WALK

MEN

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Walkmen
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Abstract

This thesis is the final result of the graduation project of the master programme Design for Interaction at the faculty of Industrial Design Engineering at the TU Delft (Delft, The Netherlands). The project is done for the Delft Institute of Positive Design in collaboration with Marten van Doorn from Bartimeus.

When glasses or contact lenses are not sufficient enough to correct someone's vision, visually impairment is diagnosed. The Netherlands counts 345.000 people who are visually impaired or blind. On estimate, 2020 will count 380.000 visually impaired people (Keunen, 2011). This is an increase of 20% since 2009, due to aging and diabetes (Bartimeus, 2017). Especially when it comes to mobility, visually impaired people (VIPs) are continuously challenged. They use a cane to detect passing obstacles and recognition points. However, the cane does not lead the route to these recognitions points which make the visually impaired in need for other assisting solutions. Dependency and autonomy seem to clash with each other: Assistive technologies provide additional certainty within the field of mobility but often taking away a piece of autonomy. Autonomy is defined as "freedom from external control or influence; independence" (Stevenson & Lindberg, 2010). Being autonomous is a psychological need for well-being (Ryff & Keyes, 1995), which will be the primary focus of this project. This result into the following assignment:

ASSIGNMENT

Design a mobility tool for visually impaired people that lets them experience a feeling of autonomy.

New developments seem to fail because of their distance from real-world settings (Loomis, Klatzky & Giudice, 2012; Maidenbaum, 2014). Besides, Loomis et al. states that many assistive technologies are a result of a solution to a practical problem and that the outcome is based on the type of engineering that is available. This approach to new product development is known as the engineering trap. Therefor the primary approach is to stay as close as possible to the real-world setting by designing for autonomy with empathy with the main goal to contribute to the well-being of visually impaired people in the field of mobility.

This is done by looking the context from different angels: : the own experience lens, the VIP experience lens ant the expert lens- This is done by doing research and design explorations. These explorations create insights of VIP's daily life -including benefits and struggles- required theoretical research, own experiences (as being visually impaired), observations and interviews. This resulted in a list of VIP superpowers, mobility mindsets, main mobility concerns, four dimensions of autonomy a list for characteristics for autonomous assistive

tools. These insights are translated into an opportunity to design.

In the current situation, being in control is an important aspect for VIPs to be able to know the route, walk smoothly and prevent mistakes, although the definition of autonomy is about freedom from external factors. There seems to be an opportunity to design for impulsivity within the mobility context. Therefore, the following question will serve as the leading question for the next explorations:

OPPORTUNITY

Is there room for impulsivity while being in control?

To be able to understand the meaning of impulsivity in the VIP mobility context, four cycles of design explorations are done. Every iteration loop starts with a different definition of impulsivity based on the previous iteration. Next, ideas are generated and evaluated on autonomy. These iterations resulted in the final impulsivity definition, the three design characteristics and the design goal. The definition of impulsivity states that;

IMPULSIVITY DEFINITION

Make a small mental detour.

In the current situation, VIPs have a number of fixed routes in their mind. They do need help in this route if they got lost in orientation due to distractions caused by noisy traffic, obstacle or noisy weather conditions. Mostly they ask for confirmation when they ask for help, to retake their control on their current orientation. It is established that one of the design characteristics describes that feeling autonomous is not about receiving less help, but it is about the type of help. So how can the design support VIPs in their mobility activity, instead of helping them?

If VIPs feel supported, it will open the possibility that there is no need for 100% focus. So they will walk their route as good as possible and have the possibility to make a small mental detour by paying attention to the unpractical elements of the route. Therefore, the following design brief is formulated:

DESIGN BRIEF

Design a supporting device that illustrates the current position within a preprogrammed known route on demand, that opens the opportunity for a small mental detour by paying attention to the unpractical elements of the environment.

The design translates this design goal into the concept design: Walkmen.

THE DESIGN

Walkmen is a support tool which is a GPS connected voice recorder on your smart-phone. With Walkmen, you can track routes and create your mobility tool, which can be used as support tool.

The design is tested from different perspectives: my own experience, VIP's experience and experts' discussion. The perspectives are the same as those used in explorations done at the beginning of the project. Overall, the tests made me realize that the need for concept design is urgent. People are intrigued by freedom that the device provides, so they are able to make their own personal reference tool which is easily accessible.

As an additional deliverable, a booklet is made with principles for designers, who want to design for autonomy for people who are in need for assistance.

To conclude, daily life is not designed for VIPs, but designed by and for sighted people. Unfortunately, many tools for VIPs are nowadays designed by sighted people to provide assistance to fill the gap of the missing visual senses. Within this project it is found that the mobility tool for VIPs should be a support tool instead of an assistive tool in order to evoke a feeling of autonomy. Walkmen is a result of the approach taken which includes the autonomous design characteristics and, according to the validation, evokes a feeling of autonomy.

Acknowledgements

What a journey! A project like this is not possible with only one person. Therefore, I would like to thank the following people that joined me and supported me during this project.

First of all, special thanks to my team. Anna, Natalia and Marten, thank you for supervising me. I am honored that I had the chance to work with such experts and thanks for supporting me in carrying out the project in my own intuitive way.

Thanks to all the VIPs that participated in the user tests and interviews. Special thanks to Christa and Nursel, who always made time to made time for phone calls to discuss the crazy ideas that I came up with Also thanks to experts Paul Lagerweij and Paul de Nooij.

Also thanks to Anna, Antoine. BFM, Donna, Ernst, Eve, Harm, Jikke, Johanna, Jord, Judith, Lizzy, Loesie, Loriana, Mama, Margot, Marina, Myrthe, Nathalie, Niels, Niels, Nynke, Obin, Oda, Odulphus, Oma, Papa, Paula, Paulien, Stefan, Stein, Tess, Tessa, Thomas, Tim, Vera, Silje en Zoé ...

... for helping me during the weekend when I was a VIP myself, for checking this monster of a report, for joining my ideation sessions, for being my human prototype, for the supportive talks, for the dinner evenings, for listening to my dramatic talks about graduation, for the every other week brainstorms, for the regular updates about life in the sun, for going through the same graduation rollercoaster, for your critical view, for your advice to be blind myself, for the Skype call which gave me the break through, for making our house the best place to live, the calming tea sessions, for “off course I can help, always!” and for the ice-creams and walks

VIP - Visually Impaired Person

Due to privacy, I keep the VIPs out of the spotlight by using fictional names.

01 INTRODUCTION

Project

Introduce the aim, the approach and the mindset of this project by defining the assignment and connecting research questions.

02 EXPLORATIONS

Autonomy

Understanding of autonomy within the VIP mobility context: What is the re-framed opportunity to design for?

Chapter 01

PROJECT

Introduce the aim, the approach and the mindset of this project by defining the assignment and connecting research questions.

Figure 1 - Picture of me and my grandmother:
both having poor spatial awareness.

Introduction to the project

Introducing the involved topics: mobility, autonomy, visually impaired people, and assistive tools.

1.1 INTRODUCTION TO THE PROJECT

My mobility skills

This project starts with my simultaneous frustration and fascination about how poorly developed my spatial awareness is. To give you a small impression: When I leave a shop, I can't remember which side I entered a shop which most often causes me to walk in the opposite direction. Besides, I always need to use Google maps to find my way, even if I have walked or cycled a route for a couple of times already. Practically, I can't leave my house without my smartphone. Luckily, mobility applications nowadays help me to find my destination which makes me capable of visiting new places without having the fear of getting lost and prevent me from taking time consuming preparations. But when my phone battery is dying, I am not prepared well enough in advance to find the desired destination on my own. Even more so, I am afraid that my spatial awareness is getting worse due to my lazy habit of using my phone. Luckily, I am not the only one and at least I know that my grandmother is just as bad as I am. However, it somehow still makes me somewhat insecure that such a fundamental daily activity is dependent on technology.

1.1 INTRODUCTION TO THE PROJECT

Autonomy

Dependency and autonomy seem to clash with each other: Assistive technologies provide additional certainty within the field of mobility but often taking away a piece of autonomy. Autonomy is defined as *"freedom from external control or influence; independence"* (Stevenson & Lindberg, 2010). Being autonomous is a psychological need for well-being (Ryff & Keyes, 1995), which will be the primary focus of this project.

In our daily lives being 100% autonomous is not possible, because everyone is in need of help during his or her daily activities. This raises the question: To what extent can we feel autonomous even though we occasionally receive help? And what if you are on average in more need of assistance due to a (physical) disability, like visually impaired people?

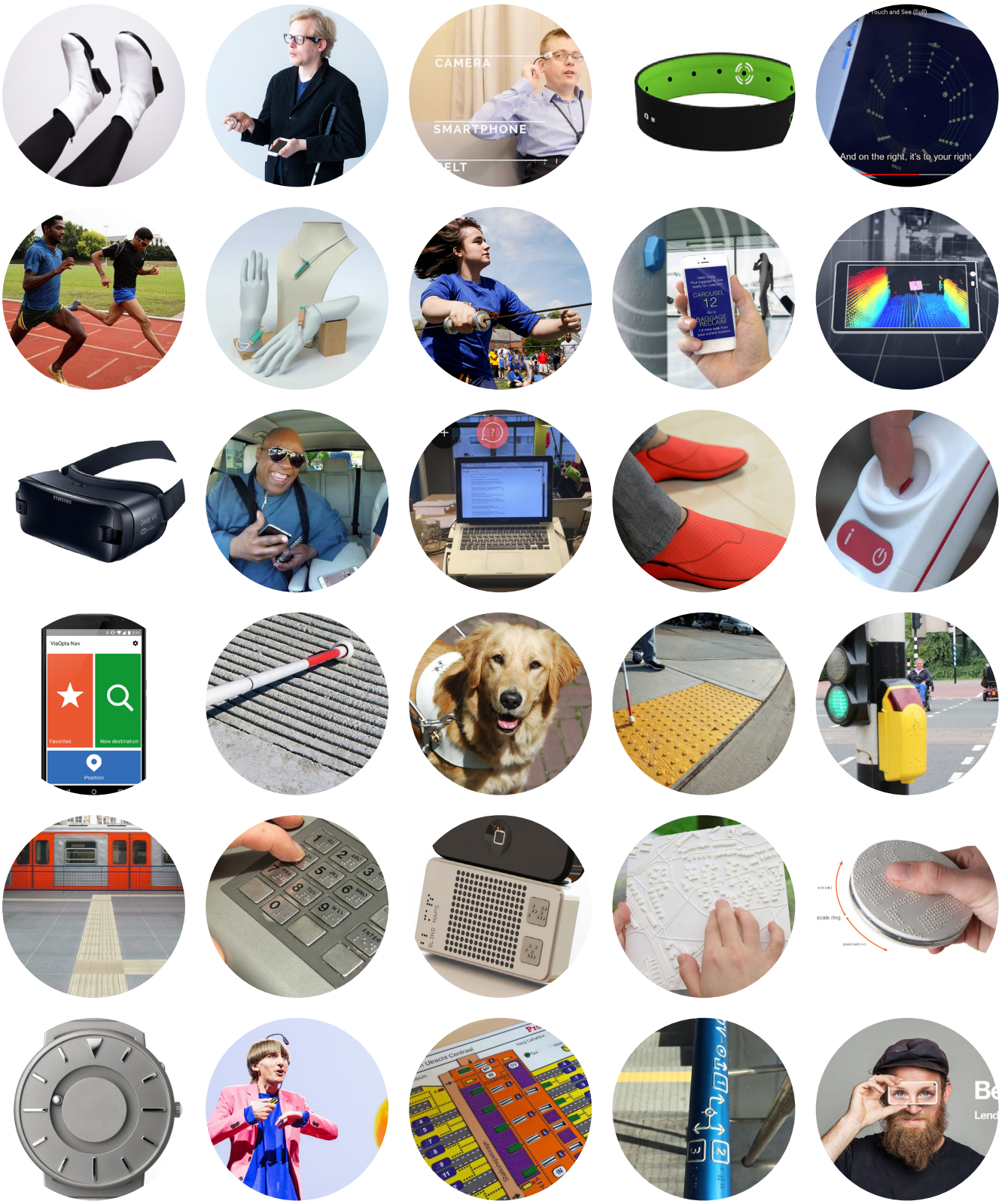


Figure 2 - Current assistive (mobility) tools for VIPs. Citations of the tools can be found in appendix 1.

Visually impaired people (VIPs)

When glasses or contact lenses are not sufficient enough to correct someone's vision, visually impairment is diagnosed. The Netherlands counts 345.000 people who are visually impaired or blind. On estimate, 2020 will count 380.000 visually impaired people (Keunen et al., 2011). This is an increase of 20% since 2009, due to aging and diabetes (Vereniging Bartimeus Sonneheerdt, 2015).

Bartimeus, which will be one of the partners in this project, is an organization that supports visually impaired people in their daily life by providing special schools and housing (when needed) and training programmes. It is a source of knowledge and experience that is continually developing new methods, training programs and supportive tools for VIPs and aims to support VIPs in having their lives as autonomous as possible. (Bartimeus, 2017).

In need of assistance

Tessa is visiting the Dutch amusement park 'The Efteling' with her parents and little sister. They pass by a restaurant which is called 'the witches cauldron' with the subtitle: dinner in the dark. Tessa and her family decide to reserve a table for later that day.

Once they go to the restaurant and sit down at the table, a friendly witch takes their order (in the dark). After the food arrives the plates start to move and turn places.

The plates keep on moving, leaving everyone bewildered except for the visually impaired Tessa. Indeed, although the moving plates are a bit of a challenge, she is in her comfort zone by eating in the dark. Eventually, besides the Croquettes that she ordered, she also eats the steak of her dad, pancakes of her sister and the soup of her mom.

While this leaves Tessa completely stuffed, the rest of her family decides to go and get a snack at a different place afterwards.

In this particular context, Tessa has an advantage over her relatives as she is used to eating in the dark. Unfortunately, this is not the case in daily life, which is mainly shaped by and for sighted people.

Especially when it comes to mobility, VIPs are continuously challenged. They use a cane to detect passing obstacles and recognition points. However, the cane does not lead the route to these recognitions points which make the visually impaired in need for other assisting solutions. Figure 2 shows some current examples of assistive mobility tools for VIPs. An extensive list of explanations can be found in Appendix 1. However, most of these assistive tools are designed by focusing on what VIPs cannot do, instead of what they can do. Furthermore, people that I spoke indicated that many current tools are designed for specific situations, meaning that they need a lot of different tools to help them out during the mobility activity.

This project is about designing an assistive mobility tool for visually impaired people by focusing on evoking a feeling of autonomy with/ by this tool. In other words, how could VIPs receive assistance while feeling autonomous at the same time?

Figure 3 - It is important to talk with people who are going to use your product: Picture of me and VIP during the final user test. Photo by Jord de Kat Angelino

The assignment

Which opportunity derives from the current situation and which (research) questions should be answered?

1.2 THE ASSIGNMENT

The engineering trap

Despite the massive amount of research and development in the field of assistive technologies for visually impaired people last years, the long cane and guide dog are still the most frequently used navigational tools for travelling (Hersh and Johnson, 2008; (Schinazi, Thrash, & Chebat, 2016). New developments seem to fail because of their distance from real-world settings (Loomis et al., 2012; Maidenbaum, Abboud, & Amedi, 2014). Besides, Loomis et al.(2012) states that many assistive technologies are a result of a solution to a practical problem and that the outcome is based on the type of engineering that is available. This approach to new product development is known as the engineering trap. Currently, many tools are developed as a supplement for the 'missing' visual information in their daily life. In my opinion, tools should be developed with the realization that VIPs do have a vibrant image of their surroundings. It is simply a different image than that of sighted people.

This engineering trap is opposite to the opportunity-driven approach from The Delft Institute of Positive Design (DIoPD). Instead of only trying to reduce people's problems, DIoPD is keen on creating opportunities and has the primary goal to improve people's well-being. Their website (http://studiolab.ide.tudelft.nl/diopd) states: "We strongly believe that it is our responsibility as design researchers to generate knowledge that enables designers to formulate effective strategies in contributing to the happiness of people" (DIOPD, 2018). The institute has provided a variety of theories and approached to design for human flourishing. Currently, the field of designing assistive tools for VIPs is only used to finding solutions for practical problems. Hereby, the DIoPD approach will be completely new and different by designing from a possibility driven perspective: enhancing the capabilities and strengths of VIPs.

In order to achieve this, it is essential to talk with the target group from the beginning on to understand how they perceive their surroundings and which situations are easy or difficult to deal with and how they handle these situations. Involving the user in the process is essential to be able to properly design for autonomy.

ASSIGNMENT

Design a mobility tool for visually impaired people that lets them experience a feeling of autonomy.

1.2 THE ASSIGNMENT

The opportunity

This project seeks for an opportunity to design experiences that contribute to the well-being of visually impaired people in the field of mobility.

The model by Ryff and Keyes (1995) that describes the core dimensions of psychological well-being covers six variables of positive psychological functioning; self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth. Out of these six dimensions, autonomy is unrepresented within the VIP mobility activity, because currently they are not able to walk independently. Espinosa, Ungar, Ochaíta, Blades and Spencer (1998) stated that when people are capable of moving and orienting in a safe and autonomous way, there is a higher chance they have a sense of security and independence. Thus a sense of autonomy is an essential aspect of the well-being of people. The purpose of this project is to introduce a similar experience in the field of mobility.

Marten van Doorn is the company mentor and works at Bartiméus as orientation and mobility (O&M) instructor and coordinator. Anna Pohlmeyer, from the Delft Institute of positive design, will be the chair of this project and is an expert on design for well-being.

1.2 THE ASSIGNMENT

Research questions

This raises the main (research) question: How can visually impaired people experience a new environment with a sense of autonomy?

The following sub-research questions are formulated:

1. What does autonomy mean for visually impaired people?
2. What does mobility mean for visually impaired people?
3. How is the current mobility experience for visually impaired people in an unknown environment?
   a. What are the main concerns in the field of mobility?
   b. How do tools that are currently in use contribute to autonomy? How can design support a sense/ feeling of autonomy?
4. What is the desired mobility experience in an unknown environment?

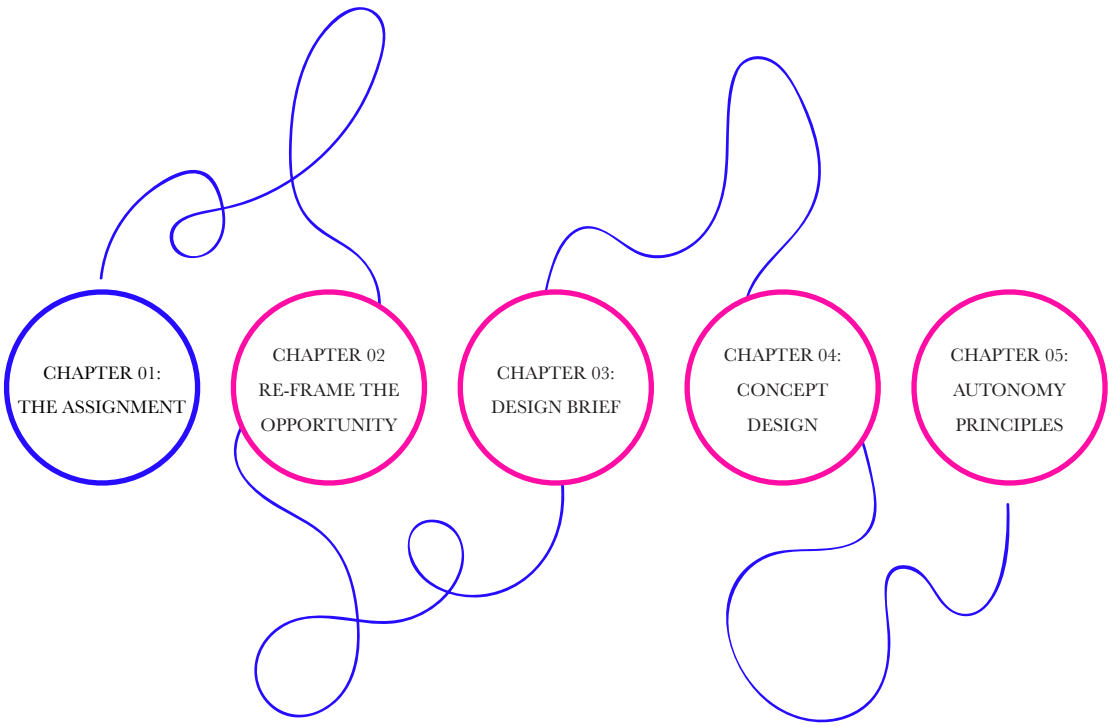


Figure 4 - Visualization of the approach taken. The done explorations are the blue thread through the process.

The approach of the project

The primary approach is to stay as close as possible to the real-world setting by doing research and design explorations. I have started this off by putting myself in the shoes of a VIP by being blind for two days. These explorations are done to emphasize with the target group to understand the meaning of autonomy within the context.

Explorations

In order to answer the research questions, several types of research and design explorations have been performed. Creating insights of VIP's daily life -including benefits and struggles- require for example theoretical research, own experiences (as being visually impaired), observations and interviews. Besides, it is important to be alert in daily life about the topic and to be able to make (new) connections within the topic. For instance, the most important insight is obtained by reading the newspaper on a Sunday morning.

I have chosen to perform different types of explorations which function as different lenses that look at the research questions in different ways. With this approach, I was able to generate well-considered answers. Hence, every exploration has a different goal, which is based on questions generated by previously executed explorations. But for all the explorations, the main goal was to learn about and design for autonomy.

With the help of the explorations and evaluations on autonomy, a re-formulation of the opportunity will be described. This will be investigated by more explorations to define a design goal and concept design. All these steps are continuously evaluated with VIPs and at the end of the project validated in the final test. The evaluations on autonomy will lead to design principles for those who want to design for autonomy when doing a project for users who are in need of assistance.

Autonomy and empathy are both important for the selected approach of this project. The way this has been executed is explained in the next sub-chapters.

Figure 5 - Me during the VIP-experience weekend. Photo by Margot Overvoorde.

1.3 THE APPROACH OF THE PROJECT

Design for autonomy

There is found an opportunity to design for a feeling of autonomy as the approach. Designing for autonomy has a different approach compared to the classical problem-solving approach in industrial design. Instead of simply looking for pains, there will be a focus on identifying VIP's strengths and opportunities to increase the feeling of autonomy.

To discover what autonomy means in the context of the project and how to design for autonomy, every exploration contains an evaluation of autonomy. These evaluations include the following questions: What did I learn about autonomy and what can I still learn about autonomy?

This project will be a journey that explores how to design for autonomy, and what autonomy means for VIPs in the mobility context.

1.3 THE APPROACH OF THE PROJECT

Design with empathy

In my opinion, it is essential that the target group feels taken seriously. Therefore, I believe that as a design researcher, it is your responsibility emphasize with the target group as much as possible. You should not do the thinking for people, but really try to think from their perspective as much as possible.

Therefore, besides the conversations I had with VIPs, I decided to experience what is like being a VIP myself. I simulated this by wearing obscured black glasses and explored what daily life is like without the use of your visual sense, as seen in figure 5. During the 'own experience exploration,' I experienced which activities created anxious feelings and which activities were not scary at all.

Designer Pat Moore also used this approach to design for Elderly. She regularly transformed herself, within four(!) hours, into an old lady mimicking both appearance and physical capabilities. At people.com, the article of Mary Vespa explains: "She attached splints to her knees (to simulate stiffness), then wrapped her legs in Ace bandages and covered everything with support hose (Moore, who lives in a fourth-floor walk-up off Gramercy Park, found that such realism required a 45-minute climb up her stairs.)". Her transformation did not only lead to ergonomic insights, but also gave her insights in how people treat elderly in places such as shops or public transportation (Vespa, 1985). In my opinion, it seems crazy that Pat Moore had to turn herself into an old woman to be able to explain to others what it is like to be 85. On the one hand, it is absurd if you think about how many people are 85 themselves, but in my case, it enables to have more in-depth and better conversations with the VIPs as my experience took away some prejudices.

Besides, my approach as a designer is to keep my view on people and contexts as open as possible. Hereby I always try to read between the lines by being sensitive to facial expressions and voice intonations during conversations and, most important, daring to be vulnerable by seeing yourself as a non-expert in the field you are designing for.

Structure of the report

The following chapters divide the project into four main / part s.

CHAPTER 2 - AUTONOMY

The autonomy chapter describes the explorations that have been performed to better understand autonomy and contains answers to the research questions and a reformulation of the opportunity to design for impulsivity.

CHAPTER 3 - IMPULSIVITY

The impulsivity chapter is about the search for the meaning of impulsivity within the context of this project. This is done by redefining the definition of impulsivity four times by doing design explorations and evaluations on autonomy.

CHAPTER 4 - WALKMEN

This chapter explains the design brief, the final concept design -Walkmen- and the validation.

CHAPTER 5 - CONCLUSION

In the last chapter, the project approach, concept design and approach are discussed, and recommendations are given. It also includes a small booklet that contains the principles that have been proved important when designing for autonomy for people who are in need of assistance.

Chapter 02

AUTONOMY

Understanding of autonomy within the VIP mobility context:
What is the re-framed opportunity to design for?

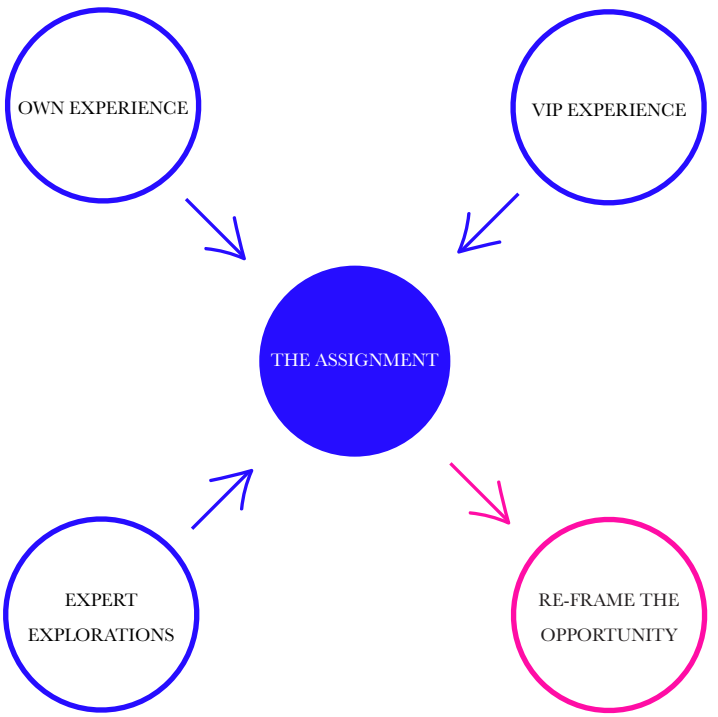


Figure 6 - Visualization of taken approach for the research in order to answer the research questions.

Introduction

The goal of this chapter is to answer the formulated research questions and find a re-formulation of the opportunity to design for autonomy. This will be done by doing research and design explorations.

2.1 INTRODUCTION

The approach

What explorations have been done to answer the research questions?

As mentioned in the 'approach of the project', different types of explorations are performed to look at the research questions in different ways. These explorations can be divided over three lenses: the own experience lens, the VIP experience lens, and the expert lens.

OWN EXPERIENCE EXPLORATIONS

The primary goal is to be well-prepared when getting in contact with VIPs. So basically, do emphasizing exercises.

VIP EXPERIENCE EXPLORATIONS

The main goal for this explorations line is to gain insights into to the mobility experience and concerns of VIPs and their perception of autonomy. The generated experience from the own experience explorations is used as starting point for these VIP experience explorations.

EXPERT EXPLORATIONS

The main goal is to gain insights about the expert's opinion of autonomy within their expertise and how and to what extent they teach/support autonomy within their profession to VIPs.

As every type of lens has a goal, also the different explorations have separate purposes. These goals are based on the results of previously performed explorations. These intermediate results can be either answered questions, new questions or unanswered questions.

Eventually, all explorations will participate in answering the research questions and form a re-formulation of the opportunity.

The next sub-chapters will extensively explain all the performed explorations.

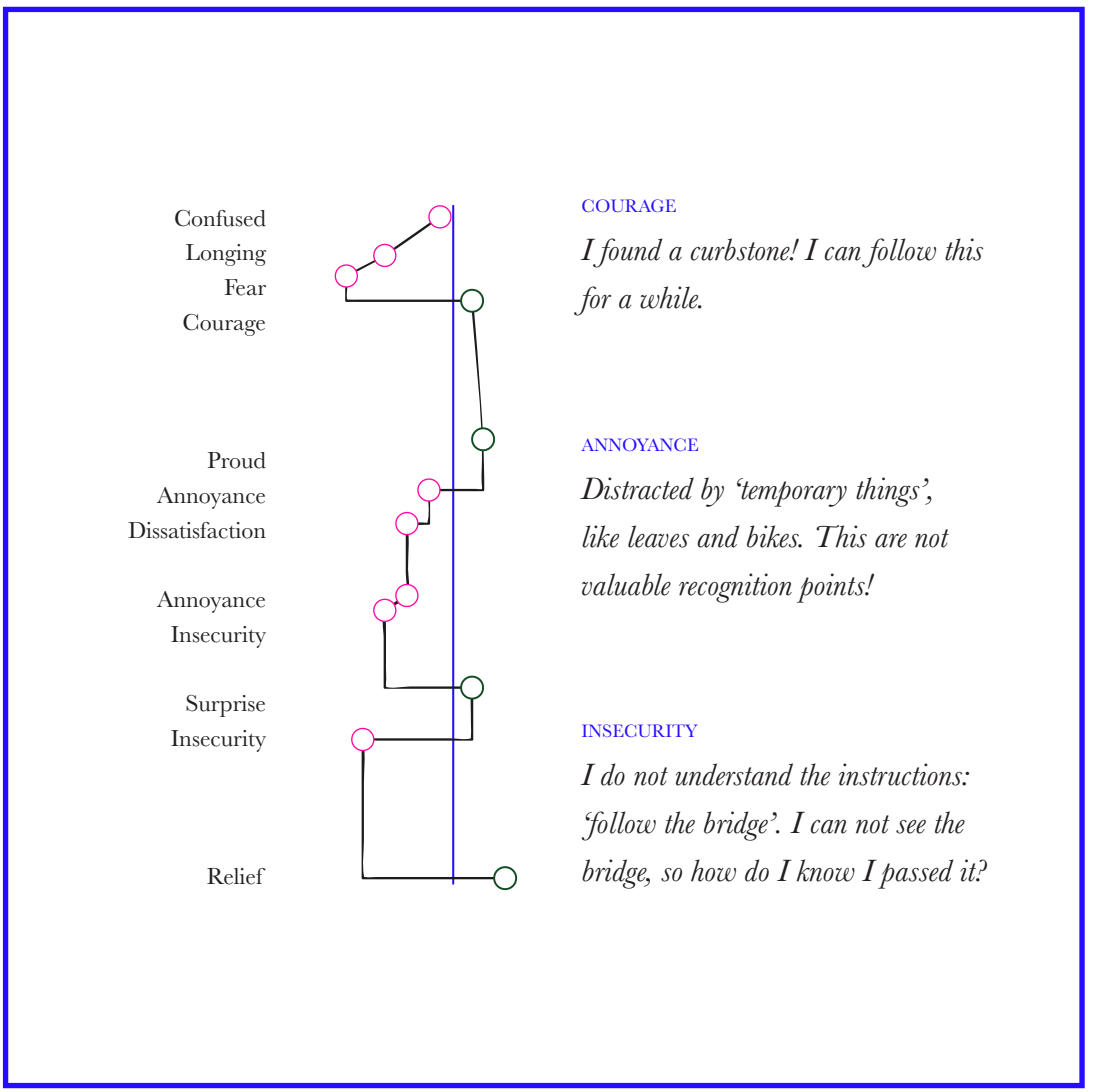


Figure 7 - Emotion line of one of the first walked route (300 m)

Explorations

The following pages describe the performed research and design explorations per lens to answer the research questions. Each exploration describes the goal, gained insights and follow-up questions.

2.2 EXPLORATIONS

Own experience explorations

How do I experience the mobility activity as VIP?

RESEARCH EXPLORATION

COLLECTING OWN EXPERIENCES

The purpose is to gain insights by self-experiencing the lack of visual senses and have a first evaluation of autonomy. As a first step, the basics have been explained and instructed by mobility and orientation expert Marten van Doorn at the Bartimeus campus in Zeist and through the city centre of Utrecht (unknown environments). Additionally, two '12h's daily life experience sessions' have been experienced by myself at my (known) home environment. These sessions were assisted by friends who are designers/landscape architects with the aim to do observations and to help out where needed. The approach of this exploration was explorative: Every six hours, evaluations took place to create a new setup for the next set of six hours. This setup consisted of a planning for the activities including one mobility activity. See Appendix 2 for an overview of all events, used tools during the day and evaluation tools.

During the 12h's daily-life-session activities, emotion capture cards (used in P. Desmet's coure: design for emotions) were used to capture emotions which are connected to specific activities to figure out possible concerns or distresses within the event. The emotion capture card is a design tool which is derived from Desmet's (2002) basic model of product emotions. See Appendix 2 for examples of the filled in emotion capture cards. Within this exploration, the emotion capture cards have two purposes:

1. During the 12h's of experience: Use as a facilitation tool to reflect on the activities and figuring out the main concerns which explain my actions and feelings together with the design students.

2. After the 12h's of experience: Within this exploration, I am both the one who experiences and analyses the activities. The emotion capture cards functioned as a reminder and helped visualizing and creating an overview of the mobility activities in emotion maps. Thus they helped to transfer from the 'one who experiences' to the 'analyst': to zoom out. One emotion map is shown in figure 7 of the first walked route. The emotion map shows a general overview of the experienced emotions during the performed mobility activities. T

During the exploration, I got insights about how I felt during the activities, which activities were difficult to perform and which not, how people react on the streets and in shops, and different types of human assistance. In total I had four different friends who helped me, each had a six hours shift and an entirely different approach of helping me out. One friend only helped me when I was begging for help, another was continuously checking if I was doing ok, the third one asked questions once I could not handle it myself to make me find the answer, and the last one was continuously speaking out loud his actions and observations to visualize the environment. To feel and recognize these differences in assistance was interesting; I experienced the need for different types of support in different situations.
For example, at my comfortable home, I needed less help compared to the unreliable street environment.

So, as a result, I got some experiences and an overview of my emotions during the mobility activities. As I was only using a cane and had a personal assistant with me, I am wondering which current assistive tools I would have appreciated during the walk to feel more autonomous and to figure out my needs and wants as a VIP.

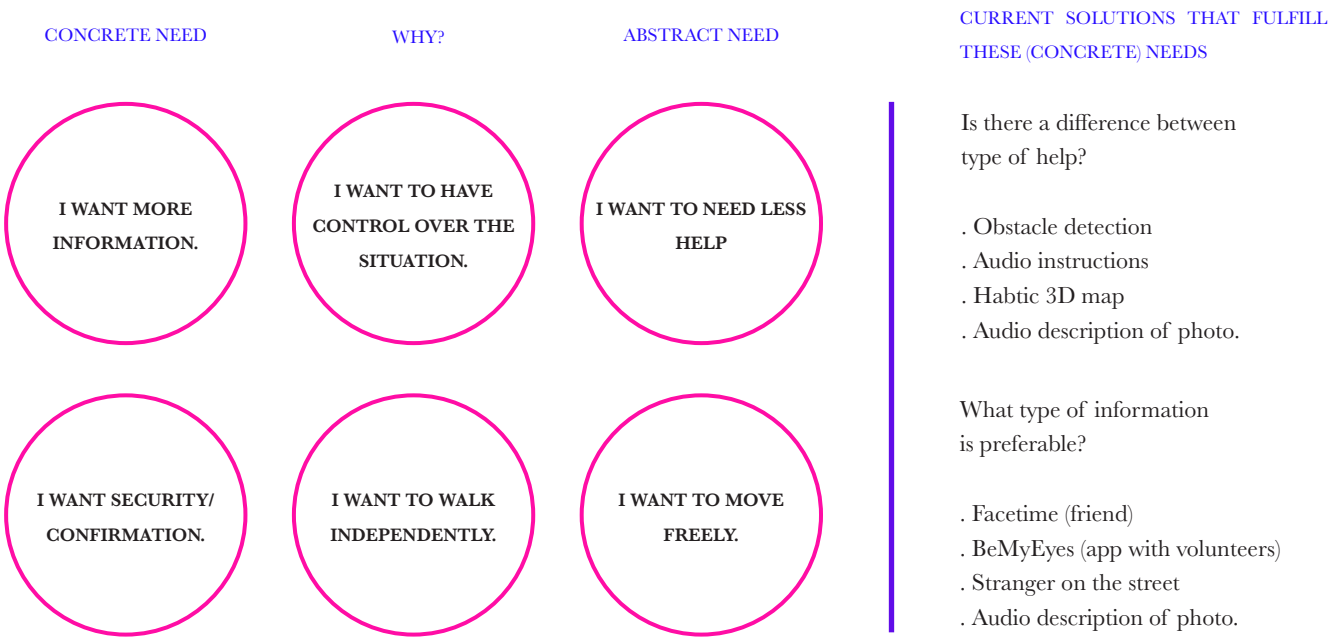


Figure 8 - An overview of my wants and needs connected to various solutions

DESIGN EXPLORATION

COLLECTING AND ANALYZING CURRENT EXAMPLES BASED ON OWN EXPERIENCE

The goal of this exploration is to understand my needs and wants during the mobility activity. To do so, the following steps have been taken:

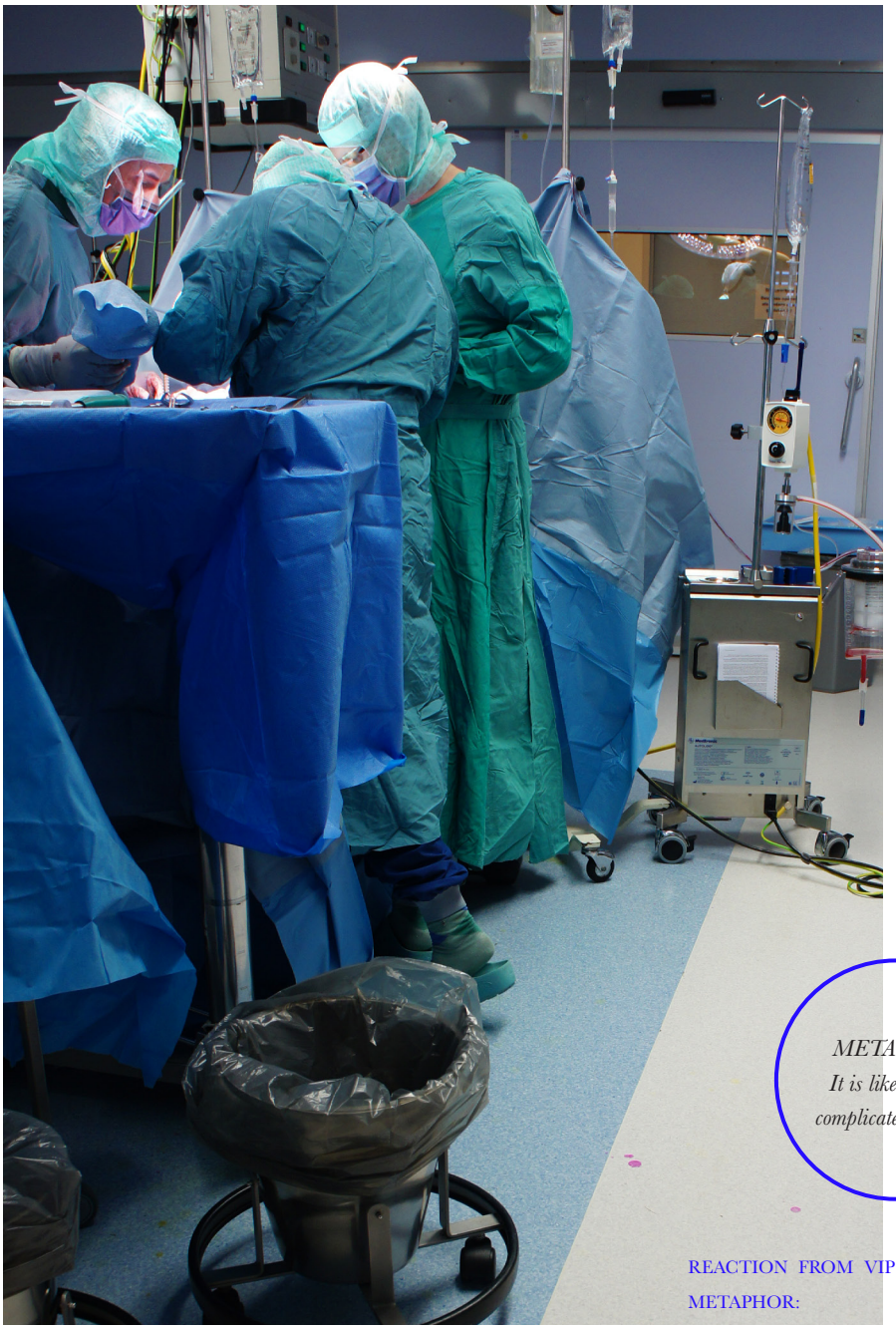
1. Create an overview of possible technologies: see what is already out there.

For the collection, I searched for as various current examples as possible without judging the solutions when collecting. Every solution has 'good' and 'wrong' aspects, and I believe you can learn from the things that don't work. A visual overview is showed in figure 2 , and an extended overview can be found in Appendix 1.

2. Evaluate and analyse the own experiences by defining personal concerns and needs.

The emotions maps/mobility activities are evaluated with the example cards by asking the question: Why would I or wouldn't I use this product concerning autonomy? As a result, a list of personal needs has been derived (see figure 8) by using the ladder technique where you ask the why-question multiple times in order to discover the more abstract needs.

I discovered that different types of solutions could fulfil the concrete needs. For example, information can be provided by a family member, a stranger in the street or a computer device. Which solution does a VIP prefer to fulfill the abstract need and what kind of effect does it have on autonomy? Also what type of information is needed to feel more secure? These nuances in providing solutions for needs are input for the interviews with the VIPs.



METAPHOR
It is like doing a complicated surgery.

Figure 9 - Described metaphor of own experience mobility activity. Photo by Paulien Klap

REACTION FROM VIP ON THE DESCRIBED METAPHOR:

"I would rather say plastic surgery. That surgeon wants it to look good and detailed - a good result. It is not about life or death, but yes...it is a bit stressful."

DESIGN EXPLORATION

CREATING A METAPHOR

To explain the experiences and insights gained from the research exploration, a metaphor is formulated. This metaphor is expressed to explain my experiences to outsiders and facilitates a discussion about the differences between my experiences -as an unexperienced VIP- and an experienced VIP. Furthermore, I want to communicate that I experienced the mobility activity as a difficult task which requires a lot of skills. Therefore I have searched for a comparison with another profession which requires a high level of skills.

The advantage of a metaphor is the ability to decompose it into different sub-components, which make my total experience more accessible to understand.

The following sentences summarize my VIP-mobility-experiences:

a. I had to focus on multiple things at the same time.
b. To be able to fulfill a route, I had to follow a specific and detailed sequence.
c. I felt insecure – I never knew what could come across and wether I could anticipate on possible obstacles.
d. I had to focus on the NOW and current position. Otherwise, I would not know what was surrounding me.
e High focus level
f. Survival mood – I felt relieved when I was at the final destination.

The described metaphor summarizes these elements into a surgeon who is doing a complicated surgery. The metaphor description below is linked to my VIP-mobility-experiences.

. The surgeon is mostly focusing on the tasks, but has to be aware of all the other sounds in the O.R. as well (a)
. The surgeon does step by step the surgery (b)
. The same type of surgery can be different every time because every human body is slightly different. (c)
. Every type of operation requires different sequence of steps like every route is also different.
. The surgeon is in its zone (sterile zone) (d), but has to be highly aware of the things around him (monitors) (e)
. The surgeon is not 100% sure if he will succeed and will feel relieved when the surgery is completed (successfully) (f)
. Communication: When the surgeon asks for a tool or extra hand, he receives it from his/her assistant. However, the assistant does not question the surgeon.
. The surgeon is a professional that needs practice, like VIPs are also highly skilled in their practices. Mobility also needs to be practiced to reach a certain autonomy on the streets.

During the interviews with VIPs, which is part of the VIP experience explorations, I presented the metaphor. Most times, big smiles rose on the VIP's faces as my experience was more dramatic than their experiences as highly skilled experts. We discussed the differences in experience and fine-tuned the description of the metaphor into -It is like doing a plastic surgery- because doing something wrong during the complicated surgery can be about life or death, while mistakes during plastic surgery do generally not influence life/death, similar to mobility. Doing something wrong in mobility means for example that you look clumsy or have to walk back and therefore has little or no life-threatening outcomes.

It turned out that the metaphor had a more rich effect than expected because it functioned as an icebreaker and turned me into an inexperienced person who wants to learn how VIPs use their skills, instead of the designer who is going to solve their problems.

Figure 10 - Photo taken from the book 'Architecture door andere ogen', page 140. The photo shows Vincent Bijlo who walks through the Beurs van Berlage in Amsterdam. His grandfather designed the building. (Jordans et al., 2012).

QUOTES VINCENT BIJLO

"My images shape slowly by using my hands - I pay attention to the details of the material: Is it cold, is it hot?"

"My grandfather designed this building. He wanted that I was able to feel the building."

2.2 EXPLORATIONS

VIP experience explorations

How do VIPs experience mobility?

Having experienced being a VIP by myself is not enough to know how a VIP experiences the mobility activity. Therefore VIP experience explorations have been performed to generate a better understanding of the current situation and to be able to define the opportunity.

RESEARCH EXPLORATION

INTERVIEWS WITH VIPS

Six interviews with VIPs were conducted, by evaluating the current examples from Appendix 1 for two main topics. First, for mobility in general (would you use these solutions for your most/least pleasant route?) and secondly, concerning a feeling of autonomy.

The selections alternated during the interviews based on the gained insights from design exploration, collecting and analyzing current examples based on own experience and the gained interview answers by the VIPs.

The last part of the interviews consisted of discussing and comparing the generated metaphor on page 36. See Appendix 3 for the interview questions.

Explaining, comparing and discussing my experiences and metaphor during the interviews were most valuable of the interviews. It broke the ice and turned me into the inexperienced person. I gained their assistance by receiving tips and explanations about how they deal with these situations that I could not handle well by myself. My dramatic experiences made them laugh and helped me by taking these situations into perspective: "When you are more experienced, you will not feel bothered by that anymore."

In general, during the interviews, I have learned that every VIP has different preferences for gaining assistance from people or technologies. This may depend on their mindset, personality or current energy level. However, some similarities were found, which are summarized in chapter 2.4: VIP mobility concerns at page 52.

Almost all interviewee mentioned that they feel autonomous already because they know what they are capable of and how much time some activities consumes. Depending on their current state of mind they make decisions how much time, energy and effort they want to put into an activity. For example, one of the interviewees had to go to a conference, which she had not been before. She knew how to get from her home to the bus station, from the bus station to the train station and how to change tracks with the train. However, she did not know exactly how to get from the train to the conference hall. Because she thought it was more important to be on time instead of finding the final destination by herself, she ordered a taxi. On the way back she walked from the conference hall to the train station, because it did not matter if she would be able to catch the first, second or third possible train.

RESEARCH EXPLORATIONS

ANALYZE AUDIO FRAGMENTS OF THE BOOK 'ARCHITECTUUR DOOR ANDERE OGEN (STEVENSON & LINDBERG, 2010)

The book 'Architectuur door andere ogen' is about how architects can design with the VIPs in mind. The book includes a series of audio fragments about VIPs walking through famous buildings in the Netherlands. These VIPs describe how they experience the building and how they approach to getting to know a building. I have learned how VIPs use their ears and hands to discover size, shape and used materials of spaces by clicking with their tong and clapping with their hands. Also they feel the materials with their hands like seen in figure 10. So, they form an opinion about a building as sighted people do, but their favourite 'view' is the place where you get the best overview of all the sounds in the building.

Figure 11 - The Den Haag accessibility challenge day on the 29th of September. Photo made by Outside inc.

2.2 EXPLORATIONS

The experts explorations

How do experts approach autonomy?

The previous two lenses helped me understanding VIP's current experiences. To better understand the 'why' behind these experiences, the third lens - the expert explorations – was executed to observe how experts approach mobility and autonomy. After all, the current solutions for VIPs are a result of how VIPs got approached by the people who work for and with VIPs.

RESEARCH EXPLORATIONS

OBSERVE MARTEN VAN DOORN'S MOBILITY TRAINING APPROACH

Marten van Doorn is mobility and orientation expert and has a lot of experience in training both VIPs and (new) mobility trainers. Marten wrote several mobility instructions for mobility and orientation trainers which I also read as preparation for my experience explorations.

In these documents, Marten empathizes a lot that it is vital that VIPs get stimulated by their environment to be curious and discover by themselves what is around and how they can make use of it. When doing this by yourself, you will learn more and will create a more significant database for yourself.

Additionally, to observe theory applied in practice, I did observations during two mobility training sessions of Marten during a one-on-one meeting with his students. The first training was about crossroads and the second about echolocation.

During the training, Marten is empathizing the use of senses and recognition points. Also, he works on a way of walking that looks as smooth as possible, which is also a central concern VIPs mention during the interviews.

Autonomy means for Marten a way of navigating where GPS is so accurate that VIPS have an accuracy of thirty centimeters, so they are easily capable of finding the pedestrian crossing at a largely sized crossroad. Also, Marten is teaching fixed routes, instead of general rules and situations, which I was expecting in the first place. "Because I never had a student who said: Let's go left instead of right this time!" To make VIPs experience a new route is therefore going to be a challenge.

RESEARCH EXPLORATION

INTERVIEW WITH PAUL LAGERWEIJ

Paul Lagerweij is involved in training programs at Bartimeus for VIP youngsters about social environments and independent living. During the interview, we talked about how he teaches his students about autonomy. He told me that autonomy is not about doing everything on your own, but about taking the initiative and using your resources.

RESEARCH EXPLORATION

VISITING THE ZIEZO-FAIR 2018 AND JOINING THE DEN HAAG ACCESSIBILITY CHALLENGE DAY

The Ziezo-beurs is a fair for VIPs where all types of organizations are presenting their latest offer to gain information or to try out new technologies. Together with a colleague I visited the fair to see and try some tools for VIPs, for example haptic maps to teach children topography and Showdown, table tennis for VIPs. During the market, I experienced the engineering trap which has been described in the introduction chapter for the first time. At some moment the colleague who was joining me said: "I have never been at such a place, where they put labels on people and don't think out of the box." Most of the products that were presented, were clearly designed based on 'the problem' that the intended users have a visual disability, which was mainly translated into the designs having huge fonts, and no attention was paid to the aesthetics.

The same occurred during the Den Haag accessibility challenge, where around ten groups consisting of student groups and companies tested and presented with and for VIPs. Again those ideas were almost all technology-based and designed to aim to be 100% autonomous.

These solutions are in contradiction with the approach both Marten and Paul apply in their trainings. They encourage mobility trainers to gain insights into VIP's resources and not to strive to do everything on your own. This means that people who are developing products clearly have no insights

Figure 12 - Analyzing insights by categorizing statement cards. Photo by Loriana Daggers.

2.2 EXPLORATIONS

Analyze insights

How to combine the three exploration lenses?

The different exploration lenses helped to generate a diverse overview of the context. During the 'own experiences' I learned the basic techniques of VIPs, experienced how sighted people react to VIPs by myself and I faced my own concerns and needs during the VIP activity. The 'own experiences' supported to empathize, so I was able to have more in depth conversations with VIPs. For example, by talking about the differences between the VIPs' experiences and my own.

During the VIP experience explorations, I gained understanding about the concerns VIPs have and the expert explorations helped me better understand why VIPs have these concerns by observing how non-VIP-people react to VIPs in the shape of trainings and assistive solutions.

All data generated from the previous explorations have been analyzed with the use of statement cards. Statement cards help to organize the raw material by selecting one quote or observation and translate this into an interpretation. When clustering the statement cards, the small insights transform into more significant categories (Sanders & Stappers, 2012). This helps to create an overview and find the connections between the insights to search for the opportunities to design for. The insights are described in the following chapters, where the research questions will be answered and the initial assignment will be reformulated.

Figure 13 - How to deal with receiving a bouquet as a VIP? Photo by A. Suleiman (unsplash.com)

Autonomy for VIPs

The following three chapters are a result of the performed explorations from the previous chapter and give answers to the formulated research questions about mobility, autonomy and VIPs.

General

Answer to research question 1: What does autonomy mean for VIPs?

As part of the design explorations, an interview with Paul Lagerweij, a psychologist who is involved in training programs at Bartimeus for VIP youngsters about social environments and independent living, was conducted. During this interview he described a situation that can be tackled in different ways, with different feelings of autonomy as result:

A friend is coming over for dinner and brings flowers as a gift. There are multiple ways of handling this situation:

1. The friend gives you the flowers (placing them in your hand), you are not able to take care of them by yourself and have to ask him if he can help you out.

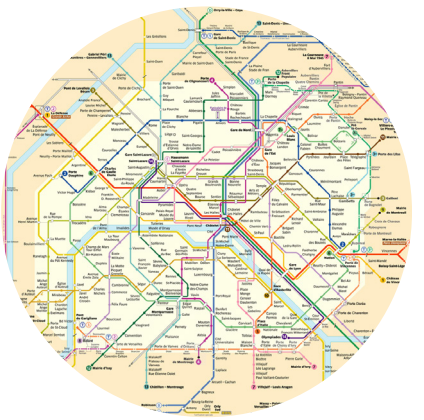
2. Before the friend can hand over the flowers, you say: "thanks for bringing flowers, can you take care of them? You can find the vase on the top shelve of the vintage closet in the living room."

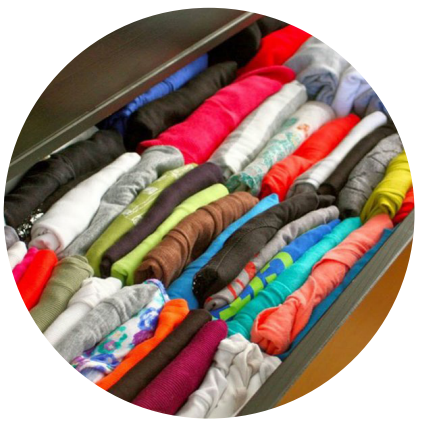
In both situations, the VIP is not taking care of the flowers, but in the second option, the person is taking the lead in the situation. This example implies that feeling autonomous doesn't mean you have to do everything by yourself, but that taking the lead, knowing your strengths and know what and how you want certain situations to happen is most important to feel autonomous.

VIP

"When you face an obstacle you realize: ok, this is different. Let's plan how to solve this."

1.





9.

VIP

"Most people help when I ask. When I am kind, people will also be kind to me."

Figure 14 - Representations of visual superpowers

VIP's superpowers

Introduction to VIPs by describing their strengths by how I like to call them: superpowers.

Because VIPs do not use visual senses in daily life, VIPs develop a set of skills that they need in order to do the activities that they want to do. Designing with people's strengths and found opportunities within the context is the strategy of the Delft Institute of Positive Design. During the research and design explorations a collection of superpowers was extracted:

1. EXPERT IN ANTICIPATION

The same route is not every time the same, due to temporary obstacles like bikes on the sidewalk, cars that deliver goods to retail shops or road work that force you to take another turn. These obstacles can result in missing your landmark or walk in the wrong direction. The approach of VIPs is: first make a new plan to reach your goal before you start moving.

2. VERBALLY EXCELLENT

Explaining what you want, can't be done by pointing to objects. Also, audio texting is annoying when you have to remove your sentence and speak over again.

3. MASSIVE DATABASE OF ROUTES AND MAPS

Not making use of Google maps when walking means VIPs need to be well prepared and a have a massive database of routes in the cortex.

4. PRECISE DISTANCE RECOGNITION

One of the interviewee mentioned: "When I want to know how far away a certain shop is, I do not ask for the number of meters, because sighted people are not always capable of doing this. So I do ask for the number of shops that are between my current position and the shop I want to visit." VIPs can count the entrances of shops by listening to people that walking in and out of the shop.

5. HYPERSENSITIVE HEARING AND TOUCH SENSES

Loss of one sense means that the other senses have to take over. In the case of VIPs these are the hearing and touch senses.

6. FEARLESS TO ASK QUESTIONS

Help is needed daily, especially in mobility. Most of the time VIPS ask confirmation questions, to be sure they are on the right track. This makes VIPs trained in asking, and makes them feeling hesitant less often.

7. WELL ORGANIZED

When placing products at an undefined spot, it often costs a lot time to find them back. Therefore it is important to organize your products within your house and work environment. Besides, a well-planned route is also essential for the mobility activity to be able to have a smooth route.

8. 360 DEGREES HEARING VIEW

Eyes have a certain degree of view, but ears have the capability of looking at what is behind you.

9. ONLY MEET PEOPLE WITH GOOD INTENTIONS

When being outside and in need of assistance, VIPs do not get in contact with people who do not feel like helping, because they walk around them. On the other hand, the people who want to help offer much assistance. Also, assistance is sometimes offered when it is not needed. This offered help is with good intention, but unneeded and a bit annoying.

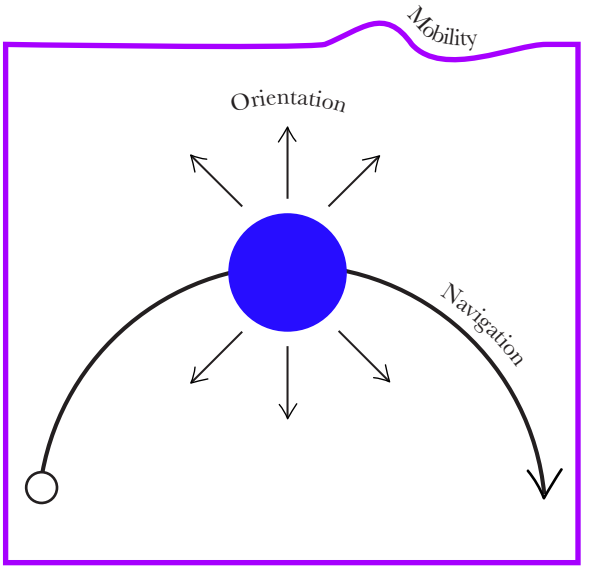


Figure 15 - Mobility scheme

Mobility for VIPs

In order to understand the VIP mobility concerns, the term mobility needs to be explained, also different mobility mindsets are described, as VIPs change mindsets concerning the condition of the environment and current state of mind or energy level.

2.4 MOBILITY FOR VIPS

Decompose mobility

Decomposition of mobility by describing the different parts of mobility and answering research question 2: What does mobility mean for VIPs?

Mobility is about moving from A to B. For example by foot, by car or public transportation. Mobility is a collection of orientation and navigation while facing obstacles. To be able to walk a route from A to B independently and safe, these three parts needs to be mastered and executed. Figure 15 shows the relation between the different elements (Van Doorn, 2018).

ORIENTATION

Skill to know the position in the person's directly surrounded environment.

NAVIGATION

Skill to know and control your position within the route and where your started. Important is to know where to go, and where you come from. When loosing track of your position, it is necessary to be able to return back to a position where you take back the control over the situation.

OBSTACLE

Objects can block a route, create an unsafe situation, but can also be used as recognition point. Skills are needed to detect these obstacles and to anticipate on them based on their function within the route.

So, knowing where mobility consists of, how does the skill level of these components influence the mindset of the VIPS?

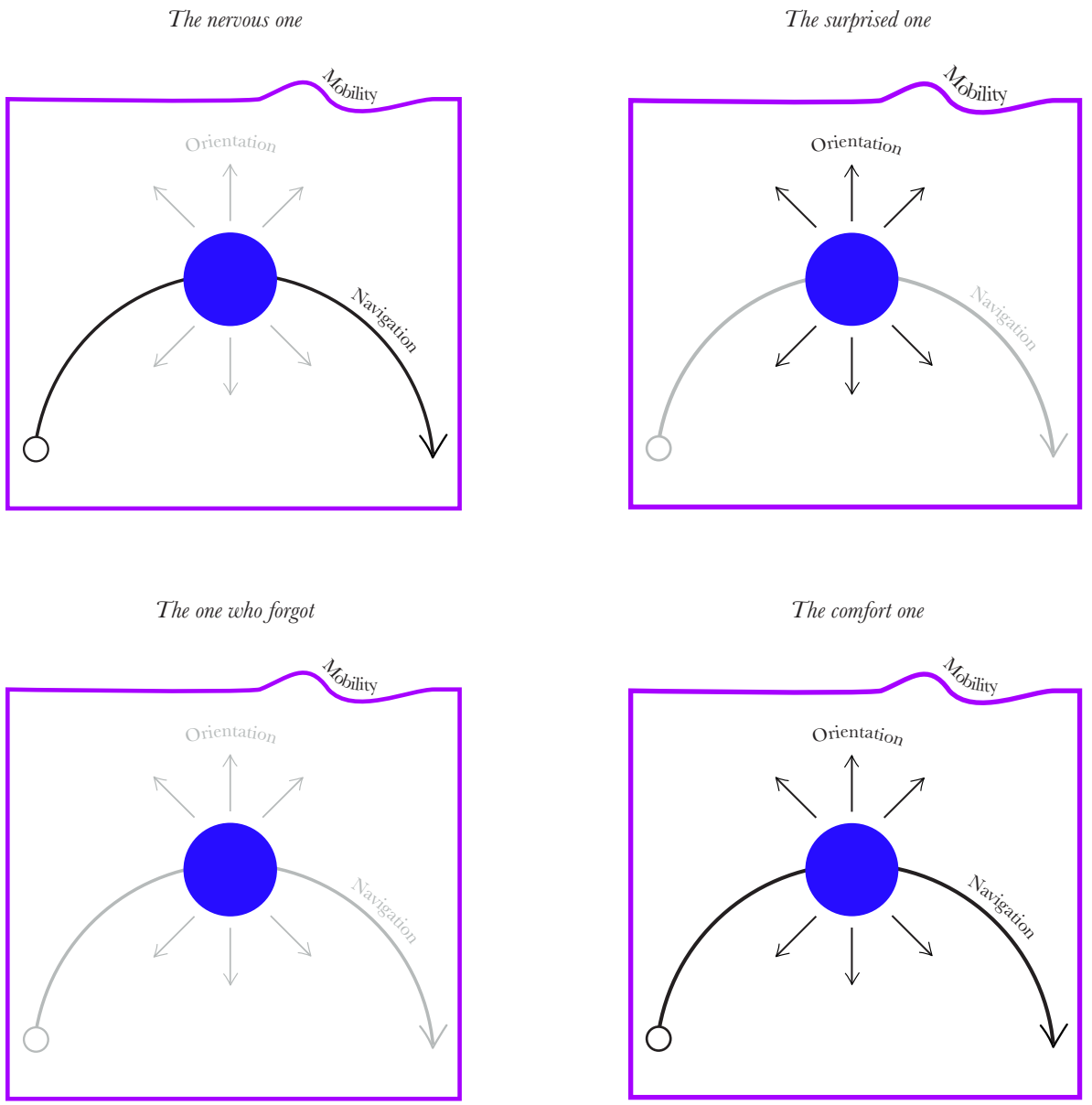


Figure 15 - Mobility scheme of the four mobility mindsets.

2.4 MOBILITY FOR VIPS

Mobility mindsets

Link the three different parts of mobility to people's mindsets in to relation their insecurities and/or confidence during certain routes.

Giving s description about a VIPs type of visual disability does not say anything about their mindset concerning mobility. During the interviews with VIPs, descriptions of pleasant and unpleasant routes have been given. Based on these answers different 'mobility mind-sets' have been formulated in relation with the mobility parts.

THE NERVOUS ONE

Uncomfortable about orientation skills, but comfortable about navigation skills:

You know where you want to go, but you are nervous and doubting if you can find all the recognition points. This can happen during a busy time of the day at a known route or during rain fall.

THE SURPRISED ONE

Uncomfortable about navigation skills, but comfortable about orientation skills:

When you did not take the lead when walking and discover something you would like to go again. You cannot remember the route exactly.

THE ONE WHO FORGOT

Being uncomfortable about both orientation and navigation skills:

Going to a place where you don't come often, so you cannot remember exactly all the recognition points and the route.

THE COMFORTABLE ONE

Being comfortable about both orientation and navigation skills:

Feeling comfortable on the known route that he/she walks more often. This means you walk in a more freely way, where you can day-dream a little bit.

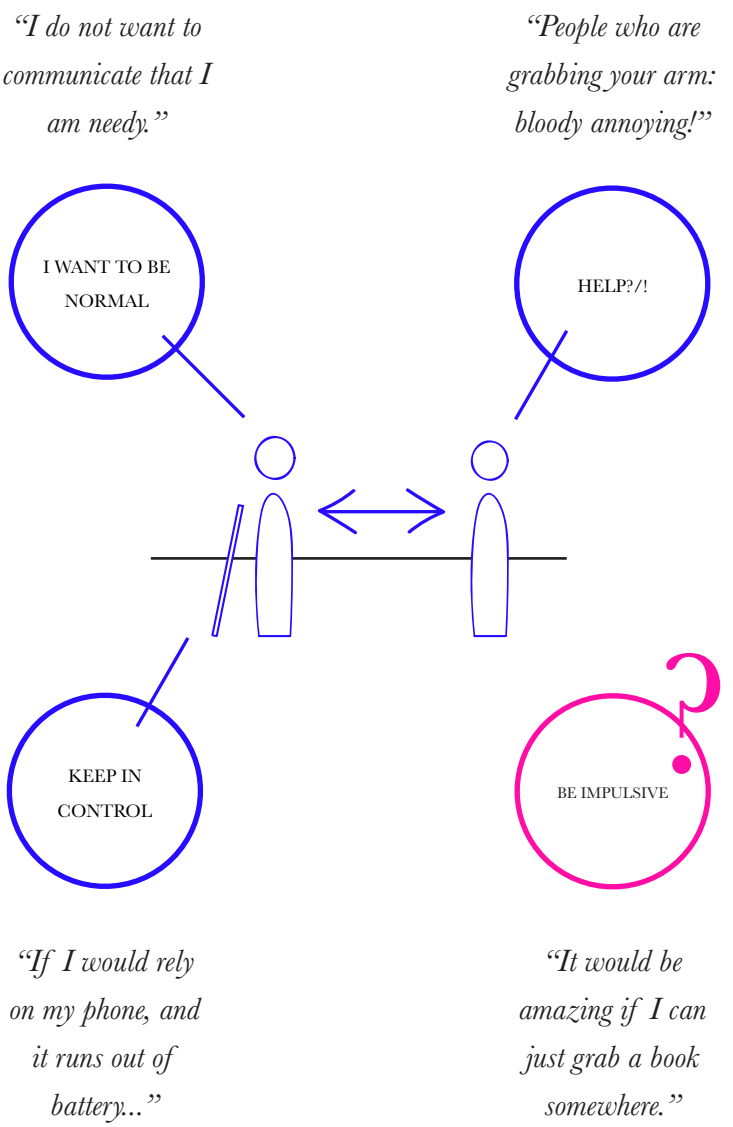


Figure 16 - Visualization of the relation between the mobility themes and the context.

2.4 MOBILITY FOR VIPS

VIP mobility concerns

Description of the main mobility concerns of VIPs and the answer to research question 3a - What are the main concerns in the field of mobility?

For VIPS, mobility consumes on average more energy compared to sighted people. Therefore, the motivation behind the mobility activity is the destination, not the mobility activity itself. As a result of the explorations, mobility concerns are found.

The following main mobility concerns are described:

MOBILITY CONCERN I

I WANT TO BE 'NORMAL'.

VIPs mention by themselves that they feel autonomous and want to 'be normal' in general. Assistive tools highlight the fact that they are 'not normal,' especially stigmatized products (Vaes, 2014). Offered help from bystanders emphasizes that it looks like they need help. Therefore their goal is that they 'walk smoothly' to blend into the environment as smooth as possible, like 'normal people.' This concern raises the question: is their image of ordinary people realistic? Because ordinary people and even superheroes do need help and make mistakes. Being 100% autonomous is (unfortunately?) not possible.

MOBILITY THEME #2

HELP?/!

Help is not about getting less help, but about the type of help. Daily, VIPs ask passers-by on the street questions when it comes to mobility: "Is it true that …?", "How many shops are between me and the …?" Most of these questions are confirmation questions and not open questions that need many instructions. Besides, they are not afraid to ask. Their approach is first standing still, wait and listen if someone is passing by and when the moment is right … "Can I ask you something?" People that are willing to help are amiable which make their contact with people in general very pleasant.

On the other hand, these unknown passengers are also offering unwanted help. VIPs think at those moments: "Mind your own business(!)", but instead of answering unfriendly, they do stay friendly. They know it comes from the right heart and they also depend on these people in situations when they do need help.

MOBILITY THEME #3

KEEP IN CONTROL

Control over the situation is about the strategy to have a pleasant route. It is all about knowing the current position and keeping the overview. Proper preparation is essential for a pleasant walk in the known and unknown environments. Although exploring a new environment on their own is uncommon, due to uncertainty what to face and the need of preparation. To accomplish a route, Vips need to be focused and should not lose track of the situation. Other factors that influence the feeling of control are: Trust the environment and yourself, create a database of routes, be curious when you do not know your position accurately, practice and experience, stay calm and plan your steps. When experiencing this control, you can move more freely on the way to the destination.

MOBILITY CONCERN #4

BE IMPULSIVE

Keeping previous concerns in mind, a question pops up: "Is there any room for impulsivity?". Exploring and searching for new things is something that is out of reach for VIPs in several situations. One of the quotes that intrigued me the most during the design explorations was: "It would be amazing if I can just grab a book somewhere"

These concerns makes us understand how and why VIPs have wants and needs and help to define an opportunity and function as a reminder during the ideation phase of the project.

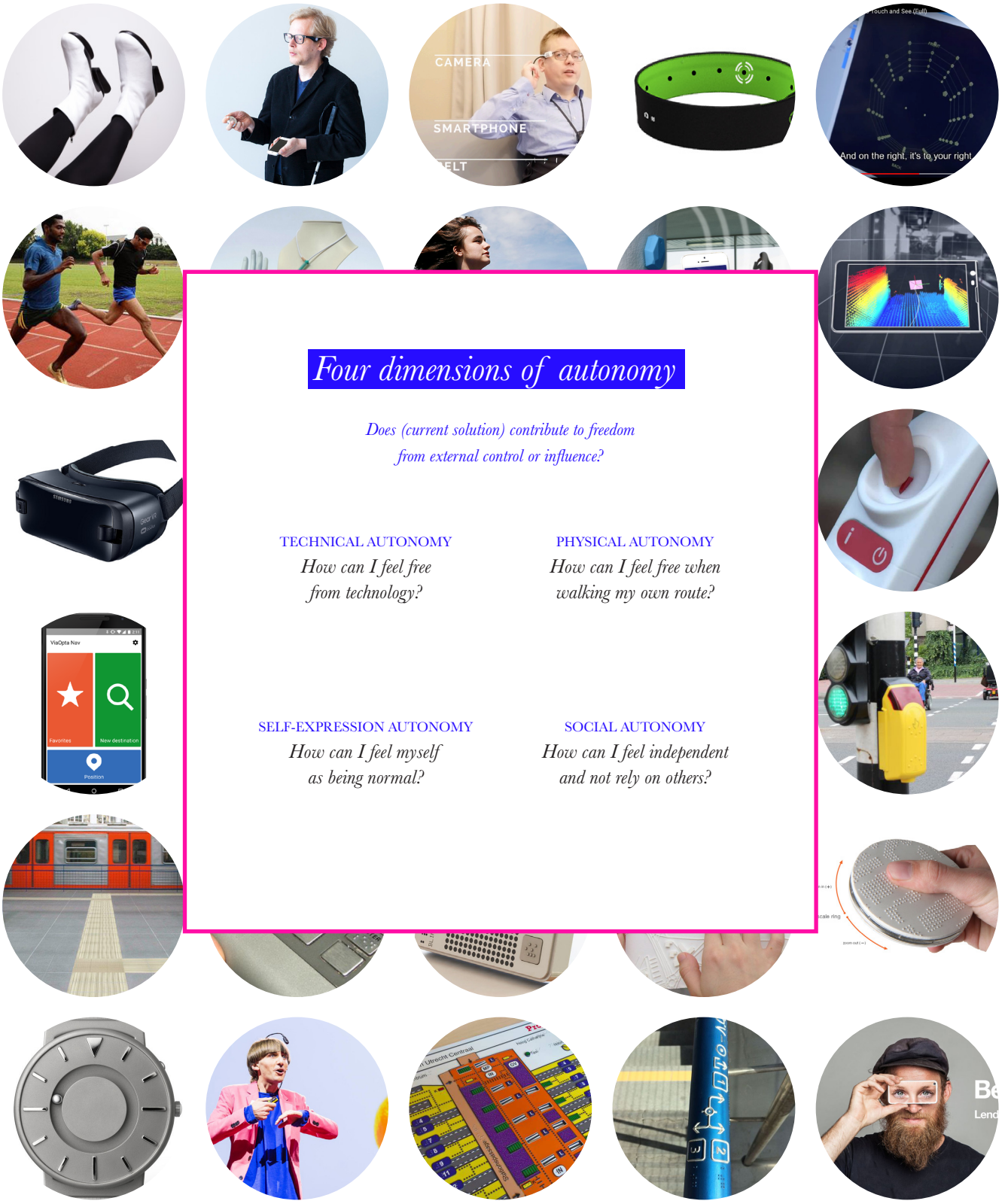


Figure 17 - The four dimensions of autonomy identified by evaluating current examples.

Four dimensions of autonomy

We now understand the general mobility concerns, but where does autonomy consist of in the mobility context?

The answer that VIPs give to the question if they feel autonomous within the mobility activity is YES(!). Most of the time they travel from A to B by themselves on familiar routes, and when they are not comfortable with a route they know how to prepare the route or ask for assistance. For example, by asking a friend to walk with them or ordering a taxi for (a part) of the new route. They have control over their approach to the route, and in their opinion this makes them feel autonomous.

Rating current solutions to their contribution to a feeling of autonomy is impossible. Contradictions come along when trying to rate a solution on autonomy and I realized that "freedom from external control or influence; independence" (Stevenson & Lindberg, 2010) can be interpreted in multiple ways. This will be explained by the examples of the guiding tiles and the guiding dog.

The guiding tiles form paths/routes within current street sidewalks towards for example train stations or shopping streets and indicate crossroads. When asking the question - Does this tile contribute to freedom from external control or influence?- conflicting answers were given:

. Yes, because you do not need (high tech) technology to find a crossroad
. Yes, because I do not need other people to find the crossroad.
. No, I have to follow the line to find the station.
. No, I cannot determine my route.

The following answers are given for the guiding dog:

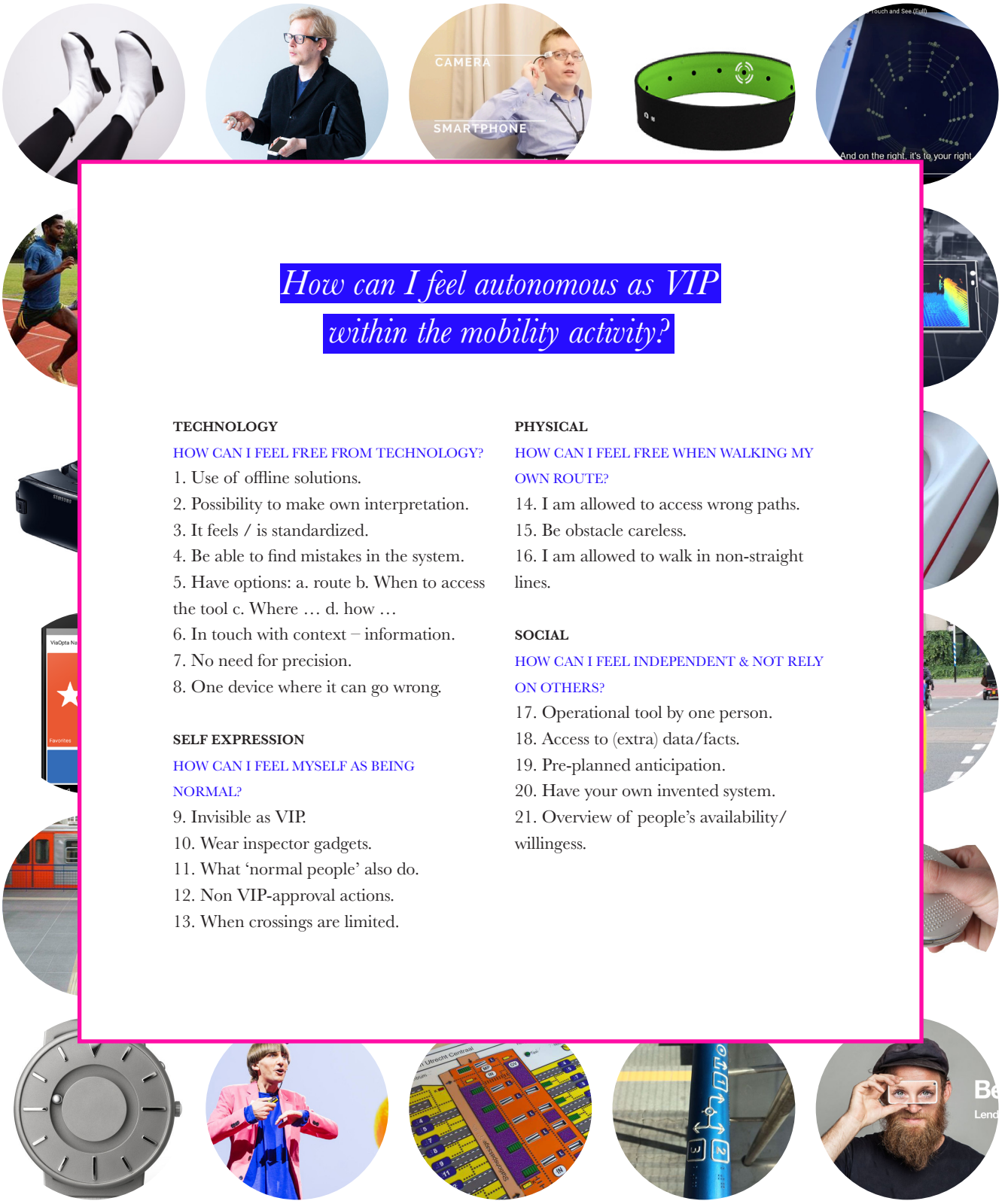
. Yes, I do not need an electronic device to walk my route.
. No, I see the dog as a technology that helps me during the walk.
. Yes, because I do not need other people to find the crossroad.
. Yes, I need a living creature to help me.
. No, the dog decides how to avoid the obstacles
. Yes, I say to the dog where I want to go, and if I do not agree with the dog, I stop his/her actions.

These answers indicate that autonomy cannot be seen as a value that consists of one dimension that provides a rating system for autonomy. Autonomy consists of multiple dimensions that can contribute to a feeling of autonomy within the context of this project. For this project, four dimensions of autonomy have been formulated:

Technological autonomy, Self-expression autonomy, physical autonomy and social autonomy. The following examples express the dimensions in different contexts:

. Someone with diabetes who has an autonomous insulin pump does not experience technical autonomy by his/herself. But would he/she feel freer when he has a manual syringe?
. A soldier in service does not feel self-expression autonomy during his duty. But can he when he is free from work?
. A technical ballet dancer does not experience physical autonomy while performing a group choreographed ballet but probably does when he/she is performing a solo piece.
. A pilot does not feel social autonomy, because he/she needs a co-pilot to be allowed to fly an aircraft.

As all four dimensions are a part of autonomy for VIP mobility and for every VIP the importance would be different in different situations, I do not make a hierarchy or choose one dimension to design for. Therefore, all dimensions will be considered when reflecting on the ideas in the ideation phase.



How can I feel autonomous as VIP within the mobility activity?

TECHNOLOGY

HOW CAN I FEEL FREE FROM TECHNOLOGY?

1. Use of offline solutions.
2. Possibility to make own interpretation.
3. It feels / is standardized.
4. Be able to find mistakes in the system.
5. Have options: a. route b. When to access the tool c. Where … d. how …
6. In touch with context – information.
7. No need for precision.
8. One device where it can go wrong.

SELF EXPRESSION

HOW CAN I FEEL MYSELF AS BEING NORMAL?

9. Invisible as VIP.
10. Wear inspector gadgets.
11. What 'normal people' also do.
12. Non VIP-approval actions.
13. When crossings are limited.

PHYSICAL

HOW CAN I FEEL FREE WHEN WALKING MY OWN ROUTE?

14. I am allowed to access wrong paths.
15. Be obstacle careless.
16. I am allowed to walk in non-straight lines.

SOCIAL

HOW CAN I FEEL INDEPENDENT & NOT RELY ON OTHERS?

17. Operational tool by one person.
18. Access to (extra) data/facts.
19. Pre-planned anticipation.
20. Have your own invented system.
21. Overview of people's availability/ willingess.

Figure 18 - 21 answers to the question: How can I feel autonomous as VIP in the mobility context?

Characteristics for autonomous assistive tools

Answer to research question 3b: How do tools that are currently in use contribute to autonomy? How can design support a sense/ feeling of autonomy?

During the explorations an overview of all sort of solutions was created: terrible solutions, futuristic solutions, student (art) projects, mostly-used solutions and the newest technologies (see appendix 1). I already reflected upon the solutions with my own experiences as preparation for the interviews. As the context is currently clearer and a fundament - the four dimensions of autonomy- is defined, the current solutions will be evaluated on the contribution to autonomy. It is important not to judge the examples in general, but search for the separate dimensions. Also, one can learn from bad examples by aiming for the opposite effect.

The evaluation has been performed by choosing four good and four bad examples for each dimension. In Appendix 4 you can find an overview of the selection and motivation why it is a bad or good example. Based on this overview, the question is asked: How can I feel autonomous?
This analysis resulted in the 21 answers shown in figure 18. Appendix 4 also indicates which examples are related to the answers.

In general, these answers do not imply practical or flawless mobility activities, but rather show users being connected with the environment, and creating an overview or be organized. This means for the design that it does not have to create a faster and easier way for mobility per se, and can be impractical in some way. This observation is in line with being impulsive, which also does not imply the practical solution eventually.

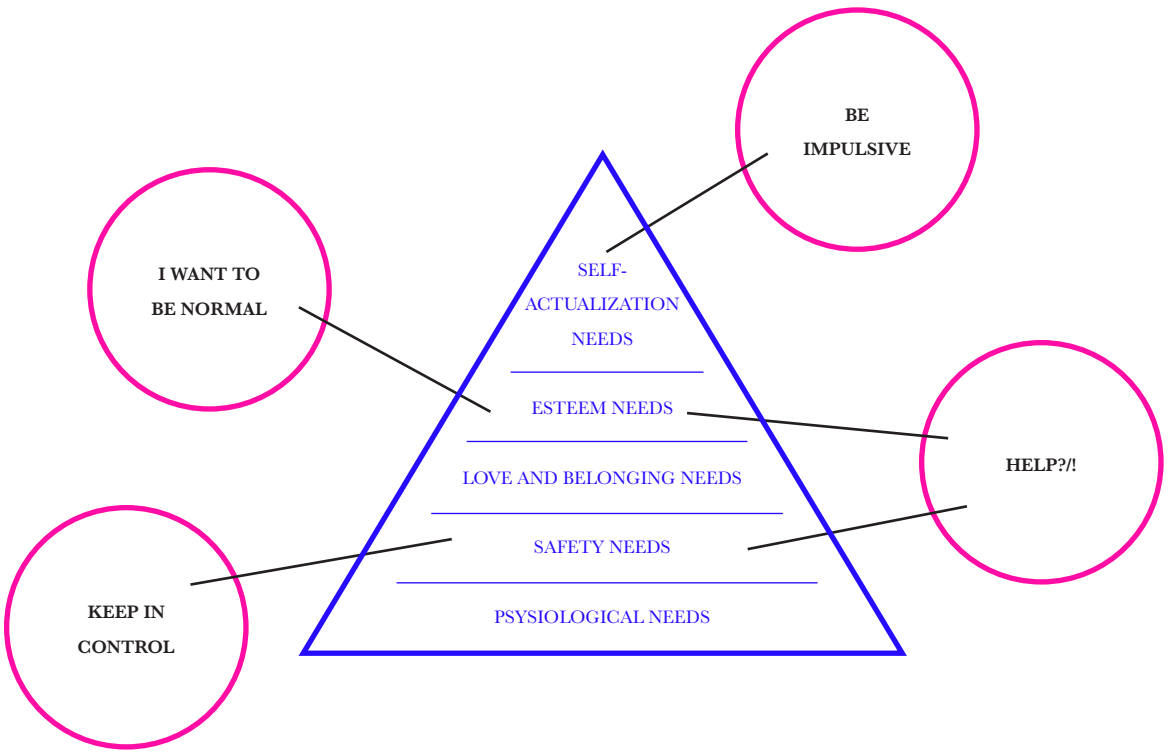


Figure 19 - Mobility themes in relation to Maslow's model.

Conclusion

As a result of the explorations the research questions have been answered by defining mobility and its concerns and by the definitions of the dimensions of autonomy. To conclude, a re-formulation of the opportunity needs to be defined to continue with.

2.6 CONCLUSION

Re-frame the opportunity

Answer to research question 4: What is the desired mobility experience in an unknown environment?

To be able to formulate a suitable opportunity for the design context, the mobility concerns should be considered. Being in control is an important aspect to be able to know the route, walk smoothly and prevent mistakes, although the definition of autonomy is about freedom from external factors. There seems an opportunity to design for impulsivity within the mobility context, which is in the current situation not possible due to loss of control over the mobility activity.

When looking into Maslow's hierarchy of needs model (Jimenez, Pohlmeyer & Desmet, 2015), the previously described mobility concerns are placed in the different levels of this model. Maslow's model describes five different levels of groups of needs in a hierarchy from the most basic needs at the bottom to self-actualization needs at the top of the pyramid. Autonomy and spontaneity describe the characteristics of self-actualized people. Figure 19 shows the model's levels and the placement of the mobility concerns in this model. Marlow states that people tend to first fulfill the lower placed needs of the pyramid, before moving to the higher ones and eventually reaching the self-actualization needs. Therefore, to be able to experience self-esteem, impulsivity is needed.

The desire for the safety needs plays a considerable role in the mobility activity in the shape of having control over the situation by preparation, be focused during the event and by asking for help when situations occur to be slightly unsure. This concern has conflicting desires to the opportunity of being impulsive.

THE OPPORTUNITY

Is their room for impulsivity while being in control?

Since being in control and being impulsive seem to contradict each other to be able to walk independently to a destination, a balance has to be found between the definitions. Therefore the following question will serve as the leading question for the next chapter during the explorations: Is there room for impulsivity while being in control? The next chapter will search for a definition of impulsivity that still meets the mobility concern of being in control. Four definitions will be formulated and evaluated for their contribution to autonomy.

Chapter 03

IMPULSIVITY

Understand the meaning of impulsivity within the VIP mobility context:
Is there room for impulsivity while being in control?

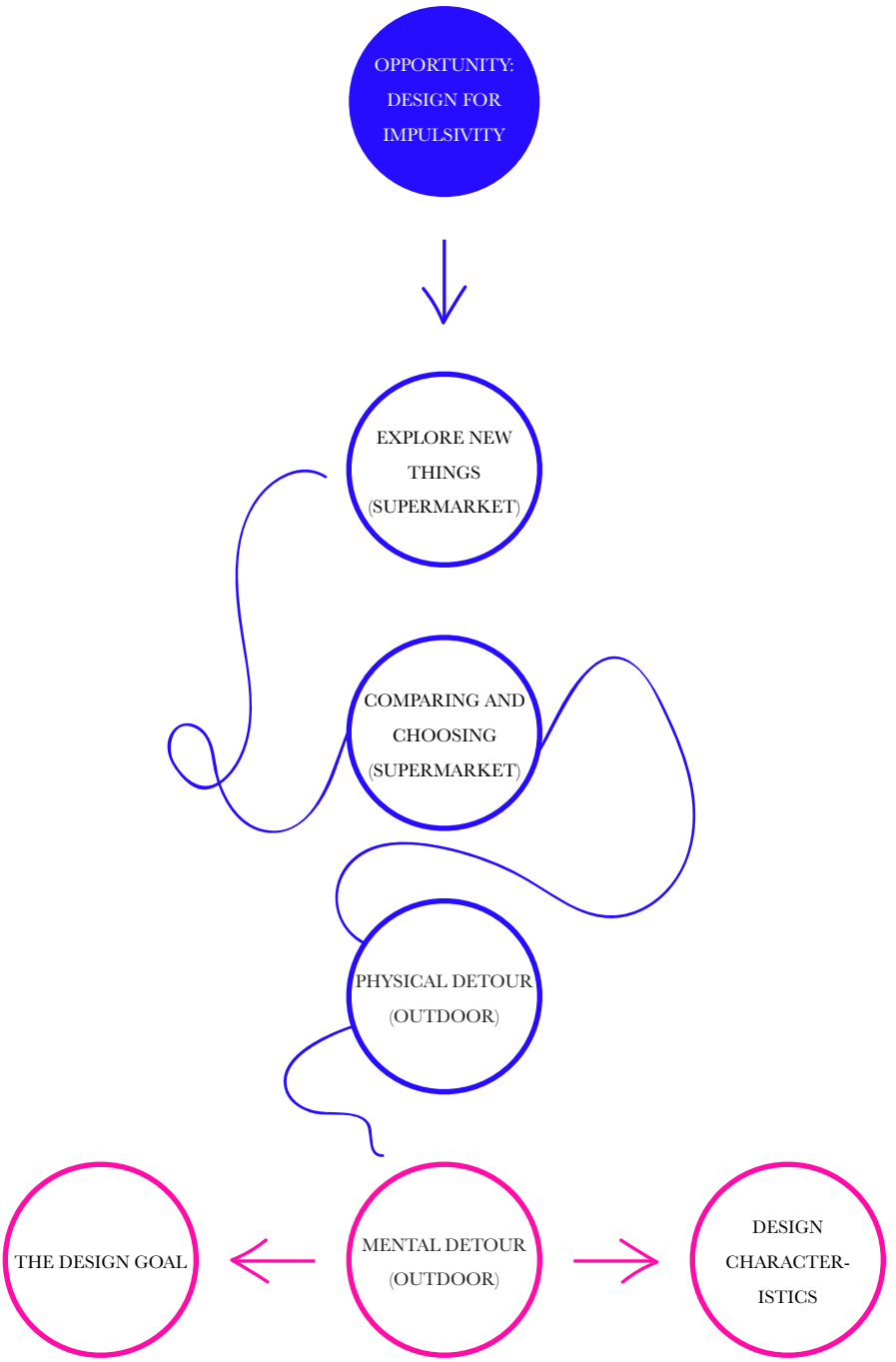


Figure 20 - Overview of approach of the chapter impulsivity.

Introduction

This chapters explains the journey of the definition for impulsivity that fits the VIP mobility context and evokes a feeling of autonomy: Is there room for impulsivity while being in control? The goal is to define a design goal.

3.1 INTRODUCTION

The approach

The previous chapter - autonomy- focused on the current mobility concern and the opportunity to design for impulsivity. The dictionary definition of 'impulsive' is acting or done without forethought (Stevenson, A., & Lindberg, C., 2010).

To be able to understand the meaning of impulsivity in the VIP mobility context, four cycles of design explorations are done. As seen in figure 20 every iteration loop starts with a definition of impulsivity. This definition includes a description of the main inspiration for the described definition.

Next, ideas will be generated within the definition. Per definition two ideas will be presented. The ideas will be evaluated based on the four dimensions of autonomy which are defined in the autonomy chapter.

Based on this evaluation, a new impulsivity definition will be formulated. Besides the formulation of impulsivity, design characteristics to design for autonomy will be formulated .

Figure 20 also shows the order of the four definitions of impulsivity. For iterations A and B, a context has been chosen: the supermarket as mini-city. This context makes the situation more specific and more accessible to generate design ideas. This main function of this context within the process is to use it as an exercise-tool, it will not be the eventual context to design for.

Figure 21 - When searching the terms 'policy' and 'blind' the first hit is a picture of 'blinden vinken'. This gives an indication of how VIPs are taken into account in the supermarket environment.

Impulsivity as: discovering new things

Currently, VIPs don't visit new places unprepared and mostly also not alone. To discover new places and experience new things, they rely on other people's eyes, since most products are designed for the eye and not for the other senses.

3.2 DISCOVERING NEW THINGS

Main inspiration

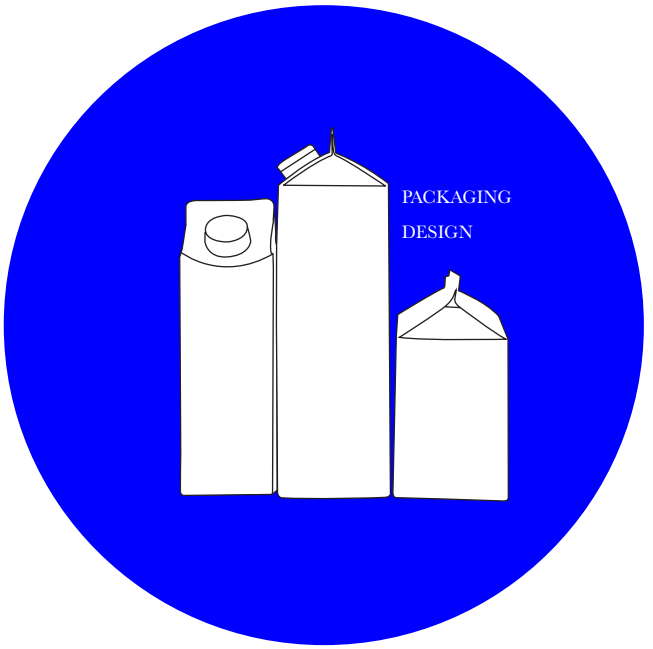
What is the main inspiration for the impulsivity definition of 'discovering new things'?

INCLUSIVE DESIGN

The inclusive design approach aims to design products and environments while taking the minority in mind that is disabled and needs additional tools or adapted tools to be able to use the designs or environment. If new products would be designed with the minority in mind, these 'different' tools would be unnecessary. It implies to not treat people equally or equitable, but to remove barriers in the system, so everybody can use the environment without need of assistance (Vaes, 2014).

Currently, both the supermarket environment as the outdoor city environment do not take VIPS into account. The supermarket environment can turn out to be one big blur because of the repetitive aisles and standardized packaging. The outdoor city environment has some additional tools to assist, but the current environment is not always suitable to make these tools 100% reliable. Guiding tiles, for example, can be placed in a clumsy/incorrect way, which can cause a confusion or unsafe feelings. This makes these guiding tiles unreliable for safety issues, although the essence of this tiles is simple and easy to apply. With the current system, it is apparently not possible to add these assistive tools. Therefore, we design an environment that fits the VIP, so they are able to explore new elements and don't have to be afraid for unpredictable unsafe situations.

As explained in the approach the first two iterations are done in the supermarket environment. As said the supermarket can turn out to be one big blur. If we use google image search using the terms 'AH' and 'blind', a picture of 'blinde vinken' (see figure 21 on the left) is the first hit. This says enough about the policy they encounter for VIPs. Currently, as a VIP you have to go to the service counter and an employer from the supermarket will escort you though the supermarket. This illustrates that lots of improvements can be made in this environment. This supports the fact that the design explorations will be about Exploring new things in an inclusive designed environment.



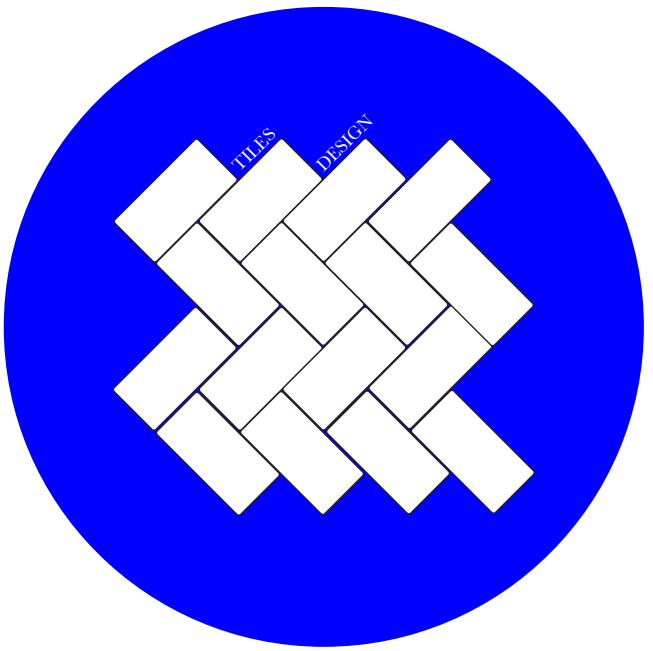


Figure 22 - Packaging design visualization

Figure 23 - Tiles design visualization

Design exploration

What design solutions fit the definition of impulsivity?

As implied, the first iterations will be done in the supermarket environment, as the mini-city, where orientation and navigation are important to be able to succeed doing groceries. In parallel the supermarket is like the mobility activity not the main goal, but rather a means to fulfill the final destination or eating the meal.

PACKAGING DESIGN

FIND THE RIGHT PRODUCT

A proposal to redesign packaging of supermarket products. Currently, the standardized packaging distinguishes product types by the print. This idea proposes that the branding will consist of more parts besides the visual aspects of the name of the product and visuals. These aspects can be for example haptic feedback and sounds made by the packaging material and the products. By providing such packaging, VIPs can make decisions 'it feels nice to me', instead of listening to the argument of somebody else: 'it looks nice to me'. This idea will make use of the orientation skill to be able to choose news products.

TILES DESIGN

FIND THE RIGHT / PART

One of the mobility tricks for orientation is to listen to the sounds which are produced by the cane and floor. A transition of tiles can be used as a recognition point. This principle can be implied in the supermarket environment by using different floor structures between different food departments. This idea will make use of both the orientation and navigations skills, by listening to the sounds to orientate or use as recognition points.

Autonomy evaluation

Do these solutions contribute to autonomy?

The ideas have been evaluated based on the four dimensions of autonomy, similar to the evaluation of the current solutions in order to discover how to design for autonomy. For this evaluation, the dimensions have been used to discover new questions that will help to define a new definition for 'be impulsive' by asking the question: how does -the idea- make you feel -dimension- autonomous?

TECHNICAL AUTONOMY

There is no need for additional tools in order to make a decision in the case of the packaging design. The tiles support finding the right aisle, but not the product in the shelve.

SELF-EXPRESSION AUTONOMY

The ideas allow to discover new things on your own, while everybody is using the same environment, which makes VIPs feel normal.

PHYSICAL AUTONOMY

The tiles and packaging provide information rather than instructions.

SOCIAL AUTONOMY

For both solutions, VIPs are not able to do groceries in an autonomous way, so without help from others. How to find the right shelve to take a close 'look' at the products? Can this be done independently or is it more efficient to do this eventually with another person?

WHAT IS NEXT?

The visual senses make it possible to observe a lot of products at once and select the preferred product. A VIP has to go through every single product and remember everything they got through. This consumes too much time. Therefore, should the design provide a pre-selection, which makes it easier to compare and choose? This raises other questions:

How do VIPs currently compare and choose new products in the supermarket? How can a design support the comparing and choosing process?

Figure 24: Sheena Iyengar in her apartment. Photo by Michal Weschler for the New York Times.

Impulsivity: Comparing and choosing

"I do not have enough information about the assortment to be able to compare and choose new products" was mentioned during a short phone interview with a VIP. This means she has to go well-prepared to the supermarket by having clear descriptions of the products that she needs.

3.3 COMPARING AND CHOOSING

Main inspiration

What is the main inspiration for the impulsivity definition of 'discovering new things'?

VIP STORY: SHEENA IYENGAR

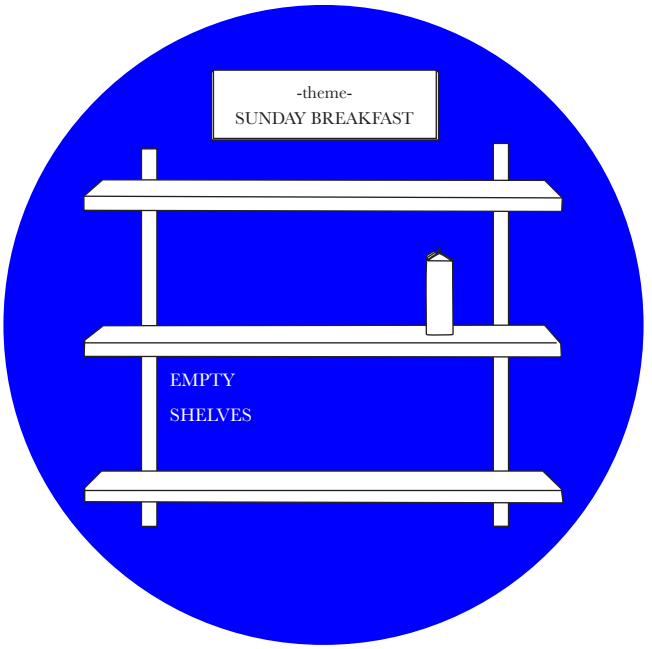
Although VIPs do not have enough information, sighted people cannot ask for less information" was mentioned during a phone interviews with a VIP. "because of all the information that is screaming for sighted people's attention."

In my search to how VIPs compare and choose, I learned about Sheena Iyengar, who is a VIP, a social psychologist and expert in choice.

Sheena tackled the interior design of her house by relying on a committee of experts. In an interview for the New York Times (Green, 2010) she explains why she believes that taste is unreliable: "I could wear makeup today, and one person would say it looks bland, another would say it looks fake, and another might tell me I look really natural." Part of the committee were her teaching assistants, friends and husband. The opinions of the different people where gained and weighted. "At first people are nervous," she said. "Then they loosen up, and knowing their opinions are just one of a group's and that I don't always go with their opinions, they get more competitive, which makes them state things in a more pure way."

She also speaks about the effect of choosing: "Even on a cellular level, brain imaging, mapping a biology of choice, reveals that neurons respond more to rewards people. Study after study concludes that it's the choosing that delights, more than the object of choice." (Green, 2010)

This implies that the design explorations will be about comparing and choosing between a provided pre-selection.



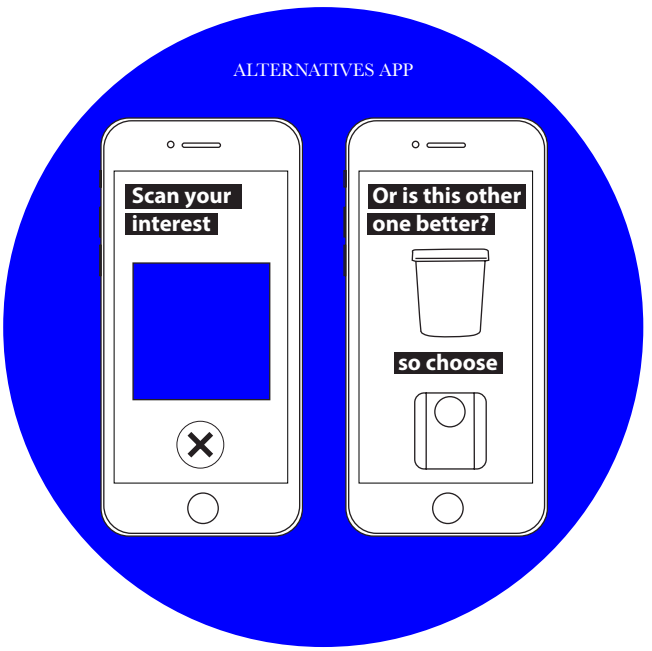


Figure 25 - Empty shelf visualization

Figure 26 - Alternatives application visualization

Design exploration

What design solutions fit the definition of impulsivity?

Choosing from a showcased pre-selection can be compared with the activity of window shopping, where the stores provide a pre-selection as a showcase and you as passer-by can decide if you want to explore this store or not. The following ideas are based on this window shopping association.

EMPTY SHELF

PRE-SELECTION IS BASED ON PREMADE-THEMES BY THE SUPERMARKET AND COLLECTED IN ONE SHELF BY CUSTOMERS

The supermarket provides an empty shelve and a periodic changing theme for this shelve. For example, Sunday breakfast, something sweet or tonight's desserts.

Customers can place their favourite products within this shelve, so create their own shop window. The shelve has a fixed position within the supermarket, so VIPs are able to find it by themselves and because it is a limited selection, it is bearable to go through all the products by asking the accompanied to read out loud the products or using a reading device. This idea will make use of the orientation skill to be able to choose new products.

ALTERNATIVES APP

PRE-SELECTION IS BASED ON YOUR INPUT, SCAN A PRODUCT OF YOUR INTEREST AND THE APP WILL PROVIDE ALTERNATIVES.

The app will show one alternative at the same time, so not much information is exposed simultaneously. The user chooses one out of two a couple of times, where the chosen one will stay and the unchosen one will be replaced. With this app, VIPs get to know new products in the supermarket. This idea will not support the navigation party, because after the product have been chosen, the product needs to be found by yourself.

Autonomy evaluation

Do these solutions contribute to autonomy?

The ideas have been evaluated similar to the previous iteration: The dimensions of autonomy have been used to discover new questions that will help to form a new definition for 'being impulsive' by asking the question: how does -the idea- make you feel -dimension- autonomous?

TECHNICAL AUTONOMY

Not depending on high tech systems to get to know new products. There is always the possibility to choose a random shelve and explore that shelve.

SELF-EXPRESSION AUTONOMY

The supermarket and strangers make the shown pre-selection based on the visual branding of the product. On which information do VIPs want to base their decisions?

PHYSICAL AUTONOMY

The empty shelve is a fixed spot in the supermarket and the app suggests products which are located at fixed places.

SOCIAL AUTONOMY

For both solutions, VIPs are still not able to do groceries without help from others. The question how to find the right shelve is again asked with these solutions.

WHAT IS NEXT?

The main question that arises when evaluating these solutions is: How can I trust new information? And from who can I trust new information? Sheena (previous page) chose her experts who made the pre-selection for her. In the case of the supermarket, a commercial environment makes choices for you, so it is a different trust than trusting people that you know. Therefore, the decision was made to go back to the outdoor street environment to design for the next design explorations with another definition of impulsivity.

Figure 27 - NRC weekend Appendix. Saturday April 28 2018 and Sunday April 29 2018.

Impulsivity: Make a small physical detour

Currently the mobility activity is a serious, practical activity which requires a lot of focus. As mentioned before, impulsivity does not necessarily imply practicality. The goal of the design is to evoke a change of mindset.

3.4 A SMALL PHYSICAL DETOUR

Main inspiration

What is the main inspiration for the impulsivity definition of 'make a small physical detour'?

NEWSPAPER ARTICLE: BE LIKE A FLANEUR (WEIJTS, 2018)

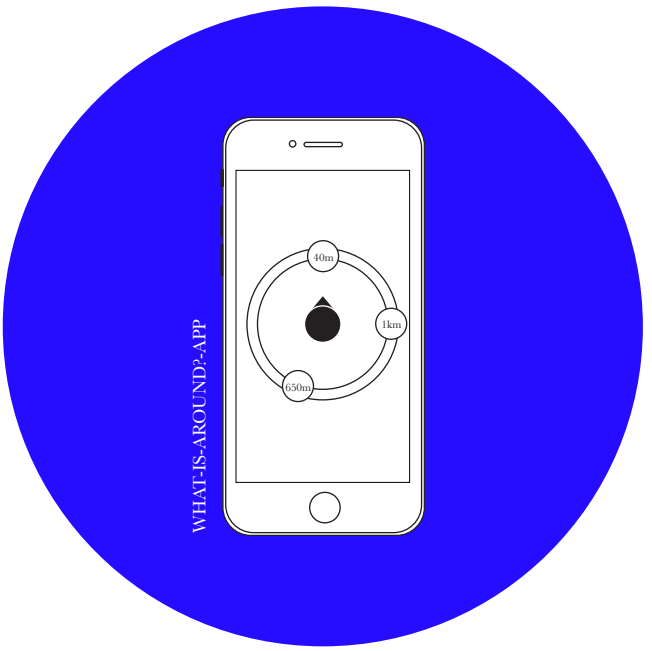
Currenlty, VIPs walk a number of known routes repeatedly. When they want to walk a new route, they prepare beforehand. The aim is to change the practical-oriented-commuter-mindset to the open-oriented-flaneur-mindset.

A commuter walks the same route every day, doesn't pay much attention to his/her surroundings and has one focus: getting to the destination. A flaneur strolls through a known city with eyes wide open and searches for new things in the environment. The current image of a Flaneur in the Netherlands is somebody who strolls dressed up over the boulevard with the purpose to be seen. But a flaneur's meaning originally derives from France where a monarch was experiencing the city incognito (Weijts, 2018). The flaneur has no destination, only a direction by following what seems interesting. His focus is gaining experiences without having a purpose or expectations. See the full article (in Dutch) in Appendix 5.

With this mindset - by being a flaneur - I believe everyone can transfer the common to something new that they want to explore.

This indicated that the design should rather be a orientation tool rather than a mobility tool, so excluding the navigation part.

To do so, the route should be mainly known (navigation skills are less challenged) and the design should stimulate to decide if the 'new element' attached to the route is interesting to explore, or not. This implies that the design explorations will be about making a small (physical) detour in the known route.



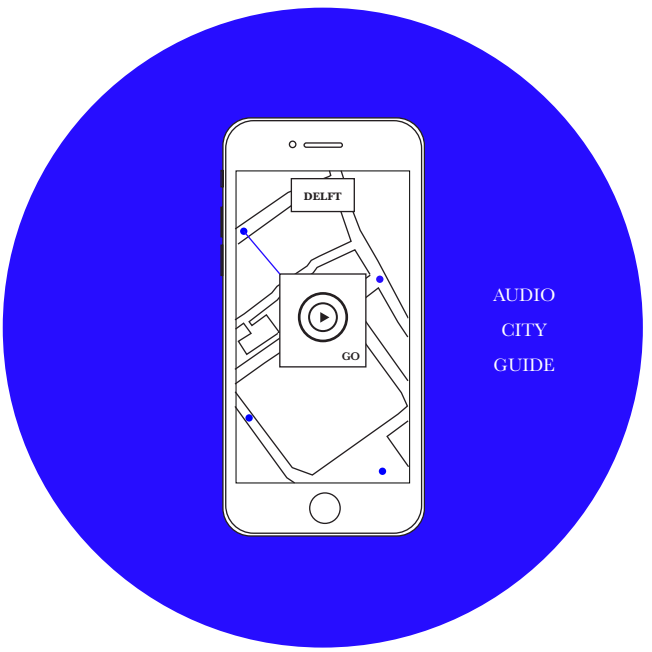


Figure 28a - What-is-around?-app visualization

Figure 28b - Audio city guide visualization

3.4 A SMALL PHYSICAL DETOUR

Design exploration

What design solutions fit the definition of impulsivity?

In order to create the Flaneur effect, the following ideas have been generated:

WHAT-IS-AROUND?-APP

MAKE DECISION IN THE MOMENT

A GPS connected device that is connected to a network of recorded sounds in the city. While walking and wondering what is around, you can listen to sounds in the environment based on the current location. The app makes it possible to determine a new direction by listening to audio fragments in your surroundings.

When a sound has been chosen, it will link to a normal navigation system to lead you to that particular sound.

AUDIO CITY GUIDE

MAKE DECISION BEFOREHAND

An audio city guide where pre-recorded sounds in the city can be listened to and the user decides if he/she wants to visit in the city. Different sounds can be recorded at the same place, to hear differences between the time of the day and seasons.

When a sound has been chosen, it will link to a normal navigation system to lead you to that particular sound.

3.4 A SMALL PHYSICAL DETOUR

Autonomy evaluation

Do these solutions contribute to autonomy?

The ideas are evaluated with a VIP during a phone call where I explained the ideas and we discussed if/how she would use the products and if they would make her feel autonomous.

When evaluating the ideas with a VIP, she mentioned that she would never explore new places on her own, since she would not know what to face during these explorations. She does not want to risk her energy. This uncertainty will most likely lead to a relieved/euphoric feeling when reaching the destination, rather than a relaxed flaneur mindset during the walk.

However, she was curious to the idea of environmental sounds. Normally people provide her detailed information about the environment and she is wondering if environmental sounds are enough to convince her to explore a new environment (with somebody else).

WHAT IS NEXT?

This means that the definition of a small detour should be reconsidered:

How small/big is the detour? Should there be a small preparation? And what is the trigger to change the mindset from a commuter to a flaneur?

Figure 29 - Me and my friends visited the Colosseum last year in Rome. But is this also a interesting place for VIPs?

Impulsivity: Make a small mental detour

VIP Paulien likes to explore new places by city trips and going on holidays. Most of the times, her sighted friends take initiative in deciding what to visit: “We should visit this nice architecture which I have heard about” and “that seems to look interesting on the right, let’s go there!” In this case, decisions are based on the perception/taste of sighted friend and not on the world of perception of the VIP.

3.5 A SMALL MENTAL DETOUR

Main inspiration

What is the main inspiration for the impulsivity definition of ‘make a small mental detour’?

VIP STORY: PAULIEN’S HOLIDAY

Last spring, Paulien visited the Canary Island La Palma with another VIP friend. The entire week they have been strolling around by walking to directions that seemed interesting to them, for example: following the sounds of the sea, walking through narrow streets or wondering what was at the top of these gigantic stairs. During this trip to La Palma with another VIP friend, they had the mindset of a flaneur.

To compare how she explores a new city like Rotterdam with a sighted friend: rather than decisions being based on the perception/taste of sighted people, in La Palma the decisions were made based on the world of perception of VIPs.

More situations occur where VIPs are reliable on the eyes of the person who they are in the company of when referring to exploring new things. For example, discovering new products in a supermarket occur because somebody else is pointing it out to them or when heard on a radio or television commercial. In an environment like a supermarket, products have the same physical packaging, so discovering differences is difficult. In such a vibrant and dynamic environment as the outdoor environment of a city or village, distinctions are easier to make by the VIP his/herself. So, a self-reliant opinion can be made about what is a beautiful place, based on the own world of perception and taste.

As mentioned in the autonomy evaluation from the previous design exploration, making individually an unprepared physical (small) detour is not wished.

Therefor the detour should be made in the known route. Aiming for a detour in the unknown environment should not be the focus of the design.

The mindset that Paulien and her friend had during the walk is exactly what a flaneur also has. A flaneur open up his/her eyes more to new places. So I hope that VIPs will open their ears more to the unrelevant elements in the known route. In other words, have a mental detour.

This implies that the design explorations will be about making a small mental detour in the known route.

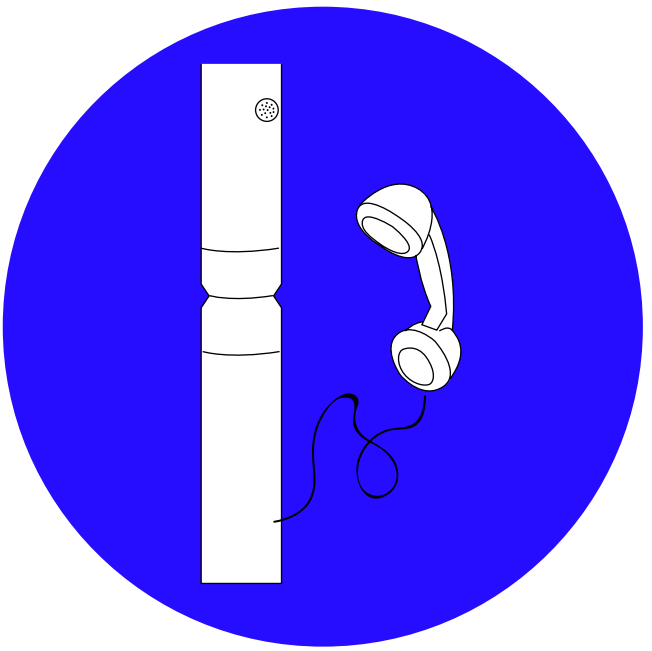


Figure 30a - Eavesdropping the city visualization

Figure 30b - Sounds at the street visualization

Design explorations

What design solutions fit the definition of impulsivity?

The following ideas have been generated that encourages VIPs to open up their eyes towards the more unpractical elements of a walk that does not necessary contribute to the smoothness or success of the walk.

EAVESDROPPING THE CITY

LISTEN TO LIVESTREAM SOUNDS OF OTHER STREETS IN THE CURRENT MOMENT

Households can attach a small installation to their rain pipe, which consists of a microphone and an attached phone. Installations are linked to each other. Passerby can listen on their current road to the sounds of others streets near by via the phone: eavesdropping the city. The design should make one feel curious to other routes near by.

SOUNDS AT THE STREETS

GET SMALL ASSIGNMENTS

Small assignments that you have to search for during the walk. Examples are: laughing person, squeaky shoes, loose tiles or a ring-tone. The assignments are deliberately things that cannot be seen easily, so sighted could also use it. The assignments are formulated based on your current location and time of the day/year. The assignments should make people pay more attention the current situation and environment.

Autonomy evaluation

Do these solutions contribute to autonomy?

The ideas have been evaluated with three sighted commuters, by sending them the sounds of the streets assignments and discuss the eavesdropping idea. I have evaluated it with sighted people, because I wanted to find out if the ideas would stimulate the sighted commuters to be more curious to the environment.

Every participant got four sounds to search for. See figure 30 for the described sounds. One of the participants mentioned she was surprised that she did not heard the ringtone sound, but did hear the sound of squeaky shoes everywhere, which was quite annoying at some times. The other participant mentioned she heard birds singing, which she was not aware of during normally. Overall, the participants were more aware of their surroundings while doing this exercise.

About the eavesdropping concept: they could imagine that it is nice for tourists, but they could not image that they would use it on their daily commute. Besides: How do VIPs find these installations? Can they do this independently?

WHAT IS NEXT?

The main question that I had during this iteration: Who is going to use this? Why do they want to start this app or search for these eavesdropping instalations? Pohlmeyer (2017) explains in her paper about *how design can (not) support human flourishing* by generating solutions within the current practices of the people to design for. The ideas connected to this design explorations are additions/new elements in the excising practice, so are the solutions in Pohlmeyers's paper for happiness seekers, than for making people's normal life more autonomous? How can we design a device within the current practice that enables a small mental detour?

Conclusion

Four rounds of iterations of the meaning of impulsivity have led to autonomous characteristics and the final definition of impulsivity. These will be translated into the design goal.

3.6 CONCLUSION

Autonomous design characteristics

Which design characteristics can be derived from the design explorations?

The search for the meaning of impulsivity within the found dimensions of autonomy is done by creating and evaluating ideas. This has resulted in the realization that the following three aspects are necessary when designing an autonomous assistive tool.

THE ASSISTANT SHOULD PROVIDE ...

REQUESTED ASSISTANCE

As mentioned in the main mobility concerns from chapter 2.4, assistance and help is needed, but only when asked for it. The same principle came across during the search for impulsivity, where the example of Sheena Iyengar illustrates that help and advice is welcome from the persons who she asked for. This indicates that the assistance tool should provide requested assistance when and how the user wants.

TRUST

The example of Sheena Iyengar and the connecting design exploration also illustrates that trust is important to be able to feel autonomous. When being in need for assistance and you are not sure if the provided information or help can be trusted, it does not feel like your decision, but rather the decision or action of somebody else. This means that the assistance tool should provide trustworthy information for the user.

FREEDOM OF CHOICE

Have the mindset of a flaneur means interpreting the world around within your own world of interpretation. This freedom of choice allows you to make mistakes. This mistakes can be literally getting off track while walking, or making the wrong interpretation of a place that seemed nice beforehand, but turned out to be a terrible place.

3.6 CONCLUSION

Impulsivity definition

What impulsivity definition support a feeling of autonomy?

In the previous chapter, we found an opportunity to design for impulsivity, but also a need to be in control. So, during the design explorations we have searched for a definition of impulsivity that matches with the need for control during the mobility activity in order to evoke a feeling of autonomy. The following definition is described:

Make a small mental detour in the known route

The reasoning behind the goal of making a small mental detour relates to autonomy according to previous insights. As described in the bouquet examples from chapter 2.3 is that autonomy means knowing what you want and how you want it. I believe that VIPs don't fulfill this autonomy principle during the mobility activity, due to the focus they need to fulfilling the route as smooth as possible. Their ears and mind are not open for new things to discover during the route that will give them new possibilities to discover. This willpower has space to develop if you are sensitive to new things during the day and make your own world of perception priority. So the VIP knows what is out there and makes decisions about what he/she like to visit.

However, providing an assistive tool that encourage to pay extra attention to the unpractical is not currently integrated in VIPs -focused mobility practice, and can even cause noise. Besides, receiving extra tasks requires more focus. This raises the question: Does it evoke autonomy when extra external tasks are encouraged?

DESIGN GOAL

Design a supporting device that illustrates the current position within a preprogrammed known route on demand.

3.6 CONCLUSION

Frame the design goal

Translation into the design goal.

Like mentioned in the autonomy evaluation of the fourth iteration, A. Pohlmeyer (2017) states that solutions should be generated within the current practices of the people to design for.

VIPs have a number of fixed routes in their mind, some of them they walk often, others not. They do need help in this route if they got lost in orientation due to distractions. For example obstacles, busy traffic situation, or rainfall which cause a lot of noise. Mostly they ask for confirmation when they ask for help, to retake their control on their current orientation.

One of the autonomous characteristics describes that feeling autonomous is not about receiving less help, but it is about the type of help. So how can the design support VIPs in their mobility activity, instead of helping them?

If VIPs feel supported, it will open the possibility that there is no need for 100% focus. So they will walk their route as good as possible and have the possibility to make a small mental detour by paying attention to the unpractical elements of the route.

Therefor the following design brief is formulated:

Design a supporting device that illustrates the current position within a preprogrammed known route on demand,

that opens the opportunity for a small mental detour by paying attention to the unpractical elements of the environment.

To recall the story of Tessa described in chapter 1.1 (in need of assistance) her example illustrates that daily life is not designed for VIPs, but designed by and for sighted people. Unfortunately, a lot of tools for VIPs nowadays are designed by sighted people to provide assistance to fill the gap of the missing visual senses. Within this project it is found that the mobility tool for VIPs should be a support tool instead of an assistive tool in order to evoke a feeling of autonomy.

The next chapter - the concept design - will show a translation of the design brief into a concept design: Walkmen. For Walkmen the three autonomous characteristics will be taken into account when making design decisions.

Chapter 04

WALKMEN

Create a concrete translation of the insights from the autonomy- and impulsivity chapter into a concept design: Walkmen.

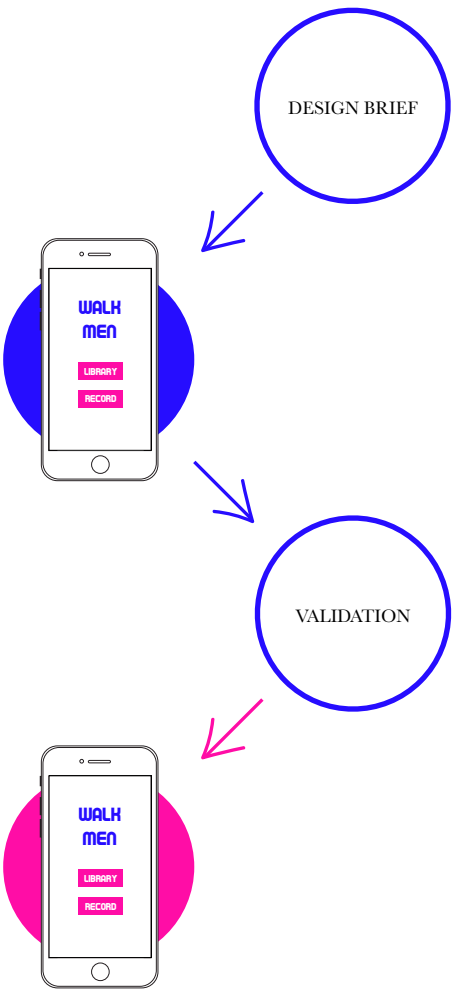


Figure 31 - Visualization of Walkmen (chapter) approach.

Introduction

The research into the meaning of autonomy and the application of impulsivity are translated into a re-framing of the design goal and three characteristics for autonomous assistive tools. The main goal of this chapter is to translate these insights into a concrete object: the concept design.

4.1 INTRODUCTION

The approach

How to develop the concept?

The chapter describes the concept design in relation to the gained insights together with the validation of fulfilling the initial assignment.

The chapter is divided into the following parts:

DESIGN BRIEF

The goal of the design brief is to describe the intended effect that the design should have, by summarizing the gained insights from previous chapters what will function as the fundamental for the design.

WALKMEN

The concept design, which is a translation of the design brief into a concrete product. The main decisions in use are based on the three autonomous characteristics for assistive tools: trust, requested assistance and freedom of choice.

VALIDATION

The goal of the validation test is to gain insight into the fulfilment of the initial assignment and verify that the autonomous characteristics are fulfilled in the correct way. The results of the validation are recommendations for the concept design.

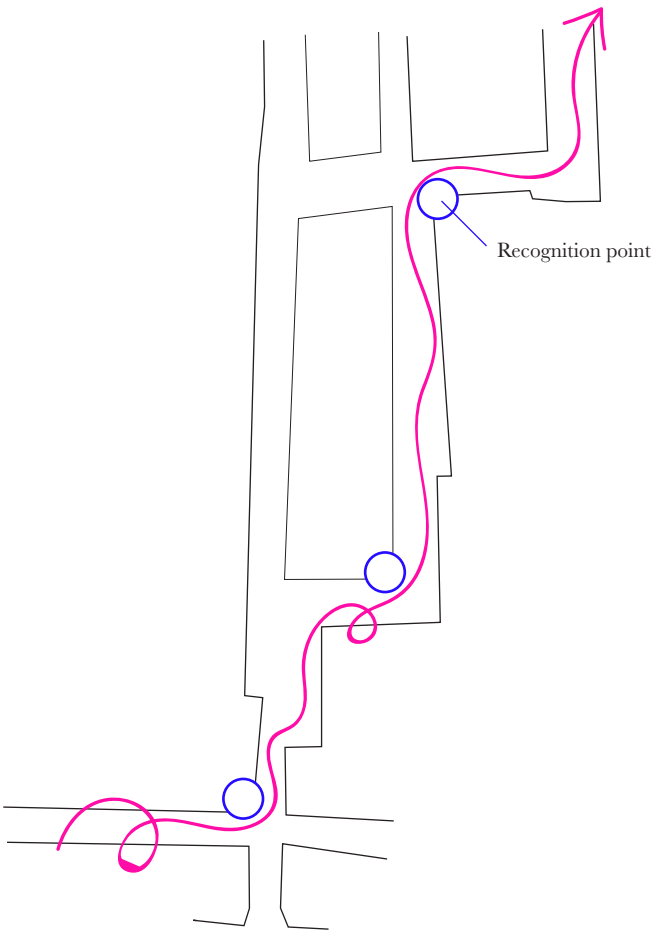


Figure 32 - Visual current situation - focus on the practical elements of a route.

Design brief

Insights from the research and design explorations resulted in the main mobility concerns, four dimensions of autonomy, design characteristics and the opportunity to design for impulsivity. These insights helped to translate the initial assignment into the design brief. The description of the design brief will summarize and translate the insights from the previous chapters into the design goal, interaction vision, and design characteristics. In other words: Putting words into practice.

4.2 DESIGN BRIEF

Current situation

What does the current situation look like?

Every VIP approaches a route differently, and though there are different recognition points and different comfortable routes, there are a couple of general concerns they have in common:

At first, the priority to focus, which is needed to be able to walk the route as smooth as possible (keep control). Secondly, the urge to walk as smooth as possible so -thirdly- VIPs will blend in the crowd as good as possible (I want to be normal) so that bystanders will not ask if they can help (help?/!)

These mobility concerns, make the mobility activity a serious and major topic for VIPs. This is also the case for Jord who walks every day from home to work with his guide dog and has to pass a courtyard which is a quiet place, but on the other hand also has to pay attention since there are cyclists, motorists, and pedestrians allowed here. He knows where to walk in this courtyard to walk as safe as possible and has some recognition points to follow his route: The first one is the small gate he has to enter, the second one is the start of the small parking area and the third one is the corner of the alley.

Jord is always very focused when he. Although he is succeeding in smoothly walking the route, he is missing out on other things. For example, the alley is opposite to a small church where kids go to singing class in the late afternoon. Also there are benches placed in the courtyard where people often gather together for a coffee or for dinner.

These (impractical) sounds are not contributing as recognition points and can be a distraction for the needed focus, but how can we open up the possibility to have an eye or ear for this impractical environmental sounds?

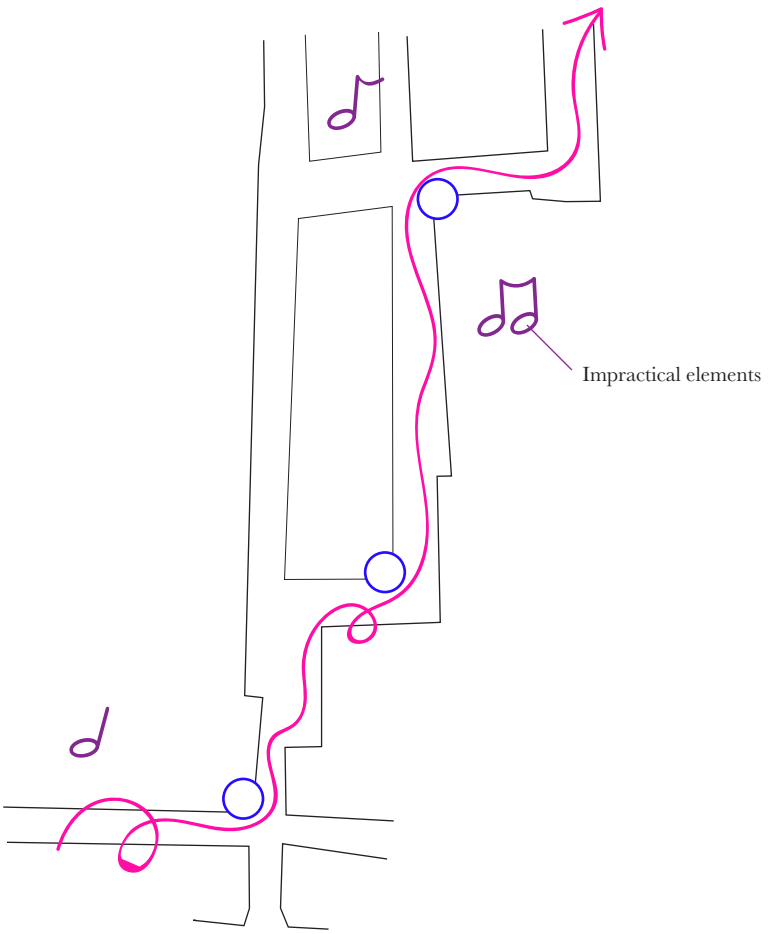


Figure 33 - Visual design brief - focus on the impractical elements of a route.

4.2 DESIGN BRIEF

Design Goal

What should the design evoke?

As explained in chapter 2.6, to be able to have a feeling of autonomy, there should be a possibility to be impulsive during the mobility activity.

Therefor the initial assignment is translated in the following design brief:

Open up the opportunity for a small mental detour by paying attention to the unpractical elements of the environment:

Design a supporting device that illustrates the current position within a self-preprogrammed known route on demand.

The first part of the design brief illustrates the possibility to make a small mental detour during the mobility activity, by paying attention to the unpractical. This is derived from the mindset of a flaneur. As mentioned in chapter 3.4 the flaneur's meaning originally derives from France describing a monarch that experiences his city incognito.

A flaneur has no destination and is guided by following what seems interesting. His focus is to gain experiences without having specific purposes or expectations, so every route is approached as unknown. This implies that the device will rather be an orientation tool, than a navigation tool.

Currently, this is not done because of the focus that is needed to be able to walk as 'well' as possible, which means for Jord, performing it in an aesthetically 'normal' way. Where in my opinion, a pleasant walk is a walk where you have a pleasant experience. For example by listening to early morning bird sounds or the enjoyment of a kid with her ice cream. These experiences can be achieved by having the mindset of the flaneur.

The second part of the design brief takes the four dimensions of autonomy into account. At first, technical autonomy by receiving information on demand, and not in a continuous flow like current navigations systems. Secondly, social autonomy by carrying a supportive device for known routes- like a reference tool-, so fewer questions have to be asked strangers on the streets. Lastly, physical and self-expression autonomy because the route is not automatically generated, but preprogrammed by the user.

So when Jord is using this support device for his walks, he still has the control over this walk.

Design characteristics

What should the design do?

The three autonomous characteristics for assistive tools (requested assistance, trust, and freedom of choice) form the fundamental for the design. Combined with the design goal, the following design characteristics are defined for the concept design.

THE CONCEPT DESIGN SHOULD ...

1. THE DESIGN SHOULD INCLUDE A ROUTE TRACKER

While walking, the device should track the route while collecting this information. So the user has the freedom to create own routes.

2. THE DESIGN SHOULD INCLUDE A LIBRARY OF ROUTES

The ability to track routes requires both a library and interface to sort and select these routes.

3. THE DESIGN SHOULD BE A MOBILE DEVICE

To track the route during the walk, the design should be a mobile device or connected to a mobile device.

4. THE DESIGN SHOULD REVEAL INFORMATION ON DEMAND

Reveal the information in a suitable way whenever there is a need for it.

5. THE DESIGN SHOULD ILLUSTRATE INFORMATION OF THE ROUTE RELEVANT TO THE CURRENT POSITION

Reveal information connected to the current position within the route.

These functions still imply design freedom. How these functions are fulfilled is described in the next / part : Walkmen.

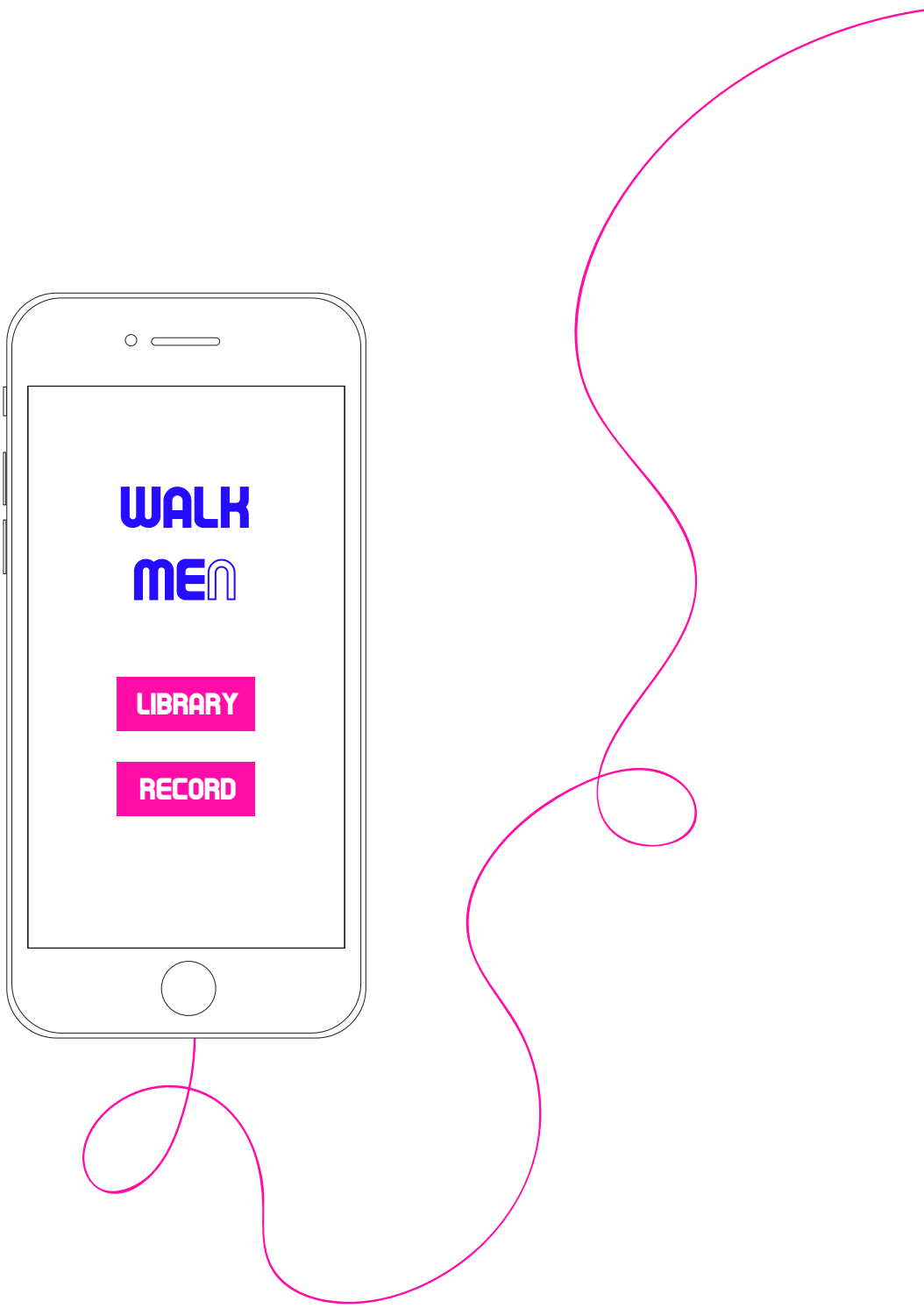


Figure 34 - Walkmen concept

Walkmen

Walkmen is a GPS connected voice recorder on your smartphone with which you can track routes and create your mobility tool, which can be used as support tool. This / part argues the current use of the smartphone and need for information during the mobility activity and describes the intended interactions and use of the device.

4.3 WALKMEN

Currently, ...

How does Walkmen fit in their routine?

CURRENT USE OF SMARTPHONE

VIPs do use their smartphone in a similar way as sighted people do. They make use of the voiceover tool on their phone, which reads out the elements on the screen when tapping once, and selecting the option when tapping twice. Typing is possible by making use of voice recording, which are transformed in written words. Most VIPs make use of Iphones due to their accurate voiceover, voice recorder and GPS detector. The smartphone is a device which consists of multiple assistive tools in one device. Because Walkmen will be an app on the smartphone, VIPs do not have to make the decision to carry an extra device with them beforehand in order to have on demand access to the application. This is important because one hand is always occupied by a cane.

For the design it is important to think about the readability of the app, by using high contrasts and big fonts for VIPs who (still) have rest vision. But it is also important to not emphasize it, so the graphics should also be attractive for sighted people.

NEED FOR INFORMATION

The design brief mentions that the device illustrates the current position on demand. How this position should be illustrated is different per person, as everyone prefers different instructions and has different recognition points. Only mentioning the direction and/ or distance within the route is not enough to feel confident. In addition, every type of VIP needs different instructions, depending on their rest vision. Trustworthy information is important and is one of the autonomy characteristics. Therefore it has been decided to let VIPs record their own instructions as they have a library of routes in their mind. Although they walk these routes often, they still ask orientation-related questions to passersby, mostly in the shape of confirmation questions: “Is it true that..?”. VIPs know best which instructions they need during the routes.

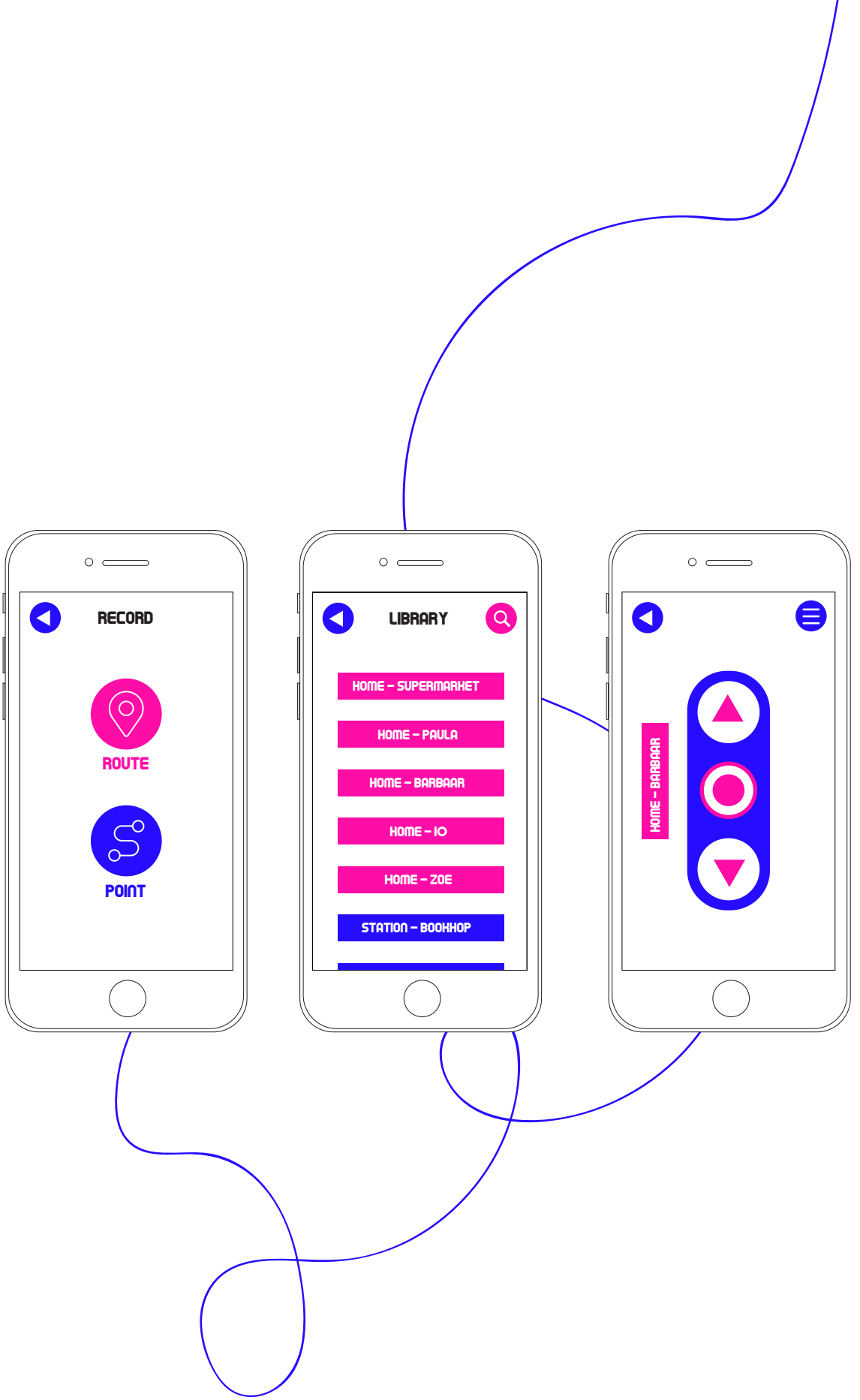


Figure 35 - Three main functions of Walkmen design

Walkmen concept

How does the design look like?

Based on the three characteristics of autonomy and the design characteristics described in the design brief, the Walkmen concept is created: a GPS connected voice recorder on your smart-phone with which you can track routes and create your mobility tool. By using this device, people are co-creators of their own reference tool. They track their own routes and record connecting voice memos at important recognition points.

The concept design has three main functions:

TRACK AND RECORD ROUTES AND RECOGNITION POINTS.

Because every VIP prefers other routes and recognition points, there is the option to track routes by the user. New routes can be recorded with the help of an acquaintance. Instructions for the route can be recorded with voice memos which will be connected to a GPS location which is located at the tracked route. This function is supporting the 'trust' and 'freedom of choice' characteristics. It enables trust in the recorded route, because the user chooses the route by him-/herself and records the required instructions. There is no need to be afraid if you get instructed via the less pleasant side of the sidewalk or via the big scary crossroad, because you tracked your preferred route. This automatically explains freedom of choice, due to the possibility to create your own route.

It is also possible to record separate points, which are not connected to a route. If desired, a route can be tracked to or from this point.

LIBRARY

All tracked routes and points are stored in the library, where the user can search and select a route or point. The user gives the routes and points names by themselves. Within the library it is possible to listen back to the recordings as preparation. It is also possible to delete routes or delete individual recordings that are not needed anymore. This allows the user to modify the routes based on the assistance that they need, which is connected to the autonomous characteristic 'requested assistance'.

THE CASSETTE

The cassette is in use when the user selects a route from the library and starts walking the selected route. The casette functions as support during the walk, by playing the recored voice memos at the tracked route that are most near by. The user can play backwards and forwards through the recordings based on the current location. To generate 'requested assistance', the voice memo's will be played when requested by pushing the play button.

It is possible to listen to the recording that is ahead and behind of the user, so the user has the guarantee that he/she is located between those two points. Due to GPS inaccuracies, mentioning the distance till the recorded point will result in a decrease of trust. Therefore it has been chosen to indicate between which points the user is located.

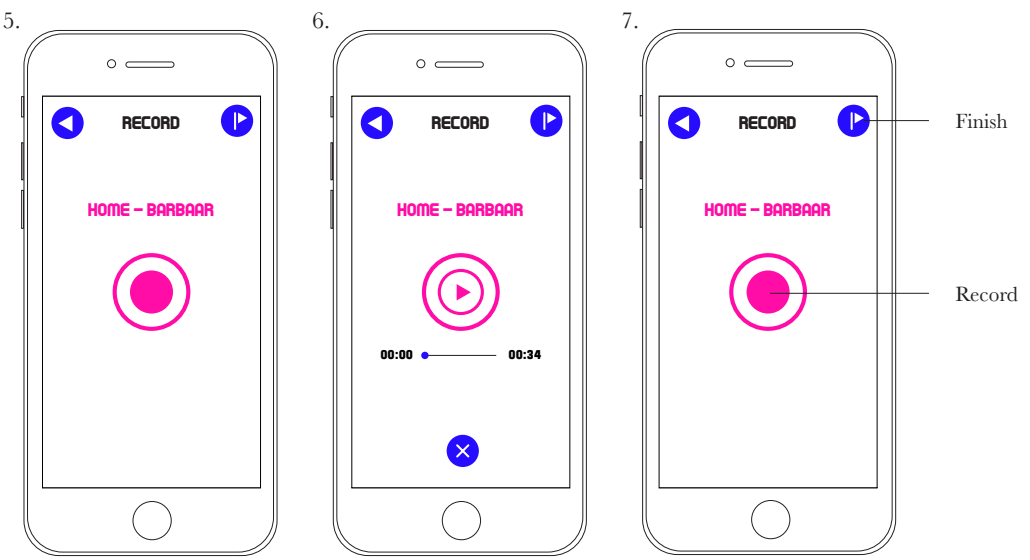
However, the distance will be communicated when getting off track. The device will let you know how far you are off route. It will be mentioned once you want to listen to a recording (requested assistance). Also distances will be mentioned in the overview of a tracked route in the library. Distances will also be mentioned between the start of the route and the recored sound, in order to listen efficiently back to the recording and create a feeling of distance when preparing the route. When using this overview during a route. The distance will be mentioned between your current location and the recorded route. In this way, the user can still cheat the system if they really want to know the distance.

Use flows

How to use Walkmen?

The use flows will explain the two main functions of the Walkmen: How to track a route with voice recordings? And how to use the Walkmen as support tool during a tracked route?

Figure 36 - Use flow: Track a route with voice recordings.



HOW TO TRACK A ROUTE WITH VOICE RECORDINGS?

1. First select 'RECORD' to track a new route.

2. Select 'ROUTE' in order to track a new route, select 'POINT' in order to track a stand alone point. In the case, we select 'ROUTE'.

3. Automatically a keyboard appears to name the route you want to track. Press 'OK' to confirm the name of the route.

4. Press 'START' to activate the GPS tracker and start your walk.

5. The RECORD button will automatically be displayed. Press and hold the 'RECORD' button to record a voice memo. Release to stop the recording.

6. If desired you can listen back to the recording or delete the recording. Walk further to save the voice recording. A short tone will confirm that the recording is saved.

7. The record button will be displayed again. Step 5 and 6 can be executed as many times as necessary. At the arrival of the destination press the 'FINISH' button. The route is then saved.

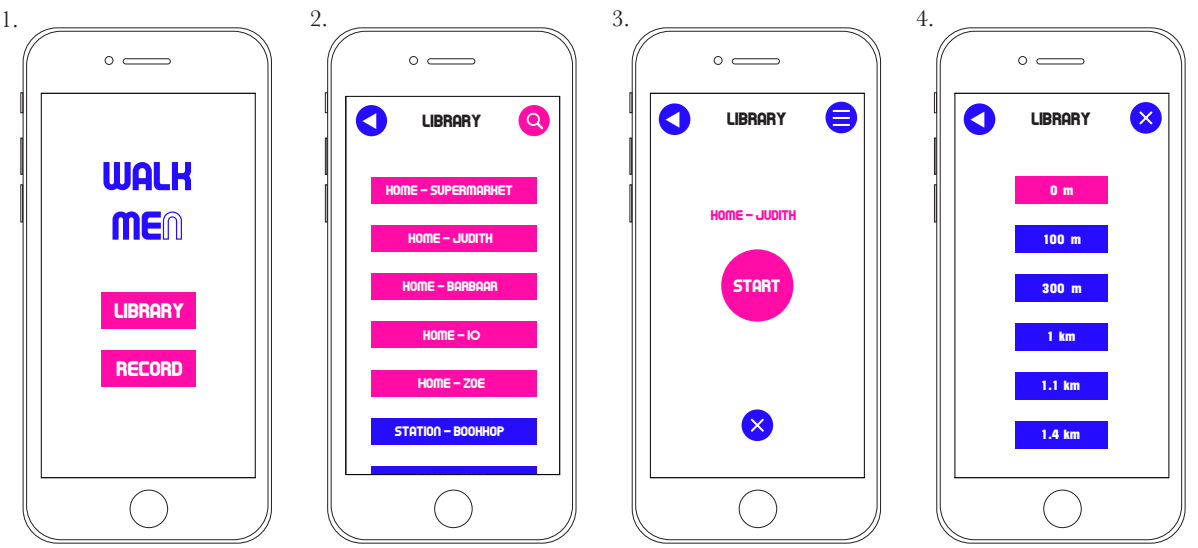
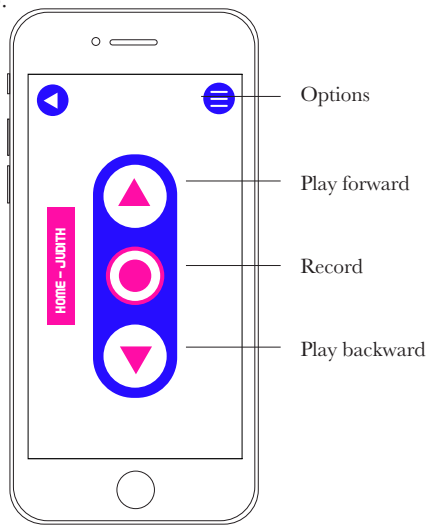


Figure 37 - Use flow: Use the support of the Walkmen during the route.

5.



HOW TO USE WALKMEN AS A SUPPORT TOOL DURING A TRACKED ROUTE.

1. First select 'LIBRARY' to select a saved route from the library.

2. The library will be displayed. The library exhibits a color distinction between the blue routes and pink points. The library will arrange the order of the routes and points based on your current location: The closest location displayed at the top. Select one of the routes you want to walk with the support tool. If you select a recorded point, the Walkmen will shift to a general navigation system. In the case of this use flow we select the route: 'HOME - JUDITH'.

3. Press 'START' to initiate the route or press the 'OPTION' button to listen to previous recordings as preparation.

4. When pressing the 'OPTION' button , you can listen to previously recorded memos. The recordings are named according to the distance between your current location and the location of the recording. Recordings can also be deleted if they are not relevant anymore. It is also possible to press the 'OPTION' button during the walk.

5. When pressing the 'START' button, the cassette is displayed and you are ready to walk. Press the 'PLAY FORWARD' button to listen to the voice memo that is located in front of you according your current location. Press the 'PLAY BACKWARD' button to listen to the voice recoding which you latest passed by. By pressing multiple times the 'PLAY' buttons, you scroll through your recordings.

Extra memos can be added by selecting and holding the 'RECORD' button. This works the same as when recording while tracking a route.

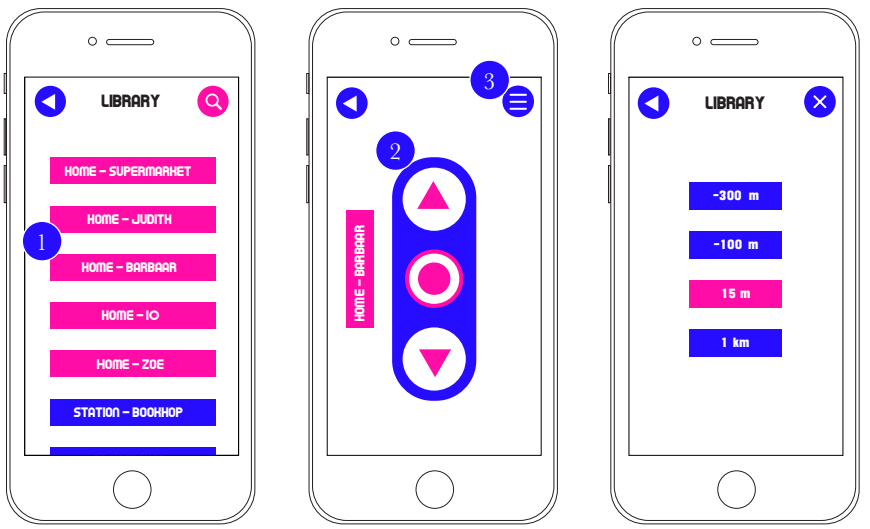
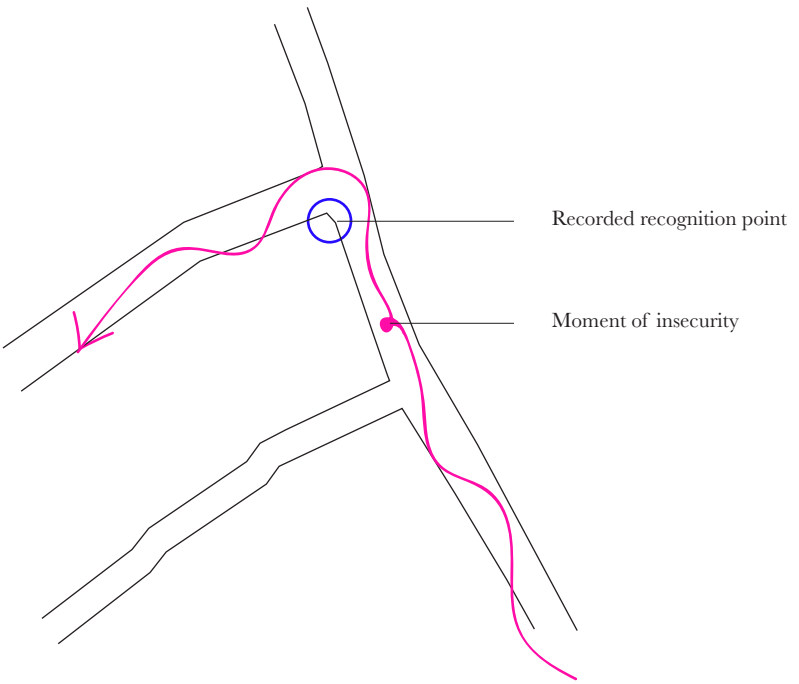


Figure 38 - 'The Nervous One' scenario explained with an example route and screens used.

Scenarios of use

How is the design used?

The user stories of the application are based on the mobility mindsets which are described in chapter 2.4. While evaluating the concept with a VIP, we talked about moments where and how she could use the concept. These discusses examples are linked to the mobility mindsets.



THE NERVOUS ONE

Margot is visiting a friend and it is time to walk with the dog. She wants to walk to the restaurant Barbaar. Although she have walked with the dog to Barbaar before, this time of the day there is probably more traffic than usual, which means more sounds. She is not sure if she can point out all her points of recognition.

In this situation the Walkmen can be used to have extra support during the walk. Because Margot recorded the route beforehand by yourself, she knows she can walk it by herself. However, in this particular situation she is not sure if she can find the right side street which the has to enter. A while ago she tracked the route during a more quiet time of the day, so she already recorded the side street that she has to enter. Figure 38 shows a small part of the route with the recorded recognition point and her moment of insecurity.

1. Before she leaves the house, she selects the route 'HOME-BARBAAR' and starts walking.

2. At the moment of insecurity, she presses the play forward button and hears the description of the recognition point. This indicates that she did not pass the side street yet. Besides she is reminded by the characteristics of this point, so she will recognize it when she will be there

3. She wants more information about the distance to the recorded point, to feel more secure, so she presses the 'OPTIONS' button to see the amount of meters till she has to enter the side street. She sees that the next recognition point is 15 meters ahead, so she has an extra reference to use.

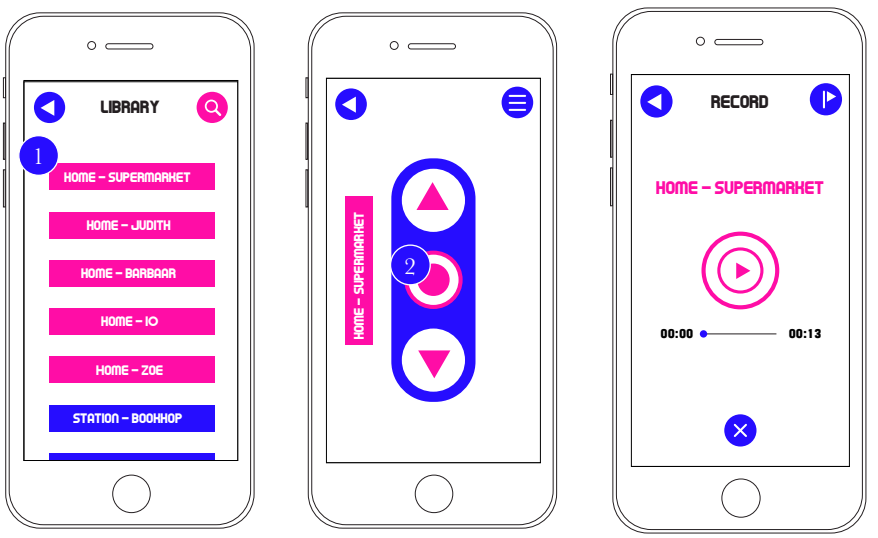
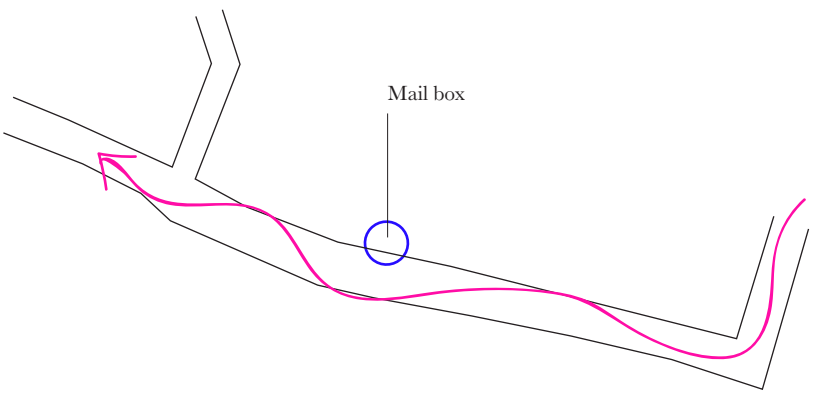


Figure 39 - 'The Comfortable One' scenario explained with an example route and screens used



THE COMFORTABLE ONE

Margot is walking on a known route. Suddenly she hears a conversation between people: "I have to go, because I have to post this letter first." By listening to the footsteps she notices that the person is walking 3-4 meters next to her and hears the sound of the mailbox. She didn't know there was a mailbox in this street. She knows at which road she is, but not where exactly on the road. Currently, her dog can search for the mailbox when she gives the commando 'mail'. Now, because she cannot point out the exact location, she has to repeat this a couple of times.

Walkmen can be used to tag this location as an individual point or add an audio note to a current route.

Margot decides to add this point to a current route: the supermarket route. She also passes by this road when she goes to the supermarket.

1. So first she opens the 'HOME-SUPERMARKET' route in her library and starts the route.

2. Secondly, she records a voice memo by pressing and holding the 'RECORD' button while recording the message.

3. Margot does not want to listen to the recording to check, so walks further. The application makes a small sound to confirm that the voice memo is saved and she continues her walk.

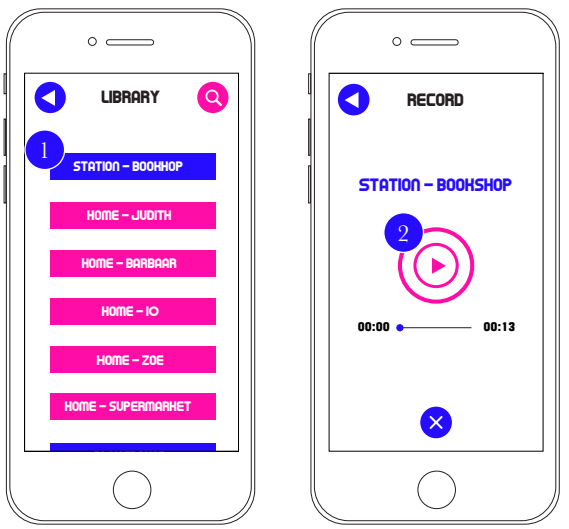
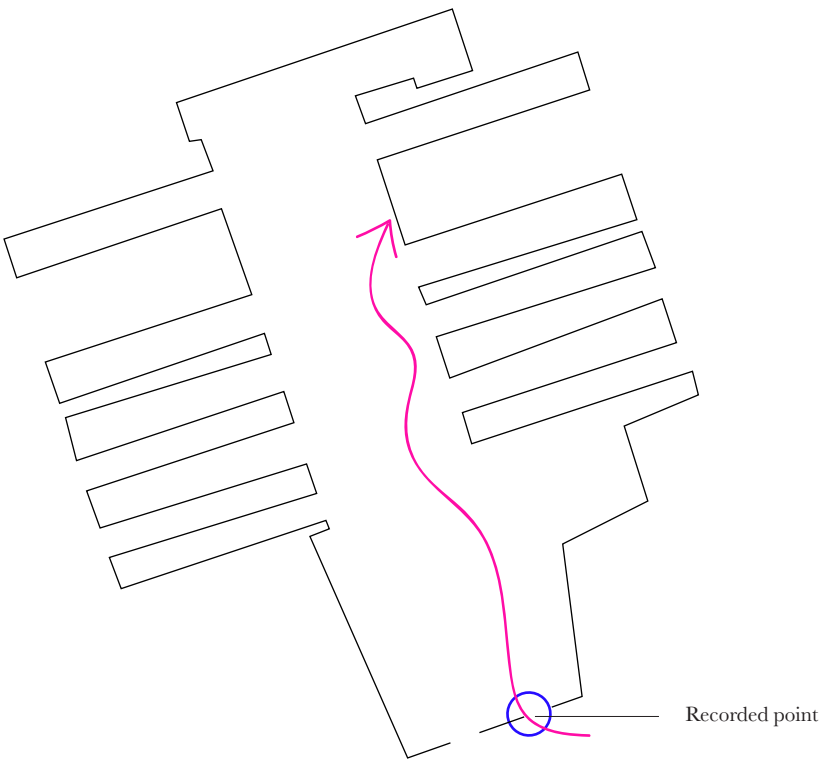


Figure 40 - 'The One Who Forgot' scenario explained with an example route and screens used.



THE ONE WHO FORGOT

At Rotterdam central station there are a lot of shops and escalators to train platforms and it is hard to distinguish the different shops, because they all look the same. She wants to visit the bookshop, but cannot remember where in the station this is exactly located.

Walkmen can also be used in this situation even though train stations can be noisy and the GPS does not always work properly. Therefore Margot decides to record a note at the entrance of the train station with instructions from the entrance to the bookshop. Again this can be included in a route or as a separate point. Margot recorded it as a separate point.

1. She opens the library and because the recorded point is located close to her, the point pops up at top of the library screen.

2. She selects it and listens to the recording, puts her phone in her pocket and walks to the bookshop.

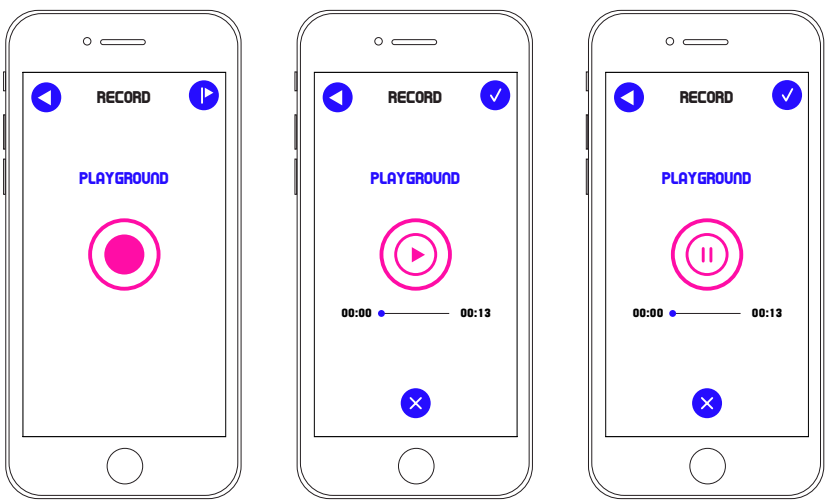
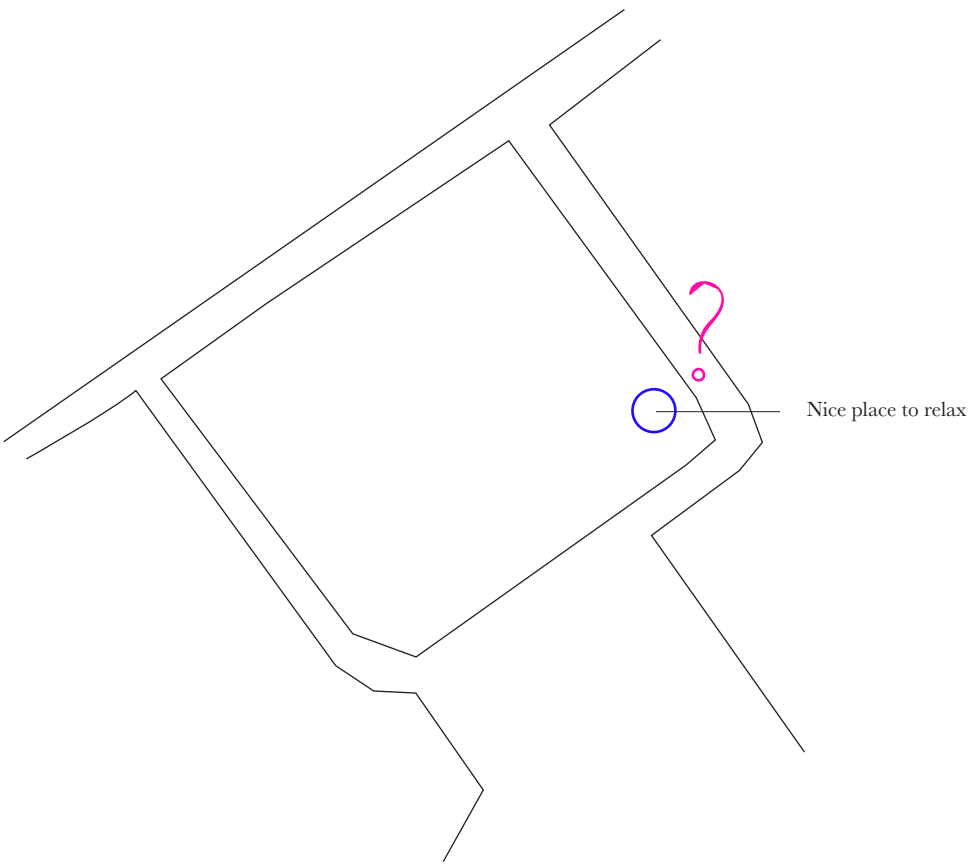


Figure 41 - 'The Surprised One' scenario explained with an example route and screens used.



THE SURPRISED ONE

Margot babysits the kids of her friends and the kids want to go a nice playground which they frequently visit with their parents. . During the walk the kids lead the way, but once they arrive, Margot realizes that she would like to visit this place more often with other people.

With the Walkmen she can tag this point with an audio memo. Next time she can walk the route and record it with the Walkmen.

These examples show that Walkmen can be used in may different ways and situations, depending on the user's preferences and mindset. This freedom of use allows the user create their own style within a reference tool.

Figure 42 - The participant (left) and the human technology (right) during the user experience test on the street.

Validation

Based on the design brief, design decisions have been made for the Walkmen. To know to what extend the initial assignment is fulfilled (evoking a feeling of autonomy) with the design, a validation is conducted. The results of the validation will help to formulate recommendations for further development of the concept design.

4.4 VALIDATION

Simulation of the design

How to test the design without making use of an working prototype?

The Walkmen application is an easily accessible technology, as nowadays every smart-phone has a microphone and GPS tracker. This makes Walkmen easy to develop in a further stage of the project. However, I did not choose to make a working prototype of the application during this phase as it is also easy to simulate the application by having an human who is using an Iphone for recording and playing the voice recordings: a human prototype.

Besides, at this stage of the project, the concept design is still a 'basic concept', and I don't have enough insights in which situations VIPs would like to use the product and to what extend the concept will lead to a feeling of autonomy in general.

By having a human who is the technology, no extra time is put into developing existing ideas, but instead developing the idea further by doing user tests. By having a human as technology, the validation test can be more flexible by giving the participants more the freedom to use the device how they would use it with the main function: Being able to voice record notes that are linked to a GPS location.

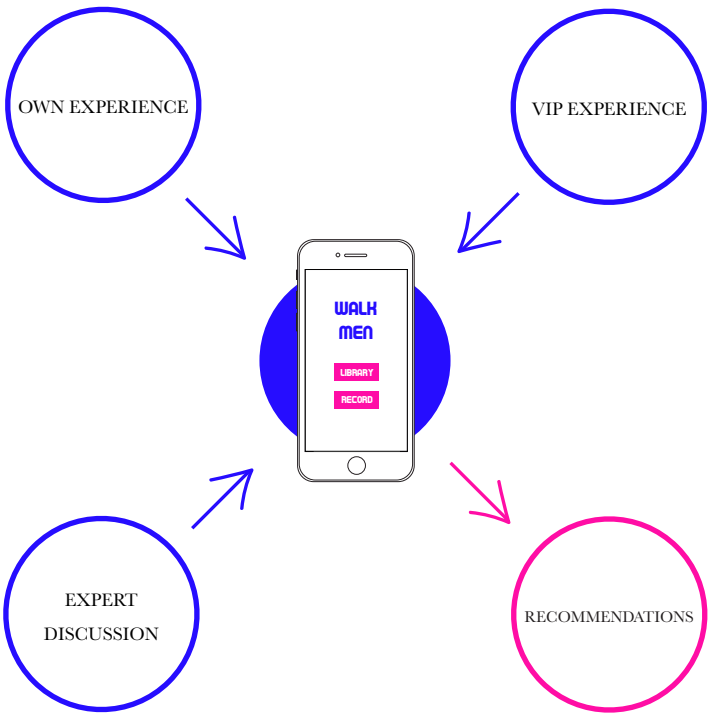


Figure 43 - Visualization of the validation approach to be able to gain recommendations for the concept design: tackle it from three different perspectives: Own experience, VIP experience and an expert discussion.

Research questions

What do I want to know about the concept design?

The main question is:
Does Walkmen evokes a feeling of autonomy?

During this project, I created an understanding about how to evoke a feeling of autonomy by design. This has been resulted in the four dimensions of autonomy (see chapter 2.3), the found opportunity to design for impulsivity (see chapter 2.6) and its corresponding definition (see chapter 2.6) and the three autonomous characteristics for assistive tools (see chapter 3.6). By answering the main question, these autonomy components will also be evaluated.

The following questions have been formulated and will be tested during the validation:

1. Does the design fulfill the four dimensions of autonomy -social, technological, physical and self-expression?

2. Does the Walkmen concept opens the possibility to have a mental detour by paying attention to the unpractical elements of the environment?

3. Does the design fulfil the formulated autonomous characteristics for assistive tools - Trust, requested assistance and freedom of choice - in a desired way?

These questions will be answered by doing several type of validations tests from different perspectives.

The approach

How to answer the research questions?

The design is tested from different perspectives: my own experience, VIP experience and expert's discussion. These perspectives are the same as the ones from the autonomy explorations in chapter 2.2. In my opinion it is important to get different type of feedback, because it gives a richer overview of how the concept design will be perceived in the world of VIPs.

OWN EXPERIENCE

The goal of the 'own experience test' is to have a pilot test before testing with the VIPs and experts. Adjustments have been made afterwards for the other perspectives with the VIPs and the experts. The own experience test consisted of a street-experience and afterwards a discussion session done by me and two other industrial design students.

VIP EXPERIENCE

The goal of the VIP experience tests is to know if the concept design contributes to a feeling of autonomy and how the concept design is perceived in general. The VIP experience is tested by doing evaluations on the street and having phone interviews.

EXPERT DISCUSSION

The goal of the 'expert opinion perspective' is to gain insight into the concerns regarding the design from different point of views and different priorities. These insights are gained by having a focus group of three different experts from different visually impairment fields.

PARTICIPANT

"I would like to record street benches so for next time I will be able to relax during the walk."

Figure 44 - The two design engineers who participated in in 'The Own Experience' test together with me.

Own experience test

How do sighted people experience the Walkmen?

The own experience test was executed first, as it was a pilot test. This means that the same activities are executed as for the other tests in order to fine tune the activities.

The own experience test consisted of two parts: the walking on the street part and the discussion part.

The tests were done by me and two other design engineers in a known environment - The central station of Delft - as the design is intended to use at known environments. During the test, three roles were defined : The human technology, the 'VIP' wearing 3% vision glasses and using a cane and a person who is company for the 'VIP' to answers questions and help within the route.

Before the start of the test, the route was defined by the three of us and cut into three equal parts. After each part, roles were rotated, so everybody experienced the three different roles, during every round.

THE TASKS

The route was walked three times, with different approaches each time:

1. Walk the route without making use of the device, to get used to the circumstances of the visually impairment. Advise and help can be asked.

2. Walk the same route again, but this time by recording voice memo's at points of interest within the route. The recordings should make it possible to walk the route independently the next time.

3. Walk the route independently, by only making use of the device.

After the walking the route three times, there was a discussion based on the gained experience. The discussion was meant to be an open discussion where every participant had to mention tips and tops at the beginning of the session, which generated the structure of the discussion.

INSIGHTS - DISCUSSED TOPICS

The following themes came across during the pilot test.

OPEN APPROACH TO TEST

During the pilot test, we decided together which route to walk, as we were all three familiar with the route. The other tests with VIPs will be done in a familiar place for the VIP, but an unfamiliar place for me. This means the VIP decide where they would like to walk and in to which extent they like to walk a familiar route or an unfamiliar route. This means that depending on the route they choose in combination with the human prototype, the user test will be a blank page where the VIP decides how they will express themselves in turns of how they would use the design in that specific situation.

HARD TO IMAGINE WHAT TYPE OF RECORDINGS VIPS WOULD MAKE.

During the test we realized that as non-VIPs, it is hard to imagine how and when to record memos that are valuable for the next time.

ADD THE NON-ESSENTIAL

During the discussion, one of the participants realized that for next time she would like to record a note about a nice bench to sit on in case she would like to have an enjoyable break. She realized that she didn't have to record only the practical mobility recognition points, but could also add pleasurable elements as memos.

VIP

"A lot of designs think for us, but we (VIPs) have the best solutions which fit out daily life."

Figure 45 - Evaluate the design by walking a route and pointing out recognition points and how to use the design. Photo by Jord de Kat de Angelino

VIP experience test

How do VIP experience Walkmen?

I visited two VIPs in their known environment to walk with them together with a 'human prototype = design student' and evaluate the design. Also a small phone interview was conducted with three VIPs who were interested to test the design, but due to time limitations, they were not able to conduct a full test. We shortly discussed their interest in the design and how they would use it. For both types I used the following explanation of the design:

Walkmen is an app that enables you to record voice notes that are linked to a GPS location. When walking a recorded route, you can listen to the recordings that are nearby the route.

THE TASK

For the street experience, I explained the device and asked in which situation they would like to use the design and I made them choose a route which they thought would be interesting to use the design and record voice memo's.

THE WALK

It turned out to be that both participants choose to walk familiar routes where they explained which recognition points are important for them. Simultaneously they reflected on different applications that they would use the design for.

During the walk, I inquired further regarding comments that they made by themselves to be able to answer the research questions. For example one of the participants mentioned: "I would like it when it is possible to share the recordings with others, so we can make use of each others knowledge." My reaction to this was: "But do you trust others instructions?" Her answer was that some instructions would not fit her, but maybe others would. She thought it would be nice if VIPs could support each other. These reactions have been analysed and transformed into recommendations which can be found in chapter 4.5 Recommendations for the design.

Unfortunately, it was not possible to record memo's and re-walk the route, as the participants could walk the route without help, so there was no need to record. In the discussion of this chapter, it will be discussed how to approach this next time, to facilitate a test where they would record some notes.

THE INSIGHTS - MENTIONED CONCERNS

The following themes came across during the evaluation.

FAST AND EASY ACCESSIBLE

In general, the interviews by phone and the street test made me realize that the need for the concept design is urgent. People are intrigued because of the freedom the device provided, by pointing out the things they want in an easy accessible way (by making use of the smart-phone).

INACCURATE GPS

Inaccuracy of GPS is a big issue for a lot of navigations systems for VIPs. At places where detail is needed - for example at the right spot to cross a crossroad for pedestrians -thirty cm accuracy is wished. My assumption before the test was that due to voice memo's the accuracy of GPS points is less relevant due to the additional descriptions, so recognitions points are still able to find due to the descriptions. Although Walkmen is already an improvement of Google maps who will tell its user within a accuracy of 15-100 meters the instruction "turn left at (an unreadable street name for VIPs)" without further confirming information.

The inaccuracy makes them trust the device less. This required different recording approaches from the user based on the accuracy of the GPS signal within certain environments.

UNIQUE RECOGNITION POINTS AND USAGE

Again, it became clear that every VIP is very different in what they prefer and what they like. People with a cane need to be more precise, as a guided dog can lead you to the start of a crossroad. Therefore, to make it is as accessible for as many people as possible, the device should be as basic as possible, with a lot of freedom of usage. That way, people have the freedom to do it their own way, because they know what works best for them.

CONFIDENT TO WALK NEW ROUTES

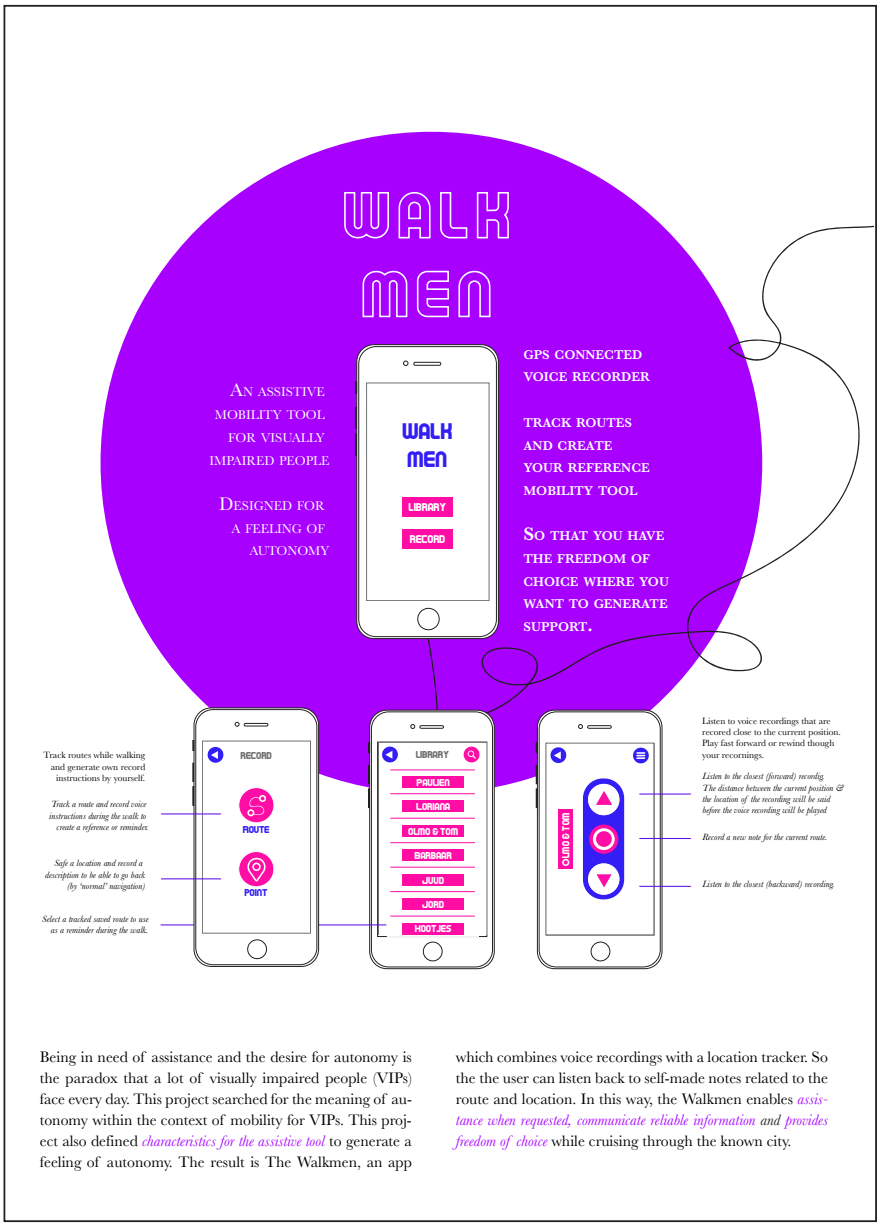
The mentioned applications during the test were all practical solutions to practical problems. The mental detour has not been mentioned. However, the VIPs did mention the confidence and ability to walk new routes with the application, rather than feel more comfortable at the known routes. They see it rather as a preparation tool and reference tool for new places, than support for known routes.

SHARE TO HELP EACH OTHER

Some mentioned the application to share routes and share point with each other, to have it as a support to prepare and walk new routes. And also to help each other out and create a community.

PAUL LAGERWEIJ

"It is pleasant to make your own instructions, it provides flexibility. Even though you get help when programming, it will provide autonomy."



Being in need of assistance and the desire for autonomy is the paradox that a lot of visually impaired people (VIPs) face every day. This project searched for the meaning of autonomy within the context of mobility for VIPs. This project also defined *characteristics for the assistive tool* to generate a feeling of autonomy. The result is The Walkmen, an app which combines voice recordings with a location tracker. So the the user can listen back to self-made notes related to the route and location. In this way, the Walkmen enables *assistance when requested, communicate reliable information* and *provides freedom of choice* while cruising through the known city.

Figure 46 - Used concept description during the focus group. See big version in appendix 6.

4.4 VALIDATION

Expert discussion

How do experts think about Walkmen?

One focus group session has been done with three experts who work with VIPS, but within different fields: Marten van Doorn -mobility expert-, Paul Lagerweij - Psycologist who is involved in VIPs social environments- and Paul de Nooij - Part of the innovation team of Bartimeus and is currently working on a project for indoor digital guide lines-.

The focus group has been done to hear opinions about the concept design in general and if they think the concept design if fulfilling the autonomous characters in the correct way.

THE TASK

As preparation for the focus group, a concept description was sent out to the participants (see 46). At the start of the session, the concept was explained based on the sent description and small questions by the experts were asked to make the concept more clear. After the introduction, everybody wrote down positive and negative aspects of the design. These written aspects formed the structure for the discussion.

On purpose I didn't choose to select topics by myself, because I can influence peoples opinion, as where I was curious to peoples reaction without knowing the full reasoning behind the concept design. However, all three of them had been (some to more extent as the others) involved in the process. So they were not totally strangers to the project.

THE TOPICS

The following topics were discussed during the focus group session:

INACCURATE GPS

As also mentioned by the VIPs, the inaccuracy of GPS of a mobile phone is an issue. During the discussion some examples/solutions have been given how to make GPS signals more accurate. For example: GPS becomes more accurate for moving objects compared to 'frozen' objects. Also a separate GPS device has more accuracy than the mobile phone one.

NOT MAKE IT EASIER, BUT SUPPORT THE ORIENTATION ABILITY.

They agreed that this tool will not take away certain steps that VIPs currently have to do in order to walk a route in terms of preparation and needed recognition points. However, they do agree that this will support their current mobility activity in order to strengthen the orientation ability.

PERSONALIZATION

They all liked the fact that it is possible to personalize your own instructions, so it will fit more people to use it.
Also they discussed the possibility to make it possible to personalize how you would like to hear your instructions: when you push the play button (as in the current design), get a notification when you are close to a recorded recognition point, or play automatically the recorded voice memo. When linking these personalized requested assistance to autonomy, making these options available and choose your preference is also a form of requested assistants, but instead of deciding in the moment, you decide beforehand.

SHARING ROUTES

Sharing routes contradicts the benefits of the personal recognition points. As you know exactly what YOU need, and not what others need. On the other hand, sharing routes means the possibility for Bartimeus to gain insights in how VIPs would use the device and the variety and richness of recognition points. Also, it is possible that some people don't know which voice messages they prefer and what to record. Sharing voice memo's can lead to inspiration, but can also lead to awareness that others will hear your messages.

WALK NEW ROUTE (WITH FRIENDS)

In terms of autonomy, the ability to ask a friend to walk a new route together is already autonomous, because the VIP is taking initiative in that moment and knows what he/she needs: help with defining a new route. Deciding in the moment to walk a new route alone is seen as recklessness. It is more common for VIPs to make a conscious consideration between your abilities combined with the risk and energy you want to invest in the activity: anticipation.

Discussion validation

What are the limitations of the validation?

During a user test, it is most important that the participants feels comfortable. Therefor I let the VIP choose which route they would like to walk to test the application.

My assumption was that they choose a route where they would need the application for. So we could record some voice memo's and walk the route for a second time, to play the recordings to simulate the concept design.

However, they choose a route where they did not needed the application, because they choose a comfortable one which they were able to walk independently. This changes the set-up of the test, which changed into a walk through the city where the VIP pointed out recognition points and simultaneously reflected on their personal usage. They did not take a risk and choose for the comfortable route.

I could have foreseen this, because VIPs do not walk a new route without the help of somebody else. And, me, as a sighted person does not automatically makes me suitable as a person who they trust, because I am unfamiliar with the environment. I understand why they choose these familiar routes, also to show what they are capable of, instead of the limitations that they face. They want to show that they are normal, which is one of the main mobility concerns.

So what can and can't I conclude with the gained data?

Getting insights on the possibility for a mental detour is something that I could not get out of this test. This is due to the fact that one route hasn't been walked for two times, so only speculations of the effect were discussed. This was difficult to do while walking in their known environment with their 'keep in control' habit. This means that the concept design is not suitable for all (known) routes. But it is also possible that it can only be discovered over the long term as the different recordings will shape different routes, variations of routes and points of interests.

But, with the gained data I got insights into the general need of the product, if the three autonomous characteristics are fulfilled in a correct way and a reflection on autonomy.

As recommendation for the next time I would suggest to do the test again with a 'human prototype' that is familiar to the VIP and the environment to walk through. Preferably walk the route two times at two different days, so the route is not fresh in the mind of the VIP.

Conclusion validation

Does Walkmen evokes a feeling of autonomy?

To be able to answer the main question:

Does the design evoke a feeling of autonomy?

First the research questions will be answered.

1. Does the design fulfil the four dimensions of autonomy -social, technological, physical and self-expression?

SOCIAL AUTONOMY

The custom to walk a new route with the help of somebody else that they trust is not something that will change easily, although it the ultimate goal for all VIPs: to walk new routes independently. Therefor the possibility to share voice memo's is wished due to the possibility to prepare routes.

The sharing voice memo's also has another benefit, which is about the possibility that VIPs can help other VIPs and create a community and a feeling of adding value to somebody else's life.

TECHNOLOGICAL AUTONOMY

What people experience as pleasant about the concept is that the application provides a lot of freedom of usage. This makes the user part of the technology with your own rules of use and habits.

However, the concept design is reliable on the performance of GPS, which can be inaccurate. This can result in useless moments. It could be that adaptation of usage is needed. For examples, at the Vondelpark in Amsterdam, GPS is very poor, though at the entrances of the partk GPS works fine. The user should voice record instructions for the park at one of those entrances instead of different point at the park.

PHYSICAL

Recorded routes can be adapted by adding detours or removing points. If a VIP gets more familiar with a route, he/she can delete points as wished. Although totally physical autonomy is not wished for in the situation of walking in the wrong direction or missing a recognition point.

SELF-EXPRESSION

"I will get more freedom" has been said multiple times due to the fact that it is connected to your smart-hone, a product that people use daily. Not an extra device has to be bring along, which makes the use flexible and needed when the user wants to express him/herself.

2. Does the Walkmen concept opens the possibility to have a mental detour?

Is has been clarified that Walkmen supports the current mobility approach in a wished way, but not what kind of effect this could have in terms of having a mental detour by paying attention to the unpractical. During the tests on the streets the participants pointed out where they would like to use the

tool for. All of them were practical elements to help them find their way.

When asking about 'funny', 'just nice', 'unpractical elements', they could not imagine the use of it.

Although, there has been mentioned that they felt they had the comfort to discover new places with the Walkmen, as it provides more freedom of usage. But if this will result in a mental detour should be discovered in further research.

3. Does the design fulfil the formulated autonomous characteristics of assistive tools - Trust, requested assistance and freedom of choice - in a wished way?

TRUST

Not every VIP would be able to know what to record to have enough support for the next time they walk that route. Although they would be able to choose someone to trust to help, as when walking a new route they would also know who they want to accompanying them.

REQUESTED ASSISTANCE

Though the requested assistance is shaped by only playing the recorded voice memo, pressing play is not desired by everybody in every situation. As one person can have different preferences depending on his/her mood or type of route. It might be preferred to have an option to get or notifications once you pass by a certain point or the voice note will be played automatically. This means that requested assistance does not have to be on the spot, but can also be requested before the user starts his/her route.

FREEDOM OF CHOICE

Every VIP is using different recognition points and when using the same recognition points, it will be for different reasons. Therefor creating room for own interpretation and usage enables a more specific and fitting tool for the user. Although you have to find out how you would like to use it and which instructions are suitable for you. Also you have to learn how to deal with GPS inaccuracy. This takes a bit of effort, as you also have to get used to a guiding dog the first months.

Main question

Does the concept design evokes a feeling of autonomy?

The initial assignment is about generating a feeling of autonomy in an unknown environment. Basically, during the research I figured out that walking an unknown route is not done independently. Besides, VIPs ask a lot of confirmation questions in known routes. This is why the focus is on an orientation tool for the known route.

During the validation, it became clear that in general there is a need for this product, as is enables to make a customized fit by yourself which provides a feeling of freedom to use it whenever and how they want. It evokes a feeling of autonomy.

Although it is meant to use at known routes, people see the opportunity to walk in unknown routes by using Walkmen, under the conditions that people can share their recordings. Although this option is still questionable (see chapter 3.5 for the recommendations), it shows faith in Walkmen that it will support them in the mobility activity and have the courage to take a step further.

Using Walkmen for new routes is questionable because this opportunity is clashing with the current situation that VIPs usually do not walk new routes by themselves. However, it does emphasize that the need to walk independently is something that they want the most.

To conclude, Walkmen supports the four dimensions of autonomy, as well as the three autonomous characteristics for assistive tools. In general it evokes a feeling of autonomy and VIPs see the opportunity to walk unknown routes with the help of this application.

In the overall recommendations in the next chapter, recommendations for further research (see 5.4) are described which describes how to test the effect of a mental detour for next time.

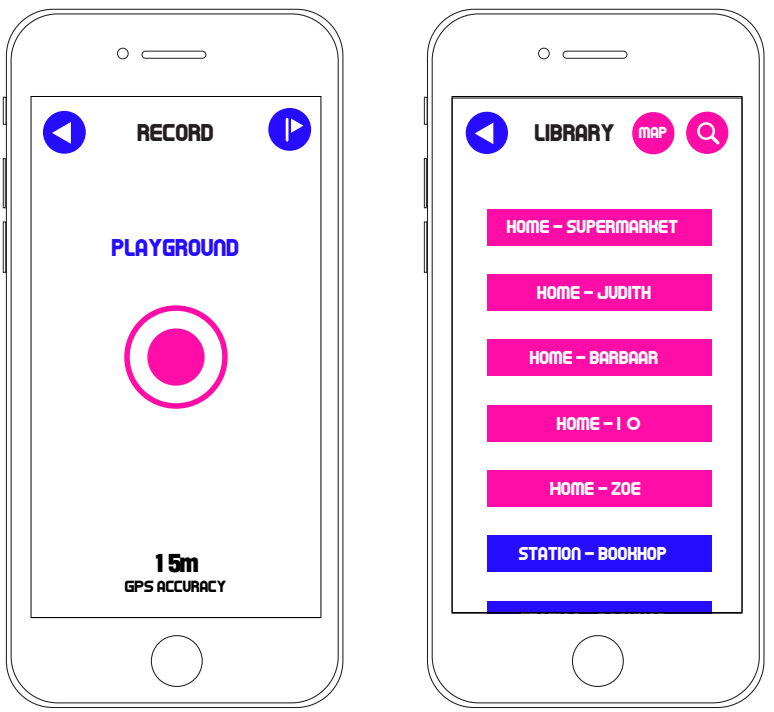


Figure 47 - Adjustments according to the recommendations.

Conclusion

Applying the knowledge about VIPs, mobility and autonomy gained from the research and design explorations has resulted into the design brief and concept design: Walkmen. The validation has been done to determine if the initial assignment to evoke a feeling of autonomy was fulfilled. Based on the validation, recommendations are formulated for further development.

4.5 CONCLUSION

Recommendations for the design

What should be improved or investigated?

VISUALIZE CURRENT GPS ACCURACY

Because GPS accuracy is a big concern within the application, I recommend to visualize the accuracy of GPS continuously, so the user can anticipate anticipate this. It is possible to add a function to confirm or adjust the location of the voice memo by visualizing the points on a map.

VISUAL OF A MAP WITHIN THE LIBRARY OF ROUTES.

Not every visually impaired person is blind, which means a map can be added for people with rest vision to visualize the relations/ connection/ distances between different routes. It is also possible to correct the GPS accuracy of the recorded points.

POSSIBILITY TO RECORD THE ROUTE IN ONE TAKE, NOT IN POINTS.

Currently, some VIPs do record an entire new route in one take which they re-listen as preparation. Walkmen is inspired but not designed for this as it is meant to record certain points. The possibility to record and walk simultaneously should be made possible. The recording will be cut into pieces based on location and will be played forward and backward as originally intended. The interface will not be different. This mode of usage will better suit VIPs without a guiding dog.

The following two recommendations are questionable in my opinion and should be investigated further in order to determine if they support the feeling of autonomy

~~SHARING VOICE MEMO'S~~

The sharing voice memo which was mentioned on several occasions might have both pros and cons. But as one of the participants mentioned: "you can always use less functions of an application, than using non-existing functions." This participant stated that since she is more advanced with regards to mobility, she would use it for unfamiliar routes. This should be investigated as I am curious to know if people will benefit from each other's voice memos as everybody is using different recognition points. Additionally, when people are aware that others will listen to their recordings, they might feel ashamed about their recorded instructions.

~~PERSONALIZE REQUESTED ASSISTANCE~~

I do not agree that there should be an option to indicate if you want to receive notifications or an automatic play of your recordings. I also share a similar belief for the notifications received when the track is lost. The device is meant as an orientation tool and as support. The aim is to be actively involved in what you want and how you want it. Besides, the inaccurate GPS will cause unreliable notifications which will result in less trust in the device. Also feeling autonomous means among other things being able to make mistakes and miss recognition points. But I do agree with the note of Paul Lagerweij that indicating beforehand what type of assistance you want, is as much 'requested assistance' as pushing a button in the moment to listen to the recordings. This feature should be considered and evaluated based on these mentioned points.

Chapter 05

CONCLUSION

Discuss and evaluate the project approach and the outcomes by reflecting on the different core elements of the project.

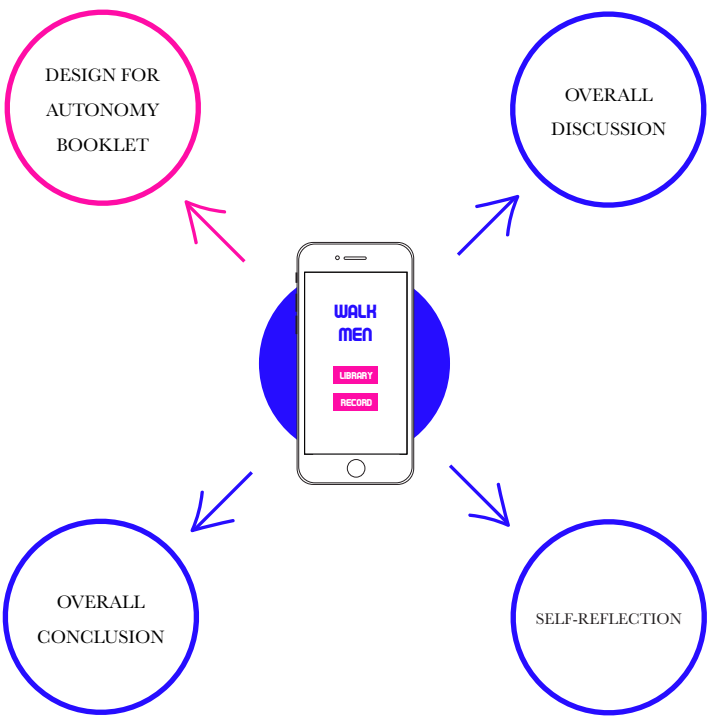


Figure 48 - Visualization of the approach of the conclusion

CHAPTER 5 CONCLUSION / PART 1

Introduction

In this final chapter I look back at the executed work, reflect, discuss the limitations and propose recommendations for the future.

5.1 INTRODUCTION

The approach

What is written down in this chapter?

Within the different parts, different lenses have been used while looking back at the project:

DESIGN FOR AUTONOMY BOOKLET

How would I advise others to design for autonomy for people who are in need of assistance? Looking back at the project and asking myself this question resulted in nine principles which are summarized in a small stand alone booklet.

OVERALL DISCUSSION

Looking back at t...the project with a critical eye by describing the recommendations, limitations and further research.

OVERALL CONCLUSION

Short summary of the project which also explains my current view on autonomous assistive tools.

SELF-REFLECTION

Looking back at the project by reflecting on the highlights and breaking points during the project's process.

Design for autonomy booklet

Every step taken within this project was driven by the main goal to design for autonomy. This means that I have learned a lot about designing for autonomy which I would like to share with others who are interested in the topic by summarizing my insights into nine principles.

5.2 DESIGN FOR AUTONOMY BOOKLET

Booklet Design for Autonomy for people who are in need of assistance

What is it for?

The nine principles are described for designers who want to design an autonomous support tool for people who are in need of assistance. The nine principles are summarized in a small booklet, which can be assembled from the following pages of this thesis. Cut out the white lines, fold the pages and use the page numbers to figure out the order of the pages. Use a ribbon or chord to bind the pages together.

Design for

AUTONOMY

WITH A NEED FOR ASSISTANCE

This booklet is a part of the thesis

- The Walkmen -
A mobility tool that supports
visually impaired people to
experience a feeling of autonomy.

PRINCIPLES BY
LAURA KOOT

Notes

Autonomy Means

Give different answers to the same question.
Where there is a will, there is a way.
Be comfortable with being uncomfortable.

As a Designer

Be unexperienced between the experts.
Have a collection of examples.
Have an eye for superpowers.

The Outcome

Provide suitable help, do not aim for less help.
Create the possibility to make mistakes.
Illustrate reliable information.

Multidimensional
Willpower
Unbalancing

Be vulnerable
Be a collector
Be astonished

Requested assistance
Freedom of choice
Trust

Illustrates reliable information.

Choosing between support that is recommended by a salesperson or by a good friend depends on the context where this decision has to be made. Due to the need for the type of expertise for that moment. Be aware of the reliability of support for your context.

The outcome

Requested assistance
Freedom of choice
Trust

Takeaways

During the journey of my graduation project, I have learned a lot about the four different themes within the scope of my assignment: mobility, autonomy, visually impaired people and assistive tools.

As designing for autonomy was the main approach, I evaluated the graduation project on what I learned about evoking a feeling of autonomy when people are in need of assistance.

This booklet - which is also a chapter in the final thesis that I wrote - describes nine principles as takeaways intended to support other designers with their design projects. The nine principles are divided into the following themes; Autonomy Means, As a Designer and The Outcome.

The Outcome

Requested assistance
Freedom of choice
Trust

Autonomy Means

Multidimensional
Willpower
Unbalancing

Fortunately, being 100% independent with the current technologies not possible. Every person is in need of a different type of support, so a feeling of autonomy means something different in every context. So as not to design more support than required, it is essential to understand what is important for your context and which aspects should be included as autonomy.

Creates the possibility to make mistakes.

Designing support does not mean facilitating THE right support. The outcome should include a freedom of choice and create the possibility to make different decisions for different reasons: the practical, the unpractical, the wrong one or the special one. Freedom of choice facilitates making all these decisions and creates the possibility to also make the wrong decision.

Autonomy Means

Multidimensional
Willpower
Unbalancing

Provides suitable help, do not aim for less help.

Designing for a feeling of autonomy is not about creating an ideal independent scenarios, but the outcome should create the type of support that suits the context.

The Outcome

Requested assistance
Freedom of choice
Trust

Give different answers to the same question.

Assistive tools cannot be valued based on a linear system, but rather on multiple dimensions that define autonomy. Discover these dimensions by providing multiple answers to the question - How does (*current solution*) contribute to autonomy? Answer this question for a collection of current solutions until you find themes within the generated answers. These are the dimensions you are searching for.

Where there is a will, there is a way.

It is more important that you know what you are aiming for, then how you reach this goal. Nobody can be fully autonomous and is in need of assistance once in a while. Get to know which support(s) is suitable in relation to the goal(s) that your context wants to reach.

Autonomy Means

Multidimensional
Willpower
Unbalancing

The Outcome

Requested assistance
Freedom of choice
Trust

In order to design for autonomy, the assistive tool provides support rather than assistance. The characteristics - *Requested assistance, freedom of choice and trust* - should be taken into account in order to generate this support in an autonomous way. Investigate what these characteristics mean in the context of your assignment.

Autonomy Means

Multidimensional
Willpower
Unbalancing

Have an eye for superpowers.

When someone lacks the necessary obvious skills, he/she is trained with other skills and has unique strengths. Be aware of these superpowers.

As A Designer

Be vulnerable
Be a collector
Be astonished

Be comfortable with being uncomfortable.

Being stuck in the comfort zone can result in being bored, whilst jumping out of your comfort zone can result in panic. Therefore, look for a challenge that has the potential for a temporary unbalance within the current situation. Find a support that encourages to step out of the comfort zone, but close enough for the context to be able to step back.

As A Designer

Be vulnerable
Be a collector
Be astonished

As A Designer

Be vulnerable
Be a collector
Be astonished

As a designer, it is essential to create empathy and understanding for the need of support within the context. Prioritize strengths and current rituals to be able to find opportunities to design for.

Have a collection of examples.

Collect all sorts of solutions: terrible solutions, futuristic solutions, student projects, art installations, typical solutions and the newest technologies. These solutions will help to refer to and discover what autonomy means within the project. It is important not to judge the examples before evaluating them. You can get inspired by bad examples by aiming for the opposite effect.

As A Designer

Be vulnerable
Be a collector
Be astonished

Be unexperienced between the experts

Simulations can be done easily by wearing blinded glasses, restricting the movement of your arms by using tape or using a wheelchair. It is true that you are not an expert in this practice, but it creates interesting discussions with your context. This makes the designer unexperienced between the experts.

Recommendations

How to use the booklet?

The nine principles are translations of my own experiences derived from the design project for autonomy. This means that these are aspects which I came across. However if another target group was used, other principles might have been derived.

In order to gain more knowledge about designing for autonomy, I suggest to develop more design projects for autonomy. Probably this will have an effect on the nine principles: they will be adjusted, the formulation might change, some principles might be removed and new ones will be added.

I would suggest to other designers to use it as inspiration for their design projects and as a first stepping stone into the topic and project. So to the other designers out there: If you are going to design for autonomy and use the principles: I am curious to your experience and suggestions.

Overall discussion

Look back at the project with an critical eye. What have been the limitations of the approach used? What would I recommend others and what would I suggest as further research?

5.3 OVERALL DISCUSSION

Overall recommendations

Looking towards the future.: What should I take into account for follow-up projects and what do I recommend others?

DESIGN FOR VIPS

The following topics are recommended to take into account when designing for VIPs in general.

HAVE A PHONE CALL

Because VIPs are a minority of society, there is a limited pool of participants who live near by to do a small test with. Therefore, discussing or testing processes are time consuming. However, VIPs are used to listen to stories without having visual support, so as a designer you can make use of this by having small phone interviews and evaluations.

Anyways, I advise to have a introductory phone meeting before doing a test or having an interview in person. This also helps to determine if both sides in the meeting have similar expectations and goals and if a potential connection is present. In general, personal issues are discussed which requires a degree of trust between the involved parties.

TEST IN THEIR COMFORT ZONE

When executing a test, make sure the VIPs feel as safe and comfortable as possible and don't force certain situations. Maybe this means you have to do some concessions towards your (research) goals. It is important to be aware that when the participant is more in his or her comfort zone, he/she is more capable and eager to reflect.

THE ENGINEERING TRAP

Because VIPs got approached by engineering-trap-products in general, their mindset is also in this state of mind.

When designing with the approach that is different form the visual-replacement-approach, you need to be patient and inventive in how to approach the ideas to avoid miscommunication.

DESIGN FOR MINDSETS, INSTEAD OF VIPS

VIPs with the same type of disability do not need the same type of help, due to the different mindset people have. Do not design for physical (dis)abilities, but for their mental state of mind.

ASK FOR NON-VIPS OPINION ABOUT YOUR IDEAS

Because VIPs are also just humans, some ideas can also be evaluated as a pilot test with sighted people. Ask if they would like to use it and in which situation they would prefer.

DESIGN FOR AUTONOMY

I suggest to take the following topics into account when designing for autonomy.

WHICH CULTURE DO YOU DESIGN FOR?

The design project has been done in the Netherlands, where autonomy is an important aspect in society. But how important is autonomy in other countries and cultures? And do the defined principles make sense in those cultures? This should be investigated and taken into account.

AIM FOR IMPROVEMENTS

Autonomy is a big topic, which can be solved on different levels ans sizes. I advice to not aim for 100% autonomy, but search for improvements in the daily life, which are already comfortable, but have room for improvements.

WALKMEN APPLICATIONS

Could the Walkmen design also be used by other groups besides VIPs?

CHILDREN WITH AUTISM

Mentioned by Marten van Doorn during the focus group session: Some children with autism occur to have mobility problems. Besides they do not accept or trust instructions from everyone. Walkmen can help in providing instructions, recorded by themselves or somebody else they do accept help from.

ELDERLY

Walkmen can function as a reminder for elderly where memory loss places them in uncertain situations. In the case when regular navigation systems are to complex for elderly, the Walken can be a simplified alternative.

5.3 OVERALL DISCUSSION

Limitations

Which limitation has the taken approach and the Walkmen?

LIMITATIONS OF THE APPROACH

Designing for autonomy with empathy has been the main approach of this project. What limitations did I experience during this project and what can other designers face when using this approach?

In general, being trained in being an empathic designer means also that you are an empathic person in daily life. It is not a button that can be switched off in moments that you need it or do not want it. Therefore it is important to distance yourself from the project and provide yourself with time to switch from the project to daily life in the evenings and weekends. It is also important to take your time when you want to attach to the project again. I had difficulties doing this, which made the project quite intense at some moments.

Overall, the approach of this project has been a personal and intuitive approach, which makes it hard to imagine how and if other people would execute the same approach. I see the approach as an inspiration than a manual to design for autonomy or design with empathy. Also, I believe that every project needs a different approach to create a certain level of empathy.

LIMITATIONS OF WALKMEN

Walkmen is designed in order to generate a feeling of autonomy. An opportunity to design an orientation tool for self-programmed routes was found, which resulted in the Walkmen design. This means not all VIPs will use it, and probably only those with difficulties with orientations will.

The features of Walkmen leave a lot of room for freedom of use. This means that the users have to figure out for his/herself how the product works best for them, by figuring out how to deal with the inaccurate GPS, what type of recordings they prefer and which tag they prefer for their recording to be able to order the notes in an logical way. As one of the mentioned strengths of VIPs is anticipation, I believe that they have the capabilities to manage this.

This will take some time and effort to figure out (like getting used to their guide dog), which makes the users partly the inventors of their personal Walkmen. This requires a high motivation from the users side. This can be a limitation factor of Walkmen.

This need to be discovered with a working prototype over a longer period of time. Since the design is not fully testable, the number of observations which can be made are limited.

5.3 OVERALL DISCUSSION

Further research

What needs to be discovered in the future?

At the moment, the Walkmen is far from a finished product. Therefore I would recommend to develop different prototypes to test different aspects of the design. The type of details which should be included within the prototype depends on the testing goals. I suggest to test the following aspects:

First, I would recommend to do the human prototype test again, but this time with a familiar person for the VIP, which is also familiar with the environment.

Secondly, test the interface of the design. Is it user friendly? Is the application capable of doing all tasks that has been done during the human prototype test? This can be done without having a standalone prototype.

Thirdly, make a stand-alone prototype and let people use it for a while. What is the effect? Do people record also 'unpractical elements'? Do they use it in familair places or also new places?

As mentioned during the validations, VIPs saw the opportunity to explore new routes with the application by making use of other peoples recordings. Although the design was not intended to do this, it is worth exploring the possibilities. I am wondering if people understand each others recordings and how it effects people way of recording.

So, if the Walkmen is a valuable addition as a support tool to current assistive tools, there are several foundations and associations that have the resources to fund this type of project. Including Bartimeus, which also has an innovation lab.

Lastly, I would like to mention the urge of VIPs to be 100% autonomous. But I am wondering if they have THE device that is accurate enough and can assist them to new places, would they use it and does it make them feel autonomous? I am curious where they would go, what they want to discover or that they stay to the known-in-control-environment

Overall conclusion

What are the results of this project?

The assignment is to design a mobility tool for visually impaired people (VIPs) that let them experience a feeling of autonomy while navigating.

To fulfill this assignment several research and design explorations have been executed from different type of lenses. 'Own Experience' lens, the 'VIP Experience' lens and the 'Expert' lens function as media to look at the assignment from different perspectives. As a result, an opportunity is found to design for impulsivity in order to evoke a feeling of autonomy. The opportunity results in the question: Is their room for impulsivity while being in control?

The meaning of being impulsive that supports a feeling of autonomy is defined by doing four consecutive design iterations. During every iteration a new definition of impulsivity is defined and ideas are generated connected to the definition. The result of these iterations is, the chosen definition of impulsivity and the three characteristics for autonomous support tools which are translated into the design goal:

THE DESIGN GOAL:

Open up the opportunity for a small mental detour by paying attention to the impractical elements of the environment:

Design a supporting device that illustrates the current position within a self-preprogrammed known route on demand.

The design goals were translated into the concept design: Walkmen. Walkmen is a GPS connected voice recorder on your smart-phone with which you can track routes and create your own reference mobility tool. Walkmen meets the three autonomous characteristics, by generating trust, freedom of choice, and provides requested assistance.

During the validation test it was confirmed by the VIPs that there is a need for this product. In their opinion it provides them freedom to make their own reference tool which evokes a feeling of autonomy.

Self-reflection

I will reflect on this project in a chronological way from the start, till the end, mentioning some milestones, breakthroughs, ups- and downs

This project started with my fascination and frustration for the level of my own mobility skills and the question relating to what type of role technology plays within my mobility activity. In my daily life, Google maps does encourage to explore new places, but when exploring a new city, I entirely rely on Google maps and my phone battery. Actually, I wanted to know to what extent technology plays a role in our perception of autonomy. So, the themes, mobility, autonomy and assistive tools were already set, and designing for visually impaired people was the last factor that formed the graduation assignment.

I was hesitant to design for VIPs in the first place because in general, I do not like it to design for such a defined group. Due to my 'allergy' for quantifying people and especially people's behaviour towards 'pathetic people.' Because it is seen as a weak group already by many designers, I wanted to emphasize the strengths of this group instead, which I called superpowers. Also, I focused on mobility mindsets, instead of describing different types of visual impairments. As soon as I realized that being a VIP is about using your senses differently, I saw an opportunity of approaching this project: I really wanted to understand how VIPs feel, experience and approach their world of perception.

I really care about stories that people tell, which sometimes was emotionally challenging. I am an emphatic person, and this empathy is sometimes a strength but is sometimes also a weakness. In the beginning of the project, I attended the final lecture of Pieter Desmet as master coordinator of the design for interaction master program. One of the things that was a good wake-up call was the note that as an empathic designer, it is essential to keep one eye on your target group and one eye on yourself, to check if you are not resonating on the other's emotions. At that moment, I had two eyes on the target group, which made me forget to check myself. This was the case after my VIP-experience-weekend, where I forgot that the project is 'just a project' and not my life.

The VIP-experience-weekend provided me with a lot of insights during the weekend, but even more advantage during the interviews, as it broke the ice during the conversations. They laughed about my stories and experiences and told me that if I were be more experienced, it would be less intense and easier.

Although I was convinced with the importance and relevance of the weekend, the week before I was very nervous and anxious. I experienced the whole weekend was very intensively and rather

stressful. That is, because I was walking around blindfolded and simultaneously continuously reflecting on how I could use this for my project and if this was indeed a fruitful exploration for the project. I can even remember that I discouraged another graduation student to do the same, but for a children hospital project. At the moment, I do see the fruitfulness of it, and I believe everybody should do it in a situation where simulating the circumstances is feasible. However, I do advice to regularly check yourself and allow yourself to have less strict rules. So I did allow myself to take off my blindfolded glasses in my bedroom on the second day to remove any hallucinogenic effects.

So, this is how designing for empathy became my method for this project. I wanted and still do want to fully understand how VIPs approach and experience mobility within their daily life activities. I have been searching until the end of the project, and actually feel like I need to explore more, because I still do not know everything. Therefore, the project took longer than it formally should have.

My goal to empathize as much as possible is not the same approach as the rest of the other companies who design for VIPs. The fact that they replace what is missing (visual information) frustrates me and because VIPs are used to this approach, they are also in this mindset of practical-visual-replacement-solutions. So, in the ideation phase my (impractical) ideas were not connecting with the target group, which made me think that I did not understand them well enough and made me feel lost in the project.

This feeling of being lost during the design ideation within the supermarket. The supermarket was meant as an exercise because it can be seen as a mini-city where navigation and orientation are essential aspects. But without noticing, I was caught by the practical problems of the supermarket environment and trapped in the engineering trap.

I usually can trust my gut feelings when it comes to fruitful ideas, but due to self-imposed time pressure, I felt rushed to accept a premature solution. So, I was not able to rely on my own intuition anymore. Luckily, I had my coaches, who helped me out. After the meeting with Anna where she mentioned the option to let go of the supermarket and choose another direction of impulsivity, I literally felt less heavy on the shoulders. I thought that I failed in the supermarket environment by not having valuable ideas, but actually, I have learned a lot from the supermarket. The autonomous characteristics are partly derived from the design explorations within the supermarket.

Another milestone was discovering the article about the flaneur which I read on a casual Sunday morning. When looking back at this moment I realized that it is important to be able to be both sensitive towards the project - especially when not working on the project - and simultaneously release it to regenerate in order to stimulate creativity

After all, I am happy with the end result of the project. Although I aimed for an 'impractical' product, a practical application is the final result of this project. What I like about it, are the possibilities that is has in terms of impracticalities, but it fits the current practical mobility habits. VIPs knows best how they want to use the product and this product provides them with he freedom of using it their way. As one of the participants of the validation test mentioned *"A lot of designs think for us, but we (VIPs) have the best solutions which fit our daily life."*

At last, the many positive reactions I got from VIPs, who would love to have this product, really touched me. I almost feel guilty that the project is over so I cannot bring this product concept to life so that VIPs can actually use it and improve their perception of autonomy.

References

Bartimeus. (2017, March 29). Over Bartiméus. Retrieved September 9, 2018, from https://www.bartimeus.nl/over-bartim%C3%A9us

Desmet, P. M. A. (2002). Designing emotions. Delft: Delft University of Technology.

DIoPD. (n.d.). Our mission. Retrieved September 9, 2018, from http://studiolab.ide.tudelft.nl/diopd/about-us/mission/

Espinosa, M., Ungar, S., Ochaíta, E., Blades, M., & Spencer, C. (1998). Comparing Methods for Introducing Blind and Visually Impaired People to Unfamiliar Urban Environments. Journal of Environmental Psychology, 18(3), 277–287. https://doi.org/10.1006/jevp.1998.0097

Green, P. (2014, October 24). An Expert on Choice Chooses. Retrieved September 9, 2018, from https://www.nytimes.com/2010/03/18/garden/18choice.html

Hersh, M., & Johnson, M. A. (2008). Assistive Technology for Visually Impaired and Blind People. London: Springer.

Jimenez, S., Pohlmeyer, A.E., & Desmet, P.M.A. (2015). Positive Design Reference Guide. Delft: Delft University of Technology. ISBN 978-94-6186-425-3

Jordans, M., Kraats, B., Elings, M., Hon, M., Blink, P., & Breukel, K. et al. (2012). Architectuur door andere ogen. Wezep: De Kunst.

Keunen, J.E.E. ; Verezen, C.A. ; Imhof, S. ; Rens, G.H.M.B. van ; Asselbergs, M.B. ; Limburg, J.J. Toename in de vraag naar oogzorg in Nederland 2010-2020. Ned. Tijdschr. Geneeskd. 2011;155:A3461.

Loomis JM, Klatzky RL, Giudice NA. Sensory substi- tution of vision: importance of perceptual and cogni- tive processing. In: Manduchi R, Kurniawan S, eds. Assistive Technology for Blindness and Low Vision. Boca Raton, FL: CRC Press; 2012, 162–191.

Maidenbaum, S., Abboud, S., & Amedi, A. (2014). Sensory substitution: Closing the gap between basic research and widespread practical visual rehabilitation. Neuroscience & Biobehavioral Reviews, 41, 3–15. https://doi.org/10.1016/j.neubiorev.2013.11.007

Pohlmeyer, A.E. (2017). How Design Can (Not) Support Human Flourishing. In C. Proctor(ed.) Positive Psychology Interventions in Practice, 235–255. Springer, Cham.

Ryff, C.D.,& Keyes, C.L.M.(1995). The structure of psychological well-being revisited. Journal of Personality and Social Psychology, 69(4), 719-727.

Sanders, E. B. N., & Stappers, P. J. (2012). Convivial Toolbox: Generative Research for the Front End of Design. Amsterdam: BIS.

Schinazi, V. R., Thrash, T., & Chebat, D. (2016). Spatial navigation by congenitally blind individuals. Wiley Interdisciplinary Reviews: Cognitive Science, 7(1), 37–58. https://doi.org/10.1002/wcs.1375

Stevenson, A., & Lindberg, C. (2010). Dictionary of American English (3rd ed.). Oxford University Press.

Vaes K. (2014). Product Stigmaticity - Understanding, Measuring and Managing Product- Related Stigma. Delft University of Technology - Antwerp University

Van Doorn, M. (2018). Mobiliteit [PDF].

Vereniging Bartimeus Sonneheerdt. (2015, November 1). The app that gives new eyes to the blind. Retrieved September 9, 2018, from http://www.vitainternational.media/en/article/2015/11/01/the-app-that-gives-new-eyes-to-the-blind/31/

Vespa, M. (1985, June 24). Designer Pat Moore Learned About Old Age the Hard Way; She Turned Herself into An 85-Year-Old. Retrieved September 9, 2018, from https://people.com/archive/designer-pat-moore-learned-about-old-age-the-hard-way-she-turned-herself-into-an-85-year-old-vol-23-no-25/

Weijts, C. (2018, April 26). Flaneren moet je leren, zeven lessen om zorgeloos te

FIGURES

slenteren. NRC, pp. 12–13.

Figure 2.1: Reidzāns, K. (2018). Graduation 17, Project: Altering the Landscape. Retrieved September 6, 2018 from https://www.designacademy.nl/EVENTS/Graduation17/Project.aspx?ProjectId=1726

Figure 2.2: Dogger, S. (2018). The Emotion Whisperer: Project description. Retrieved September 6, 2018 from http://www.simondogger.nl/emotionwhisperer.html

Figure 2.3: Van Wezel, R. (2017). Feel the Emotion. Video Wearable Vibrotactile Device. Retrieved September 6, 2018 from https://vimeo.com/240231572

Figure 2.4: feelSpace. (2018). feelSpace – tactile Information. Retrieved September 6, 2018 from https://www.feelspace.de/?lang=en

Figure 2.5: Range-IT. (2018). About Range-IT. Retrieved September 6, 2018 from http://www.range-it.ugent.be/

Figure 2.6: Thomas, L. (2018). How to Get Young Athletes to Run Faster. Retrieved September 6, 2018 from http://iyca.org/the-simple-math-behind-young-athletes-running-faster/

Figure 2.7: Tucker, E. (2017). Maptic is a wearable navigation system for visually impaired people. Retrieved September 6, 2018 from https://www.dezeen.com/2017/08/02/maptic-wearable-guidance-system-visually-impaired-design-products-wearable-technology-graduates/

Figure 2.8: Anorak. (2013). Faces of the day. Retrieved September 6, 2018 from http://www.anorak.co.uk/357290/sports/faces-of-the-day-67th-annual-eastern-athletic-association-for-the-blind-track-and-field-tournament.html/

Figure 2.9: Garcia, M. (2014). American Airlines' Plan for iBeacon Connectivity in Dallas and Beyond. Retrieved September 6, 2018 from https://skift.com/2014/06/19/american-airlines-plan-for-ibeacon-connectivity-in-dallas-and-beyond/

Figure 2.10: Griffin, A. (2015). Project Tango. Retrieved September 6, 2018 from https://www.independent.co.uk/life-style/gadgets-and-tech/news/project-tango-google-technology-to-3d-scan-the-whole-world-could-be-in-phones-this-year-10018821.html

Figure 2.11: SM-R325 | SM-R325NZVAPHN | Samsung NL. (2017, September 14). Retrieved September 9, 2018, from https://www.samsung.com/nl/wearables/gear-vr-galaxy-note8/

Figure 2.12: Del Monte, M. (2015). Stevie Wonder le improvvisa una serenata, a sorpresa piange il marito. Retrieved September 6, 2018 from https://www.intelligonews.it/uova-fresche-di-giornata/articoli/16-settembre-2015/30531/stevie-wonder-le-improvvisa-una-serenata-a-sorpresa-piange-il-marito/

Figure 2.14: Roy, A. (2018). Lachal Shoes. Retrieved September 6, 2018 from https://www.coroflot.com/abhishekroy/Lechal-Shoes

Figure 2.15: I-Cane. (2013). De I-Cane Mobilo. Retrieved September 6, 2018 from https://www.youtube.com/watch?v=O8A_1wFV4YE

Figure 2.16: ViaOpta Nav 2.0.3 APK. (2017, September 5). Retrieved September 9, 2018, from https://apk-dl.com/viaopta-nav/com.novartis.blind

Figure 2.17: Centar za rehabilitaciju Silver. (n.d.). Long Cane Technique. Retrieved September 9, 2018, from http://czrs.hr/programme/long-cane-technique/?lang=en

Figure 2.18: Salesforce. (n.d.). KNGF Geleidehonden zet Salesforce-platform in voor relaties met donateurs en cliënten. Retrieved September 9, 2018, from https://www.salesforce.com/nl/blog/2016/04/kngf-geleidehonden-zet-salesforce-platform-in-voor-relaties-met-.html

Figure 2.19: Bollard, G. (n.d.). Adjusting Society to Meet the Needs of People with Autism. Retrieved September 9, 2018, from https://life-with-aspergers.blogspot.com/2018/04/adjusting-society-to-meet-needs-of.html

Figure 2.20: Verkeerskunde.nl. (n.d.). Veilige oversteekplaatsen gevraagd (VK 6/2013) - Verkeerskunde: hét multimediale platform voor verkeerskundigen. Retrieved September 9, 2018, from http://verkeerskunde.nl/internetartikelen/vakartikelen/veilige-oversteekplaatsen-gevraagd-(vk-6-2013).34705.lynkx?pageStart23314=1

Figure 2.21: Zwembadtegels.nl. (n.d.). Blindengeleide tegels. Retrieved September 9, 2018, from http://www.zwembadtegels.nl/blindengeleide-tegels/

Figure 2.22: Mentalfloss.com. (2012, January 27). Why Do Drive-Up ATMs Have Braille on the Buttons? Retrieved September 9, 2018, from http://mentalfloss.com/article/29851/why-do-drive-atms-have-braille-buttons

Figure 2.23: Van der Vleuten, R. (n.d.). Blind Maps. Retrieved September 9, 2018, from http://www.rubenvandervleuten.com/blindmaps.html

Figure 2.24: Retrieved September 9, 2018 from https://touch-mapper.org/en/

Figure 2.25: Burns, C. (2010, April 22). GPS in a Hand Disk. Retrieved September 9, 2018, from http://www.yankodesign.com/2010/04/22/gps-in-a-hand-disk/

Figure 2.26: Watches.com. (n.d.). Eone Bradley Classic Steel Mesh. Retrieved September 9, 2018, from https://www.watches.com/bradley-steel-mesh

Figure 2.27: TED. (n.d.). Neil Harbisson: Ik luister naar kleur. Retrieved September 9, 2018, from https://www.ted.com/talks/neil_harbisson_i_listen_to_color?language=nl

Figure 2.28: NOS. (2017, October 31). Alle treinstations zijn nu toegankelijk voor blinden. Retrieved September 9, 2018, from https://nos.nl/artikel/2200593-alle-treinstations-zijn-nu-toegankelijk-voor-blinden.html

Figure 2.29: Retrieved September 9, 2018 from https://twitpic.com/dw7bs6

Figure 2.30 Barbetta, C. (2015, November 1). The app that gives new eyes to the blind. Retrieved September 9, 2018, from http://www.vitainternational.media/en/article/2015/11/01/the-app-that-gives-new-eyes-to-the-blind/31/

Figure 13: Suleiman, A. Retrieved September 9, 2018, from https://unsplash.com/photos/iLCMK21AWqE

Figure 14.1: NU.nl. (2015, October 18). Stevenage-keeper verschalkt collega van negentig meter. Retrieved September 9, 2018, from https://www.nu.nl/mixed-zone/4147599/stevenage-keeper-verschalkt-collega-van-negentig-meter.html

Figure 14.2: How Steve Jobs became the greatest businessman the world has ever known. (n.d.-d). Retrieved September 9, 2018, from http://bestpresentationonearth.com/blog/?p=1983

Figure 14.3: plan-de-metro. (2012, February 14). Retrieved September 9, 2018, from https://studiomontreuil.wordpress.com/situation/plan-de-metro-3/

Figure 14.4: Les 10 tendances Retail à suivre en 2017 | caravelle digital. (2017, February 27). Retrieved September 9, 2018, from http://caravelledigital.com/les-10-tendances-retail-a-suivre-en-2017/

Figure 14.5: MacLean, J. (2017, September 29). Is the 3-D selfie creepy or cool? You be the judge. Retrieved September 9, 2018, from https://www.cantechletter.com/2017/09/is-the-3-d-selfie-creepy-or-cool-you-be-the-judge/

Figure 14.6: Perfectionist Moving - Atlanta, GA. (2018, June 29). Retrieved September 9, 2018, from https://www.yelp.com/biz/perfectionist-moving-atlanta

Figure 14.7: 6 consells per a ordenar l'armari. (2015, May 1). Retrieved September 9, 2018, from https://vicflats.wordpress.com/2015/05/01/6-consells-per-a-ordenar-la-roba/

Figure 14.8: Soni, V. (n.d.). How to click 360 view with your android phone. Retrieved September 9, 2018, from http://teckatblog.blogspot.com/2017/05/how-to-click-360-view-with-your-android.html

Figure 14.9: Die Flodders: So sieht Ma Flodder heute aus! (n.d.-d). Retrieved September 9, 2018, from https://www.tvmovie.de/news/die-andere-karriere-was-macht-mudder-flodder-heute-41769

Figure 21: Albert Heijn. (n.d.). [Producten]. Retrieved September 9, 2018, from https://www.ah.nl/producten/product/wi235435/ah-blinde-vinken

Figure 24: Green, P. (2014, October 24). An Expert on Choice Chooses. Retrieved September 9, 2018, from https://www.nytimes.com/2010/03/18/garden/18choice.html

APPENDICES

1 - Current examples / 2 - Own experience weekend activities / 3 - Interview questions / 4 - Four dimensions of autonomy analysis table / 5 - Newspaper article: Flaneren moet je leren / 6 - Concept description

APPENDIX 1

Current examples

Overview of the collected current examples. Every example consists of acitation, which shortly described the solution. For more information, the retrieved source of the citation is included.

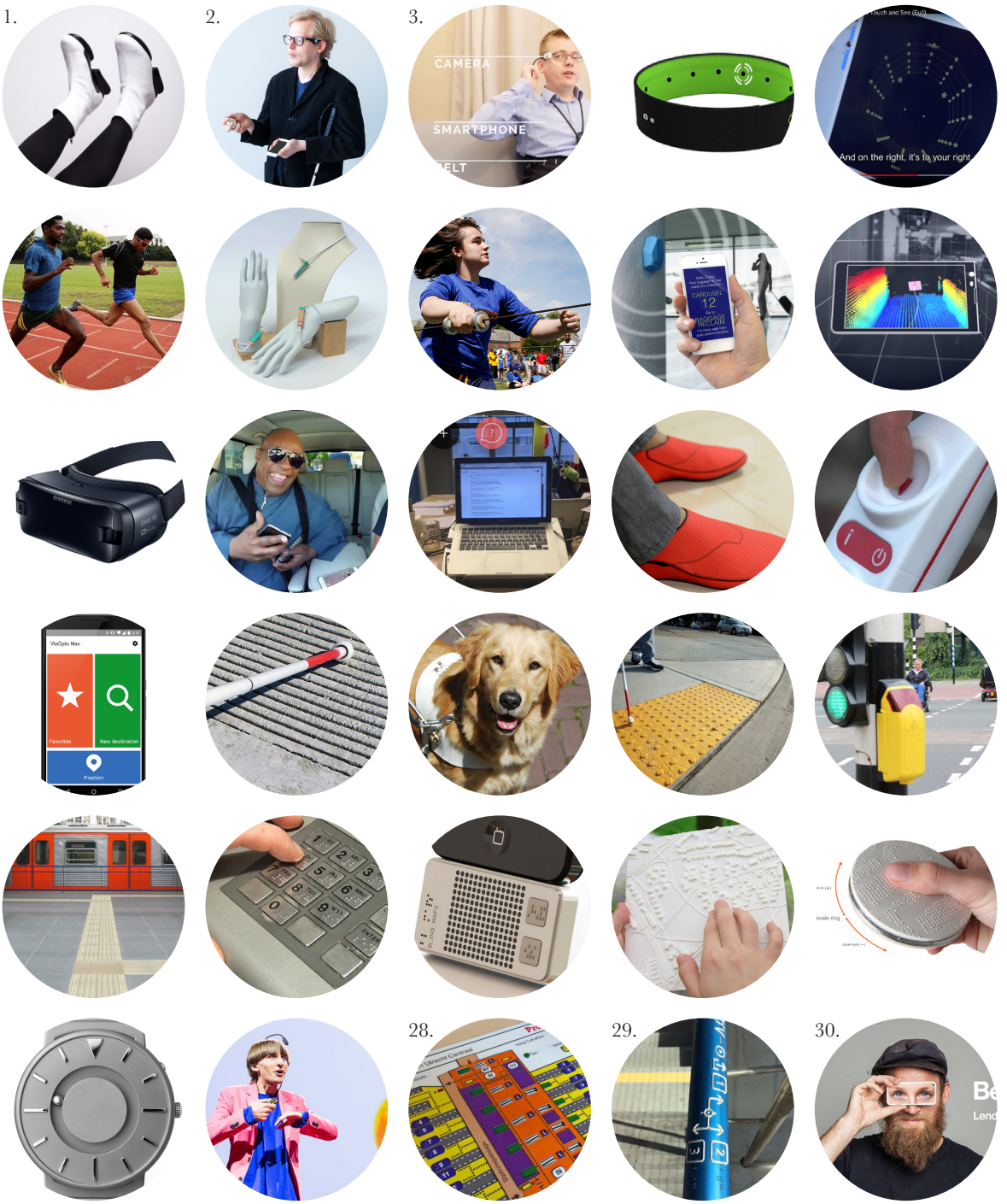


Figure 2 - Current assistive (mobility) tools for VIPs. Citations the tools can be found in appendix 1.

1. ALTERING THE LANDSCAPE

"The shoes that Kristofers Reidzāns has designed are more than just practical footwear. They have been created to become extensions of the body. In Kristofers' own words: "amplifying the body's navigation through contemporary urban space". With his 'Altering the Landscape' range, he wants the wearer to consciously perform the act of walking, to take in the feeling of being a moving element within the landscape. Made of complementing synthetic and natural materials, in close collaboration with Latvian craftsmen, the shoe has been reinvented as a platform for a new experience every step of the way."

http://www.kristofersrei.com

2.THE EMOTION WHISPERER

"The Emotion Whisperer is a subtle tool that can prompt the visually impaired with the body language they're otherwise missing out on. It comes with a pair of camera glasses that sends images of conversation partners to an emotion recognition app. These are analyzed and translated into a sensory signal: emotions like attention, surprise or happiness are felt by a specific vibration of the small device in the palm of your hand. You can actually feel someone smiling."

http://www.simondogger.nl/emotionwhisperer.html

3. SLIMME BRIL – GEZICHTSUITDRUKKING

"Met het systeem ervaart iemand dus de gezichtsuitdrukking van de gesprekspartner door te voelen waar in de band er iets trilt. Hierbij worden positieve en neutrale emoties meer op de buik getoond naar aanleiding van spreekwoorden als 'Vlinders in je buik hebben', terwijl de meer negatieve emoties op de rug worden getoond. Uitbreiding naar navigatie mogelijk. "Een fijne bevesiging"

Richard van Wezel, hoogleraar Visual Neuroscience aan de Radboud Universiteit en de Universiteit Twente

4. FEELSPACE NAVIBELT

"Normally, we rely mostly on our eyes and ears. Starting today, rely on your gut feeling! The vibrating feelSpace naviBelt makes routes and directions tactile. Experience a completely new sense of space! Just put on the naviBelt enter a destination using your smartphone, and feel where to go. Following the motto: "Always follow your gut feeling". The operation of the belt is completely handicapped accessible, thus also suitable for the elderly and visually impaired."

feelSpace. (2018). feelSpace – tactile Information. Retrieved September 6, 2018 from https://www.feelspace.de/?lang=en

5.RANGE-IT

"Het hulpmiddel dat Range-IT ontwikkelt verhoogt ook de radius van obstakeldetectie van 1,5 meter (traditionele afstand voor een witte stok) naar 7 tot 8 meter en specifieke referentiepunten zoals trappen en muren worden weergegeven."

RANGE-IT: BETERE NAVIGATIE VOOR BLINDEN EN SLECHTZIENDEN. (n.d.-b). Retrieved September 9, 2018, from https://www.tno.nl/nl/aandachtsgebieden/gezond-leven/roadmaps/biomedical-health/range-it-betere-navigatie-voor-blinden-en-slechtzienden/

6. BLINDTRACK

"The BLINDTRACK system has to fit to the challenge of the real-time tracking of a blind runner. The difficulty of the task is its real-time nature. The system has to operate without significant delays between the system units and these components must have short response times as well. The other challenge is the localization system, which has to be accurate, and has to fit to the real-time environment."

Blindtrack. (2018). Guiding system for visually impaired for individual running on the track. Retrieved September 6, 2018 from http://blindtrack.eu

7. MAPTIC

"Called Maptic, the set comprises a visual sensor that can be worn like a necklace, and a series of feedback units that can be clipped onto clothing, or worn around the wrist. The sensor connects to a voice-controlled iPhone app, so it can use GPS to direct the wearer. It does this through a series of vibrations to the left or right side of the body."

Tucker, E. (2017, August 4). Maptic is a wearable navigation system for visually impaired people. Retrieved September 9, 2018, from https://www.dezeen.com/2017/08/02/maptic-wearable-guidance-system-visually-impaired-design-products-wearable-technology-graduates/

8. VIP ATHLETE DAY

67th annual Eastern Athletic Association for the Blind Track and Field tournament

Anorak News | Faces of the day: 67th annual Eastern Athletic Association for the Blind Track and Field tournament. (n.d.-b). Retrieved September 9, 2018, from http://www.anorak.co.uk/357290/sports/faces-of-the-day-67th-annual-eastern-

athletic-association-for-the-blind-track-and-field-tournament.html

9. IBEACONS

"From welcoming people as they arrive at a sporting event to providing information about a nearby museum exhibit, iBeacon opens a new world of possibilities for location awareness, and countless opportunities for interactivity between iOS devices and iBeacon hardware."

Retrieved September 6, 2018 from https://developer.apple.com/ibeacon/

10. GOOGLE TANGO

"Tango is a platform that uses computer vision to give devices the ability to understand their position relative to the world around them. It's similar to how you use your eyes to find your way to a room, and then to know where you are in the room and where the floor, the walls, and objects around you are. These physical relationships are an essential part of how we move through our daily lives. Tango gives mobile devices this kind of understanding by using three core technologies: Motion Tracking, Area Learning, and Depth Perception."

Ramel, D. (2016). Retrieved September 6, 2018 from https://adtmag.com/articles/2016/08/17/tango-augmented-reality.aspx

11. VR VERKENNING

Application of a 360 degree video in VR glasses. To provide the clients of Bartimeus the opportunity to prepare for a visit at Bartimeus.

12. FACETIME

Video chat with friends and/or family by using the camera on your mobile phone.

13. ENVISION BETA APP

"Hence, we built an app called Envision AI, that takes a context-based approach to this problem. Our app can be currently used to:

- Recognise and read texts in their native dialect.
- Explain scenes that camera captures in detail.
- Train and recognise faces of your friends and family.
- Train and recognise your personal objects like wallet, keys or glasses.
- Do context-based recognition, that is, taking a picture of a clock will tell you the time, taking a picture of a window will tell you the weather outside, etc."

Mahadevan, K. (2017). Introducing Envision AI, a new iOS app to help the blind identify text, objects, and what's around them. Retrieved September 6, 2018 from https://www.applevis.com/forum/ios-ios-app-discussion/introducing-envision-ai-new-ios-app-help-blind-identify-text-objects

14. HAPTIC SHOES

"Sharma along with his friend Krispian Lawrence has designed a shoe that can assist the visually impaired in navigating easily from one place to another. The shoe can be connected to the user's smartphone through Bluetooth and vibrates according to the directions to the destination."

Pareek, S. (2014). He Designed A Shoe For The Visually Impaired That Vibrates To Show Them The Right Path. Retrieved September 6, 2018 from https://www.thebetterindia.com/12631/man-designed-shoe-blind-will-let-navigate-without-help/

15. I-CANE

"The I-Cane Mobilo® is an important 'building block' of a socially-driven project aimed at providing blind and visually impaired people (who can not be helped medically), an intelligent guide stick that improves mobility, self-sufficiency and thus the quality of life. the everyday life improves. By providing them with an intelligent guide stick, they will become more mobile, feel safer, become more independent and thus be able to develop better."

Retrieved September 9, 2018 from https://www.i-cane.nl

16. VIAOPTA NAV

"This is a navigation app to direct people to a destination via turn-by-turn navigation from their current position to their destination. Waypoints can be added to improve the effectiveness of the calculated route. At any time, the user can query the app for their position as a street address. A list of junctions/inter/ part s around the user, with the corresponding distances and bearings, can also be obtained. Audible information relevant to user navigation is provided by using the Text To Speech (even if no screen reader is running)."

ViaOpta Nav. (2014, August 21). Retrieved September 9, 2018, from https://itunes.apple.com/nl/app/viaopta-nav/id908435532?mt=8

17. CANE

"A white cane is used by many people who are blind or visually impaired. Primarily it aids its user to scan their surroundings for obstacles or orientation marks, but is also helpful for other traffic participants in identifying the user as blind or visually impaired and taking appropriate care. The latter is the reason for the cane's prominent white colour, which in many jurisdictions is mandatory."

Wikipedia contributors. (n.d.). White cane - Wikipedia. Retrieved September 9, 2018, from https://en.wikipedia.org/wiki/White_cane

18. GELEIDE HOND

"Slordig geparkeerde fietsen, vuilnisbakken of terrassen; veel stoepen staan er vol mee. Maar met een blindengeleidehond merk je daar niks van. Hij leidt zijn blinde of slechtziende baas soepel om deze hindernissen heen. Ook brengt hij zijn baas op commando energiek en kwispelend naar de bushalte, stationstrap of informatiebalie. Bijzonder is dat de blindengeleidehond een commando kan weigeren als er gevaar dreigt. Zo voorkomt hij dat zijn blinde baas per ongeluk van een hoge kade de diepte

in stapt."

KNGF. (n.d.). Blindengeleidehond voor veiligheid en vrijheid. Retrieved September 9, 2018, from https://www.geleidehond.nl/pagina/onze-honden/blindengeleidehond

19. GUIDE TILES: STUDS

Street tiles with structure studs which indicate: warning. These warning can indicate for examples a splitting, crossroad or streetlight. Used as orientation tool and in combination with guide tiles – lines (21).

20. RATELTIKKER

Addition to street light, which indicates with sound if the streetlight indicated, red, orange or green.

21. GUIDE TILES: LINES

Street tiles with structure lines which generate haptic feedback concerning routes. Used as orientation tool and in combination with guide tiles – studs (19).

22. BRAILLE

"Braille maakt lezen voor blinde en zeer slechtziende mensen mogelijk. Het brailleschrift bestaat uit zes punten en wordt gelezen met de vingers."

Oogvereniging. (n.d.). Braille. Retrieved September 9, 2018, from https://www.oogvereniging.nl/leven-werken/alle-onderwerpen/boeken-lezen/braille/

23. BLIND MAPS

"Blind Maps is a navigation system for the iPhone. The concept focuses on the visually impaired, and explores a device to improve their ability to discover and navigate confidently through a city. By connecting the device to an iPhone, the user receives real-time tangible feedback on the route through a braille-like interface. This is project is the result of a 36 hours project at CIID together with Andrew Spitz and Markus Schmeiduch."

Van der Vleuten, R. (n.d.). Blind Maps. Retrieved September 9, 2018, from http://www.rubenvandervleuten.com/blindmaps.html

24. TOUCH MAPPER

"Tactile maps are a great aid for people who are blind or partially sighted, helping them to orient themselves and to plan routes. Using Touch Mapper, you can easily create custom outdoor maps for any address of your choice. You can either print the map yourself at no charge using an embosser, a swell paper printer or a 3D printer, or you can order an affordable 3D print (a basic map for 35 euros, about USD40)."

Retrieved September 9, 2018 from https://touch-mapper.org/en/

25. DROP

"This one's for those of you who have low or no visibility with the eyes. Blind, sometimes people say. This is what's known as the "DROP" GPS system, and it's all hand-held. It uses the 3D dots you might be used to calling braille, here known more as Tactile Display technology, and it all works in conjunction with things such as a cane or seeing eye dog sometimes used by the blind. Smooth sailing on an abstract device. It'd be interesting to try'n use one of these, blind or sightful, The 3D map of the city is lifted up from the surface of the device and moves as you move, like a compass and with zoom, search, voice command, and everything. All in your palm."
Designer: Allan Sejer Madsen and Lukasz Natkaniec

Burns, C. (2010, April 22). GPS in a Hand Disk. Retrieved September 9, 2018, from http://www.yankodesign.com/2010/04/22/gps-in-a-hand-disk/

26. EONE BRADLEY

"Wouldn't it be great if you could check the time in a dark movie theater without having to illuminate your smartphone? What about not having to look down at your watch to check the time during a drawn-out client lunch? The Bradley is a tactile timepiece that allows you to not only see what time it is, but to feel what time it is."

Watches.com. (n.d.). Eone Bradley Classic Steel Mesh. Retrieved September 9, 2018, from https://www.watches.com/bradley-steel-mesh

27. NEIL HARBISSON

"Neil Harbisson was born completely color-blind. But thanks to a device he wears which translates shades into frequencies, he can now hear colors—and perhaps loves and appreciates them more than those with better sight."

TED. (n.d.). Neil Harbisson: Ik luister naar kleur. Retrieved September 9, 2018, from https://www.ted.com/talks/neil_harbisson_i_listen_to_color?language=nl

28. HAPTIC MAPS FOR VIPS AT TRAIN STATIONS TO INCREASE ACCESSIBILITY.

NOS. (2017, October 31). Alle treinstations zijn nu toegankelijk voor blinden. Retrieved September 9, 2018, from https://nos.nl/artikel/2200593-alle-treinstations-zijn-nu-toegankelijk-voor-blinden.html

29. STAIRS RAIL BRAILLE AT TRAIN STATIONS

NOS. (2017, October 31). Alle treinstations zijn nu toegankelijk voor blinden. Retrieved September 9, 2018, from https://nos.nl/artikel/2200593-alle-treinstations-zijn-nu-toegankelijk-voor-blinden.html

30. BE MY EYES

"Be My Eyes is a free app that connects blind and low vision people with sighted volunteers and company representatives for visual assistance through a live video call."

Retrieved September 9, 2018 from https://www.bemyeyes.com

APPENDIX 2

Own experience activities

Overview of the used a materials of the own experience weekend in Delft, done activities and some examples of filled in emotion capture cards.

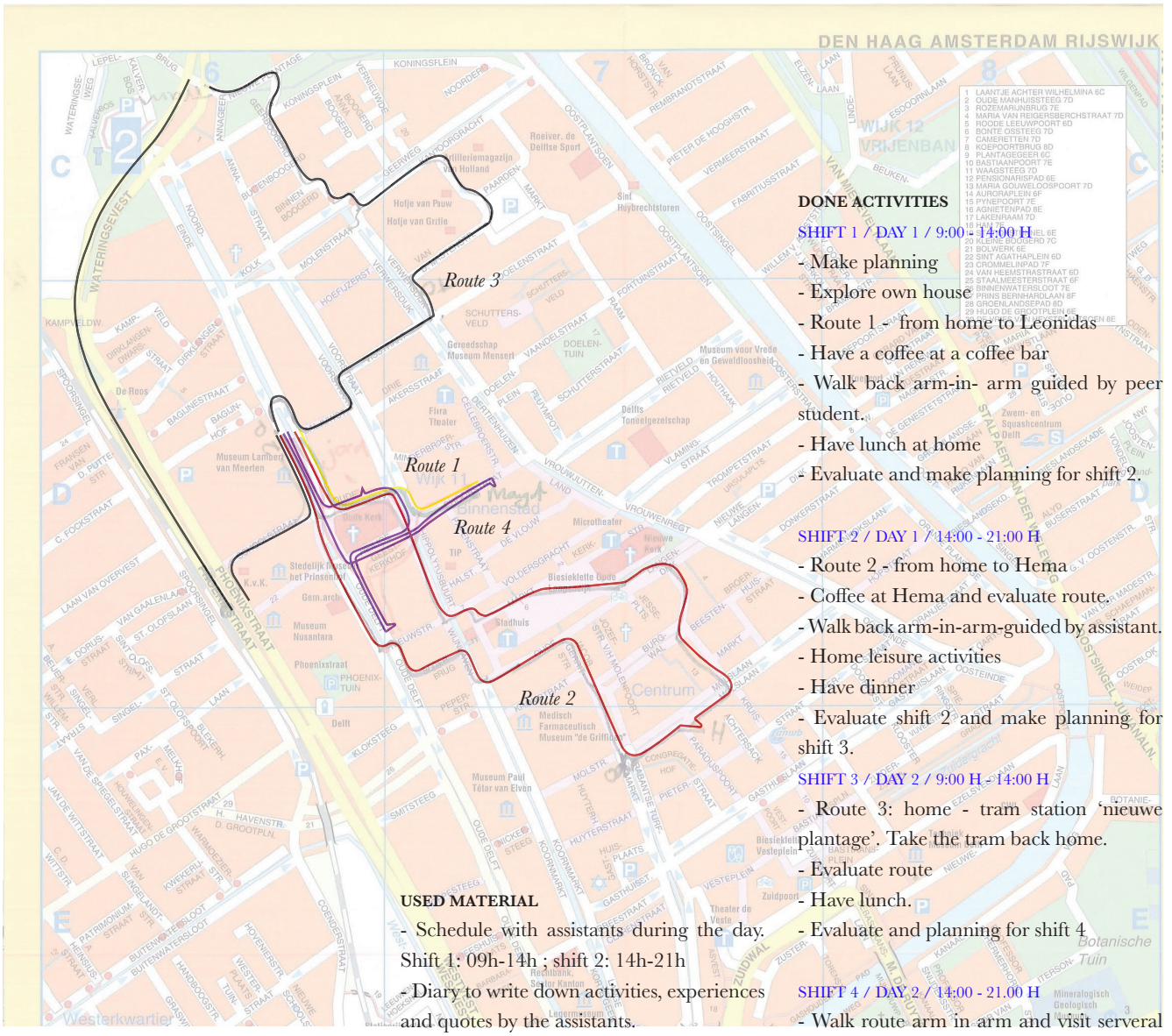


Figure 49 - Walked route during the own experience days.

USED MATERIAL

- Schedule with assistants during the day. Shift 1: 09h-14h ; shift 2: 14h-21h
- Diary to write down activities, experiences and quotes by the assistants.
- Emotion capture cards
- Cane
- Black pained glasses
- Backpack with necessities for the day (wallet etc.)

DONE ACTIVITIES

SHIFT 1 / DAY 1 / 9:00 - 14:00 H

- Make planning
- Explore own house
- Route 1 - from home to Leonidas
- Have a coffee at a coffee bar
- Walk back arm-in- arm guided by peer student.
- Have lunch at home
- Evaluate and make planning for shift 2.

SHIFT 2 / DAY 1 / 14:00 - 21:00 H

- Route 2 - from home to Hema
- Coffee at Hema and evaluate route.
- Walk back arm-in-arm-guided by assistant.
- Home leisure activities
- Have dinner
- Evaluate shift 2 and make planning for shift 3.

SHIFT 3 / DAY 2 / 9:00 H - 14:00 H

- Route 3: home - tram station 'nieuwe plantage'. Take the tram back home.
- Evaluate route
- Have lunch.
- Evaluate and planning for shift 4

SHIFT 4 / DAY 2 / 14:00 - 21.00 H

- Walk route arm in arm and visit serveral places: getting a sandwich, have a tea at a bar and go to the supermarket.
- Leisure home activities
- Cooking & dinner
- Evaluate shift 4

Figure 50 - Examples of used emotion capture cards

APPENDIX 3

Interview questions

Overviews of the interview questions which are done as part of the VIP-experience-explorations.

PREPERATION QUESTIONS: ROAD

An email is send the week before the interviews, in this e-mail following two questions were asked, so the participants could think about it as preperation. These questions are also the first two questions of the interview.

- Which road is the most pleasant? & why?
- Which road is the least pleasant? & why?

CURRENT SOLUTIONS

From the current examples (Appendix 1), for every interviews I choose three examples to evaluate during the interview. Every interview another selection was chosen, based on the answers from the previous interviews. First I explained the solutions and ask if they have questions about the current solutions. After the following questions were asked.

- Which example would you use on the most pleasant road? & why?
- Which example would you use on the most pleasant road? & why?
- The example(s) that you didn't choose, why don't you want to use it/them? Can we improve this/these example(s)

AUTONOMY

Explain definition: Freedom from external control or influence; independence. The same current solutions are evaluated.

- Which example makes you feel most autonomous? & why?
- Which example makes you feel the least autonomous? & why?
- How can we improve the feeling of autonomy of these examples?

Follow-up questions

- Facetime / be my eyes / envision beta – What do you prefer? At which of those examples do you feel most/least autonomous? & why?
- What information do you need about the environment? (amount and type) Do you still feel autonomous when you got much information?
- Do you feel autonomous in general?

VALIDATE METAPHOR

Based on my own experience explorations I formulated a metaphor about how I experienced mobility as a VIP. This metaphor consist of the following different parts and explaines how I experienced it as being a VIP. I asked if they also feel this in their daily mobility activity.

- Survive – feel relieved when I was at the final destination
- High concentration level
- Focus on multiple things
- Insecure – I never knew what I could find om my way
- A sequence I had to follow, which was very detailed
- Focus on the NOW, current position

Metaphor – a surgeon that is fulfilling a operation

APPENDIX 4

Four dimensions of autonomy analysis table

Overview of the done analysis with the current examples from appendix 1. For this analysis the four 'best' (green boxes) and 'worse' (red boxes) examples have been chosen per dimension of autonomy. The motivation of selection is written down in the boxes. Based on these answers the 'Characteristics for autonomous assistive tools' are defined. The numbers above the pictures indicate which characteristics apply to the solutions.

			Cane / 1- 2- 7- 12- 16 - 17 - 19 - 8	Assistance dog / 1- 4- 7- 14- 17 - 8	Opta Nav / 17 - 18	Guiding tiles / 1- 14- 7- 14- 17 - 8
		current examples				
	Out of context examples	4 dimentions of autonomy				
It feels standardized	**ratel tikker /** 1 - 3 - 11 - 12	**Technology** - How can I feel free from technologie?	scan the environment by listening and feeling (cane is extention) of the arm & get information of the obstacles & paths on the ground.	Dog can make mistakes, or be sick (unexpected) You have to be aware (=autonom?)	Follow instructions from device, also calculates route	Follow guide lines that lead you to important points. You decide by yourself which line to follow.
everyone can use this watch	**Eone Bradley** / 1 - 3 - 9 - 10 - 11 - 8 - 12	**Self expression -** How can I feel myself as being normal?	Icon for VIP's, people recognize you as VIP	Icon for VIP's, people recognize you as VIP		Speciel for VIP's.
100% sure no one is in the way	blind athlete day / 1 - 17 - 15 - 8 - 13	**Physical -** How can I feel free when walking my own route?	Cane is not restricted to one route But has limitations in recognition point. It stays on the ground	Dog is not restricted to one route & moves faster (120%)	You can choose destination. The app decides the route. But adaps when you decide to go another way.	Folow lines (precise) But network is big, you can choose your own lines. Have overview and much choice.
Teach your own system	Neil Harbisson / 1- 2- 17- 20- 8	**Social -** How can I feel independend & not rely on others?	Can use the cane on your own but on the way VIP ask for on spot help or people ask to help	Dog is personal assistant	Datebase of routes. Gives context, street names, which you cant see & have to ask	

Table 1 - Four dimensions of autonomy analysis table

CHARACTERISTICS FOR AUTONOMOUS ASSISTIVE TOOLS FROM CHAPTER 2.5

TECHNOLOGY

HOW CAN I FEEL FREE FROM TECHNOLOGY?

1. Use of offline solutions.
2. Possibility to make own interpretation.
3. It feels / is standardized.
4. Be able to find mistakes in the system.
5. Have options: a. route b. When to access the tool c. Where … d. how …
6. In touch with context – information.
7. No need for precision.
8. One device where it can go wrong.

SELF EXPRESSION

HOW CAN I FEEL MYSELF AS BEING NORMAL?

9. Invisible as VIP.
10. Wear inspector gadgets.
11. What 'normal people' also do.
12. Non VIP-approval actions.
13. When crossings are limited.

PHYSICAL

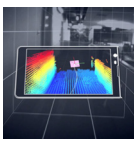
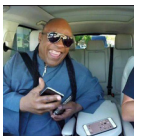
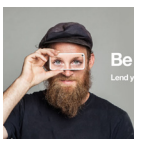
HOW CAN I FEEL FREE WHEN WALKING MY OWN ROUTE?

14. I am allowed to access wrong paths.
15. Be obstacle careless.
16. I am allowed to walk in non-straight lines.

SOCIAL

HOW CAN I FEEL INDEPENDENT & NOT RELY ON OTHERS?

17. Operational tool by one person.
18. Access to (extra) data/facts.
19. Pre-planned anticipation.
20. Have your own invented system.
21. Overview of people's availability/ willingess.

Braille map Utrecht C. / 1- 3- 7- 14 - 17- 3	Google Tango / 8	Altering the landscape / 1- 2- 7- 9- 10- 14- 16- 17- 20- 8- 12	Maptie / 5d - 9 - 17 - 18 - 20	Range it / 9- 10- 17- 18- 19- (15)	Facetime / 2- 3- 5bcd- 11- 18- 19- 12	Touch mapper / 5abcd- 7- 11- 14- 18- 19- 20	Be my eyes
							
Physical 3D map. So access to it whenever you want. ?What is the advantage of a 3D printed map?	Follow precise instructions. Cant deviate from route. Also doesn't give context.	Richer experience by feeling more of the ground. More precise information		Sensors / GPS can be unprecise. Room for own interpretation	Internet & camera. Depending on both way performance.Room for own interpretation		
			Jewerly. You can decide where & how to wear it.	Hidden	Everyone can and use facetime	Reading a map But who uses maps today?	You have to confirm yourself as VIP or non-VIP.
	Very precise path	No restriction to route			You can use it whenever you are.		
	Other's have to set up the route @ that spot			Obstacles & direction. Reaches farther away than cane.	Calling for a question. But people don't have to be close distance to you.	People have to make the map. But from another place and time.	

APPENDIX 5

Newspaper article: Flaneren moet je leren

This Essay by Christiaan Weijts is used as main inspiration for the definition of impulsivity

Flaneren moet je leren

ZORGELOOS RONDSLENTEREN Door een stad lopen zonder ergens naar onderweg te zijn, is nog best lastig, merkte *Christiaan Weijts*. Maar wat zie je veel als je het eenmaal kunt.

Net toen het lenteweer kwam, gingen ze mijn straat openbreken. Geen steen bleef in de grond. Omdat de hele operatie - met graafmachines, drilboren en trilplaten - nog weken gaat duren, ontvluchtte ik het kabaal. Sindsdien dwaal ik overdag door de straten van Den Haag.

In het begin viel dat nog niet mee. Het blijkt verdraaid lastig om door een stad te lopen zonder ergens naar onderweg te zijn. Ik maskeerde dat door de tijdspanne op te breken in vertrouwde schijnbestemmingen: het Hema-2 euro-ontbijt, de openbare bieb, het café, de strandtent. Lezen en schrijven, het enige wat ik kan, is overal mogelijk.

Op mijn derde dag passeerde ik aan het Voorhout een standbeeldje: *Flaneur* van Theo van der Nahmer. Galant z'n hoed afnemend boven de uitgebloeide krokussprietjes. Aan de overkant stond Louis Couperus in glimmend brons een Hagenaar te zijn. Flaneren: 'zorgeloos rondslenteren om te kijken en gezien te worden', zegt Van Dale, en inmiddels stellen we ons er inderdaad dit soort dandyeske heertjes bij voor. Maar de oorspronkelijke flânerie, zoals die in het negentiende-eeuwse Parijs was ontstaan, beperkt zich juist niet tot boulevards, pleinen en aanverwante plekken om 'gezien te worden'.

De Franse dichter Charles Baudelaire, vaak aangehaald als een soort founding father van het flaneren, noemt in een essay uit 1863 „de volmaakte flaneur" juist „een vorst die overal van zijn incognito geniet." Zijn streven: „Buitenshuis te zijn en zich toch overal thuis te voelen; de wereld te zien, in het middelpunt van de wereld te staan en toch voor de wereld verborgen te blijven."

De flaneur gebruikt de stad als huiskamer. Kan zoiets tegenwoordig nog? De enige moderne flaneur die me te binnen schiet is Teju Cole, die in zijn boek *Open City* (2011) een jonge Nigeriaanse psychiater doelloos door uiteenlopende buurten van New York laat struinen, „door een winkelende en werkende menigte, door wegwerkzaamheden en het getoeter van taxi's", en zo een mijmerend essayportret van de stad schildert.

Doelloos flaneren, dat moest mijn doel zijn. Wat deed ik hier nog? Het ware flaneren gaat dwars door alle rangen, standen en sociale grenzen heen. En Den Haag mag dan geen New York zijn, het is wel een van de sterkst gesegregeerde steden van ons land. „Elke honderd meter begint Den Haag opnieuw", beweert Harrie Jekkers vaak in interviews.

Les één: dwing jezelf tot doelloosheid. Sla willekeurige straatjes in, negeer de highlights. Toeristen flaneren niet. Die bezoeken de voorgeschreven monumenten die de flaneur juist links laat liggen. Die doelloosheid staat volslagen haaks op onze tijdgeest van nut en rendement en is daarom zo bevrijdend.

Zodra ik het centrum uit ben, ben ik in een buurtje met kale flats, brede tegelpleinen, met toch overal bordjes met 'verboden te voetballen'. De flaneur is geen socioloog, dus het gaat mij niet om de hangende jongeren op de scooters, maar om de verscheidenheid aan manieren waarop de stalen balkonnetjes huiselijk zijn gemaakt, met bloemmotief bedrukt plastic in de spijlen gevlochten, met vogelhuisjes, met bierkratten.

Bij elke kruising groeit het genot dat geen enkele beslissing - rechts, links of rechtdoor - enig gewicht heeft. Ik ben vrij. Hoewel ik zelfstandig freelancer ben, is ook mijn bestaan behoorlijk strak gestructureerd rond schooltijden en deadlines, en zo'n doelloze wandeling is een tegenwicht. Als je het verkoolde woud aan burn-outs in onze vrienden- en kennissenkringen ziet, realiseer je je dat de vergeten kunst van het flaneren heilzaam kan zijn.

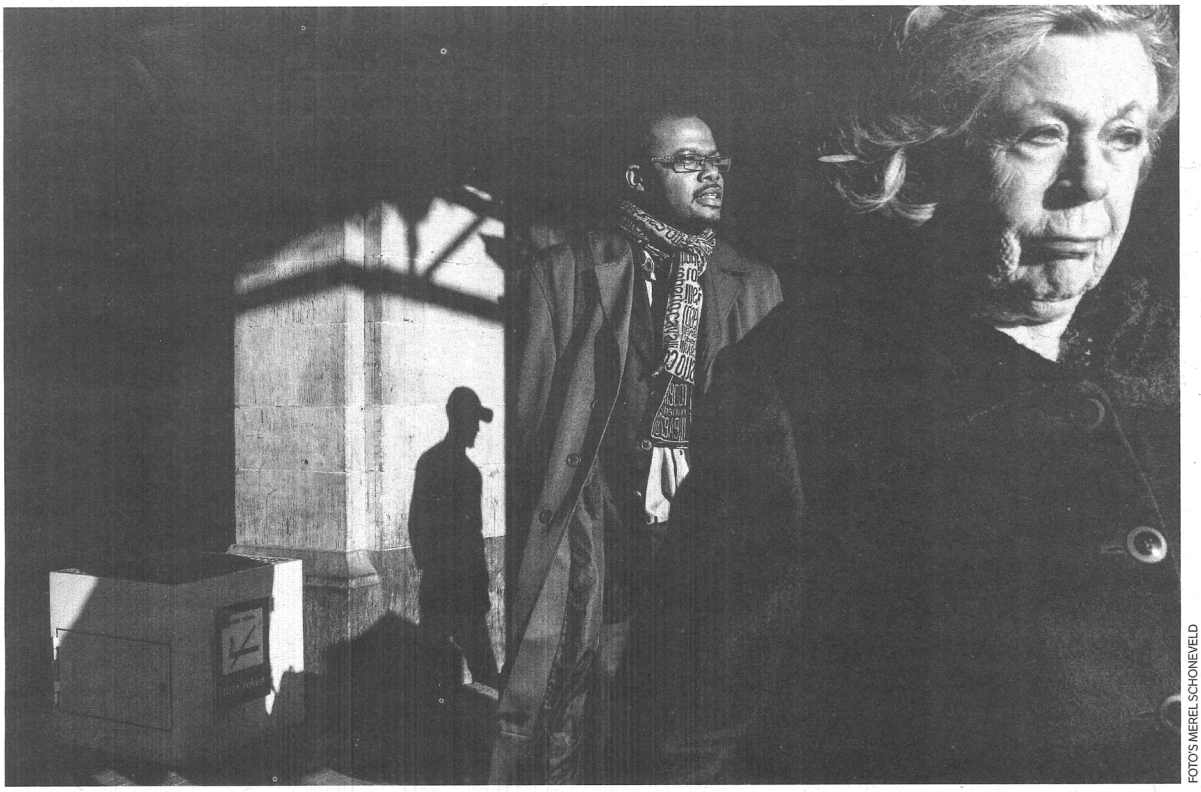
Les twee: beschouw flaneren als fysiek clicken, swipen en scrollen. Want het gekke is dat we online wél vele uren per week voor die nutteloze willekeur weten vrij te maken. Verplaats dat rondneuzen eens naar de echte wereld, waar het bewegen ook nog eens je creatieve denken vrijmaakt.

Dus flaneer ik door de Schilderswijk, over de lange Hoefkade waar voor de buurtkruideniers het fruit ligt uitgestald in plastic kratten en waar de geur van bakkersgist vermengt met die van schoonmaakmiddel op de warme pas geschrobde stoep waaruit een stoffige aardegeur vrijkomt. Opgewonden stemmen van mannen voor een koffiehuis. Een scootmobiel geparkeerd onder een hoes vol gaten. Metalen karren rammelen over de stoeptegels. Precies wat ik laatst nog verrukt stond te fotograferen in de Berlijnse wijk Friedrichshain-Kreuzberg. Het rommelig geïmproviseerde leven bevindt zich ook gewoon om de hoek.

Les drie: versmelt met de menigte. Baudelaire schrijft: „Een te worden met de menigte, dat is zijn hartstocht en beroep. Voor de volmaakte flaneur, de hartstochtelijke waarnemer, is het een ontzaglijk genot om zich te vestigen in de massa, in de golving, de beweging, het vluchtige en oneindige."

Op maandagochtend kan dat vooral op één plek waar de de mensenstroom me ongemerkt heen heeft gevoerd: de Haagse Markt. Langs glimmende vissen op ijs, langs groente in aluminium bakken en langs kraampjes met afgedankte spulletjes stroomt de menigte. Dik in gewaden ingepakte vrouwen naast zonnebrilmeisjes in fladderjurkjes. De werktuiglijk opgewekte kreten van de marktkooplui lijken een soort vraag-en-antwoordkoor: „Kiwi's ananassen aardbeien een kilo'tje...!" „Lékkere békken!" Een gangster-rapper-achtige figuur sjokt met een gorillaloopje langs, petje, kettingen, en een gifgroene papegaai op z'n schouder.

Cultuurfilosoof Walter Benjamin noemde de flaneur „de botanist van het trottoir". De stad wordt een natuurlandschap, waarin je de verschillende types



FOTO'S MEREL SCHONEVELD

observeert. Op de Markt kan dat het beste. Daarbuiten is het opvallend hoe opgesloten we zitten in onze eigen wijkjes, met amper benul van het geheel en hoe die afzonderlijke stadseilanden met elkaar verbonden en vergroeid zijn.

Uren later blijk ik, via de Haagse bosjes, in een villabuurtje te zijn beland. Ruim opgezet, vol oude bomen. Hier is het Willem Royaardsplein, waarvan ik me ineens herinner dat Frédéric Bastet, de biograaf van Couperus, eens beweerd had dat alleen hier nog iets terug was te vinden van diens tijd. Bij de koffiehuizen zitten oude dames in rolstoelen, achterover naar de zon toe gekanteld, naast verpleegkundigen. Place des Invalides, wordt het hier ook wel genoemd. Op de stoep markeert een bordje de voetgangerszone. Daaronder de tekst: 'Toch fietsen € 55 / Toch snorren € 95 / Toch brommen € 95'. Ik fotografeer het, en oogst de digitale likes.

Les vier: ga goed maar onopvallend gekleed. Om je anoniem in de menigte te vestigen, moet je nergens uit de toon vallen. In het oorspronkelijke flaneren mogen de straten dan wel geen catwalk zijn, dat betekent niet dat elke elegantie achterwege moet blijven. Flaneren is iets anders dan de hond uitlaten.

Zelf merk ik na een paar dagen dat het advies van een Italiaanse kleermaker uit Florence nog altijd het beste werkt: schoon overhemd, gepoetste schoenen. Als John Keats zich somber voelde, hoefde hij alleen maar een nieuw overhemd aan te trekken. En het werkt. In die uitrusting ben ik zowel in Schilderswijk als in Statenkwartier onopvallend, en ik ga er vanzelf meer rechtop lopen, geïnteresseerd, opgewekt. Want daar gaat het om. Baudelaire noemt de flaneur iemand die „geen enkel aspect van het leven afgezaagd vindt", die overal een kinderlijke blik op heeft, „een waarneming die scherp en magisch is". Om ook eens een flaneuse te citeren, schrijfster Colette (1873-1953) omschreef dit het allermooist: „Nooit kijken we genoeg, nooit zullen we genoeg, precies genoeg, gepassioneerd genoeg kijken."

Les vijf: proef de sferen. De flaneur is niet op zoek naar kennis maar naar ervaringen. „De grote overblijfselen uit het verleden", schreef Walter Benjamin in 1929, „de historische frissons - voor de ware flaneur zijn ze oude rommel die hij graag aan de toeristen overlaat. En al zijn kennis van kunstenaarswoningen, geboortehuizen of vorstelijke paleizen wisselt hij graag voor de lucht van één enkele verweerde drempel of het aanraken van één enkele tegel, datgene wat de eerste de beste hond met zich meeneemt van een plek."

In Den Haag is elke buurt uit weer ander gesteente opgetrokken, met een eigen akoestiek, een eigen geur, een eigen soortelijk gewicht. Waar ligt dat aan? Waarin zit hem de overgang? Gaat het om de huisnummerbordjes die ineens niet langer afgebladderd zijn als je terug in het nette centrum komt? De gevelornamenten die ineens weer glinsteren in de witte verf?

Wat maakt de typische sfeer van een buurt? De duistere machten van een stad, die zich niks van stadsplanning aantrekken, werken onmerkbaar traag op de straten in. Alles wat er ooit is gezegd, gedroomd, gebeurd, verhandeld en uitgevochten bouwt mee aan de atmosfeer en blijft er rondspoken. De geheimzinnige discretie en medicinale geuren in de straten met Aziatische acupuncturisten en massagesalons. De gelaten blik in de ogen van twee vrouwen voor een speelgoedwinkel in de oude kern van Scheveningen: ze blijven iets houden van het standbeeld van de vissersvrouw. In hun genen blijft het besef rondwaren van mannen die niet zijn teruggekeerd van zee. Of verbeeld ik me dat? Rondwandelen is immers kijken door een sluier, „waar doorheen de vertrouwde stad voor de flaneur overgaat in fantasmagorie", volgens Walter Benjamin.

Les zes: zie de stad als een organisme. Ook stelde Benjamin eens voor om de geschiedenis van Parijs te versnellen tot een film: „Van de samenballing van een eeuwenlange beweging van straten, boulevards, galerijen en pleinen in een tijdsbestek van een halfuur. En doet de flaneur niet precies dat?"

De flânerie is een betrokken interactie met de stad, die tegelijkertijd iets onthechts heeft, merk ik. Overal ben ik een passant. Ik praat kort met automonteurs, ambtenaren en visverkoopsters. Het heden, met al die details, heeft iets terloops. Daardoor ga je je als vanzelf op een andere tijdsschaal richten: soms voel ik me even oud en traag levend als de stenen van de stad waar ik mee versmelt.

Na een week voelt de stad haast aan als een organisme, met haar eigen metabolisch systeem. Ze slurpt vis naar binnen door de mond, de Scheveningse haven. Ze absorbeert de voedingsstoffen via de bloedbanen van de straten, stegen en kanalen. Ze scheidt de ontlasting uit op de vuilstortplaatsen van de Binckhorst. Soms loeit een ambulance langs, met een vervormde sirene, om ergens een wond te stelpen.

Flaneren is oog hebben voor specifieke details én voor de stad als geheel. Het is een dubbelfocus van twee extremen. Andere stervelingen, die met een doel voor ogen in de stad van A naar B gaan, stellen altijd scherp op een zone ergens tussen die twee in. Het functionele perspectief op een functionele stad.

Les zeven: verwacht er geen wonderen van. Kan het nog wel, de uitbundigheid van het alledaagse leven betrappen, sferen proeven, versmelten met de menigte? Op de meeste plekken is de stad of vol met doelgerichten of met lanterfanters van telkens één specifiek slag, of het nu toeristen, bejaarden of ambtenaren in hun lunchpauze zijn. De plekken waar die groepen samenkomen, waar het doordeweekse leven straattheater is, worden zeldzaam.

Die werkelijke Baudelairiaanse verrukking heb ik eerlijk gezegd maar één keer gehad, volslagen onverwacht. Ik had de gedachte aan dat flaneren al weer losgelaten. Het was in Rotterdam, en ik had een half uurtje te overbruggen voor een literair optreden. Op een hoek van de Witte de Withstraat drink ik aan een klein tafeltje een witbiertje in de avondzon. De stad trekt voorbij in al haar gekte, uitbundigheid, maar vooral in alle mogelijke kleuren, maten en gradaties van schoonheid. Dit is goddelijk flaneren zoals flaneren moet zijn. Even is het alsof dit wervelen nooit zal ophouden, of niemand van deze jonge, oude, mooie, lelijke, slonzige, hippe, chagrijnige, elegante mensen ooit zal sterven.

Wie mij in dat onbekommerde hoekje van de stad had gezien, had het ongetwijfeld van mijn gezicht kunnen lezen. De blik die Baudelaire beschrijft als „de gefixeerde en dierlijk extatische blik voor het nieuwe". Het duurt hooguit drie minuten.

's Nachts, thuis, staan de verlaten graafmachines in het zand van mijn opengebroken straat, als paarden op stal. Ooit zullen ze wegrijden. Ik zal ze dankbaar nakijken, want ik zal de flânerie waar ze mij toe dwongen, blijven voortzetten.

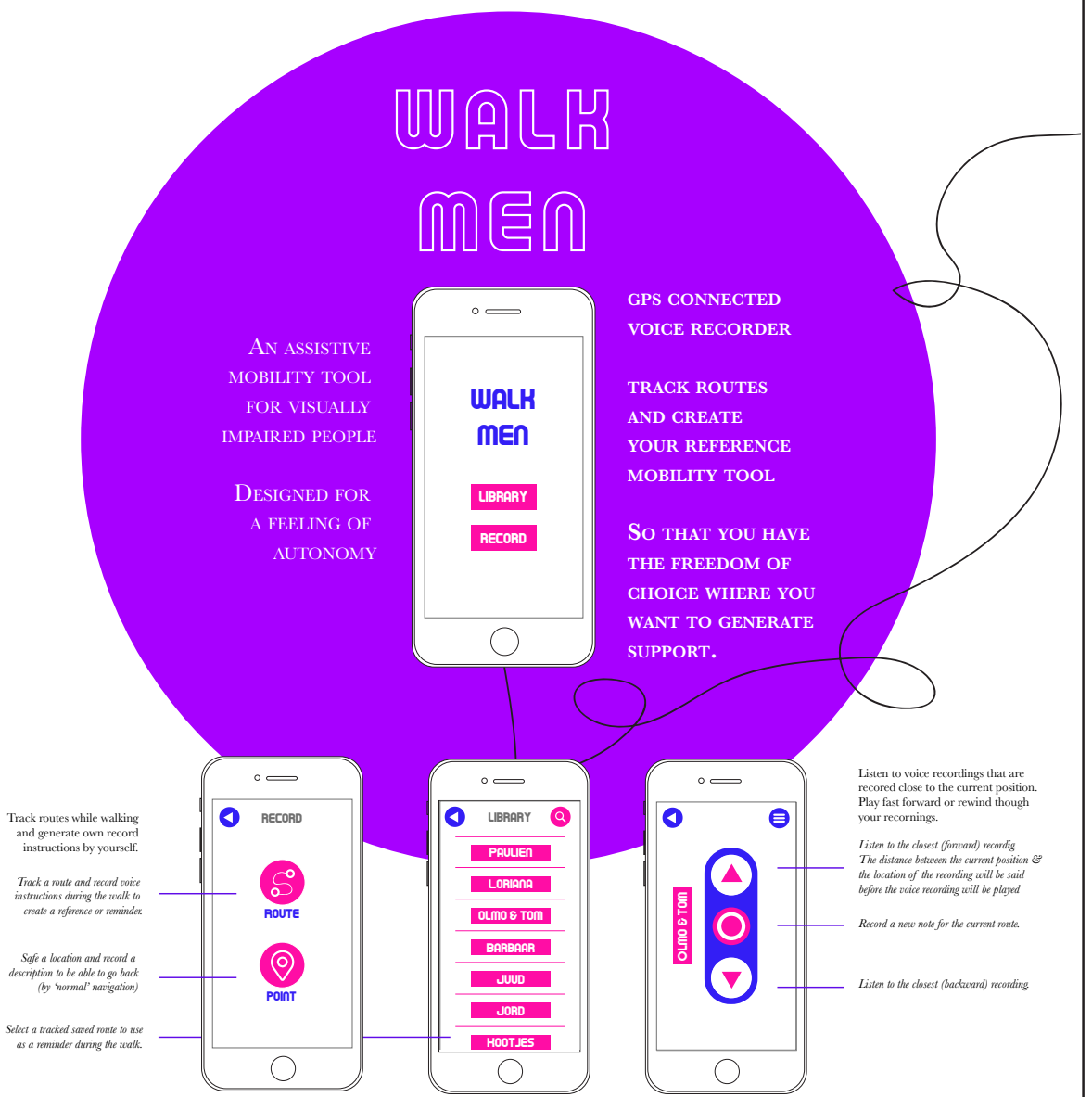
Christiaan Weijts

De flânerie is een betrokken interactie met de stad, die ook iets onthechts heeft

APPENDIX 6

Concept description

Uses concept description during the focus group with experts as part of the validation.



Being in need of assistance and the desire for autonomy is the paradox that a lot of visually impaired people (VIPs) face every day. This project searched for the meaning of autonomy within the context of mobility for VIPs. This project also defined *characteristics for the assistive tool* to generate a feeling of autonomy. The result is The Walkmen, an app which combines voice recordings with a location tracker. So the the user can listen back to self-made notes related to the route and location. In this way, the Walkmen enables *assistance when requested, communicate reliable information* and *provides freedom of choice* while cruising through the known city.

A mobility tool that supports
visually impaired people to
experience a feeling of autonomy.