is quite a wasteful solution.

Since sustainability is a key priority to NS, a more sustainable solution could be explored.

### CHALK & ERASER TRAY DESIGN

The chalk & eraser tray is designed to be a simple tray with low edges and an enlarged back plane, as can be seen in Figure 47. The enlarged back creates more adhesive surface for attaching the tray to the board, using the aforementioned tape. The low edges are chosen in order to create a shallow tray, in an attempt to prevent people using it to leave trash or other unwanted items.

The side pieces that close the tray are intentionally attached to the outside rather than the inside, to provide extra support. Also attaching these side pieces to the blackboard with the tape, ensures that the tray carrying the weight is supported, aiming to prevent the tray from sagging.

The tray is glued together with wood glue and fixated using little nails from a nail gun. This method provides a nearly invisible connection and a clean look.

The chalk and eraser are randomly placed in the tray, which also allows users to randomly put them back, with little effort.

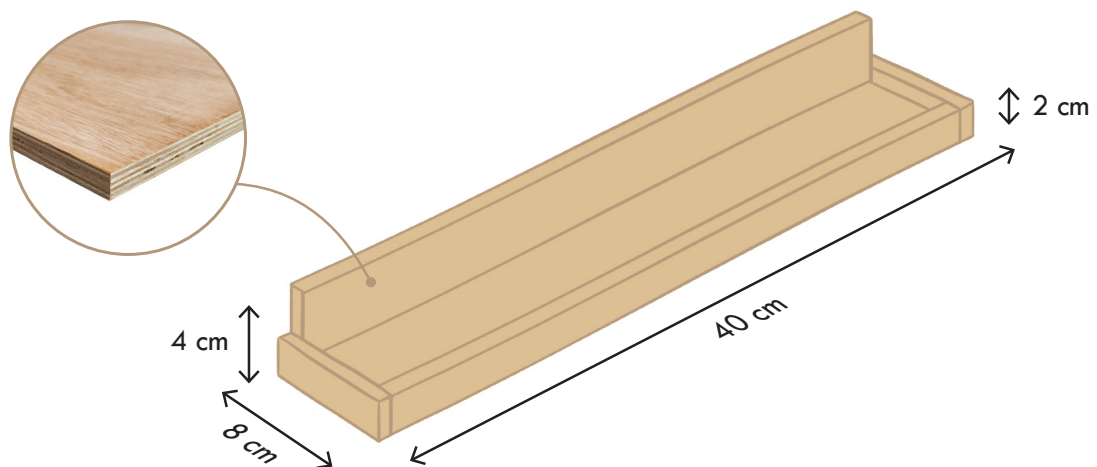


Figure 47: Design chalk & eraser tray

## 8.5

# THE SOCIAL CONCEPT

As decided upon in Chapter 7.2, the concept aims for the social concept as presented in the analogy:

Connecting people, while maintaining  
(the possibility of) anonymity

To emphasise this social concept within 'Ontdek 'n plek', the crossing of user journeys of both user groups are visualized in Figure 48.

In the visual, the grey plane illustrates the train station. Both the sharer and the explorer are at this location twice during their journey. They arrive at the platform and make use of the board, after which they continue their own paths to end up at the same platform again. So, their journeys cross. However, not simultaneously.

In Chapter 8.1, it becomes apparent that a definitive element for true community is **shared emotional connection**. The quality of interaction is stated to be an important feature to the principle of shared emotional connection:

"The more people **interact**, the more likely they are to become **close**." *McMillan and Chavis (1986)*

As explained in Chapter 8.1, the concept facilitates this interaction between community members, albeit not in a direct way. By having the possibility to remain anonymous, the threshold to use the concept remains low, while still being able to interact with other travellers through the use of the board. While anonymity can be preserved with the concept, it does not mean it is a requirement. The concept can also create opportunities for direct interaction, for those who are open to it.

In the journeys visualized (depicting a possible scenario), both end users' experiences with the concept are presented. The explorer discovers a new place that they like, leaving them feeling excited and grateful that they found this place with the help of a fellow traveller. The sharer gets to share their knowledge and receives a positive response to this, leaving them feeling delighted and satisfied as they got the chance to help someone. In the end, both end users attain a positive experience by using the concept.



**SHARER**



**EXPLORER**

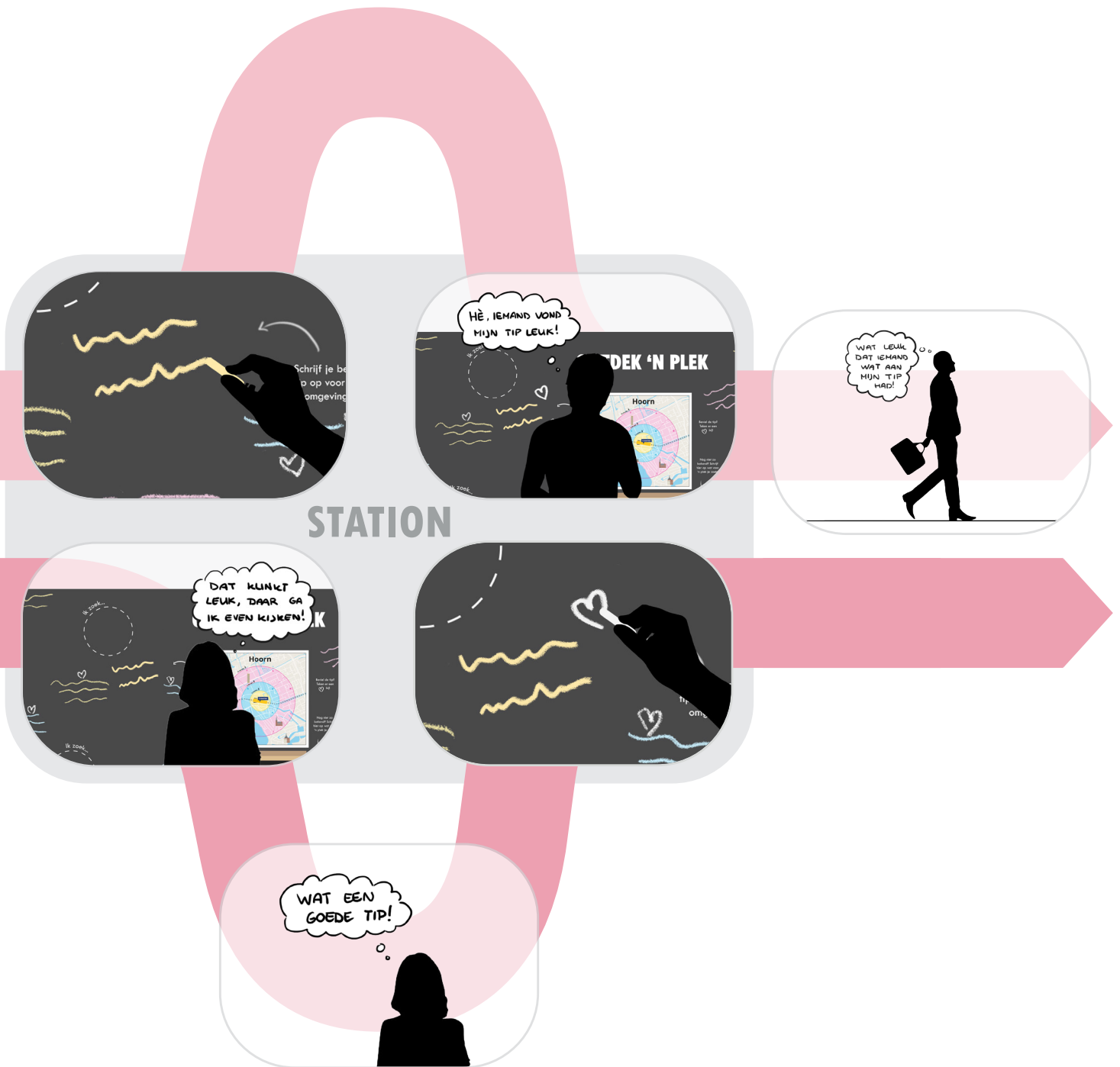


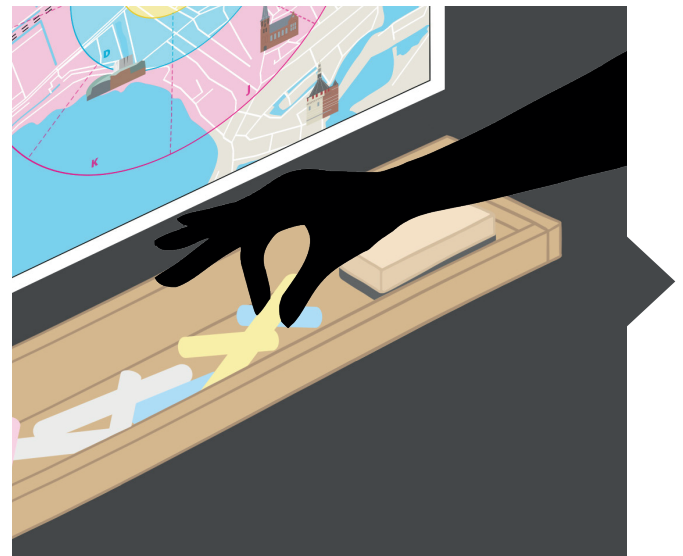
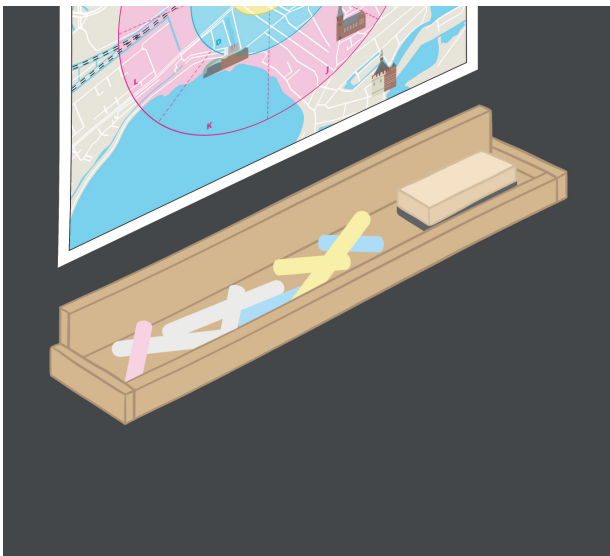
Figure 48: Use scenario

## 8.6

# PRACTICAL SCENARIOS

To further clarify the use, possible misuse and measurements taken in the concept, several practical scenarios are outlined. First, a few scenarios of use will clarify different aspects of the concept. Hereafter, scenarios of misuse are illustrated and scenarios of vandalism are discussed.

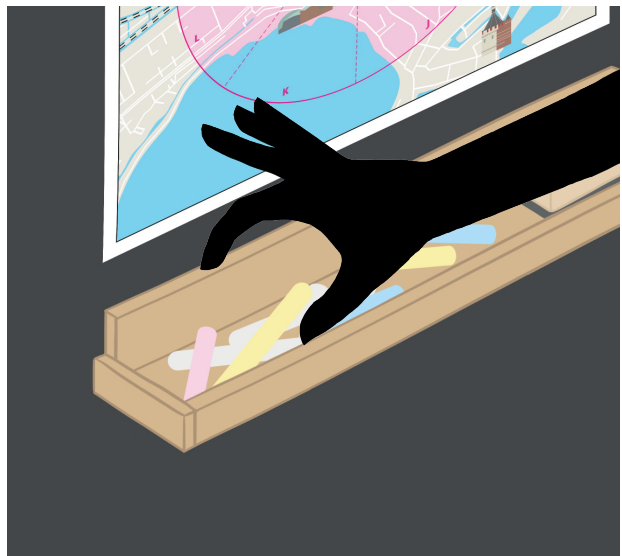
### SCENARIO 1 | USE CHALK & ERASER TRAY



Take a chalk from the tray in the right colour



Write your tip on the blackboard



Randomly put back the chalk used

**SCENARIO 2 | WRITING TIP**



Know a good tip? Check out the map and find out where it is approximately located



Once you have found the spot, you will see in which coloured circle and section it is found

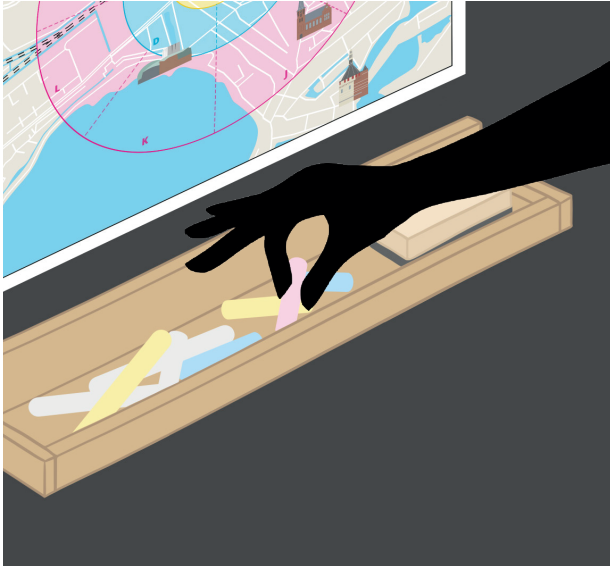
**SCENARIO 3 | USE DEDICATED SEARCH SPOT**



Looking for a specific kind of place? Write it down in the dedicated search spot



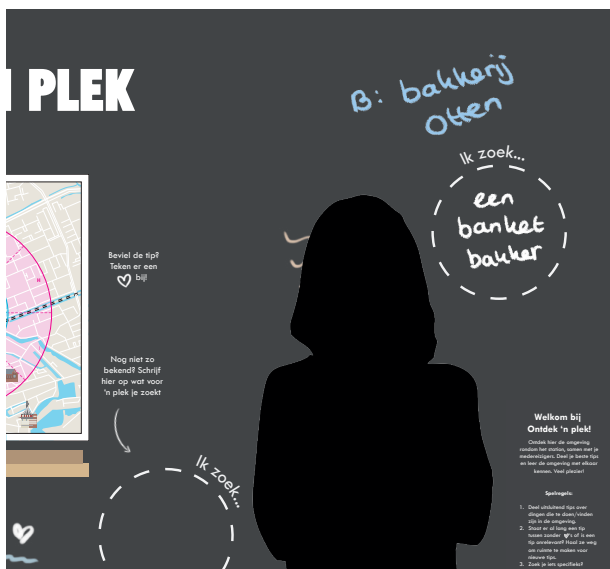
Got a tip that matches the quest? Write it next to the circle, in the right colour and with the section letter



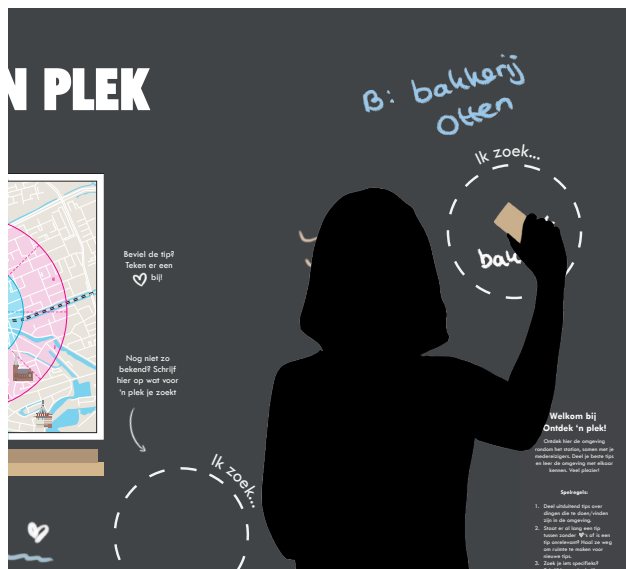
Take a chalk with the same colour as the circle



Write the tip, starting with the letter of the section

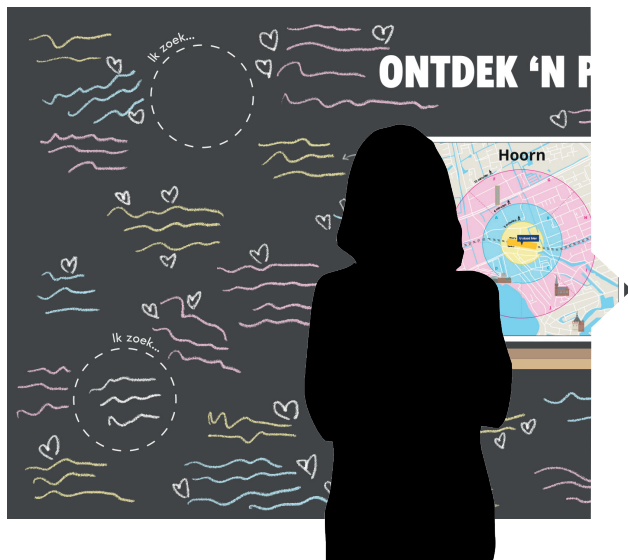


The searcher sees the respond to her request

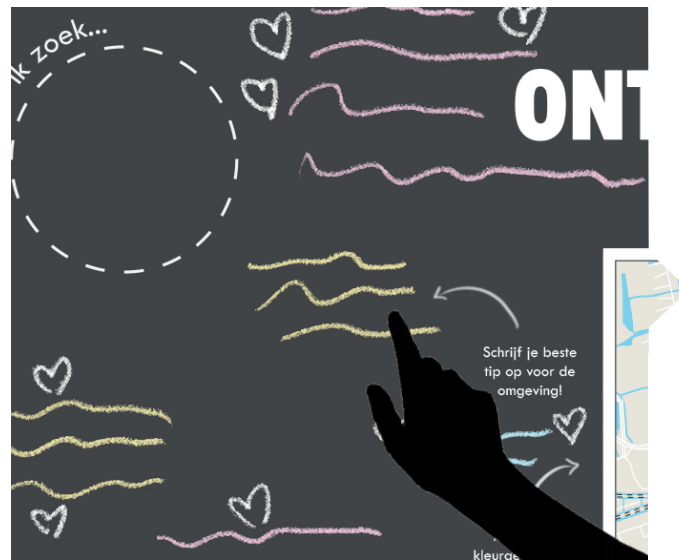


With the searcher satisfied with the received tip, they erase the request to make room for another one

**SCENARIO 4 | BOARD IS FULL**

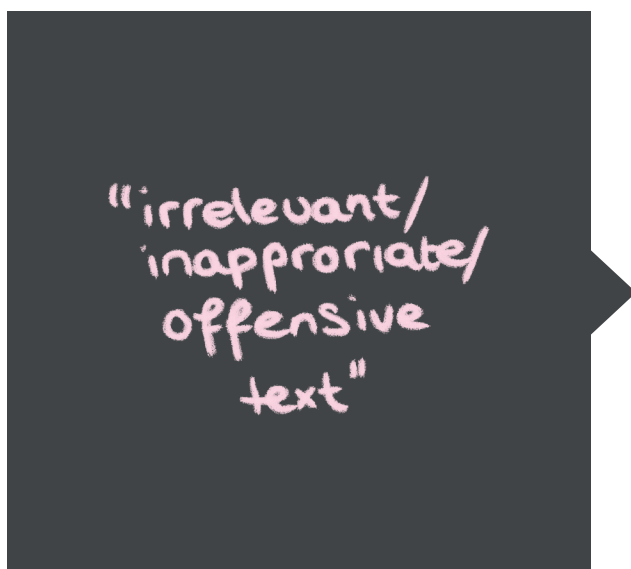


Is the board full of writings? Check if you see any writings without hearts that you know are already there a while

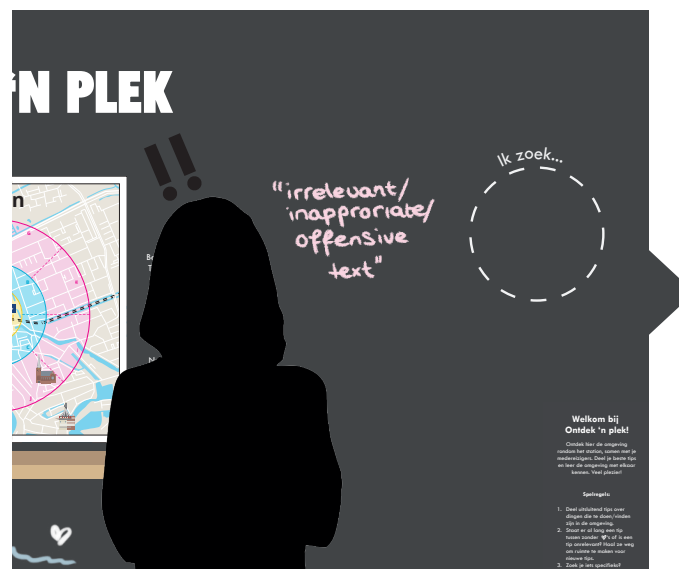


Found one?

**SCENARIO 5 | MISUSE BY WRITINGS**



There is a change that irrelevant, inappropriate or offensive writings or drawings are put on the board.



If one notices these kind of drawings and feel that they are not appropriate, they may erase them from the board.

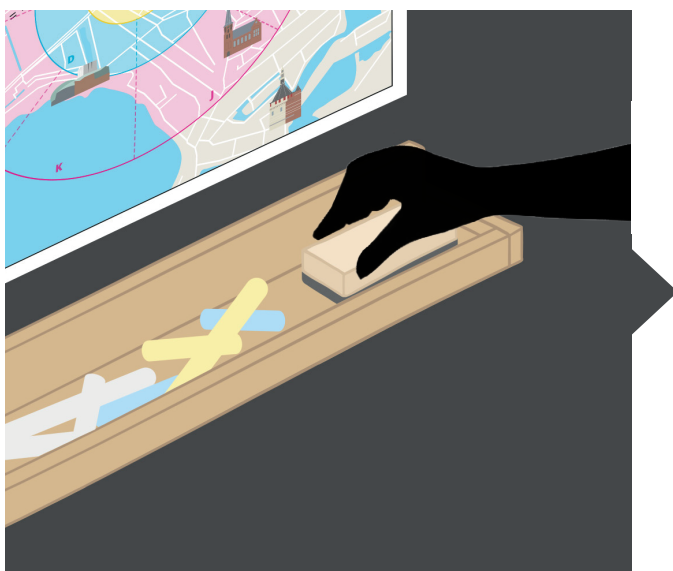




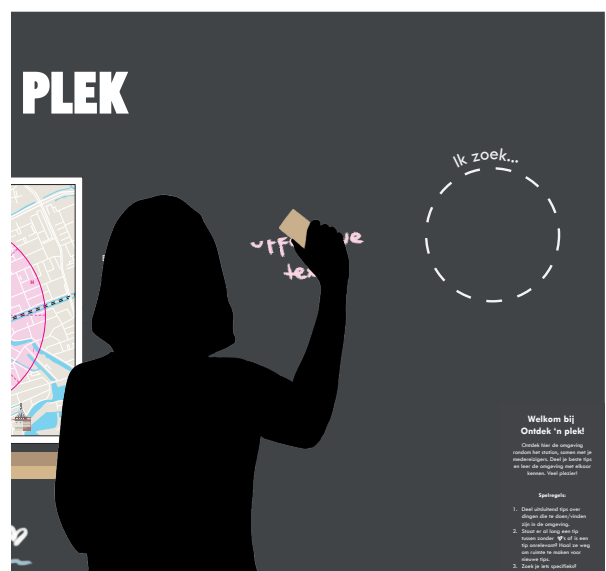
Erase the tip with the eraser from the tray to make room for new tips



Write a new tip or leave the space blank for somebody else to write one



Take the eraser from the tray.



Erase the writing or drawing to ensure positive experiences for all users.

## SCENARIO 6 | VANDALISM

With installations placed in public spaces, there is always the risk of vandalism taking place. In the context of this installation, the following scenarios could occur:

- Peeling of the foil/stickers
- The board being daubed with something other than chalk (markers, graffiti)
- The chalk or eraser are taken away from the board
- The chalk or eraser are spread around the platform

These scenarios are all plausible, but assume the worst in people. In the Stationstaal experiment previously mentioned, hardly any offensive texts were created with the magnetic letters and a negligible number of people took the letters home, something they had prior feared (Van Hagen & Ten Elsen, 2019). Taking this experiment as an example, it is expected that this kind of vandalism will be minimal.

However, it is still something to look out for. The final evaluation test will show if vandalism of any kind will occur, and will provide insights into whether and how the installation should be modified in the future to avoid this

## SUMMARY

The concept is supported by a definition and theory of sense of community, consisting of four elements: **membership, influence, integration & fulfilment of needs** and **shared emotional connection**. By addressing all four elements in the concept, it is envisioned that an enhanced sense of community can be achieved.

The idea is further developed into a concept, for which several decisions need to be made. There is decided upon an **analogue board**, to be most inclusive to people less comfortable with digital appliances. Furthermore, the concept lets travellers **moderate the board amongst themselves**, which can add to their sense of community.

Moreover, choices are made regarding the measurements and also the material of the board, which will be a **blackboard foil**. Decisions on the design of the board are further grounded on the basis of the **concept qualities**: low-threshold, inviting & valuable.

The concept will be implemented in the **glass waiting rooms on the platforms of unmanned train stations**. This offers an implementation in the current facilities, making a first potential testing phase easy and fast to run.

The concept aims for the social concept of **connecting people, while maintaining (the possibility of) anonymity**. The two users groups, sharers and explorers, cross paths on the train station platform twice in their journey. However, not simultaneously, preserving the travellers' anonymity.

Practical scenarios of use and misuse, and the measurements taken in the concept as a result, are outlined to clarify the concept.

The image features a solid orange background. In the lower half, there are two overlapping circles. The left circle is partially obscured by the right one. Inside the left circle is a white outline of the number '2'. Inside the right circle is a white outline of the number '3'. The circles are defined by a thick, light pinkish-orange border.

2

3

# 9

## final evaluation

This Chapter describes the final evaluation of the final concept as shown in the previous chapter. It first shows the designer's hypothesis on the enhancement of sense of community. It describes the testing method, location, prototype and execution. The results of the test are presented and conclusions are drawn.

## 9.1

# HYPOTHESIS

As mentioned in Chapter 8.1, the concept is supported by a definition and theory of sense of community by McMillan and Chavis (1986). The concept aims to address all four core elements of their definition: membership, influence, integration & fulfilment of needs, and shared emotional connection. The comprehensive approach to these four elements aims to lead to an overall enhanced sense of community. However, certain elements are believed to be depicted more prominently within the concept than others.

The hypothesis is proposed that the concept will primarily emphasize the element of shared emotional connection and its various components,

followed by influence and integration & fulfilment of needs. The element of membership, while present, is believed to receive relatively lesser emphasis. **This means that the most substantial increase is expected around travellers' sense of shared emotional connection, subsequently around their sense of influence and integration & fulfilment of needs, and lastly around their sense of membership** (visualised in Figure 49).

These different levels of representation of the elements are expected to have an overall positive effect on the sense of community.

Verifying the hypothesis' accuracy will be the main objective of the final evaluation.

## SENSE OF COMMUNITY: 4 ELEMENTS

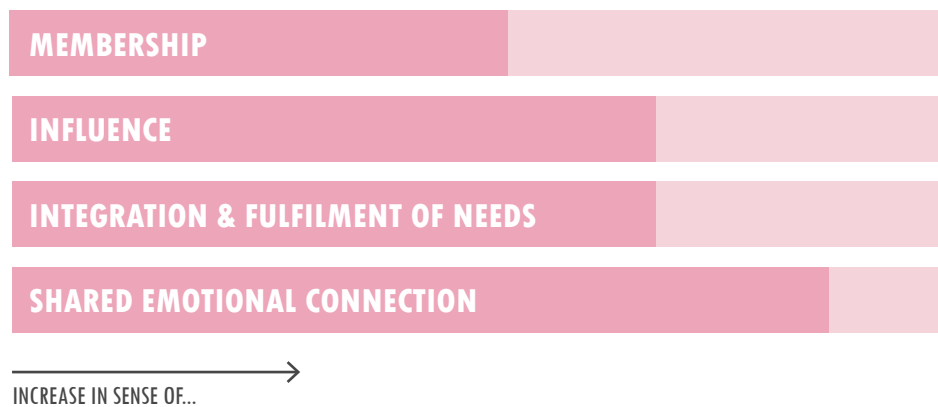


Figure 49: Hypothesis on sense of community

## 9.2

# METHOD

To test the final concept, a “0 and 1 measurement” is used. This concept is commonly used in computing and digital systems, where “0” usually signifies an off or inactive state, while “1” represents an on or active state. In testing the final concept, this will mean a first test on the platform in its normal state and thereafter a test on the platform with the addition of the concept. In both tests the enhancing of sense of community will be assessed and can thus be compared to see whether an increment takes place.

How the data around the enhancement of sense of community will be obtained, will be outlined in the following section.

### DATA COLLECTION

To obtain data useful to gain insight in the users’ sense of community, various data collection methods are used: a survey (physical and digital), observation and interviews with travellers.

#### Survey

A survey will be devised, derived from the concept of the Stationsbelevingsmonitor (SBM), which can be found in Appendix G. NS has found the way of formulating clear statements in colloquial language and highlighting words with bold text effective and reliable for obtaining people’s value on the train stations.

From scoring the statements on *strongly disagree* to *totally agree*, respondents are given the option to indicate their opinions on a 10-point scale, also inspired by the SBM.

For the survey questions, first a variety of statements are presented that can be divided into

three sections. At first, statements from the SBM considered applicable to the concept. Secondly, self-devised statements that measure the concept qualities. And thirdly, self-devised statements that measure the sense of community with the use of the four elements of sense of community (McMillan and Chavis, 1986).

Including the first section of questions enables the possibility to compare the data obtained with the data already at present in NS databases, if found useful.

Additionally, two question are devised to find out the kind of mood people were in while in the waiting area and the reason for making their journey (hedonic or utilitarian), which might provide insights and clarifications to the results. The survey with all its questions is shown on the following two pages.

The survey will be handed out in physical form on the platform, alongside a QR code for distribution and QR codes placed near the concept installation. The latter will also enable people to give their opinion when no one is at present, allowing more results to be obtained.


When handing out the forms or QR code, the question is asked if people would like to fill in a survey to rate the station and the waiting room they are in/standing near. To ensure that people can form genuine opinions, seeking reliable results, only people who are in or near the waiting room are asked to fill in the survey. When people are not in the waiting area but are standing near, they can at least take a look inside.



Deze enquête is onderdeel van een afstudeerproject in opdracht van NS en de TU Delft, met als doel de toekomst van NS treinstations in 2030 te verkennen. We horen graag hoe u het station ervaart voor toekomstige aanpassingen en vernieuwingen. Het invullen duurt slechts 5 minuten en uw antwoorden worden anoniem verwerkt.

## In hoeverre bent u het eens met onderstaande stellingen?

(1=helemaal mee oneens, 10=helemaal mee eens. Kruis n.v.t. aan als de uitspraak voor u niet van toepassing is)

	1	2	3	4	5	6	7	8	9	10	n.v.t.
Ik voel me <b>welkom</b> op dit station	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik voel me <b>veilig</b> op dit station	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik kan <b>mijn tijd</b> op dit station <b>aangenaam besteden</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik ervaar het <b>wachten</b> op dit station als <b>comfortabel</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik vind dat het station er <b>verzorgd</b> uitziet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik ervaar dit station als <b>levendig</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik ervaar een <b>ontspannen sfeer</b> op dit station	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik ervaar dit station als <b>gezellig</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 <b>SBM questions</b>											
Ik vind de <b>wachtruimte</b> op dit station <b>prettig</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik vind de <b>wachtruimte</b> op dit station <b>uitnodigend</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik vind het <b>wachten</b> in deze wachtruimte <b>prettig</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik vind dat de tijd in deze <b>wachtruimte</b> snel voorbij gaat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik ervaar <b>verbondenheid</b> met mijn mede reizigers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik merk dat ik in deze wachtruimte <b>iets voor andere</b> reizigers kan betekenen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik merk dat andere reizigers in deze wachtruimte <b>iets voor mij</b> kunnen betekenen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Wij</b> treinreizigers komen op <b>dezelfde plekken</b> in deze stationsomgeving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



### Hoe heeft u uw tijd in de wachtruimte voornamelijk besteed?

*(U kunt hier 1 antwoord geven)*

- |   |  |
|---|--|
| <input type="checkbox"/> Lezend             | <input type="checkbox"/> Werkend                               |
| <input type="checkbox"/> Op mijn telefoon   | <input type="checkbox"/> Ik ben niet in de wachtruimte geweest |
| <input type="checkbox"/> Om me heen kijkend | <input type="checkbox"/> Anders                                |
| <input type="checkbox"/> Bellend            |  |

### Wat is voor u de belangrijkste reden om vandaag deze treinreis te maken?

*(U kunt hier 1 antwoord geven)*

- |   |   |
|---|---|
| <input type="checkbox"/> Van / naar werk                                    | <input type="checkbox"/> Vakantie / uitstapje / dagje weg |
| <input type="checkbox"/> Zakenreis / dienstreis                             | <input type="checkbox"/> Sport / hobby                    |
| <input type="checkbox"/> Van / naar school, studie, cursus, opleiding       | <input type="checkbox"/> Ik heb niet met de trein gereisd |
| <input type="checkbox"/> Bezoek aan familie / kennissen, zieken(huis)bezoek | <input type="checkbox"/> Anders                           |
| <input type="checkbox"/> Winkelen   |   |



**SBM question**

***Hartelijk dank voor uw medewerking!  
U kunt de enquête weer inleveren bij de enquêteur.***

### **Observation**

Observation of people in both the 0 and 1 measurement, can give insight in the difference of the amount of approach behaviour towards the waiting area. Additionally, the overall interaction of the travellers with the board can be observed: if it will catch attention, if people will read the explanations, if they will write something on the board, etc. In the end, this comes down to the concept qualities derived from the analogy. By observation, insights can be gained on whether the threshold for using the concept is low, whether it is inviting and whether it is deemed valuable.

### **Interviewing travellers**

Finally, more in-depth interviews with travellers can bring about more qualitative insights when the concept is installed, as an addition to the quantitative data obtained by the survey. These insights could include information about why people would or would not want to use the concept, if they think it would be a useful addition to the train station and/or if they would change something about it. These interviews will be approached using a semi-structured interview method. Below, several questions are outlined which will give guidance in these interviews with travellers on the platform.

1. What do you think of the board?
2. Is the way of use of the board clear to you?
3. Would you write something on the board?
4. Would you read and use the tips on the board?
5. How would you like it if a waiting area like this would be placed on every station?
6. Do you have any ideas for improvement?

Notes will be taken to document interesting comments and insights. This way of documenting offers a way to capture the most relevant and valuable information, while still time-efficient in its processing.

### **STUDY LENGTH**

The time set for this study will be a minimal of four days, with two days for both the 0 and 1 measurement. Four days are deemed at least required for obtaining a reliable amount of results. There is aimed for an amount of 100 survey results per test, with a bottom limit of 60 results. It should become apparent during the study whether additional time is needed and to what extent this is feasible in the time available.

## 9.3

# LOCATION

In the search for a location for the final evaluation, a number of factors are taken into account. First of all, there is aimed to test the concept at an unmanned train station, since the concept was developed for this end. Furthermore, there is looked out for a station with a significant amount of boarding and alighting passengers, to ensure a reliable amount of test results. Lastly, as the prototype is preferably installed in the envisioned waiting room, the testing location should have these present.

There are obstacles on the road in getting permission to test at a station outlined above. ProRail has to give permission to install and test the concept, as the platforms and the glass waiting areas are there domain. Unfortunately, they do not grant permission, because of the risk of misuse of the concept due to the absence of surveillance at the unmanned stations. This necessitates compromising on the requirements for an appropriate testing station.

The search continues for a station with a significant amount of boarding and alighting passengers, but there is a will to make concessions regarding the envisioned waiting areas and the presence of staff. Although a station with staff present is not the kind of station the concept was initially intended for, it is thought that such a station can still offer the opportunity to test whether the concept can contribute to a sense of community amongst travellers. As the concept focuses on connecting the travellers through experience and the service from NS staff focuses on the more practical matters, no occurrence of conflict is expected.

If the concept turns out to be successful and not misused by the travellers, consideration could be given to also testing the concept at unmanned stations.

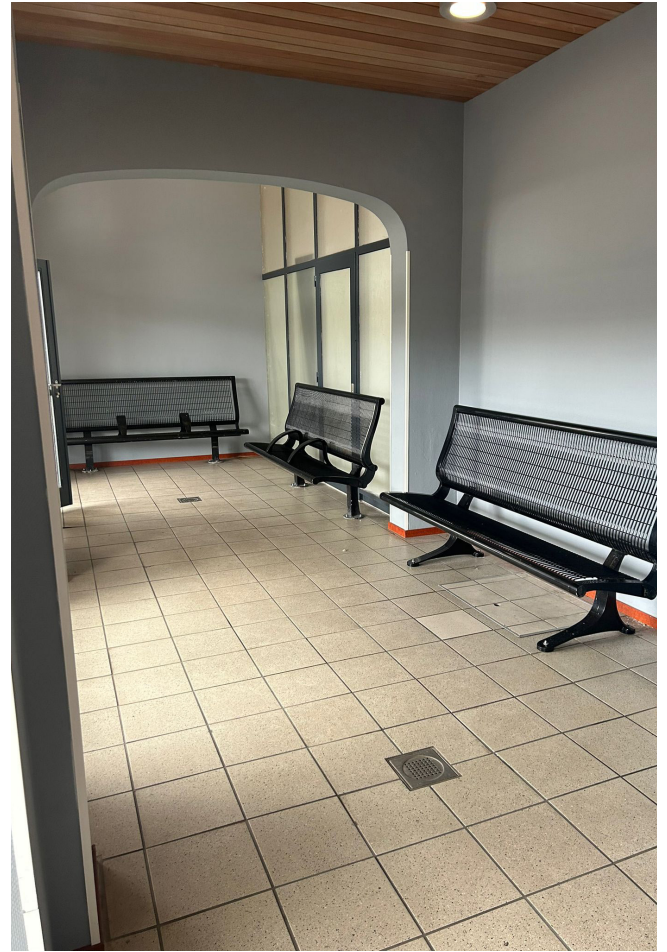
## HOORN TRAIN STATION

Finally, permission has been given to test the concept at Hoorn train station. This station has service staff present and an alternative waiting area on platform 1 which will be used for the test. In 2022, the station had an average of 10.033 boarding and alighting passengers a day (NS, 2023), which seems to make the chances of obtaining a reliable amount of test results feasible.

In Figure 50, the platform and waiting area to be used are shown. In addition, the glass wall for the concept to be installed on is displayed, which can be seen from the platform when passing the door of the waiting area. Lastly, the approximate position of the concept on the wall is illustrated.



Figure 50: Hoorn train station platform and waiting area



## 9.4

# PROTOTYPE



Figure 51: Blackboard foil placed in waiting room at Hoorn train station

The prototype is produced professionally by Fleetshield, in the way envisaged for the first potential testing phase as described in Chapter 8.4: blackboard foil printed on with UV-printing. The foil is mounted on the glass by a mounting team commissioned by Fleetshield.

The result can be seen in Figure 51 and 52.

For the prototype of the chalk & eraser tray, a similar product is retrieved from Praxis and mounted on the foil as envisaged for the first potential testing phase: using 3M VHB double sided tape. As shown in Figure 53, the tape is placed on the sanded back of the tray and stuck to the foil underneath the map, resulting in a very strong and firm connection.



Figure 52: Printed blackboard foil

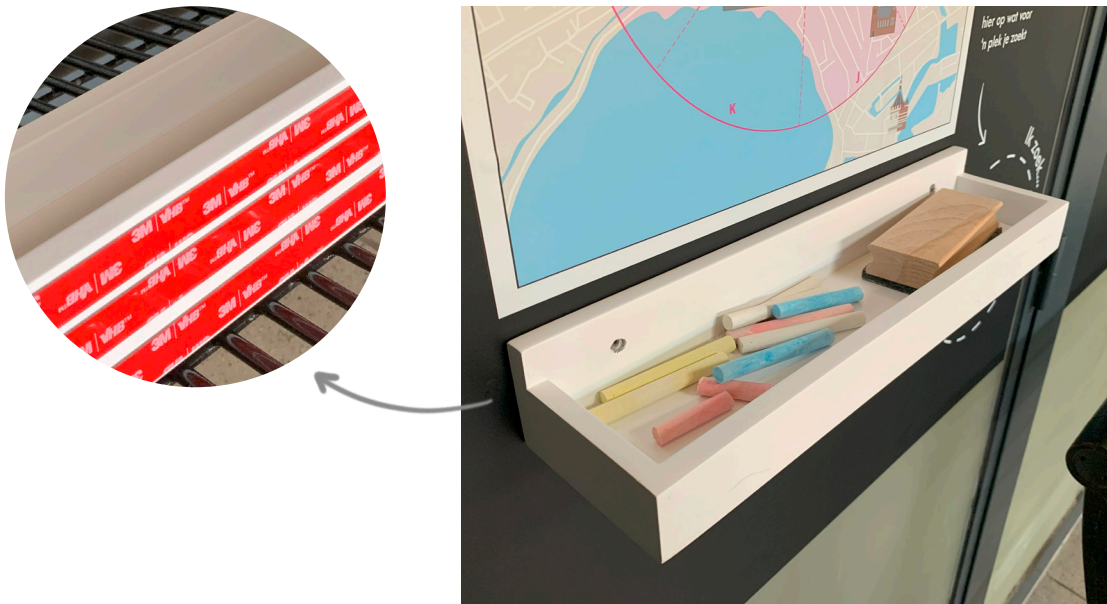


Figure 53: Chalk & eraser tape prototype and mounting

To set an example, already some tips and a request in an 'I search...' circle are written on the board, as can be seen in Figure 54. This will clarify to the travellers how the board is used, and could additionally nudge them in writing something as well, as opposed to if the board were still completely empty of writings. With QR codes placed alongside the installation,

people can give their opinions after looking at or using the board.

Additionally, during both the 0 and 1 measurement QR codes are placed on the doors of the waiting area and on a sandwich board outside the waiting area, placed in an attempt to catch people's attention to look inside (see Appendix H).



Figure 54: Example writings on the prototype

## 9.5

# TEST EXECUTION

During the conduct of the final evaluation, obstacles are encountered and insights are gained that may change the course of further execution of the evaluation. These obstacles and insights and the possible resulting alterations will now be outlined.

### CROWDEDNESS ON THE PLATFORM

The 0 measurement was completed in 2 days (Tuesday and Wednesday), exceeding the minimum amount of 60 respondents. However, the minimum amount of 60 respondents for the 1 measurement was not reached in the 2 consecutive days, due to reduced crowdedness on the platform, people on the platform who already filled in the survey before and additional focus on conversations with travellers.

**Alteration:** Because of the above, the test has been prolonged with two more days of testing to reach the minimum of 60 respondents.

### WILLINGNESS AND TIME TO HELP

Quite a number of people are not willing or do not have time to offer their help. Fortunately, there are also plenty of people who are helpful

and willing to fill out the survey.

With a small group of people, the opportunity was seen to go more in-depth on the concept, with the use of the semi-structured interview questions. However, it was often not managed to go through all these questions, due to the lack of time available on the platform.

### MISUSE

From the first day of testing, it appears that people misuse the board, as described in scenario 5. It was daubed with some irrelevant writings, a signature and graffiti-like letters, as can be seen in Figure 55. While it is unfortunate that this happened, it confirms the speculation described in the scenario and may provide insights for follow-up steps.

**Alteration:** Although the concept proposes that the users themselves moderate the board, and therefore these writings are supposed to be removed by other users, it has been decided to remove these writings from the board for them for the time being. It is thought that self-moderation is not yet clear to/implemented by the users, and the behaviour of misuse it not wished to be encouraged among other users as well.

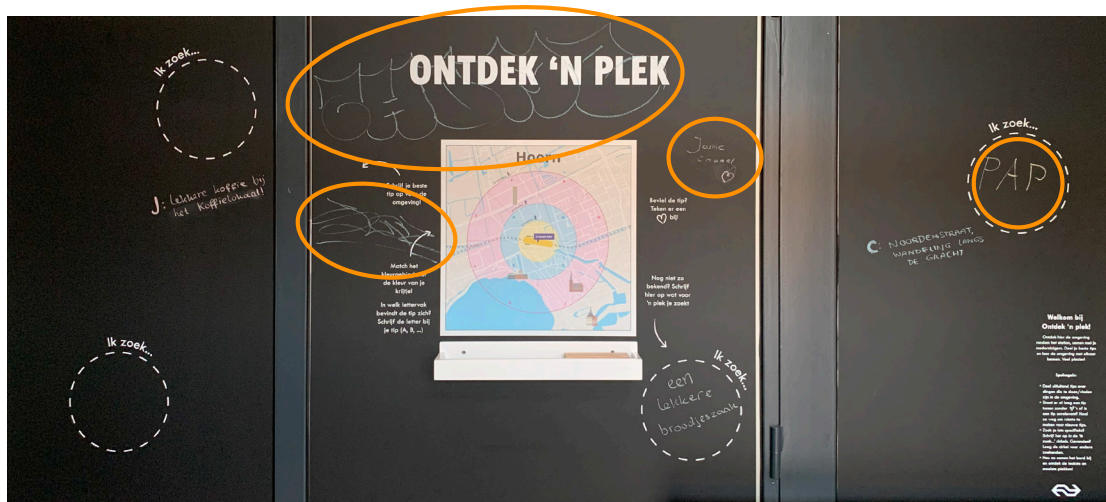


Figure 55: Daubed prototype



## PROMINENCE

Not everyone sitting in or standing near the waiting area seems to notice the board. This is partly thought to be caused by the fact that the waiting area is quite elongated and that it is located inside the station building (instead of in the envisioned glass waiting room). Additionally, people are often introspective, and thus not open to absorbing their surroundings.

**Alteration:** to nudge people in noticing and taking a look at the board, the following sentence is added when agreed to fill in the survey: 'Before you fill in the survey, I wish to emphasize the board that was recently installed in the waiting area'.

## MAKING AN EFFORT

When asking people to fill out the survey and additionally emphasizing the board, it is noticed that people often do not take the effort to look at the board long enough to figure out its purpose and operation.

**Alteration:** To nudge people even more in the direction of the board and making them familiar with the concept, a short explanation is added when handing out the survey or QR code: 'People who are familiar with the area around the station as shown on the map, can leave tips on the board for people who are not so familiar yet. These people can then read these tips and use them to discover the area surrounding the station'.

## EXAMPLE SEARCH CIRCLES

During the 1 measurement with the installed concept, there were a few people who wrote

something in the 'Ik zoek...' circles. This was good advancement, but no one seemed to respond to the requests.

**Alteration:** As no example was yet set on how to react to someone else's request, an example is written on the board in an attempt to make to operation of it more clear. The example is shown in Figure 56.

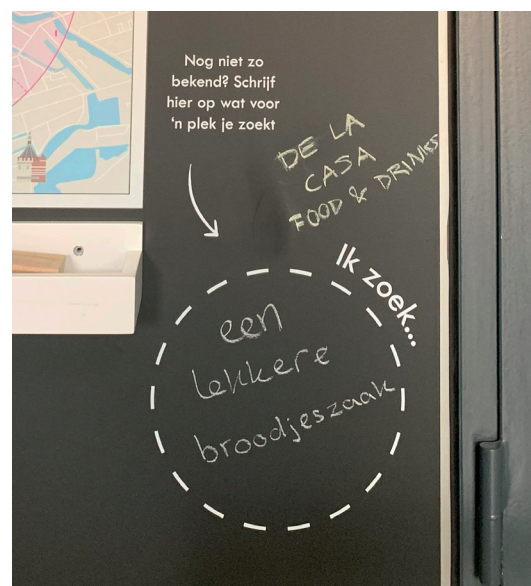


Figure 56: Example writings for 'Ik zoek...' circles

The alterations made are aimed to make the test most reliable and therefore to make the results interpretable, so that a conclusion can be drawn from this final evaluation.

## 9.6

# RESULTS

After six testing days, the analysis of the collected data can commence with both 0 and 1 measurements exceeding the amount of 60 respondents. In this paragraph, the results of all data collecting methods will be outlined.

### SURVEY

The following table shows the amount of respondents collected for both the 0 and 1 measurement (M). The digitally and physically obtained results, both acquired from the exact same set of questions, are combined to reach the final totals of 63 and 62, as shown underneath.

	0 M	1 M	
#	63	62	= 125

The survey includes the following question: 'How did you spend your time in the waiting room?'. Respondents are given the possibility to check the answer 'I have not been in the waiting area'. While all people asked to fill out the survey were in or near the waiting area and therefore could take a look or go inside, not all results seem to be usable. The decision is made to eliminate the results of participants who both indicated not to have been in the waiting room and did not assign scores to questions regarding the waiting room. This leaves the following numbers:

	0 M	1 M	
#	51	58	= 109

### Overall outcome

In order to translate the collected data into a tangible outcome, first the average score per question for both the 0 and 1 measurement is calculated. From the average scores of both measurements, the difference in scores can be determined. Let's take the first question of the survey as an example. With an initial score of 7,5 and a subsequent score of 7,8 the score increase is 0,3 on a 10-point scale. In Appendix I, this and all other results and calculations can be found.

From these differences in score from the 0

M	average
0	7,5
1	7,8

↓  
 $\Delta = 0,3$

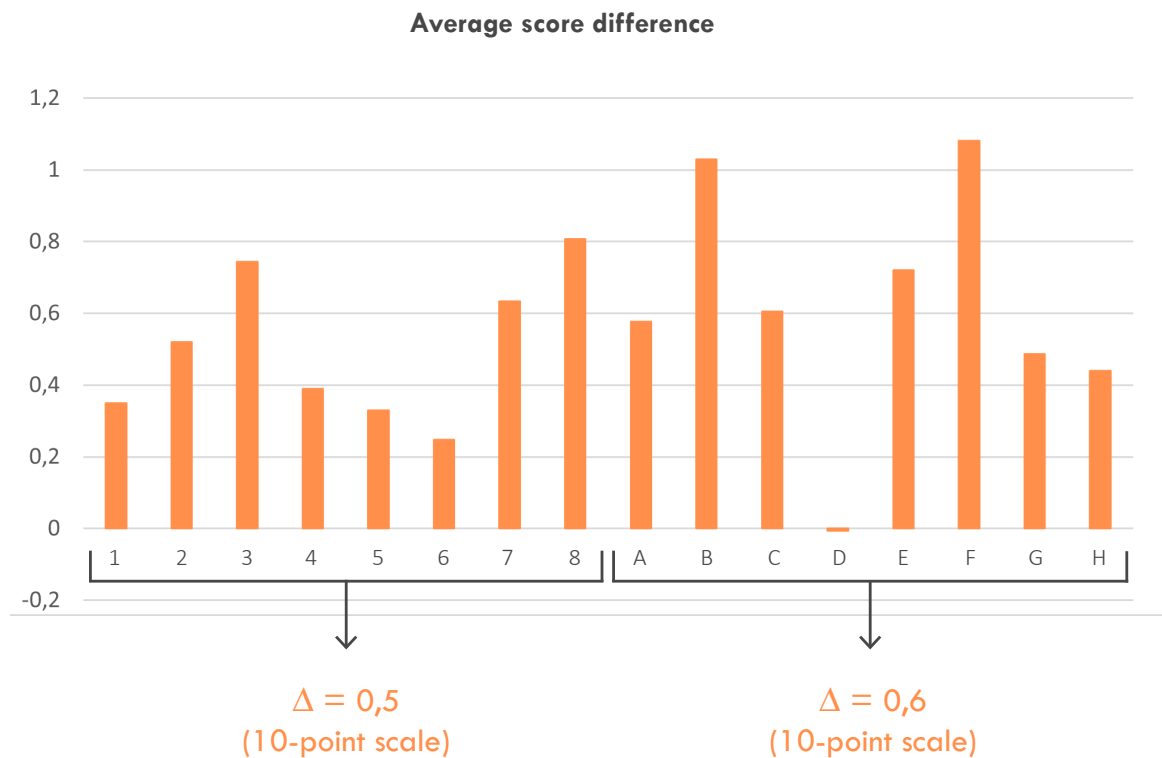
to the 1 measurements, an average score of difference of all questions can be calculated. However, it is chosen to approach the total of questions in two parts: first questions 1 to 8 that are derived from the SBM. Secondly questions A to H, which are concept related and devised to evaluate its success. The distinction in numbering of the questions is made for the recognition of the reader.

As can be seen in Figure 57, the average score difference for question 1 to 8 is 0,5 on a 10-point scale, where this is 0,6 for questions A to H. There seems to be a slight higher score improvement in the concept related questions, which stands to reason given that the aim of the concept is to impact the aspects lying within these questions. While statements of the SBM are picked that are considered applicable to the concept, they are less related to the concepts purpose than questions A to H.

Striking is the lack of improvement in question D, with an average of -0,0 in difference. This will naturally bring down the overall average of the concept related questions. To gain more insight into how the different questions and thus aspects of the concept scored, there will now be zoomed in on the questions separately.

### Questions 1 to 8

Let's take a look at questions 1 to 8. While the scores of all questions have increased slightly, the highest score improvements of 0,7; 0,6 and 0,8 is seen in questions 3, 7 and 8, respectively. Looking at the specific questions, the high improvement in question 3 again stands to reason, as this question is the one that could be most directly impacted by the addition of the concept. Questions 7 and 8 could also be impacted by the concept, as the addition of it to an otherwise plain waiting area can affect people's experience of the space and/or their mood.



1. Ik voel me welkom op dit station
2. Ik voel me veilig op dit station
3. Ik kan mijn tijd op dit station aangenaam besteden
4. Ik ervaar het wachten op dit station als comfortabel
5. Ik vind dat het station er verzorgd uitziet
6. Ik ervaar dit station als levendig
7. Ik ervaar een ontspannen sfeer op dit station
8. Ik ervaar dit station als gezellig

- I feel welcome on this station  
 I feel safe on this station  
 I can spend my time at this station pleasantly  
 I experience waiting at this station as comfortable  
 I think the station looks well cared for  
 I experience this station as lively  
 I experience a relaxed atmosphere at this station  
 I experience this station as cosy

- A. Ik vind de wachtruimte op dit station prettig
- B. Ik vind de wachtruimte op dit station uitnodigend
- C. Ik vind het wachten in deze wachtruimte prettig
- D. Ik vind dat de tijd in deze wachtruimte snel voorbij gaat
- E. Ik ervaar verbondenheid met mijn mede reizigers
- F. Ik merk dat ik in deze wachtruimte iets voor andere reizigers kan betekenen
- G. Ik merk dat andere reizigers in deze wachtruimte iets voor mij kunnen betekenen
- H. Wij treinreizigers komen op dezelfde plekken in deze stationsomgeving

- I find the waiting area at this station pleasant  
 I find the waiting area at this station inviting  
 I find waiting in this waiting room pleasant  
 I find that time passes quickly in this waiting room  
 I experience connectedness with my fellow travellers  
 I feel I can do something for other travellers in this waiting area  
 I feel that other travellers in this waiting area can do something for me  
 We train travellers visit the same places in this station environment

Figure 57: Average score difference survey questions

### Questions A to D

Question A to D are devised to gain insights on whether the concept possesses the concept qualities derived from the analogy. Question A and B focusses on the invitativeness of the concept. Question C is devised to gain insight on whether the concept has a low-threshold (it is thought that when a person can do something effortlessly, they will consider it a pleasant experience). Question D is devised to gain insight on whether the concept is considered valuable to travellers (it is thought that when people can spend their time doing something that is of value to them, they will have the perception of time passing more quickly).

In Figure 58, it can be seen that Question B, regarding the invitativeness, has got quite a high score improvement of 1,0 on a 10-point scale. Together with the improvement in Question A of 0,6; the invitativeness of the waiting area seems to have increased.

Question C, regarding low-threshold, has also seen an increase of 0,6. It seems that the threshold for entering the waiting area and waiting at this location has slightly been lowered.

Lastly, question D shows no difference in score. It seems that with the added concept the waiting area has gained no additional value.

### Questions E to H

To gain insight on whether the concept can enhance the sense of community amongst travellers, questions E to H have been devised. Each question focuses on a different element of sense of community: membership (E), influence (F), integration & fulfilment of needs (G) and shared emotional connection (H).

Looking at Figure 58, question F has the highest increased score of 1,1. This could be an indication that mostly the influence that travellers feel they have on the community has increased with the addition of the concept.

Hereafter, question E has the highest score increase of 0,7. Again, this could indicate that the sense of membership felt by travellers has increased quite a bit.

Lastly, questions G and H also see a score increase, however smaller than questions E and F. The increase in scores is 0,5 and 0,4; respectively. These scores could indicate that there is a fairly

equal increase in travellers' sense of integration & fulfilment of needs and sense of shared emotional connection.

### Isolating or absorbing the environment

In the second last question travellers could indicate their main activity in the waiting area. The options given can be divided into two groups: isolating or absorbing the environment. A person open to absorbing the environment could experience the station and waiting area differently than someone who has isolated themselves.

The amount of respondents in both the 0 and 1 measurement of the isolated (I) and absorbent (A) group is presented below.

I	0 M	1 M
#	27	24

A	0 M	1 M
#	10	16

After calculating the score difference for questions 1 to 8 and A to H for both groups, it becomes apparent that the two groups show no significant difference in score level or score improvement from which meaning can be drawn.

### Hedonic vs. utilitarian

In the last question of the survey, travellers could indicate their main reason for traveling. The options given can again be divided into two groups: hedonic and utilitarian. This question is added to provide the possibility of comparing the results of hedonic and utilitarian travellers, to see if they experience the station and waiting area differently.

Below, the number of respondents in both the 0 and 1 measurement of hedonic (H) and utilitarian (U) travellers is presented.

H	0 M	1 M
#	29	28

<b>U</b>	0 M	1 M
<b>#</b>	14	15

Again using the same calculation method, the score difference for questions 1 to 8 and A to H for both the group of hedonic and utilitarian travellers is established and presented in the table below.

	<b>1 - 8</b>	<b>A - H</b>
<b>H</b>	$\Delta = 0,1$	$\Delta = -0,4$
<b>U</b>	$\Delta = 0,3$	$\Delta = 0,7$

Striking is that the group of hedonic travellers bring about virtually no difference in score (on average); a negative difference if any. However, the group of utilitarian travellers bring about a positive difference in score for both the SBM and concept related questions.

Aside from the travellers that have given an indication of their reason for traveling to be hedonic or utilitarian, there is also a group of travellers that have given no indication on this matter. This is a small group, with an amount of 8 and 15 in the 0 and 1 measurement, respectively.

Because the number of respondents in this group are so small, the scores cannot be assigned any meaning to. It is therefore chosen to exclude this group from this specific analysis.

Additionally, there has been analysed if a significant difference in the levels of scores between hedonic and utilitarian travellers occurs. No clear difference has been identified from which meaning can be drawn.

#### Level of scoring

Looking not only at the score improvements, but also at the average scores for question 1 to 8 and question A to H in both the 0 and 1 measurement, it becomes apparant that the first set of questions score much better than the second set of questions (as can be seen in Figure 58). In the table below, the average scores are presented. While questions A to H have seen a slightly higher score improvement in the overall result, the final average score of these questions is still a whole point below the average of question 1 to 8.

<b>M</b>	<b>1 - 8</b>	<b>A - H</b>
0	6,5	5,3
1	7,0	6,0

**Average score level**

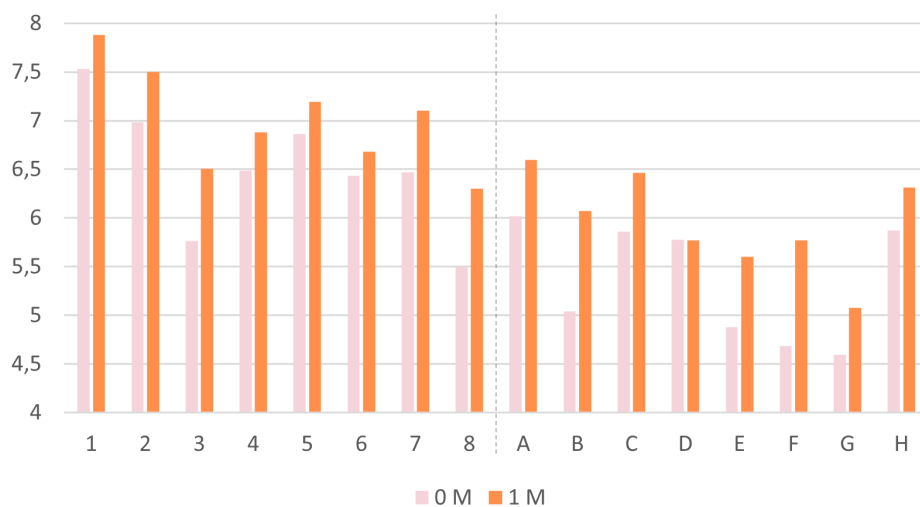


Figure 58: Average score level of 0 and 1 measurement

## OBSERVATIONS

Aside from collecting survey responses, the amount of approach behaviour towards the waiting area and the overall interaction of the travellers with the board are observed.

### Approach behaviour

In both the 0 and 1 measurement, quite some approach behaviour towards the waiting area has been identified. Most of the time, people will foremost look for a spot to sit outside on the platform but will otherwise find a spot to sit inside of the waiting area (this will expectedly be different during colder periods of the year).

Noticeable is that the concept does attract people's attention. People who walk past the waiting area seem to notice the board, which sometimes leads to people walking inside the waiting area and them taking a look at the board, often followed by them sitting down.

In this sense, there seems to be a slight increase in approach behaviour towards the waiting area.

### Interaction with the board

Aside from people noticing and taking a looking at the board, a small group of people takes it a step further by writing something on the board (see travellers in Figure 59). These writings can be divided into three groups: *well understood*, *misunderstood* and *intentionally misused*.

One person seems to have understood the operation of the board correctly and has written a request in one of the circles. This writing is indicated with a green circle in Figure 60.

A few people seem to have misunderstood the operation of the board and have written something in an alternative manner: they have added writings that concern the area of the train station rather than the area **surrounding** the train station, in other words the village, or they have written a tip that falls outside the biggest circle of a 10 minute walking distance, with a random chalk colour. These writings have been indicated with orange circles in Figure 60.

Lastly, there are some people who have intentionally misused the board with irrelevant writings, graffiti like letters, a drawing and a signature. These are shown in Figure 61 and indicated with pink circles in Figure 60.

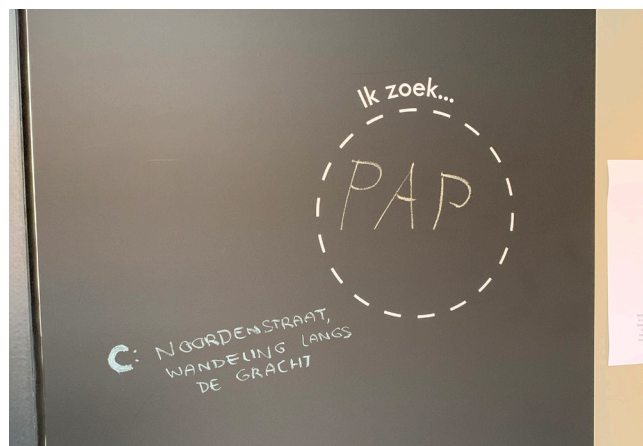
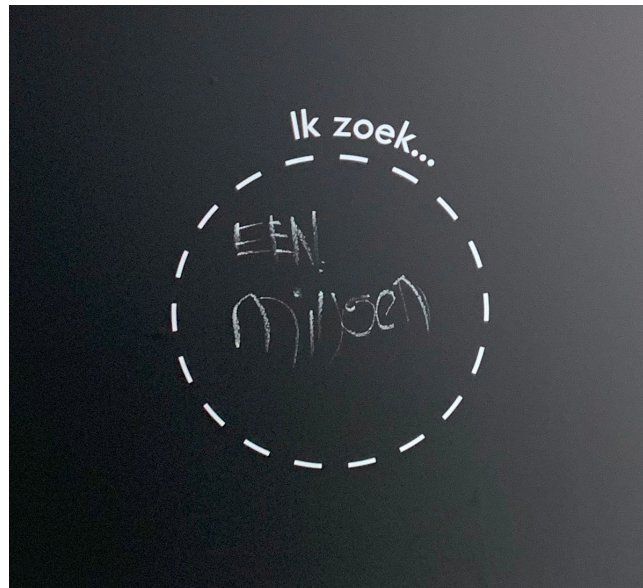


Figure 61: Intentional misuse

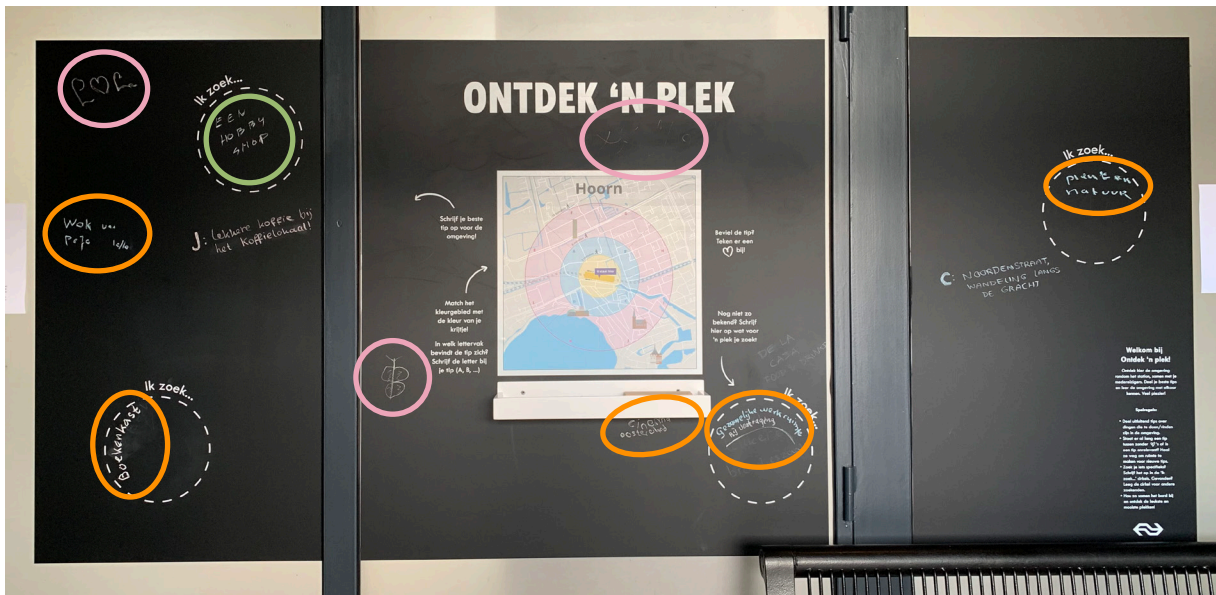


Figure 60: Well understood (green), misunderstood (orange), intentional misuse (pink)



Figure 59: Travellers interacting with the board

## INTERVIEWS

To gain more in-depth insight on travellers' experiences and thoughts about the concept, semi-structured interviews with travellers are conducted on the basis of the questions established in Chapter 9.2. In total, seven interviews were conducted. As mentioned in Chapter 9.5, not all questions are always addressed due to lack of traveller's time and/or course of the conversation. The notes taken from these talks can be found in Appendix J.

Key insights from these interviews are listed underneath:

- Almost everyone would write a tip on the board: 5 out of 6 people.
- 3 out of 6 people would not read and/or use the tips on the board.
- The name 'Ontdek 'n plek' seems to lack clarity regarding its inclusiveness of tip-sharers. The name clearly conveys that people can discover something regarding the area of Hoorn. However, people who are already familiar with the area might think that the board is not for them. It is important to ensure that locals understand they can contribute their knowledge.
- The term 'omgeving' (environment) seems to be causing confusion among some individuals. They seem to think it refers to the immediate environment on the train station, while actually it refers to the broader environment surrounding the train station, that is the village the train station is situated in.
- Travellers' opinion is that the waiting area in which the concept is installed does not have a pleasant appearance due to the fact that from the outside looking in, it is a quite dark, dimly lit place.
- The success of the concept among day-trippers relies on its widespread recognition. It's essential that they are aware of the availability of this board for valuable tips. Without proper awareness, the concept might not effectively reach this particular audience.
- The explanations given alongside the map on the board, lacks some clarity. It is not clear what part of the explanations are meant for the sharer and for the explorer.
- The usability of the map, with the coloured circles indicating walking distance and the circles again divided into sections, is not completely clear to users. These aspects of the map are not very notable.



## 9.7

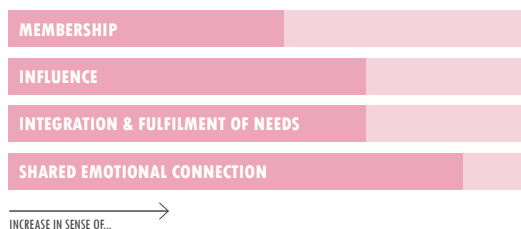
# CONCLUSION

The previous chapter has presented a collection of insights, that emerged from a combined approach of surveys, observations and interviews. This variety of data collection methods have provided a broad understanding of the concept's influence on the train station, with surveys offering quantitative data, observations adding real-world context, and interviews infusing personal views. From the information collected, conclusions are drawn, not just as a closure but as an opening for further exploration.

### SENSE OF COMMUNITY

The survey has shined light on travellers' sense of community before and after the installation of the concept. The results indicate that the concept's presence has increased travellers' sense of community. Looking at the results for the different elements of sense of community, some seem to have increased more with the addition of the concept than others.

The hypothesis on the increment of the different elements of sense of community was the following:



Looking at the average score increase in the survey questions regarding above elements (E, F, G, H) in the graph in Figure 58, the hypothesis seems to have been off base. The sense of travellers' influence on the community seems to have increased the most, after which travellers' sense of membership sees the highest rise. The sense of integration & fulfilment of needs comes in third on improvement, with shared emotional connection in last place.

The highest increment in sense of influence is in line with the insights obtained from the interviews, in which most people indicated that they would leave a tip on the board. Less people would also use the tips, which is in line with a lower increment

in sense of integration & fulfilment of needs. People seem to be able to exert their influence on or contribute to the community through the concept, where they seem to feel less like their own needs are being met with the use of the concept.

The sense of shared emotional connection was expected to see the highest increment. However, the sense of this element seems to have only increased slightly. No clear explanation can be given for this deviating result. Possibly the result does not give an accurate picture, which could be due to the short duration time of the final evaluation. It is thought that a longer usage time could increase one's sense of shared emotional connection with fellow travellers, by interacting with one another through the board and increasing the feeling of common places and shared experiences.

The sense of membership was expected to see the lowest increment. However, the perceived value of exclusive access to the concept seems to be higher than expected. It is thought that this exclusiveness has increased the sense of membership in travellers.

Apart from the score increase in question E to H, the level of scores is also taken into consideration. The average score level for question E to H was a 5,0 in the 0 measurement and a 5,7 in the 1 measurement, which can be considered quite low. This low score is an indication of the limited presence of the sense of community in and among fellow travellers.

### CONCEPT QUALITIES

Whether the concept possesses the concept qualities derived from the analogy, is examined by the means of both the survey, observations and interviews. The concept qualities examined are the following: **inviting**, **low-threshold** and **valuable**.

#### Inviting

The score increase in question A & B indicate that the inviting nature of the waiting area has increased with the presence of the concept, which could be an indication the concept has contributed

to this and also possesses this quality.

However, interviews show that locals do not always find the concept to be inviting. This perception seems to arise from the concept's name, which suggests a focus solely on discovery, an aspect that might not resonate with the local community. The very essence of the name appears to inadvertently exclude the possibility of active participation from those who are well-versed in the area. As a result, the concept's potential to serve not only as a platform for exploration but also for contribution may be overlooked. Therefore, it is thought that a name that encapsulates the collaborative spirit of both discovering and sharing could bridge the gap between the concept and its potential users.

#### **Low-threshold**

The seemingly decreased threshold for entering and using the waiting area after installing the concept is a noteworthy development. It could be an indication that the threshold to use the concept is also perceived to be low.

On the contrary, the fact that individuals have used the concept incorrectly might suggest that its usability isn't sufficiently straightforward. However, it's important to note that these writings were written by travellers in conversation with the interviewer. While a brief explanation of the board's purpose and use was provided, the travellers did not take the time to read the explanations on the board before contributing their writings. As the writings are therefore not representative for typical use of the board (first reading the brief explanations alongside the map, whereafter contributing), no definitive conclusions can be drawn from them.

Aside from the observations, one interview has provided some insights that indicate the concept's understandability not to be straightforward. How to write a tip and use the map seems to lack some clarity. This feedback, though originated from one interviewee, might mean a lack of clarity for more people.

One individual using the concept correctly and another indicating a lack of clarity, is insufficient to draw any definitive conclusions on the understandability and ease of use of the concept.

#### **Valuable**

The survey has indicated that the waiting area did not gain any added value from the inclusion of the concept.

In the interviews, most travellers declare that they would leave tips on the board for others. This is an indication that these individuals do perceive value in the contributing aspect of the concept. Yet, half of the interviewed travellers declare they would not read or use the tips left by others. This is, on the contrary, an indication that they perceive less value in the receiving aspect of the concept. However, it is important to note that these insights are derived from a limited group of interviewees. They might not fully encompass the diverse viewpoints of a wider pool of travellers. Understanding the perspectives of a larger and more varied group of travellers is essential in gaining a comprehensive grasp of how the concept's value is perceived on a broader scale.

#### **INTENTIONAL MISUSE**

The final evaluation has shown that intentional misuse of the concept does occur: the board was daubed with drawings and writings.

Scenario 5 in Chapter 8.6 describes the way the concept aims to deal with this behaviour: moderation of the board by the travellers themselves. However, since the duration time of the final evaluation was limited and does not offer the travellers the time to get familiar with this concept of self-moderation, the board has been cleared of these drawings and writings for them.

The intentional misuse observed during the final evaluation underscores the need for a cautious approach towards such incidents. Evaluating the effectiveness of the concept's strategy for addressing such occurrences requires a follow-up study conducted over an extended period.

#### **VANDALISM**

The final evaluation provided the opportunity to detect whether vandalism is something to be wary of and if there are grounds to modify the installation for a first potential testing phase.

Since there has not been any vandalism in the final evaluation, there is no basis to anticipate its occurrence. It seems that a first potential testing phase could be carried out in the envisioned manner.

## WAITING AREA

The low scoring level established in question A to D, is an indication that the waiting area is not experienced rather positively. The scores of 5,7 and 6,2 in the 0 and 1 measurement, respectively, in combination with interviewees feedback that the waiting area does not have a pleasant appearance, indicate that an improvement is opportune.

## HEDONIC VS. UTILITARIAN

The established difference in score improvement between hedonic and utilitarian travellers, indicates that foremost utilitarian travellers perceive the concept and/or are receptive to it. An explanation for this could be that utilitarian travellers may be more likely to travel alone and therefore be more receptive of the environment. Another explanation could be that these travellers may visit the same station more frequently and modifications to this station may be more notable to them.

From this, it can be argued that a focus on utilitarian travellers in such a social initiative can achieve the most impact.

## OVERALL CONCLUSION

The survey findings indicate that introducing the proposed concept at the train station has had a notably positive impact on travellers' overall experience and their sense of community on the station, moving towards the goal as set out in the statement:

**I want travellers at the station to relate to each other more as part of a community, than as separate, individual travellers**

However, it is essential to evaluate whether this specific concept holds genuine value for the passengers. A low score on the concept quality of value, a moderate score on integration & fulfilment of needs, and a medium score regarding whether passengers would use the provided tips could suggest that the concept may not be perceived as valuable enough.

Nonetheless, comprehensive research might reveal a latent demand for what the concept has to offer.

If not, it may prompt the exploration of alternative social initiatives where passengers can mutually support each other, as there seems to be an evident willingness among travellers to assist others by leaving tips and potentially contributing to the community's well-being. However, there must be a genuine need for this assistance. A social initiative where parties can both contribute and find value in this contribution, holds the potential to enhance the sense of community.

Enhancing the sense of community and countering the prevailing trend of individualism has been determined to hold significance and value for the future of NS train stations. Given the currently low sense of community, it seems appropriate to take proactive steps in this direction.

In summary, the results from the final evaluation underscore the positive impact of the proposed concept on travellers' experiences and their desire for a stronger sense of community. While questions about the concept's value persist, the potential for fostering a more communal atmosphere at train stations is evident and vital for the future.

## 9.8

# LIMITATIONS

When interpreting the results of this final evaluation, it is important to consider the limitations of this testing method. The limitations of the test will now be outlined.

### DURATION / FAMILIARITY

Something that has become apparent from the final evaluation, is that a new concept or product is not immediately grasped, acknowledged and adopted. People do notice its existence, but they are not eager to use it because they do not know what can be done with it and what to expect from it. They would have to put in an effort to discover its purpose and operation themselves, which in many cases will be seen as too big of an effort.

Since in the 1 measurement the respondents often had very little time to get familiar with the new concept, the question arises if the results from these surveys are representative for what the concept could achieve in the long run with more exposure time or through the promotion of the concept.

Using the concept as envisaged in the user journey in Chapter 8.5 and scenarios in Chapter 8.6, should enhance the elements of sense of community outlined in Chapter 8.1. However, as the duration of the test nearly offers the travellers to use the concept and experience it in the intended way, there will most likely not yet be such an enhanced sense of community.

A longer trial run with greater exposure and more promotion of the concept will be needed to make a proper judgement on whether the concept can be considered successful.

### NUMBER OF RESPONDENTS

With a limited duration time of the test also comes a limited number of respondents and interviewees. For this final evaluation there was aimed at 100 respondents per measurement (0 and 1), but the amount of time and travellers available resulted in exceeding only the minimum of 60 respondents (with an already prolonged test). As travellers' views are quite diverse, a larger number of respondents would be desirable to provide more convincing results.

### AVERAGES

In analyzing the results of the survey, averages are used to gain insights on the differences in outcomes between the 0 and 1 measurement. While averages serve as a useful tool for providing a general summary of the collected data and highlighting patterns or distinctions, it is important to keep in mind that they may hide the diversity of individual responses.

### CONCEPT LOCATION

As mentioned in Chapter 9.5, the visual prominence and appearance of the concept is mitigated by the location of placement. The waiting area used does not offer view of the concept from outside, making the concept draw less attention. Moreover, the visual appearance of the waiting area may detract from the concept's appearance and appeal.

### TEST ALTERATIONS

While the execution of the test has been altered during the test, based on insights gained throughout, these alterations were obviously not there from the starting point. They were deemed necessary to make the results of the test most reliable. However, when looking at the results as a whole, it should be kept in mind that not all results are obtained in the altered way.

### QR SURVEY

QR codes near the concept and distributed on the platform also allow travellers with limited time to complete the survey (possibly while on the train), creating a chance to gain more test results. However, this does eliminate the possibility of perceiving the environment of the train station and waiting area while filling out the survey. Taking this possibility away could result in the respondents being less able to form a good judgement around the statements.

### WEATHER AND OTHER INFLUENCES

Important to note, is the impact that weather conditions can have on the respondents. During the two days of the 0 measurement, the weather

was excellent with sunny and warm temperatures. However, on day 3, during the 1 measurement, the weather turned cold and rainy. A respondent mentioned, "The rain is not helping," highlighting how weather affects mood and potentially survey responses. Considering that the 0 measurement was executed in favorable weather and 3 out of 4 days of the 1 measurement were rainy, this is a noteworthy factor to consider.

Apart from weather conditions, holiday season or rush hour could impact the results.

## SUMMARY

A hypothesis is set for the enhancement of the different elements of sense of community, in which the sense of *shared emotional connection* increases the most and the sense of *membership* the least.

The methods chosen for this final evaluation include a **survey**, **observations** and **interviews**. The test aims for 100 respondents (bottom limit of 60) for both the 0 and 1 measurement, and will be executed at **Hoorn train station**.

**Printed blackboard foil** is placed on the glass walls of the waiting area. Example writings are written on the board, to clarify the boards way of use to the travellers.

The execution of the test has seen some obstacles, in terms of crowdedness, traveller's willingness and time to help, and so on. Still, **60 respondents per measurement** are reached.

Underneath, the **main insights of the test** are listed:

- The hypothesis seems off base, but the **overall sense of community seems to be enhanced**
- Low scoring levels indicate **limited** presence of **community spirit**
- The concept's **name** seems to inadvertently **exclude tip-sharers**
- No definitive conclusions can be drawn about the clarity of the concept's **usability** and its **ease of use**
- Travellers perceived **value** of the concept is questioned, but shows no clear outcome
- The successfulness of the concept's strategy of **self-moderation** cannot yet be identified
- Striking is that foremost **utilitarian travellers** perceive the concept and/or are receptive to it.

Overall, the test findings indicate that the addition of this concept or an alternative social initiative holds the **potential to move towards the goal in the statement**.

The **limitations** of this testing method should be considered. These include the test's duration and the concept's familiarity, the number of respondents, calculation by averages, alterations made throughout the test, an online survey, as well as weather and other influences.









# 10

## recommendations

The final evaluation presented in the previous chapter resulted in insights and recommendations for further development and exploration of the concept and possibly other social initiatives. These recommendations will be elaborated upon in this chapter.

## 10.1

# ONTDEK 'N PLEK

From the conclusions it is evident that a follow-up study is necessary to gain more broad and extensive insights on the successfulness of the concept. Before continuing in this direction, a few aspects of the concept should be revisited, to strengthen the concept's quality.

### ASPECTS TO REVISIT

First of all, it should be considered to **rename** the concept. A new name, encapsulating the dual nature of exploration and contribution, could have the potential to foster a more inviting and participatory environment for the tip-sharers.

It is recommended to **examine the clarity of the concept's usability and the ease of use**, with a panel of NS train travellers. In case the concept is not sufficiently clear to the travellers, adjustments should be made before proceeding.

As for a first potential testing phase the concept is envisioned to be placed in the glass waiting areas on the platforms, it is recommended to take the backside of the concept into consideration. In the case of a waiting area that can be circled, something might also be placed on the outside of the waiting area, which will **cover up the adhesive side of the blackboard foil** and can have promoting value at the same time.

### FIRST TESTING PHASE

To determine whether the concept can be successful in the long run, a first phase of longer and more extensive testing is recommended. The test should be carried out on multiple locations of train stations throughout the country, to provide the opportunity to explore **possible differences between population groups/cultures, and between rural and urban areas**. Statistical recommendations might provide insights into the necessary duration time and number and variety of respondents.

As stated in Chapter 9.7, the traveller's **hedonic or utilitarian** purpose for making the trip seems to be of influence on the impact the concept has on the traveller. This established difference between these groups are the basis for the recommendation to include a distinction between hedonic and

utilitarian travellers in the follow-up study.

Similarly, **weather conditions, the level of crowdedness, and/or holiday periods** could also influence the outcome. If this is anticipated, it is important to ensure that measurements are well-distributed across these aspects (and potentially other factors that might have been overlooked).

As mentioned in Chapter 9.8, common knowledge of the concept is expected to increase positive attitude towards it. In order to raise familiarity, it is recommended to **promote** the concept both at the train stations and through online platforms. This could potentially affect traveller's approach behaviour towards and even the perceived value of the concept.

From the first phase of testing, insights on multiple aspects should be obtained, as listed underneath.

- It should become evident if **self-moderation** of the board by the travellers is a successful strategy for moderation. Checking on the boards regularly during the testing phase will help determine whether self-moderation occurs or is not taken up by travellers. If the latter is the case, it should be considered if modifications to the concept could change this, if the task of moderation could be handed over to NS or if this shortcoming obstructs the concept's future potential.
- A rather important aspect to establish the future potential of the concept, is the value the concept holds to the travellers. From an extended testing phase, it can become evident **if both the explorers and sharers hold value to the concept** and more importantly, if explorer's needs are met through the use of the concept. Insights in this regards can be obtained through observations of the board that can help establish whether it is frequently used. Additionally, a similar test to the one conducted in the final evaluation can offer quantitative data, from which most probably conclusions can be drawn regarding this aspect. If the conclusion is drawn that the travellers do not see sufficient value in the concept, the concept will most probably not be commonly used and thus provide minimal effects on the enhancement

## 10.2

# NS STATIONS IN 2030

of sense of community.

- Lastly, the overall successfulness of the concept should be examined by establishing travellers **growth of sense of community**. It is recommended to once again perform a 0 and 1 measurement, with the 1 measurement naturally conducted after an extended period that ensures travellers to get acquainted with the concept. The quantitative data collected from these measurements should shine light on the different elements of sense of community and their individual growth, as well as the overall growth experienced by travellers. In the case that certain elements seem to lag behind on others, thought should go into whether modifications to the concept could be made to enhance these.

If the concept turns out to be successful and implementation on a wide scale is strived for, consideration should be given to how the concept should be shaped and placed to **pursue the most sustainable and durable result**.

However, if it turns out the concept does not have future potential, an alternative social initiative should be considered. This will be elaborated on in the next section.

The addition of a social initiative seems to have a positive impact on traveller's experience and to reveal their desire for a stronger sense of community. On this basis, **the addition of a social initiative to the standard station formula** of unmanned NS train stations is recommended to be adopted by 2030, as derived from the framework resulted from the execution of the ViP method focusing on the domain of the *NS train stations in 2030*. The implementation of such an initiative is meant to counteract the trend of individualism, presuming that NS endorses this goal and wants to contribute to it. If so, such a concept could be of great value for both NS and society, as it could increase the accessibility to the train stations and travellers' feelings of social safety, and could overall be beneficial for the way people will co-exist in Dutch society.

The strength of the concept is believed to lie in the social concept as derived from the analogy:

*Connecting people, while maintaining  
(the possibility of) anonymity*

Additionally, potential is seen in the way the analogy connects people: by enabling someone to help another by leaving something behind, and someone who needs it to take it with them.

In designing an alternative social initiative, it is recommended to deploy above concepts of social connection and exchange.

Moreover, an alternative social initiative should strive to strengthen the 4 elements of sense of community, aiming for the enhancement of the overall sense of community among travellers.

In conclusion, a social initiative proved with the ability to bolster the sense of community holds great relevance and potential for the future of NS train stations in 2030.





# 11

## discussion

This chapter provides an evaluation of this graduation project, both on a project level and on a personal level.

It references to Chapter 0.2 (Personal ambition), shows insights and sets out a vision for my future as a designer.

## 11.1

# PROJECT EVALUATION

My goal was to explore the future of NS train stations in 2030 and create a vision for it. The outcome was the presented framework containing 12 statements. These statements can be seen as 12 design challenges for NS train stations in 2030, all of which appear relevant and important in their own way for the future of the stations.

After creating the framework, the focus shifted to one of these design challenges: to let travellers at the station relate to each other more as part of a community than as separate, individual travellers. This focus led to the final concept, *Ontdek 'n Plek*.

In this project, both crafting the future vision and designing the concept took up about half of the available time. With only around 10 weeks to develop this future vision, the time for gathering information about the chosen context was limited. With more time, this information gathering could have been more extensive, resulting in a more comprehensive worldview. Nevertheless, the strength of this project lies in the combination of creating the future vision and translating it into a tangible concept, giving NS the opportunity to build upon it and/or focus on other design challenges presented.

When I first entered the ideation phase and began generating ideas to align with the interaction and product vision, I struggled to hold onto these visions. Yet, these visions were there to guide me in the idea generation process and to ultimately create a concept aligned with the envisioned goal as set in the statement. This approach to ideation, where there isn't a clear list of practical requirements to cling to but rather a vision to pursue, was somewhat unfamiliar to me, and I had to learn how to work with it. However, a foundation like this in an ideation process seemed to allow much more room for creativity to flourish.

With a concept created, came a desire to test it to see if it could reach the goal set. However, finding a test location was challenging; these are evidently the hurdles one encounters in a large company. A learning in this process was that having contacts can be incredibly helpful in expediting certain processes and connecting with individuals who can assist you along the way.

When finally able to execute the test, it became apparent that more factors come into play than initially thought when testing on a train station platform, or possibly anywhere in a public area for that matter. When planning a similar study in the future, it's essential to realize this and take measures for it.

Additionally, it would be beneficial to in the future think more thoroughly in advance about the systematic analysis of the results to be obtained. The questions asked were carefully formulated, enabling me to measure what I intended to. However, I developed the approach for analyzing these results as I went along. Establishing this beforehand can prevent the possibility of missing crucial information necessary for a proper analysis.

The planning of the project went quite well, even though I hadn't used the ViP method before. Matthijs provided excellent guidance in this regard. Concerns from station managers and ProRail about testing my concept on a station platform caused the testing to happen later than envisioned. However, in the end it still occurred within the available time, also leaving the required space for a proper analyses of the results.

The freedom this project and my supervisors provided me with, enabled me to steer the project myself and infuse it with my own values, interests and vision. This made the project even more enjoyable to work on, and for that, I am grateful.

## 11.2

# PERSONAL REFLECTION

The personal ambitions set in Chapter 0.2 are accomplished in this project.

One of these objectives was to experience social design in practice within a company, and I have gained valuable insights in this aspect while doing an internship at a large company like NS. Throughout the project, I have noticed the interest and curiosity people feel for a project like this, aimed at the experiential side of things. However, with functionality being at the core of NS, it is noticed that not everyone is open to an alternative view and changes in the experiential aspect. Implementing such ideas seems to be more complex than initially thought. With the knowledge acquired from a large organization, I am now curious to explore how this translates on a smaller scale, perhaps at a social design agency. This is something I wish to explore after my graduation and see as a potential direction for my future career.

Furthermore, another goal of mine was to get familiar with the ViP method. I had never used this design method before, but it had piqued my interest. I am very happy to have had the opportunity to become familiar with this method, as I really enjoyed working with it. I discovered that this research approach suits me much better than, for instance, literature research. As the ViP method involves multiple steps, it adds variety to the entire research process. This method allowed me to uncover connections and patterns that were previously hidden, igniting my curiosity to explore more potential with it. Overall, using the ViP method has been a highly positive experience that I will carry with me into my career as a designer.

Matthijs provided excellent guidance throughout the various stages of the ViP process and this graduation project. His encouragement and support kept me motivated and enthusiastic throughout the project, and he challenged me to extract the most from it. His knowledge and ideas within this design practice have inspired my thoughts for interesting directions in the future.

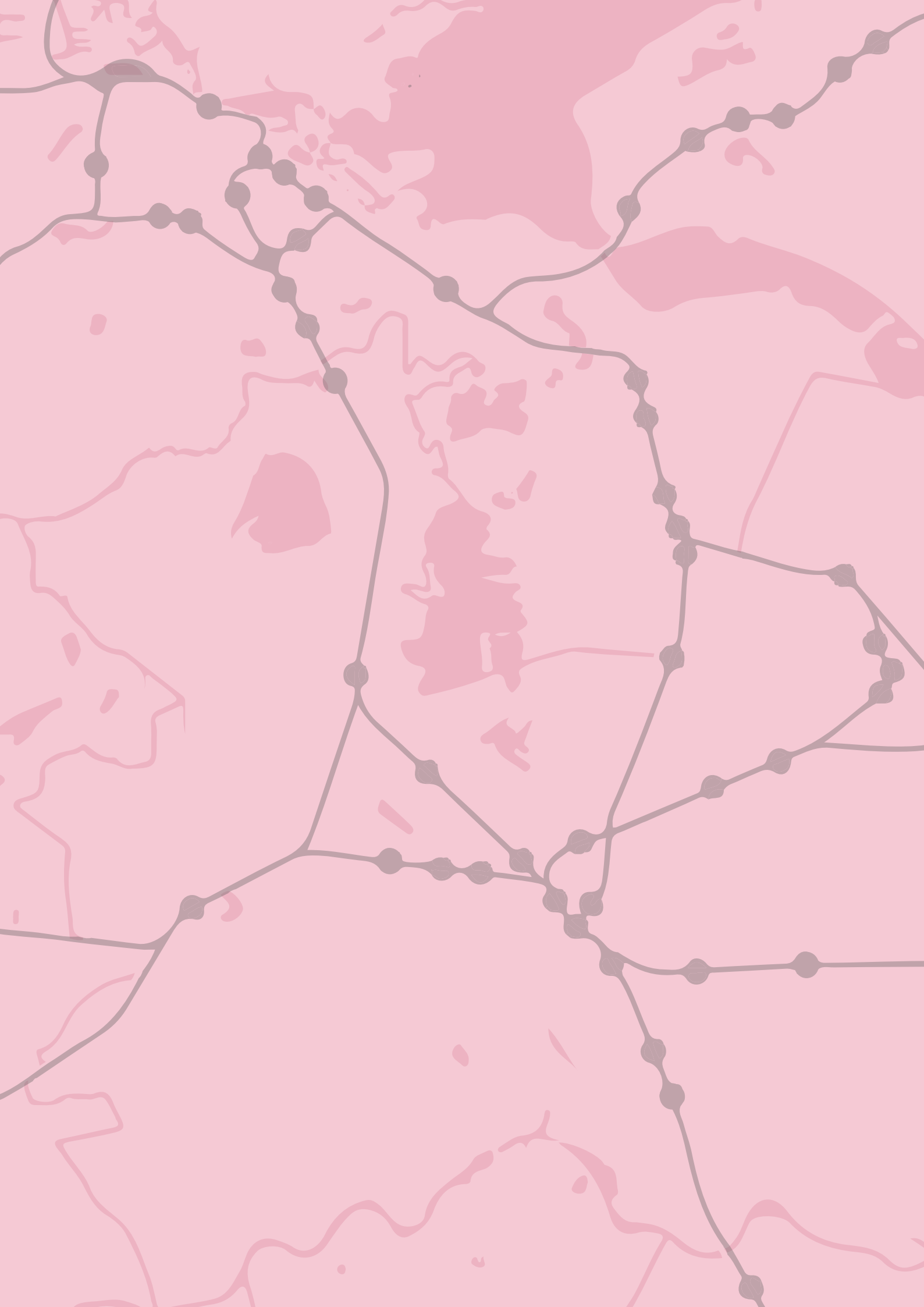
Weekly meetings with Mark were a constant presence in my graduation project, allowing me to share my progress and ideas and Mark thought along with me in the process. Having someone

to talk to about my progress was really nice and helpful. It reminded me how much I prefer working as part of a team, where we can bounce ideas off each other and solve problems together. Moreover, Mark made me think ahead, keeping eye on the planning and considering future steps. The meetings with Mark were always relaxed and allowed me to move forward with a motivated and positive attitude.

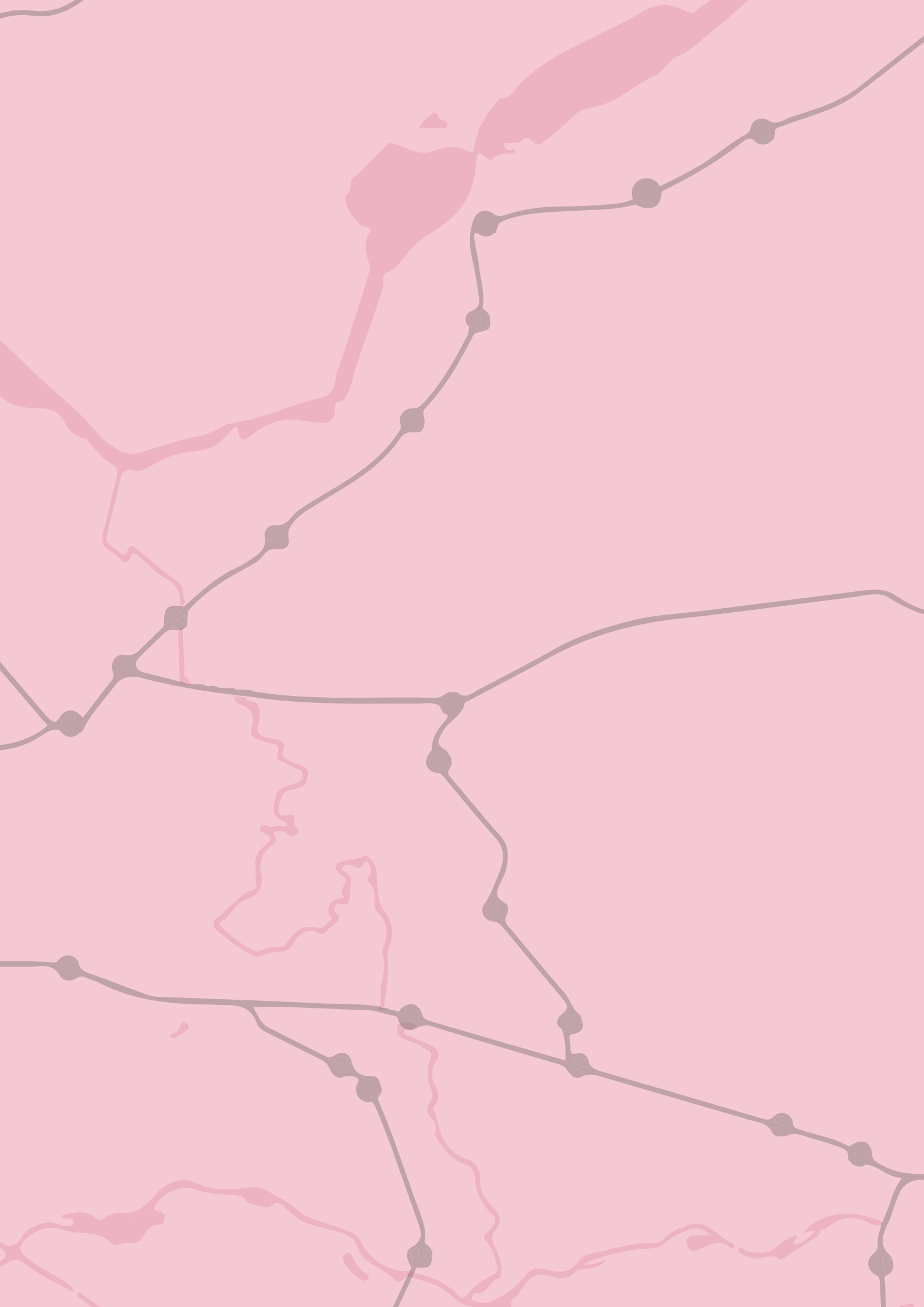
Next to my TU Delft supervisors, Roeland and Mark from NS guided me throughout the project. From the beginning, Roeland gave me the opportunity to make the project my own and steer it into my own desired directions. He often redirected the focus to what ideas and directions could mean for NS, which helped me steer the project in valuable directions. Keeping the business side of things in mind is something to take along with me.

Mark shared a lot of his knowledge on behavioural sciences with me, being of great value to the subject of my project. His support of my ideas were a reassuring confirmation of the potential of my final concept. He helped me greatly in making the testing of my concept a reality and getting it up and running quickly. It became evident that having connections is key, a valuable lesson I will take into the future.

With this project, I was able to reaffirm my graduation direction once again. The opportunity to steer the project in directions that resonate with me made working on this project even more enjoyable. I hope that the future has more of this in store for me.







# references

## A

Albinsson, P. A., & Perera, B. Y. (2012). Alternative marketplaces in the 21st century: Building community through sharing events. *Journal of Consumer Behaviour*, 11(4), 303–315. <https://doi.org/10.1002/cb.1389>

## B

Benson-Armer, R., Noble, S., & Thiel, A. (2015, December 1). The consumer sector in 2030: Trends and questions to consider. McKinsey & Company. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-consumer-sector-in-2030-trends-and-questions-to-consider>

Borg-Laufs, M. (2013). Basic Psychological Needs in Childhood and Adolescence. *Journal of Education and Research*, 3, 41–51. <https://doi.org/10.3126/jer.v3i0.7851>

Budson, A. E., MD. (2020). Why is music good for the brain? Harvard Health Publishing. <https://www.health.harvard.edu/blog/why-is-music-good-for-the-brain-2020100721062>

## C

CBS. (2017, December 19). Forecast: 18.4 million inhabitants in 2060. CBS Statistics Netherlands. <https://www.cbs.nl/en-gb/news/2017/51/forecast-18-4-million-inhabitants-in-2060>

CBS. (2019, January 11). Forecast: 3.5 million single households in 2030. CBS Statistics Netherlands. <https://www.cbs.nl/en-gb/news/2018/51/forecast-3-5-million-single-households-in-2030>

CBS. (2020a, March 27). Nearly 1 in 10 Dutch people frequently lonely in 2019. CBS Statistics Netherlands. <https://www.cbs.nl/en-gb/news/2020/13/nearly-1-in-10-dutch-people-frequently-lonely-in-2019>

CBS. (2020b, July 8). Population Outlook 2050: more people with a migration background. CBS Statistics Netherlands. <https://www.cbs.nl/en-gb/news/2020/28/population-outlook-2050-more-people-with-a-migration-background>

Chopra, M., Falardeau, E., Hayton, S., Moulton, J., Pione, A., & Spagnuolo, E. (2021). The future of wellness: Connected and customized. McKinsey & Company. <https://www.mckinsey.com/featured-insights/the-next-normal/wellness>

CitizenLab. (2022, August 30). Vier trends in burgerparticipatie. Binnenlands Bestuur. <https://www.binnenlandsbestuur.nl/bestuur-en-organisatie/citizenlab/vier-trends-burgerparticipatie>

## D

Douglas Fields, R. (2011, April 1). Why We Prefer Certain Colours. *Psychology Today*. <https://www.psychologytoday.com/us/blog/the-new-brain/201104/why-we-prefer-certain-colours>

## E

Eurostat. (2021, May 20). Population projections: urban growth, rural decline. Eurostat. <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210520-1>

## F

Fieulaine, N., & Van Hagen, M. (2023). Interview with Mark van Hagen on behalf of Nicolas Fieulaine. In Behavioral Insights Unit, French National Railways (SNCF). <https://docs.google.com/document/d/1uN1nzO-LzYR6lHrSD-W9c8s-t7rW8tce/t?usp=sharing&oid=117319084722963982257&rtpof=true&sd=true>

## G

Global Payments. (2022, January 31). How Millennials and Gen Z are shaping the future of payments. <https://www.globalpayments.com/insights/2022/01/31/millennials-and-gen-z-shaping-the-future-of-payments>

Grand View Research. (2022, August). Wearable AI Market Size, Share & Trends Report, 2030. <https://www.grandviewresearch.com/industry-analysis/wearable-ai-market-report>

## H

Heinrich, B. (2013). The Biological Roots of Aesthetics and Art. *Evolutionary Psychology*, 11(3), 147470491301100. <https://doi.org/10.1177/147470491301100316>

Hekkert, P., & Van Dijk, M. (2011). *VIP Vision in Design: A Guidebook for Innovators*. BIS Publishers.

Heller, R. S., Jorge, J., & Guedj, R. A. (2001). EC/NSF workshop on universal accessibility of ubiquitous computing. In *Ubiquitous Computing*. <https://doi.org/10.1145/564526.564528>

Heshmat, S. (2016, June 6). 10 Reasons We Rush for Immediate Gratification. *Psychology Today*. <https://www.psychologytoday.com/us/blog/science-choice/201606/10-reasons-we-rush-immediate-gratification>

Hiroshima University. (2021, March 31). Millennials and Generation Z are more sustainability-orientated -- even when it comes to money, researchers find. *ScienceDaily*. <https://www.sciencedaily.com/releases/2021/03/210331103635.htm>

Hsieh, E. (2015, December 30). 20 for '30: Imagining sustainability in 2030. *Greenbiz*. <https://www.greenbiz.com/article/20-30-imagining-sustainability-2030>

Huijismans, T. (2020, November 9). The Urban-Rural Divide in Political Attitudes in the Netherlands. *EuropeNow*. <https://www.europenowjournal.org/2020/11/09/the-urban-rural-divide-in-political-attitudes-in-the-netherlands/>

## I

Instituut voor de Nederlandse taal. (1886). *Gemeenschap. Instituut Voor De Nederlandse Taal*. <https://gtb.ivdnt.org/iWDB/search?actie=article&wdb=WNT&id=A007544.re.5>

International Association of Public Transport. (2022). How to Make Stations Lively Hubs for Citizens and Public Transport Users: Trends. <https://www.uitp.org/projects/stations-of-the-future/>

## J

Juma, C. (2016). *Innovation and Its Enemies: Why People Resist New Technologies*. Oxford Academic. <https://doi.org/10.1093/acprof:oso/9780190467036.001.0001>

## K

Klinenberg, E. (2002). Alone in the City? An Intellectual History of Social Isolation (WP-02-15). Institute for Policy Research Working Paper. <https://www.ipr.northwestern.edu/documents/working-papers/2002/IPR-WP-02-15.pdf>

## L

Livio, M. (2017). *Why?: What Makes Us Curious*. Simon and Schuster.

## M

Mai, D. (2021). Sharing Without Caring: How a Lack of Community Undermines the Principles of the Sharing Economy in the Mobility Space — Human Futures Studio. *Human Futures Studio*. <https://www.humanfutures.studio/articles/2020/1/7/sharing-without-caring>

Marcus, L. P. (2011, October 13). What it Means Today to be 'Connected.' *Harvard Business Review*. <https://hbr.org/2011/10/what-it-means-today-to-be-conn>

McAuliffe, W. E., Forster, D. E., Pedersen, E. R., & McCullough, M. E. (2018). Experience with anonymous interactions reduces intuitive cooperation. *Nature Human Behaviour*, 2(12), 909–914. <https://doi.org/10.1038/s41562-018-0454-9>

McKinsey Center for Future Mobility, Conzade, J., Cornet, A., Hertzke, P., Hensley, R., Heuss, R., Möller, T., Schaufuss, P., Schenk, S., Tschiesner, A., & Von Laufenberg, K. (2021, September 7). Why the automotive future is electric. McKinsey & Company. <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/why-the-automotive-future-is-electric>

McKinsey Global Institute, Smit, S., Tacke, T., Lund, S., Manyika, J., & Thiel, L. (2020, June 10). The future of work in Europe. McKinsey & Company. <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-in-europe>

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1), 6–23. [https://doi.org/10.1002/1520-6629\(198601\)14:1](https://doi.org/10.1002/1520-6629(198601)14:1)

Ministerie van Algemene Zaken. (2023, April 11). Burgerparticipatie. Burgerschap | Rijksoverheid. <https://www.rijksoverheid.nl/onderwerpen/burgerschap/burgerparticipatie>

Ministerie van Volksgezondheid, Welzijn en Sport. (2022a, September 20). Armoede daalt door maatregelen kabinet, SCP plaatst wel kanttekeningen. Sociaal En Cultureel Planbureau. <https://www.scp.nl/actueel/nieuws/2022/09/20/armoede-daalt-door-maatregelen-kabinet-scp-plaatst-wel-kanttekeningen>

Ministerie van Volksgezondheid, Welzijn en Sport. (2022b, December 1). Eerst een thuis centraal in Nationaal Actieplan Dakloosheid. Rijksoverheid. <https://www.rijksoverheid.nl/actueel/nieuws/2022/12/01/eerst-een-thuis-centraal-in-nationaal-actieplan-dakloosheid>

Ministry of Infrastructure and Water Management, NS, Federatie Mobiliteitsbedrijven Nederland, GVB, RET, HTM, & ProRail. (2019). Public Transport in 2040. Rijksoverheid. <https://www.government.nl/documents/publications/2019/06/13/public-transport-in-2040-outlines-of-a-vision-for-the-future>

Molyneux, M., Dey, A., Gatto, M. A. C., & Rowden, H. (2021). New feminist activism, waves, and generations. United Nations Entity for Gender Equality and the Empowerment of Women (UN Women). <https://www.unwomen.org/en/digital-library/publications/2021/05/discussion-paper-new-feminist-activism-waves-and-generations>

## N

Nederlandse Spoorwegen. (n.d.). Stations Belevings Monitor [Slide show]. Internal documents NS.

NL Times. (2022, July 6). Big cities to push Dutch population growth in coming years. NL Times. <https://nltimes.nl/2022/07/06/big-cities-push-dutch-population-growth-coming-years>

NS. (2023). Reizigersgedrag | NS Dashboard. NS Jaarverslag 2022. <https://dashboards.nsjaarverslag.nl/reizigersgedrag/hoorn>

NS, Mecanoo architecten, ProRail, Bureau Spoorbouwmeester, & Springtime. (2019). Journey to the Future. In NS Internal Database.

## O

OECD. (2013). How's Life? OECD eBooks. <https://doi.org/10.1787/23089679>

## P

Parker, C. (2016, November 12). 8 predictions for the world in 2030. World Economic Forum. <https://www.weforum.org/agenda/2016/11/8-predictions-for-the-world-in-2030/>

Parker, C. (2019, October 29). 30 visions for a better world by 2030. World Economic Forum. <https://www.weforum.org/agenda/2019/10/future-predictions-what-if-get-things-right-visions-for-2030/>

Phutela, D. (2015). The Importance of Non-Verbal Communication. *IUP Journal of Soft Skills*, 9(4), 43–49. <https://www.proquest.com/scholarly-journals/importance-non-verbal-communication/docview/1759007009/se-2>

Pine, B. J., Pine, J., & Gilmore, J. H. (1999). *The Experience Economy: Work is Theatre & Every Business a Stage*. Harvard Business Press.

Princes, E. (2019). BOOSTING IMPULSE BUYING BEHAVIOR IN MARKETING MANAGEMENT: CUSTOMER SATISFACTION PERSPECTIVE. *Polish Journal of Management Studies*. <https://doi.org/10.17512/pjms.2019.20.2.34>

PwC. (2021, March 25). Verkoopstop nieuwe brandstofauto's in 2030 is haalbaar. <https://www.pwc.nl/nl/actueel-en-publicaties/diensten-en-sectoren/automotive/verkoopstop-nieuwe-brandstofautos-in-2030-is-haalbaar.html>

## R

RIVM. (2023, April 3). Snel actie nodig om drinkwatertekort in 2030 te voorkomen | RIVM. Rijksinstituut Voor Volksgezondheid En Milieu. <https://www.rivm.nl/nieuws/snel-actie-nodig-om-drinkwatertekort-in-2030-te-voorkomen>

Rock, D. (2009, October 25). A Hunger for Certainty. *Psychology Today*. <https://www.psychologytoday.com/us/blog/your-brain-work/200910/hunger-certainty>

## S

SCP. (2020, September 9). De sociale staat van Nederland 2020. Sociaal En Cultureel Planbureau. <https://digitaal.scp.nl/ssn2020/verantwoording/>

SDG Nederland. (2022, June 13). 5 Gendergelijkheid - SDG Nederland. <https://www.sdg Nederland.nl/SDG/5-gendergelijkheid/>  
Shrestha, N. (2020, June 23). The Black Lives Matter movement protests in the Netherlands. Utrecht University. <https://www.uu.nl/en/opinion/the-black-lives-matter-movement-protests-in-the-netherlands>

## T

Täuber, S., & Van Leeuwen, E. (2010). *The psychology of prosocial : group processes, intergroup relations, and helping*. Blackwell Publishing. [https://www.rug.nl/research/portal/publications/the-strategic-side-of-outgroup-helping\(88e81a95-1ee6-41ea-b263-b3c58addea22\)/export.html](https://www.rug.nl/research/portal/publications/the-strategic-side-of-outgroup-helping(88e81a95-1ee6-41ea-b263-b3c58addea22)/export.html)

The Hague International Centre. (n.d.). Cultural do's and don'ts. Retrieved April 6, 2023, from <https://www.thehagueinternationalcentre.nl/why-the-hague-region/the-netherlands-in-a-nutshell/cultural-dos-and-donts>

Timmermans, R. (2022). Omgevingswet participatie: kansen voor burgerparticipatie! Gemeentepeiler. <https://www.gemeentepeiler.nl/omgevingswet-participatie/>

## U

United Nations, Department of Economic and Social Affairs, Population Division. (2019). *World Population Prospects 2019: Highlights*. In *Statistical papers - United Nations. Series A, Population and vital statistics report*. United Nations. <https://doi.org/10.18356/13bf5476-en>

## V

Valentinuzzi, M. E. (2015). The good old blackboard and chalk [RetroSpectroscope]. *IEEE Pulse*, 6(3), 58–60. <https://doi.org/10.1109/mpul.2015.2409105>

Van den Broek, A., Van Campen, C., De Haan, J., Roeters, A., Turkenburg, M., & Vermeij, L. (2016, December 21). De toekomst tegemoet. *Publicatie | Sociaal En Cultureel Planbureau*. <https://www.scp.nl/publicaties/publicaties/2016/12/21/de-toekomst-tegemoet>

Van Gool, M., Versantvoort, M., Van Noije, L., Verbeek-Oudijk, D., Van den Broek, A., & Van Campen, C. (2022, January 10). Reflectie op het regeerakkoord 2021-2025 vanuit het burgerperspectief. Publicatie | Sociaal En Cultureel Planbureau. <https://www.scp.nl/publicaties/publicaties/2022/01/10/reflectie-op-het-coalitieakkoord-2021-2025-vanuit-het-burgerperspectief>

Van Hagen, M. (2011). Waiting experience at train stations. [http://doc.utwente.nl/80061/1/thesis\\_M\\_van\\_Hagen.pdf](http://doc.utwente.nl/80061/1/thesis_M_van_Hagen.pdf)

Van Hagen, M. (2022). Railway Station and Interchange Design: A Station Design that Perfectly Fits the Quality Needs of Passengers. In *Transport and sustainability* (pp. 19–40). Emerald Publishing Limited. <https://doi.org/10.1108/s2044-994120220000014003>

Van Hagen, M., & Temme, P. (2021). De opkomst van de sust reiziger. Colloquium Vervoersplanologisch Speurwerk. [https://cvs-congres.nl/e2/site/cvs/custom/site/upload/file/cvs\\_2021/sessie\\_a/a5/cvs\\_88\\_de\\_opkomst\\_van\\_de\\_sust\\_reiziger\\_1\\_2021.pdf](https://cvs-congres.nl/e2/site/cvs/custom/site/upload/file/cvs_2021/sessie_a/a5/cvs_88_de_opkomst_van_de_sust_reiziger_1_2021.pdf)

Van Hagen, M., & Ten Elsen, E. (2019). Geef treinreizigers wat te doen! Nationaal Verkeerkundecongres. [https://drive.google.com/file/d/1qZaTsM6hD722CY6Ho\\_nGwnlxH-xlqzQz/view?usp=sharing](https://drive.google.com/file/d/1qZaTsM6hD722CY6Ho_nGwnlxH-xlqzQz/view?usp=sharing)

Van Hagen, M., Van der Laan, E., Cuijpers, P., & Netherlands Railways. (2022). How to segment psychological preferences of train passengers? European Transport Conference.

Van Hagen, M., & Van der Sluis, L. (2016). Muziek, kleur, geur op het station werkt. *OV Magazine*. <https://www.ovmagazine.nl/nieuws/ns-onderzoekt-wachtbeleving-reizigers>

Van Hagen, M., & Vos, M. (2019). Stress meten tijdens de treinreis. *Tijdschrift Vervoerswetenschap*, 55 (2). [https://cvs-congres.nl/e2/site/cvs/custom/site/upload/file/paper\\_search/2018/id\\_135\\_mark\\_van\\_hagen\\_stress\\_meten.pdf](https://cvs-congres.nl/e2/site/cvs/custom/site/upload/file/paper_search/2018/id_135_mark_van_hagen_stress_meten.pdf)

Van Hees, L. (2020, August 7). Feminisme in 2020: 'Het gaat over alle mensen, iedereen is gelijkwaardig.' Eva Jinek. <https://www.evajinek.nl/onderwerpen/artikel/5175937/f-woord-feminisme-human-valerie-bisscheroux>

Vermeulen, F. (2022). Open armen en dichte deuren. Sociaal en Cultureel Planbureau. <https://www.scp.nl/publicaties/publicaties/2021/02/18/open-armen-en-dichte-deuren>

## W

Wever, H. (2018, October 17). Nederland in 2030 koploper flexibel werken in Europa. *FlexNieuws*. <https://www.flexnieuws.nl/nieuws/nederland-2030-koploper-flexibel-werken-europa/>

Winston, A. (2019, August 16). The World in 2030: 9 Megatrends to Watch. *Sustainable Brands*. <https://sustainablebrands.com/read/defining-the-next-economy/the-world-in-2030-9-megatrends-to-watch>

## Z

Zenger, J., & Folkman, J. (2019, February 5). The 3 Elements of Trust. *Harvard Business Review*. <https://hbr.org/2019/02/the-3-elements-of-trust>



