



# DotBot

Searching for a positive white cane experience

## ***Appendices.***

Veronika Szabó

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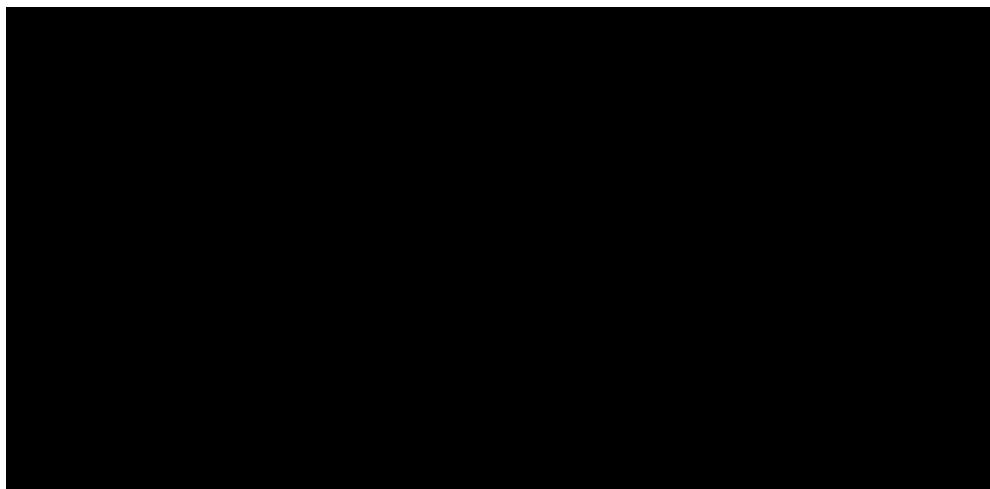
## A. Starting points

### I. Expert meeting at Visio Den Haag.

#### i. Notes.

Details of the experiment

Experience different visual impairments with the help of goggles:



- ski goggles with black glass, completely blocking light;

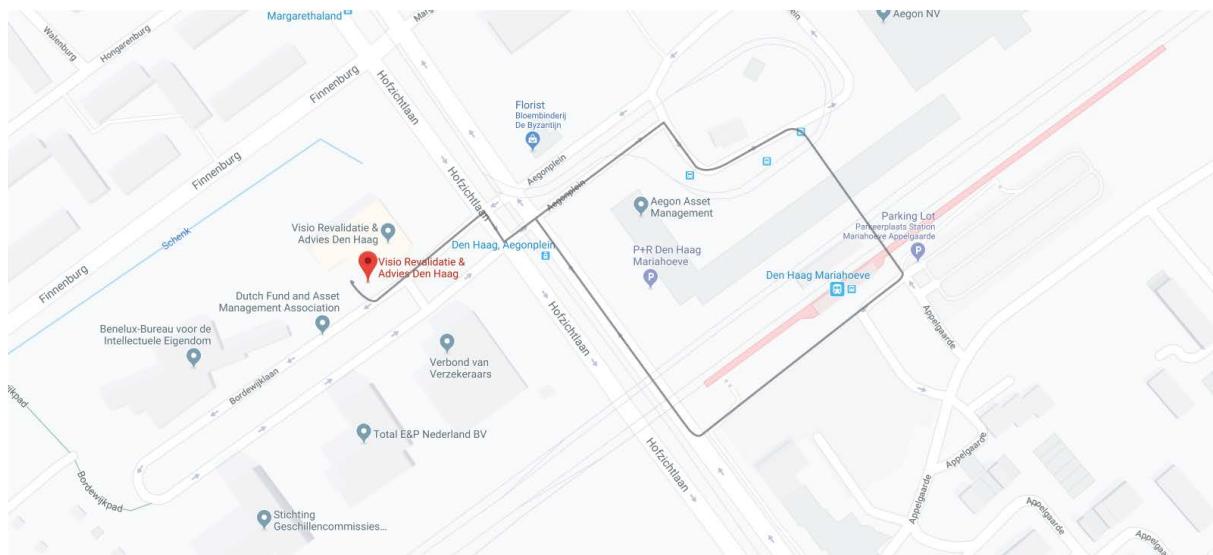


- glasses to permit light perception but very blurred vision, around 1%;



- goggles to imitate the RP condition, mostly blocking vision, with two small openings) and a
- long cane, while guided by a mobility trainer

Length: walking to the train station and back ( less than 10 minutes walk when I had my sight)



## ii. Narratives.

### Narrative Thijs

Putting on the fully blind glasses was disorienting and scary. I felt claustrophobic as my vision got totally lost and had to get used to staying as close to Femke as I could. Walking towards the elevator, we met another of Femke's co-workers, with whom it was hard to get a normal interaction. I felt a little bit awkward and just waved in all directions, making jokes to alleviate my own distress. Walking through Visio's entrance hall, I noticed the acoustics of the large, glass-paned space as I got led, stumbled, to the exit of the building. I tried snapping my fingers rhythmically to get a sense of navigation but this was no use. Stepping out the door, I felt the cold wind on my neck and cheeks, and an entire soundscape opened up to me. Cars in the distance, a train seemingly closer. This is where I was first introduced to the white cane. Holding it in my hand, Femke told me to relax and I suddenly noticed I was all tensed up. Dropping my shoulders, I began rolling the cane around on the floor, feeling the texture and imagining the material in my mind. That's when I first noticed the guiding strip. Femke told me to follow it and with little steps, swinging my cane wildly I tried to follow it in a straight line. Thijs, the other ergo-therapist, told me I walked like a cowboy. I noticed I did. In the back of my mind, I apparently didn't want to step on the guiding line, as it was my only means of navigation I had left. I got very much in tune with the sounds around me and had a sense of the layout of the space as I could like the gradually increasing noise of the pedestrian crossing to my mental image of the road. When it became time to cross the

road, I felt very vulnerable but had faith that, together with Femke, I could cross the road. I felt a bump with my walking cane - a curb! When crossing the road itself, I had no sense of how long the crossing was and I arrived at what I thought was the other side much quicker than I had anticipated. Turned out this was only halfway down the crossing, and I had never paid much attention to the layout of the crossing when sighted. I noticed that, when blind, I felt 'locked in' into my own body and experienced the outside world as a series of random events happening to me. On the other side of the crossing, we switched goggles. I went from blind to 3% sighted.

This was a huge relief for me. I had a sense of space again, discern large shapes and colours and could gauge distances. The blurriness made it feel as if I was underwater. The increased vision made it so I did not have to rely on the cane as much anymore, and could walk more freely. It made me feel much more at ease as I felt less exposed to the seeming randomness of the world around me. I could see people again, their effortless way of living made me feel more confident that I could take on the world as well. Walking to the entrance of the Mariahoeve station, I could only discern large shapes. A manhole in the ground seemed like a tunnel I could fall into. The face of the office building next to the station looked like the Coliseum. The low definition and high contrast inherent in my vision turned the world around me into simplified shapes and icons. This made my brain fire rapid associations in an attempt to make sense of it all.

I then got to try goggles that simulate tunnel vision. This made navigation easier than being completely blind as I still had one clearly visual spot in the middle. It did make it way harder to keep my balance. I also had a way harder time of judging distance and depth of steps, for example, as well as making a mental image of space layout. This made experiencing this kind of visual loss very exhausting. The cane was much more necessary here, as it widened my point of 'view', allowing me to survey the floor as well without having to constantly look down. It did make me feel less vulnerable, as I could for example see traffic lights changing and could accurately judge the height of individual steps.

All-in-all, this experience opened up my eyes a little bit to the experiences visually impaired people go through on a day-to-day basis. Navigating felt very exhausting. The white cane felt very intuitive by the end of it, and I can imagine using it on a daily basis can provide the user with various tricks to gauge the floor. This means that the eventual design may have to be very simple, intuitive and open to use - kind of like a multitool.

### *Narrative Veronika*

When being in the ski goggles that simulate blindness I immediately felt that I am vulnerable and unsafe. I lost the feeling of space, I was completely lost. I was even feeling a bit dizzy. When entering the elevator I didn't sense how crowded the space was, how many people are there, how close are we to each other. I was feeling the floor with my feet, looking for any information I can get (the different textures of rooms, the slope). When moving between different spaces I was paying more attention to the changes in temperature and airflow, the noises surrounding me and their direction. I wasn't aware of the people surrounding me, and I didn't care that much, as I needed all my senses to concentrate on the navigation.

Outside of the building I felt even more unsafe, I heard the sound of cars and people, but it was hard to filter out the sounds that would help me in navigation from all the noise. I started to walk using the long cane, swiping the pavement with the tip of the cane and feeling for the guiding line. My guide was instructing me to be more relaxed, as I was crouching, bending over a bit, with all my muscles in tension. I was also feeling with my feet, and was taking very small, uncertain steps to always stay in close contact with it. I was also dependent on my guide, asking questions if I was to walk, to stop, if I should cross the road. Stepping down from the pavement was terrifying. Even if I knew that I can (as I have asked before), I was still uncertain. I still heard the sound of the cars, and the sound signals of all the crossings nearby. I was able to identify some objects around me (the guideline, a patch of grass, the pole where the signalling button is before the crossing), but it was disturbing to come across obstacles that I couldn't figure out.

After the crossing, we switched goggles, I closed my eyes to take the blind goggles down, and change to a different one. When I opened my eyes, I was wearing the goggles for 1% vision. I felt a huge amount of relief, I got my sense of space back. I was able to identify the general shapes of things, I could see some light, and even colors. The guideline was now visible to me, I relied less on the cane and the feeling of the guideline with my feet. I became less tense, and I became more chatty (as observed by my guide). I could see if people were near me, if I was nearing the station, where the stairs are to the platforms. I didn't have the details, couldn't read the signs, but still I was able to navigate more easily. I began to walk in a quicker pace also.

When we were in the station, we switched goggles again. This time, when I opened my eyes, I had the goggles simulating RP vision on. I had a small patch where I could see the details, and around it nothing. It was an extremely frustrating feeling for me, I was turning my head constantly to get a grip on what is going around me. I needed the cane much more than with the 1% goggles, as the peripheral vision was completely gone. For example at the crossing, I was looking at the traffic light, and was very happy with being able to see it, but I couldn't see if bikes were approaching on the bike lane, or if there is any obstacle at my feet.

It was also hard to find the details I was looking for, as I didn't have the overview. I also lost my sense of space, I was walking with one arm in front of my body, as my guide pointed out, and I didn't even notice it. I was preparing for a fall or an obstacle, as I didn't feel safe. I also had no feeling of distances. I bumped into Thijs walking in front of me, although I have seen that he is there just I had no idea how far he is.

After arriving back to the Visio facility, I was relieved and exhausted. Being tense all the time needed a lot of effort.

## *II. Visiting the ZieZo Beurs in Utrecht.*

### *i. Narratives.*

Veronika

We tried to go to the ZieZo fair with an open mind. We didn't set too many observation goals, we were ready to take in what the fair has to offer. I also had a bit of doubt about how useful the event will be, as I had attended a different fair at the Jaarbeurs before, and it wasn't the most fruitful day.

When arriving at the fair I was pleasantly surprised about the general ambiance, as I was expecting a very commercial and crowded event, with little soul in it. The first impression the ZieZo was however a quite welcoming one. We saw that VIPs who attend were in a positive mood, greeting each other. I don't suppose they meet so many fellow sufferers very often, and at this fair they were the "normal people", the sighted were the ones out of place.

At first of course it was overwhelming, with the crowd and all the guide dogs attending. It was a challenge not to bump into someone, and I had a guilty feeling to be so much in the way. Guidelines were installed to the whole area, but it was hard to use them because of the cramped and narrow space between the booths.

A large share of the exhibiting companies were there with an offering of highly functional and functional looking assistive devices, such as loops, reading out devices, canes. Several organisations training guide dogs were also present. As it was just before the provincial elections, a device that permits the visually impaired was also on display.

We encountered a booth from Bartiméus with an interestingly unusual approach: at the Oogverblindend Mooi workshops they help VIPs regain control over how they present themselves to the seeing society. This includes style and colour advising, make up, but also self presentation and body language. I did find it inspiring that they leapt over offering purely functional help, and are giving tools of self expression to their clients.

We also made a few interesting discoveries at the NS booth. They told us that the conductors on trains undergo a training where they have to navigate on the train in modified goggles simulating visual impairment to build more empathy. Also interesting was that the NS sometimes receives complaints from people tripping over because of the guidelines and other features of the stations that are to assist the visually impaired train users. It was a comforting feeling that they made the effort to have empathy with all the different people they can encounter in their work.

At a stand selling everyday objects for visually impaired, we saw a few hidden gems. Among all the similarly looking loups and assistive devices some design objects were hiding. One was a tactile watch, that looked quite stylish, and a wall clock that I could imagine in a sleek and minimalist home. We also encountered a haptic printer to prepare educative materials for VI children. But generally the devices available had a more sterile and medical look, some were even scary, as they belonged more to a lab than to a home. I had the general feeling that they were designed with the assumption in mind that if you design for VIPs aesthetics doesn't matter.

Thijs

My goals for attending the ZieZo fair was to uncover what is on the cutting edge of technology currently being developed for visually impaired users. I wanted to get a sense of the level of technology that is acceptable for these users. And lastly, I wanted to probe what the visual style and feel of the products currently being used is and to see where this can be improved. I also hoped to meet a variety of interesting people in order to include them in the project and build a solid network on which to build.

My expectations going into the fair were that there were indeed a lot of interesting people. I did not know how much access we could get to having long conversations with people in industry and how ready they would be to collaborate with us in our project. I expected the level of technology to run the gamut. Some products I expected to slightly improve quality of life with low-tech interventions, while others would be more technologically advanced. I expected, perhaps cynically so, that these high-tech products would be quite challenging to use for visually impaired users and, above all, be quite unattractive in design. I expected these products to have most of all a functional and quite medical look.

It was very exciting to see how much interest there was in our project from the people exhibiting at the fair. Most people were genuinely interested in meeting us and hearing that 'bright students' were devoting their energy in helping the visually impaired community. People were eager to hand us their business cards and asked to be kept up to date on our efforts. The products were indeed very much varied. The exhibits ranged from special vacations for visually

impaired to high-tech zooming devices that VIPs can use to read. These, in turn, varied in size from handheld devices to desktop-sized proportions. The look of most of these products and devices was very clinical and functional, and the interfaces were designed in a very childish way - no regard for font or compositions, mostly consisting of rows of very large buttons in different primary colours.

The technological products on show were all meant for magnification. I did not see any innovation on any other product front, and a strong absence of white canes. This can indicate that there are opportunities, or can indicate that there is no need for innovation when it comes to white canes. The highlights of this fair to me were the Bartiméus initiative called Oogverblindend Mooi, which attempts to help VIPs in selecting outfits, applying makeup and in general caring for their appearance. I did see an adapted version of the white cane fit into this philosophy very well. Another highlight was a voting booth, adapted for the visually impaired. I thought it was wonderful to see that there are efforts to give these people the means to participate in and put their mark on society.

There is still a lot of innovation to be done and impact to be had on the visually impaired experience. The tools these people use have great effect on their day-to-day experience and these tools are being treated like machines more fit for a hospital than daily life. This has not been achieved so far and achieving this will make sure these products and their users are seen as more normal and fitting within society.

# B. Autoethnography

## III. Pilot study in Delft.

### ii. Planning.

#### Goal of study:

The goal of this autoethnographic study is to get familiar with *autoethnography* and *participant observation* as methods. Another goal is to uncover the possible problems that can emerge during engagement in these methods. These insights will improve the methods used in the eventual full study. The third and last goal is to get insights into the reaction surrounding visually impaired people and to gain empathy for this target group.

#### Methods:

The two participants in this study are Veronika Szabo and Thijs te Velde. They are both design researchers conducting their master's graduation project at Delft University of Technology. Features that set them apart from the general populations are their knowledge of design research and their stake in the project. These two participants were selected to allow them to both gain experience in conducting autoethnographic research and participant observation as well as gain insights useful to the graduation projects.

The tools used to perform this autoethnographic study are the following:

- Glasses to simulate the effects of retinitis pigmentosa.

We took a pair of sunglasses and neatly cut out blinds out of thick black paper. We then used a pin to create two small holes in the middle of these blinds to see out of. This simulates the effects of retinitis pigmentosa. We chose to simulate this specific type of visual impairment because one of the main stakeholders in the project suffers from this condition.

- Long cane.

The kind people at Visio allowed us to borrow a used long cane. This particular cane is quite worn as it has been used in many a training but still functions and serves our purposes perfectly.

- Mobile phone for audio recording and taking pictures.

Because we won't be able to record everything using writing when walking around town, we decided to use a mobile phone to record the majority of information.

- Field notebook and pen.

We did, however, still carry around a notebook to note down particularly noteworthy observations.

Two rounds of 30-minute studies will be done. In each study, one of the researcher will assume both the role of a guide and a participant observer. This researcher will keep an audio record of observed bystander behaviour by stating observations in the audio recorder out loud. The other researcher will be guided around town using a white cane and modified sunglasses that simulate the effects of retinitis pigmentosa (tunnel-vision). This participant will keep an audio record of autoethnographic information like observations, insecurities and feelings. Pictures will be taken at moments of interest, both for record and later analysis. Two schedules were decided on. They both consist of a walk and executing a mundane task. The two tasks decided on are to get some sandwiches withdraw money at an ATM.

After the completion of the two rounds both researchers will complete their personal narratives based on their experience, the audio recordings and the notes made during the reflection. These narratives will be compared afterwards and both commonalities and differences will be noted down and discussed.

The schedule for both sessions is already defined and can be found in this section:

*11:00: Start of first part of the study (Veronika will guide, Thijs will be VI).*

During this first part of the study, Thijs will have to get used to walking around using the modified glasses and cane, and Veronika will have to probe how much guidance is needed. Veronika and Thijs will also have to get used to stating their experiences out loud, and making notes whenever anything noteworthy occurs.

*11:00: Start walk from Delft central station to Kaas & Wijn (Brabantse Turfmarkt).*

During this main part of the first round of study, Thijs notes observations about the visually impaired experience while Veronika notes observations about the reaction of bystanders to the presence of behaviour of a visually impaired person.

*11:20: Arrive at Kaas & Wijn, buy sandwiches.*

During this forced interaction with a bystander, Thijs will make observations about how it feels to execute mundane activities as a visually impaired persons, while Veronika will make observations about the behaviour of the people in the store.

*11:30: End of first part of the study, start of reflection. Writing notes for narratives.*

After this, both researchers note down other key observations while they are still fresh in their memories.

*12:00: Start of second part of the study (Thijs will guide, Veronika will be VI).*

This is when we change roles. This time around, Veronika will have to get used to walking with the modified glasses and the cane, while Thijs will have to get used to guiding and making observations at the same time.

*12:00: Start walking back to the station.*

The second leg of the study begins. The approach remains the same, the roles are reversed.

*12:20: Withdraw money at the ING Bank (Phoenixstraat).*

Another forced interaction with the environment and possible bystanders will allow us to both gain empathy for visually impaired people and observe the reactions of the environment to the presence of one.

*12:30: End of second part of the study, start of reflection. Writing notes for narratives.*

After this, we will wrap up the second part of the study and note down additional observations for use in our personal narratives while they are still fresh in our memories.

#### iv. *Results of the pilot study in Delft (06-03-2019).*

To get familiar with the methods of participant observation and autoethnography, a pilot study was conducted in the city centre of Delft. The secondary goal of this study was to uncover problems that can emerge during execution of the methods, and improvement possibilities of the equipment used. The third and last goal was to get insights into the reaction surrounding visually impaired people and to gain empathy for this target group.

A detailed plan of the session can be found in appendix A. The session consisted of two parts, with a short break in between to switch roles and note down observations and switch roles. The map of the route can be seen in figure (FIXME).

The time schedule for this first autoethnographic study was as follows:

*11:00: Start of first part of the study (Veronika guided, Thijs was visually impaired [VI]).*

During this first part of the study, Thijs was getting used to walking around using the modified glasses and cane, and Veronika was probing how much guidance is needed. Veronika and Thijs were also getting used to stating their experiences out loud, and making notes whenever anything noteworthy occurs.

*11:00: Start walk from Delft central station to Kaas & Wijn (Brabantse Turfmarkt).*

During this main part of the first round of study, Thijs noted observations about the visually impaired experience while Veronika noted observations about the reaction of bystanders to the presence of behaviour of a visually impaired person.

*11:20: Arrive at Kaas & Wijn, buy sandwiches.*

During this forced interaction with a bystander, Thijs was making observations about how it feels to execute mundane activities as visually impaired persons, while Veronika was making observations about the behaviour of the people in the store.

*11:30: End of first part of the study, start of reflection. Writing notes for narratives.*

After this, both researchers noted down other key observations while they were still fresh in their memories.

*12:00: Start of second part of the study (Thijs guided, Veronika was VI).*

This is when we change roles. This time around, Veronika will have to get used to walking with the modified glasses and the cane, while Thijs will have to get used to guiding and making observations at the same time.

*12:00: Start walking back to the station.*

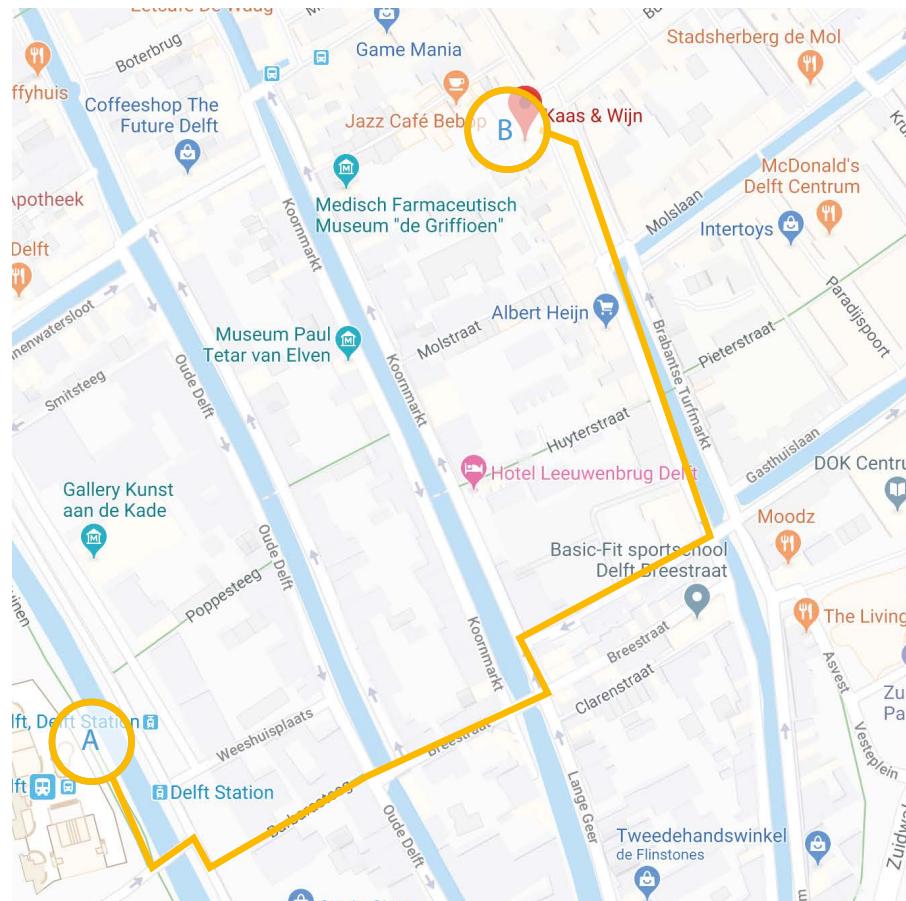
The second leg of the study begins. The approach remains the same, the roles are reversed.

*12:20: Buy notebooks at Flying Tiger (Phoenixstraat).*

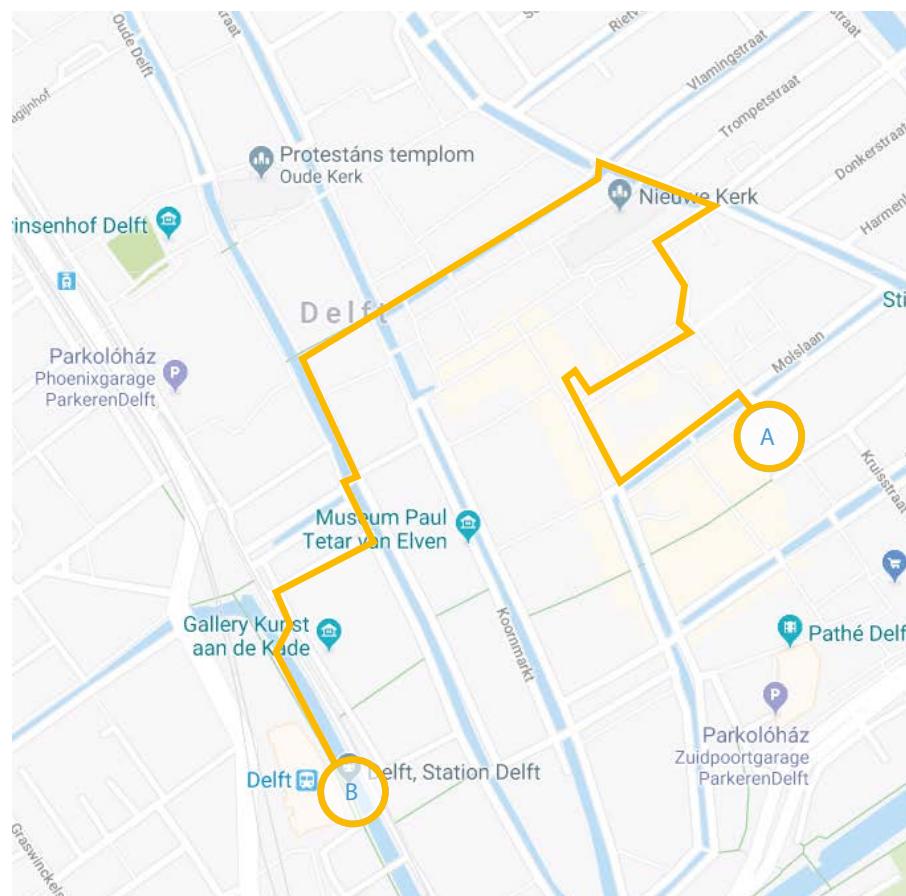
Another forced interaction with the environment and possible bystanders allowed both researchers to gain empathy for visually impaired people and observe the reactions of the environment to the presence of one.

*12:30: End of second part of the study, start of reflection. Writing notes for narratives.*

After this, we wrapped up the second part of the study and noted down additional observations for use in our personal narratives while they were still fresh in our memories.



**Figure 1:** Map of the pilot study Part 1



**Figure 2:** Map of the pilot study Part 2

### iii. Results of first part

#### Personal narrative by Thijss

Prior to starting this experiment, I felt a little bit nervous about navigating the city, but especially going into the store. When I put on the glasses, I noticed I could still see quite well from my center vision. Enough to navigate on my own. This made me walk pretty confidently and comfortably. The cane was still very useful as I could still feel the ground in front of me and thus did not have to think that much about navigating curbs and slopes. Otherwise, this would have been very exhausting navigation. From the moment I put on the glasses and started walking with the white cane, I felt like everybody was looking at me from the corner of my eyes and approaching me more carefully. Right away, Veronika noted that a person on a bike took a larger path around me than usual. Walking to the cheese store was relatively easy, although I did feel like I was in people's way more so than in my seeing life. And to be fair, I did see a lot less. The outline of cyclists approaching was clear, but their faces and general appearance a blur. When entering the cheese store, I felt a moment of hesitation. I even asked Veronika if she would go inside for me in advance and announce our arrival. With a slightly pounding heart, I entered the store. When entering the store, which I had visited not long ago, I navigated confidently to the back of the store where they prepare the sandwiches. A lady asked us if she could help us. I stated I wanted a sandwich and my preferred cheese. She asked me whether I would want anything else with the sandwich. I felt like she was talking to me in a childish voice, like you do to toddlers. I don't know if this was slightly true or if my mind was messing with me completely, but the effect was amplified in my mind due to my insecurity for sure. Another lady browsing the cheese store looked at me in wonder, or so I interpreted.

In general, I felt like bystanders were not observing me any more than usual, but were more aware of my presence. I also felt like I was tricking bystanders, as if me pretending to be blind was somehow unfair to them.

#### Personal narrative by Veronika

During the experiment I felt sometimes that I was in the way, like my guidance is not really needed, and I was hesitant to interfere with how Thijss was navigating. I had the impression that I was too close to be able to observe the situation well, and that also I am influencing the results too much. I had the feeling that I was looking at the people more than I usually do, and that it can feel intrusive.

Thijss was confident with walking in the city, but much more hesitant when he had to interact with someone ("I feel like I am tricking them"). This was especially apparent before entering the cheese store. He was very conscious of the happenings around us, he acted as a participant and an outsider at the same time.

I didn't see negative reactions from passers by, and there was only one cyclist who took a way too big detour around us.

I had the feeling that people were aware of us, but didn't make any unnecessary or exaggerated reaction.

In the cheese store I felt that the interaction was normal, and I didn't notice people staring at us or acting unnatural. I didn't notice any very strong reaction on our entering the shop.

Afterwards the cheese lady mentioned she acted differently as Thijss was not alone (had already a guide, so no need to offer too much help).

#### Observations. by Veronika

Observation	Interpretation	Notes
A cyclist made a large detour when passing us.	The cyclist didn't feel sure about what is a safe distance.	
The interaction at the cheese store was smooth.	It looked to me as a normal interaction, and I saw no staring people.	

#### iv. Results of second part.

##### Observations.

Observation	Interpretation	Notes
A man rolling a trash bin from his house across the street apologized for being in our way, quickly crossed and then stood still.	This man felt responsible to ensuring Veronika's safety and was unsure what to do about that next.	
A lady walking with a bike first looked at, then smiled at Veronika.	This lady was checking Veronika's safety and then felt happy to see she was doing well on her own.	
Employee no. 1 at Flying Tiger kept looking at Veronika.	She was checking to make sure Veronika could navigate the store, and assumed she would need help finding items.	<b>Interview:</b> She did not think much of it but kept her eye on her anyway. She observed her a bit more than she would observe other customers.
Employee no. 2 at Flying Tiger was looking around nervously, and not at Veronika, when helping her pay for her items.	She was looking around for help, or making sure another colleague was nearby in case she needed help.	<b>Interview:</b> She was a little bit nervous but wanted to help in small ways like holding the PIN-machine.
A couple entering the Flying Tiger when we were exiting quickly hopped into the store, keeping distance from Veronika and looked at me in a questioning way.	They did not want to be in the way and thus kept their distance. They looked at me for confirmation they were acting in the right way.	
A man on the way to the station took a very large distance from Veronika and looked at her intensely.	This man was scared Veronika would do something unpredictable.	
A car driver at a crossing near the central station stopped for us at a very large distance, signaling with headlights that we could cross.	This person wanted to make extremely sure we saw them, and make extreme precautions to not run Veronika over.	
People in general were looking Veronika in the eyes.	People in general were curious how Veronika navigated or wanted to make sure she was okay.	

##### Personal narrative by Veronika

I felt safe during the walk and the shopping, I didn't have the feeling of being exposed and looked at that Thijs mentioned after his blindfolded excursion. I noticed that people reacted on the cane and the glasses, but it didn't feel like they were staring. I was walking knowing that passers by will look out for me a bit more, this gave me a sense of safety. A few times I noticed people moving out of their way to let me pass on the street, but generally I felt I was more passive, I waited for

everyone to pass and let the situations unfold, rather than actively reacting to the situation and people.

Entering the store was harder than expected. The sudden change in the light and environment conditions was hard to adapt to that quickly. Getting around was not that big of a problem, but I had an awkward feeling. I was anxious about looking around as I had the assumption that people generally don't distinguish between the different visual impairments and suppose everyone with a cane is totally blind, so they will notice me looking around and will think I am just acting as I was blind.

Before crossing the small bridge with the stairs, I was expecting that it will be kind of a challenge to cross, but it turned out to be much more simple than all the other crossings. I had to give the cane over to Thijs, as it was really getting in the way with walking on the stairs.

Only once had the feeling that someone reacted in an unexpected and exaggerated way: he looked like he was scared of me he avoided me in such manner. He took a big detour, he kind of went over to the other side of the road, and it really didn't feel necessary.

By the end of the experiment I felt that my neck was really tense, I suppose I was holding my head and shoulders in an unnatural way.

I had the feeling that the cane was more of a hindrance than help. It was occupying one of my hands, and kept getting stuck in the holes between the bricks and the pavement. It was also tiresome to swipe it all the time, and the noise was annoying.

I also wasn't really using the information the cane provided, I was relying more on my eyes.

I felt that Thijs was offering me more guidance than I needed. He was for example taking my elbow at crossings, when I didn't feel it was necessary.

I felt that people were really considerate with me, and that I triggered stronger and more reactions from bystanders than Thijs, when he was in the VIP equipment.

Possible interpretation: gender? Or I was more hesitant in getting around?

## IV. Study in Leiden.

### i. Planning.

#### Goal of study:

The goal of this study is to collect data on the main research question. Furthermore the the differences in culture between the two cities will be explored, especially in terms of bystanders' reactions. The third goal of the study is to further help in developing empathy towards the user group.

The tools used in this study will be identical to the pilot study toolkit:

- Glasses to simulate the effects of retinitis pigmentosa.

We took a pair of sunglasses and neatly cut out blinds out of thick black paper. We then used a pin to create two small holes in the middle of these blinds to see out of. This simulates the effects of retinitis pigmentosa. We chose to simulate this specific type of visual impairment because one of the main stakeholders in the project suffers from this condition.

- Long cane.

The kind people at Visio allowed us to borrow a used long cane. This particular cane is quite worn as it has been used in many a training but still functions and serves our purposes perfectly.

- Mobile phone for audio recording and taking pictures.

Because we won't be able to record everything using writing when walking around town, we decided to use a mobile phone to record the majority of information.

- Field notebook and pen.

We did, however, still carry around a notebook to note down particularly noteworthy observations.

Two rounds of 30-minute pilot studies will be done. In each study, one of the researcher will assume both the role of a guide and a participant observer. This researcher will keep an audio record of observed bystander behaviour. The other will be guided around town using a white cane and modified glasses that simulate retinitis pigmentosa (tunnel-vision). This participant will keep an audio record of autoethnographic information like observations, insecurities and feelings. Short video clips will be taken at moments of interest, both for record and later analysis. Two schedules were decided on.

After the completion of the two pilots both researchers will complete their personal narratives individually based on their experience, the audio recordings and the notes made during the reflection. These narratives will be compared afterwards and both commonalities and differences will be noted down and discussed.

The schedule for both sessions is already defined and can be found in this section:

11:00: Start of first session (Veronika will guide, Thijs will be VI).

11:00: Start walk from ING to Leiden Central Station

11:20: Arrive at Leiden Centraal. Enter the station.

11:30: End of first pilot and start of reflection. Writing notes for personal narratives.

12:00: Start of second session (Thijs will guide, Veronika will be VI).

12:00: Checking in at Leiden Centraal

12:15: Buy sandwiches at the station.

12:25: Find the platform to board the train to the direction of Delft.

12:30: End of second pilot and start of reflection. Writing notes for personal narratives.

Tools:

- Glasses to simulate the visual impairment (retinitis pigmentosa).
- Long cane.
- Mobile phone for audio and video recording.
- Field notebook.
- Pen.
- Power bank.

## *ii. Results of first part.*

### *Observations by Veronika*

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
Thijs moved less confidently than he did in Delft "I feel more exposed than last time. I don't know where I am"	He didn't know the terrain well.	
The passers by didn't pay a lot of attention to us.	Possibly they were in a hurry, they also saw that Thijs is not alone, or they just didn't care.	
Thijs asks Veronika if people are looking at him.	He is curious about the culture in Leiden and wants to compare it to Delft.	
Thijs is talking about topping up his OV card. "I am curious if anyone will offer me help".	He is unsure how it will go. He is also a bit nervous about the situation.	
On the way to the station people are not moving out of our way.		
Thijs is asking about things we are passing.	He is disoriented, he wants to figure out where we are.	
A van is parked on the guideline in front of the station.		

### *Personal narrative Thijs*

When I put on the goggles in Leiden I felt a little more insecure than in Delft. The people, environment and culture were new to me and I had a hard time anticipating how these people would react. Walking with the cane and glasses itself took a little getting used to again, and I didn't remember being that visually impaired while walking in Delft. It felt like I could see a lot less here. We did not encounter a lot of people on the street, which was both pleasant and a disappointment. The interesting part to me was to see whether people here would react differently than people in other towns. When walking across the canal, we finally encountered two people - a man standing in a doorway talking to a man blocking the curb with his bicycle. They seemed no to notice us when we approached. I expected the man blocking the road with his bicycle to move away from me, but he did not. "The people here seem to be more rude", I remarked. In some way, that made me feel more safe since they seemed to care a bit less. This made me feel less observed than in Delft. Turning right and walking up to the station, I followed the guidelines. I walked more confidently here, knowing that I was not seen as an anomaly. People were walking on the guideline and did not move out of the way, though. Since I still had enough visual capacity to move out of people's way actively, it did not bother me too much. I was debating whether people just didn't care about allowing me to follow the guideline, didn't see or were just plain ignorant. Neither of those three is very favourable. While I had walked here just a few hours before, the environment seemed alien to me and I could only make out the contours of the buildings. My annoyance reached a peak when a

van was parked right across the guideline, as if to mock me. When we arrived at the station, people from GroenLinks were spreading pamphlets and harvesting votes. They did not approach me. Going inside the station to top up my OV-chipcard was nerve wracking as I did not see a thing. I was scared about people asking me if I needed help and me accepting their help. It feels treacherous to pretend to be blind.

### *iii. Results of second part.*

*Observations by Thijs*

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
Veronika has some issues finding her OV-chipcard.	It is a small object and her bag is full. It's also hard to both hold the cane and search your bag.	
Passing through the gate goes smoothly.	I expected some issues here, but it was smooth sailing.	
Some people in the station glance at Veronika from the corner of their eyes.		
Most people are too absorbed in their own thoughts to notice us.		
Veronika does not seem to see the entrance to Lebkov and Sons, even though it is quite clear.	Some factors could be that the facade is made out of glass. The door is huge, and it's weird that she misses it.	
Veronika seems scared to enter Lebkov and Sons.	It is a little bit crowded and a large, open space without any landmarks. It is also quite dimly lit.	
Veronika asks me what they sell at Lebkov and Sons, asks about the prices.	She is unable to see the wares clearly on display. The boards with the prices and sandwiches on them are places quite high up.	
Veronika quietly says she wants to leave.	She is a little nervous in this location.	The reason she gives is that it's a little pricey.
Checking in seems harder this time.	Veronika's eyes have had less time to adjust to the relatively low light levels in the station.	
Veronika is able to find the platform quite easily.	She has been here many times before.	I wonder if she would be able to find the platform on her own in a station in which she is not that familiar.
The moment we enter the Albert Heijn To Go, Veronika seems disoriented.	The layout of unclear, nothing is labeled, everything looks the same.	
People move out of Veronika's way.		

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
A man wanted to look on the same shelves as we were, but walked away.	He anticipated this might take some time and did not want to be rude and ask Veronika to move.	
People seem to be moving around us in quite a large circle.	This has been observed many times before. People don't want to be in our way and maybe anticipate unexpected behaviour. They might not know how to deal with visually impaired people.	
Veronika asks me what kind of sandwiches they sell.	The packages are the same and the light is more dim.	
Veronika looks at the sandwiches really closely.	She wants to know the contents of the package.	She feels a bit awkward about touching every sandwich. She feels like she is not making an informed choice.
Veronika can't tell where the self-checkout is.	It is not clearly marked.	
Veronika can't find her card.	The entire action of paying feels chaotic and stressful.	
Veronika punches in the wrong PIN-code, gets scared for a bit.	She feels anxious losing abilities that were so common to her.	
People hear Veronika approaching and move out of their way.	They are aware of her disability and comply.	
People standing on the guideline move out of their way.	The guideline was opening like the sea to Moses. It was quite touching.	
Everyone on the platform is glancing at Veronika.	People are very aware of her presence. Maybe they notice it more because they are just waiting around and have nothing to do.	
I am also getting glances.	I'm getting checks on whether I am caring for Veronika right.	

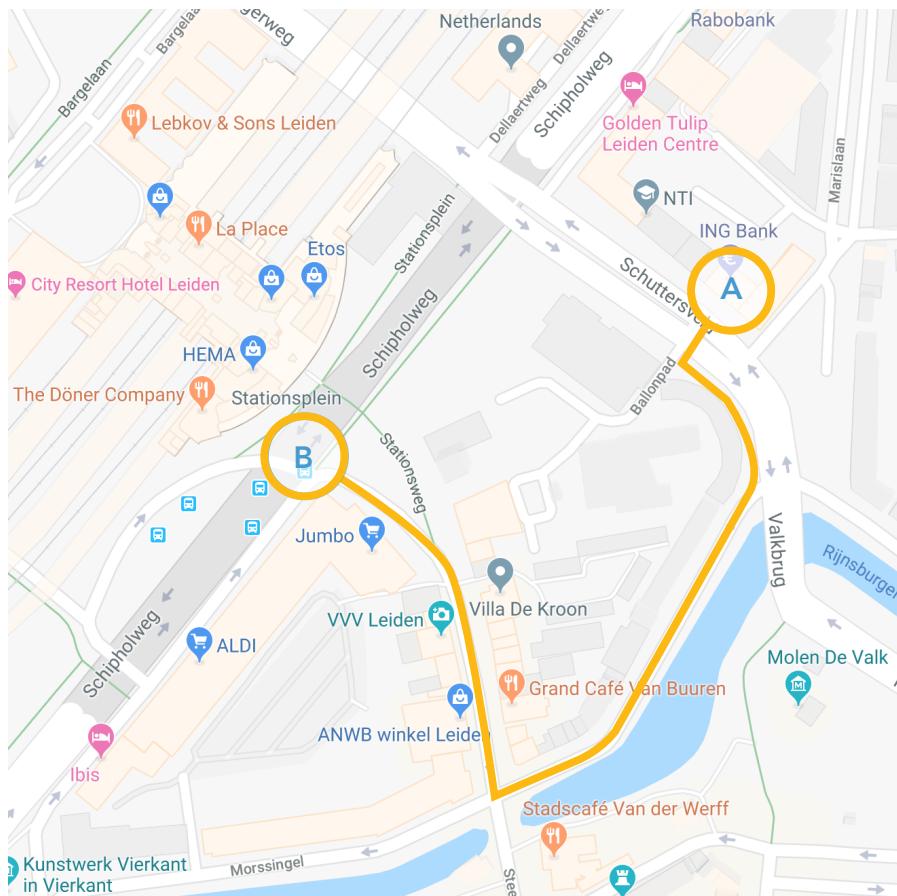
## Personal narrative by Veronika

After we switched the glasses, first I needed to check in the station. I was a bit afraid of checking in and out, but it was surprisingly smooth. I had had a bit of problem with finding my OV card. I had to switch between the weekday and weekend cards. My weekend card was at the back of the phone, where I usually keep my other card. The weekday one was in my pocket. When entering the station I got disoriented for moment, as the light was lower than outside, and I needed time to adjust. First I didn't see a thing. Walking in Leiden Centraal was very easy for me, as I know the station quite well. I was walking much more confidently than I did in Delft (a city I don't know very well), and I was less hesitant.

When we left the station on the other side, I was much more disoriented. This was the side of the station that I don't really use often, so I wasn't sure where the things were. I wanted to buy food, as I was heading to Rotterdam, and I knew that I need to eat something before. But the sandwich place at that side of the station was unfamiliar to me. I didn't even know where the entrance was, and it was hard to find it in the modified glasses. We entered the place, I had to ask Thijs about the price range and selection of sandwiches. I found it too pricey, so we exited the place. It was an awkward feeling. We went to the AH to go instead, as I kind of knew what they sell. But when entering, it wasn't that easy to select a sandwich. I had to take the sandwiches off the shelves to check the label, but in the end I just asked Thijs to help with it. When I payed for the sandwich I was very happy with my choice of banks, as my card is bright orange, so it was easy to find it in my card holder. But when I tried to pay, the machine said I had to type my pin code in. It was quite hard to operate the self cassa, as I could read nothing on the user interface/buttons, so I didn't know what to press.

We entered the station again, and I was reminded of how a VIP was checking in and was feeling for the gate to open with her hand a few days before. I didn't see if the gate opened either. But I decided not to extend my hand, as I had the sandwich in one and the cane in the other, so I already had my hands full.

We used the escalator to go up to the platform. Seeing the people moving away from my way, opening the guideline gave a satisfying feeling. I felt that the cane has the power to grant me passage on the train platform. People who were looking at their phones heard the noise of the cane swiping on the guideline, and moved away as well. I walked past the Kiosk, and just waited for my train. We talked about being vulnerable and exposed. I didn't really feel it, but Thijs experienced it when he walked with the cane.



**Figure 3:** Map of the study in Leiden

## V. Study in Den Haag.

### i. Results of first part.

Observations by Thijs.

Observation	Interpretation	Notes
When they see Veronika coming, people in the station move away from the guideline.	They know what the guideline is for and they can hear Veronika approaching.	They were already paying attention because it was crowded.
Almost all of the people passing us glanced at Veronika from the corner of their eyes, then looked at me.	People are more worried about her, then confirming with me whether I helped her sufficiently.	
A lady from D66 asked Veronika if she was going to vote.	She wanted Veronika to feel included. And wanted her vote.	
A man was looking at Veronika, caught my eyes and then looked away completely.	This man was ashamed to be caught looking, so pretended like he was looking around very interestedly.	
A man jumped off of the guideline when he saw us approaching as if it was hot lava.	He was scared to trip Veronika, or to be hit by the cane.	
Veronika needed my arm when going under the dark overpass.	She could not see due to the change in light and needed my guidance. It was also very busy under the overpass so she was frightened.	
The people in the station were very hurried.	It's rush hour in The Hague, people are gonna be busy.	
Some ladies blocking the guidelines with their bikes apologised a lot.	They wanted to show they were not hindering Veronika on purpose.	
The ladies apologising to Veronika touched her on her shoulder while talking to her.	Maybe they felt Veronika would be startled by their voices if they didn't touch.	Veronika hated this.
Veronika seemed disoriented in the bakery.	It was darker in there and a lot of movement.	
People enjoying coffee in the bakery did not look at or notice Veronika that much.	She didn't stand out. She was also more quiet, which could be a reason.	
Veronika could not see where the cash register was.	It was lit more than the rest of the store so should be more visible. Apparently, it wasn't enough.	
Veronika had a hard time finding where to stand in line.	There were people all around, and the line was clearly defined.	Maybe it was hard to judge their orientation?

Observation	Interpretation	Notes
Veronika talked in a very low, almost trembling voice when ordering coffee.	Veronika was scared to order coffee.	
The lady serving the coffee acted completely normal.	She apparently was used for blind people to order coffee at her bar.	

## ii. Results second part..

Observations by Veronika.

Observation	Interpretation	Notes
Thijs said he doesn't know the way to HS	He is not as confident as he would be in a familiar setting	
Thijs said he can't see a thing	The light conditions are worse than the day before, also the high buildings block lot of the morning light and have long shadows	
Thijs remarks there is a lot of noise and he feels that his senses are a bit overloaded  "I kind of understand what they meant at Visio with audio overload"		We are walking next to a construction sight, also the area is quite busy
We are more looked at than in Delft	It can be several things: more people in general, Thijs is less confident and also it is a very different city	
A girl passes us on a bike, looks at us for a long time	She is puzzled or concerned about Thijs	
"I feel like I'm walking in ancient Rome"	He feels he is not in the same reality, a bit alienated	High white buildings ( library, city hall, construction of the Spuiforum)
He remembers Leiden was more inviting		
Guiding requires more effort than in Delft or Leiden	There is more traffic, more complicated crossings	
Thijs remarks that it is more scary as he is unfamiliar there	The overload of senses makes it really hard to navigate in a busy environment, knowing the way do help a lot	
Veronika tries to give Thijs cues in the navigation by naming the buildings, but is doesn't help him	as Thijs is not really familiar with the city it only adds to the information overload already created by all the audio, so he is not happy about this	
Thijs remarks that he doesn't see at all under the bridge		

Observation	Interpretation	Notes
We remarked that there is no audio feedback at the traffic light when we were crossing, but in reality there was, it was just so much noise that we didn't hear it	Audio overload is very real	In front of the filmhuis
Thijs is curious if we are looked at, but most bystanders are just hurrying to work/school, their business		
Cyclists don't stop for us at the crossings	We are ignored or we are too hesitant, so they are not sure if we want to cross	
Thijs remarked that the car stopped for us way farther than necessary at the crossing	The driver was unsure about our trajectory, he didn't want to risk hitting us or we are getting more hesitant	
We pass a pair who collect the garbage from the pavement. They stop their work and wait for us to pass until they resume	They are afraid that they would bother us if they continue or we might bump into them. It seemed a bit overly considerate	
Thijs remarked that this walk is exhausting	We are facing more complicated situations, it required a lot of effort to navigate	
Thijs starts to act proactive in asking for help at crossing and navigating	Veronika didn't provide enough guidance from this point or he is getting tired and needs more guidance than before	
Passers by and cyclists don't stop they make rounds/walk around us	they are aware of us but they are confident they can pass us safely	
Thijs is asking about the busyness of the street		there are mostly horeca vans on the street, not many passers by, shops and places are mostly closed
break @ Grote Markt		
When passing a group of people in front of the T-mobile Thijs asks what they are doing there. they are waiting for their shift	He didn't see the details (company logo on uniform, etc.) therefore he had no explanation for the fact that a small group of people are standing in an empty shopping street	
Thijs needs a lot of help at the crossing.	He doesn't realise if we finished crossing or not, that's why he is hesitant	
When entering the Binnenhof, Thijs remarks he doesn't see a thing	We go through a small tunnel	
A group of schoolchildren pass us. They don't react to us	They don't find the sight of a blind/VIP person unusual. They are more interested in their peers	

Observation	Interpretation	Notes
When on the promenade a girl looks at Thijs for a long time	She is concerned/interested	
Veronika warns Thijs of the horse droppings on the path.	Possibly it is hard to notice these kind of things lying on the path for VIPs	
An older lady smiles at Thijs while passing	She was encouraging us	
An older guy passed us on a scooter. He came close to us, didn't make a detour	He didn't notice or didn't care	

### iii. Results third part.

Observations by Thijs.

Observation	Interpretation	Notes
We joke about already smelling rookworst, and thus knowing there is a HEMA nearby.	I don't know if we are getting more accustomed to our other senses, but we joke about it.	
Veronika is uncomfortable asking directions.	She does not want to randomly approach people on the street.	She thinks the test will be about language instead of visual impairment.
Thijs gives a lot of directions when crossing the road.	He wants Veronika to be safe. It is however a little too much.	
Thijs wants Veronika to wait and let a tram pass way in advance.	See above.	
Thijs gives a lot of information about the surroundings while crossing.	He wants to involve Veronika and the navigation as much as possible.	It is questionable how much Veronika can actually do with all of this information.
A stopping car stops at a very great distance to let us pass.	The car wants us to be safe and show he takes care with us.	
Veronika sees the HEMA before Thijs.	The hema is well indicated.	
The entrance to the HEMA is observed by Veronika as just a black area.		
Veronika doesn't see if the entrance is a turning door or sliding door.	Even though it is well lit and obvious to me, she doesn't see it.	
Two girls waited for us to pass.	They did not slip by us as they would normally do but gave us plenty of room.	
Veronika has no problem going up the escalator.		
Veronika can't see much, even though the HEMA is very well lit.		

Observation	Interpretation	Notes
Veronika has to look intently too find the balloon ("F").	The labels all look alike.	It helps that the balloons are ordered alphabetically.
The cane makes no noticeable sound in the floor of HEMA.		This causes less people to notice Veronika.
Veronika does not want to eat and walk so decided against eating.		
A lady almost runs us over with her stroller and gets startled.	Her reaction seems exaggerated because she almost "ran over a blind person".	
Exiting the HEMA is easier for Veronika because she is "walking towards the light".		
There is a lot of noise in the city around us, making Veronika disoriented.	There are no specific sounds to be discerned, making it harder to navigate.	
Veronika remarks that "here, navigating takes more effort".	She means it is busier and louder here, making it harder to focus on getting around.	
She does however, remark that "I'm more confident here than in Delft, I really don't know that city".	These two things seem to contradict each other.	
People in this neighbourhood seem to pay us no mind.		It's interesting to research the different reaction to people with disabilities amongst various demographics.
Veronika recognises the neighbourhood we are in.	She can still see enough to recognise a general ambiance and layout of a neighbourhood.	

#### iv. Results fourth part.

Observations by Veronika.

Observation	Interpretation	Notes
Thijs remarked that he needs some adjusting again	He doesn't feel very confident in the glasses	
Thijs feels the area is busier than it really is		

Observation	Interpretation	Notes
Passers by casually look at us and look away	They consider us as a normal sight	
Crossing needs a lot of concentration	The area is not well adjusted to VIP needs, there is no guideline for example	
Thijs remarks several times that he is disoriented	he is disoriented	
Thijs remarks he is concerned about the tram ride	He is unsure about what to expect	
Thijs is annoyed by the noise	The noise level hinders his ability to navigate	
Thijs remarks getting to the tram stop is scary		we are crossing several tracks, trams cross tracks and it is generally quite busy
Thijs remarks waiting for the tram seems longer in the glasses than it usually does		
People in the tram stop don't react to us	The tramstop is not crowded, and many people are waiting for the other trams	
Thijs doesn't see where the door to the tram is	It lacks the sufficient contrast or the light conditions are too bad	
Thijs doesn't see the check in terminal	When stepping in the tram it is suddenly darker	
Thijs remarks "I don't see a thing"	He feels disoriented	
Veronika needs to guide Thijs to find the handles	He has difficulties orienting on the tram, he doesn't see where the handles are	
Thijs makes a joke about the name of the tram station	He tries to lift the mood a bit, as he is anxious	Bierkade station
People generally react less about Thijs on the tram than on the street. They don't try to move farther from us or let us pass	They just try to squeeze themselves inside, and they don't mind the cane and the goggles	
Thijs is asking about which side will we get off	He is concerned about the getting off, he wants to prepare himself in advance	
When stepping out, Thijs is disoriented		
When moving on the guideline we have to wait people to move from the guideline	It is in the middle of the day, people have a slower pace than in the the morning. They just take their time	
Thijs remarks he feels exhausted	It requires considerable effort to navigate in busy situations	
Thijs wanders off the guideline, and needs help finding it again	He is tired and it makes navigating harder	

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
The guideline leads through a door that is not working, but Thijs cannot read the sign about it		

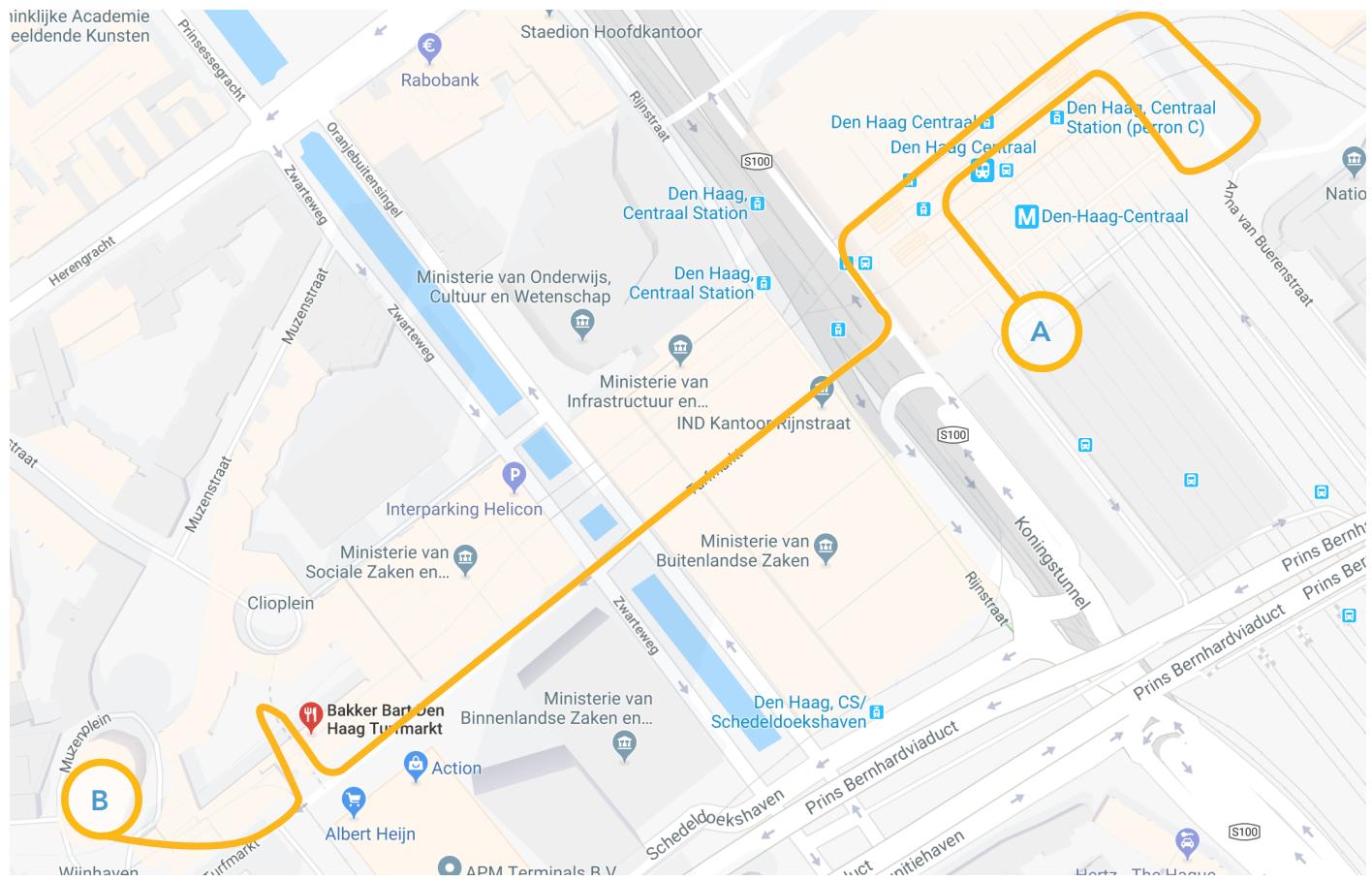


Figure 4: Map of the study in Den Haag, Part 1.

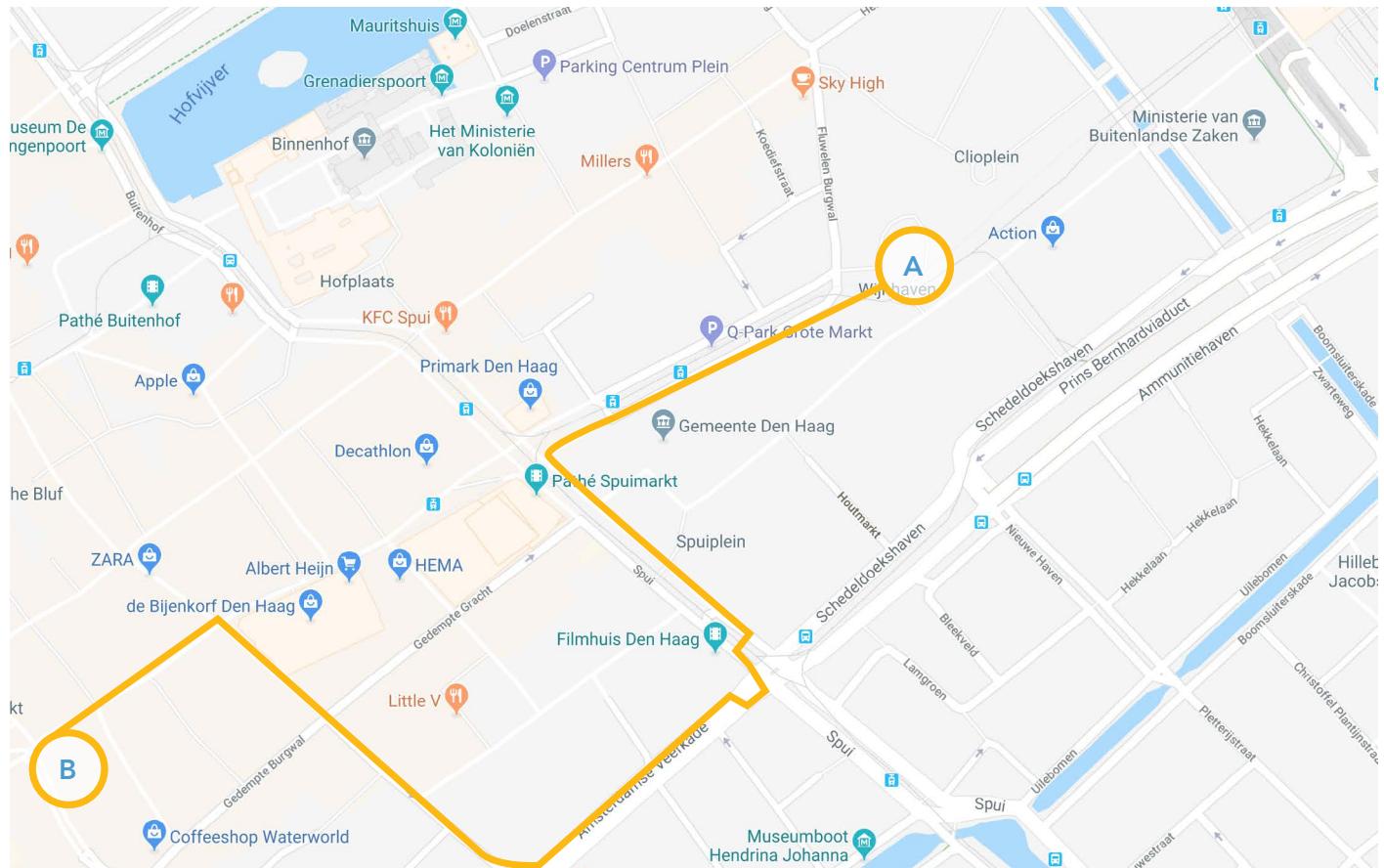


Figure 5: Map of the study in Den Haag, Part 2.

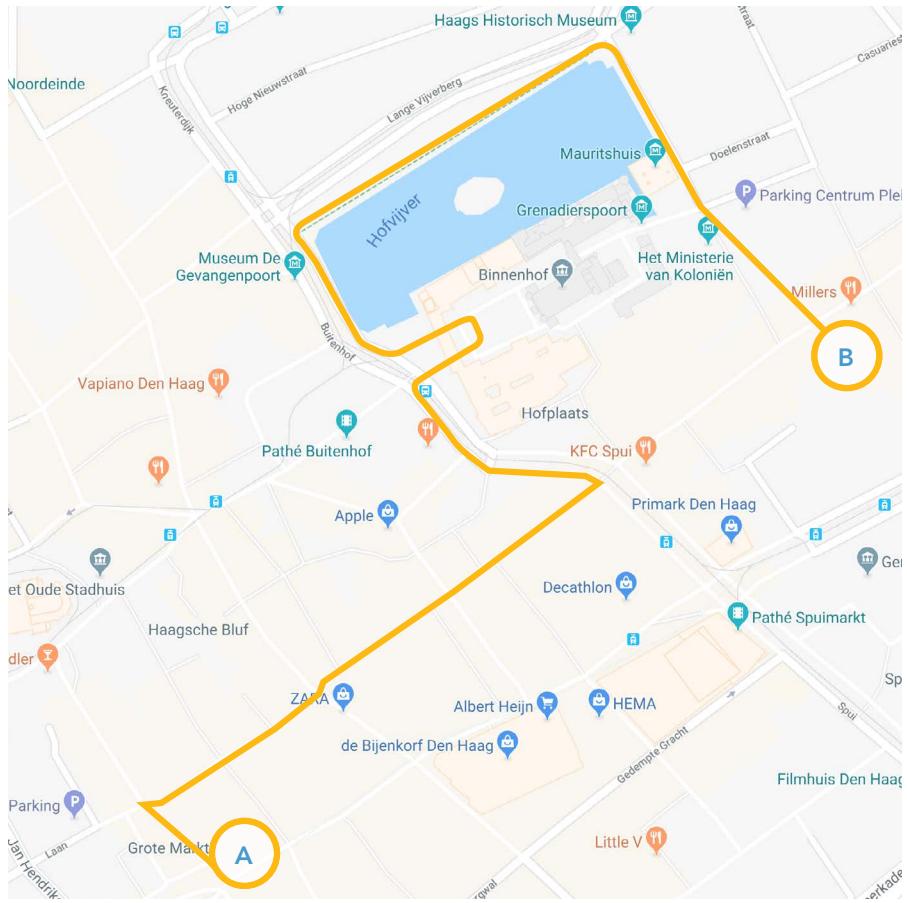


Figure 6: Map of the study in Den Haag, Part 3.

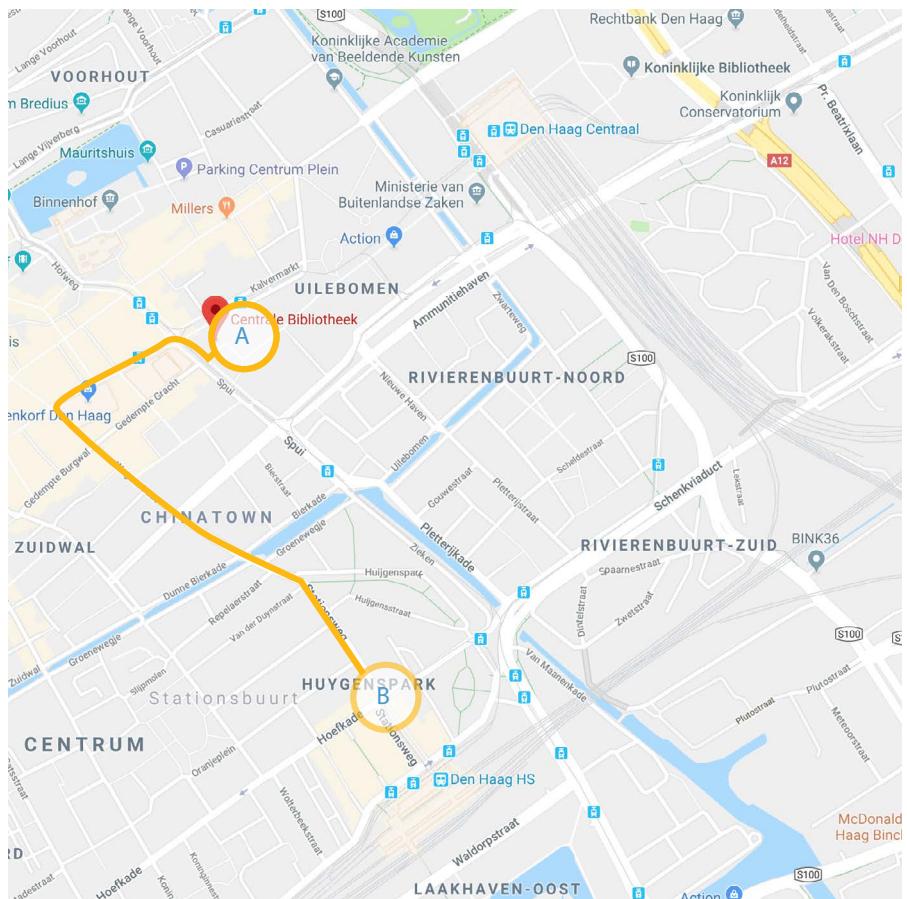
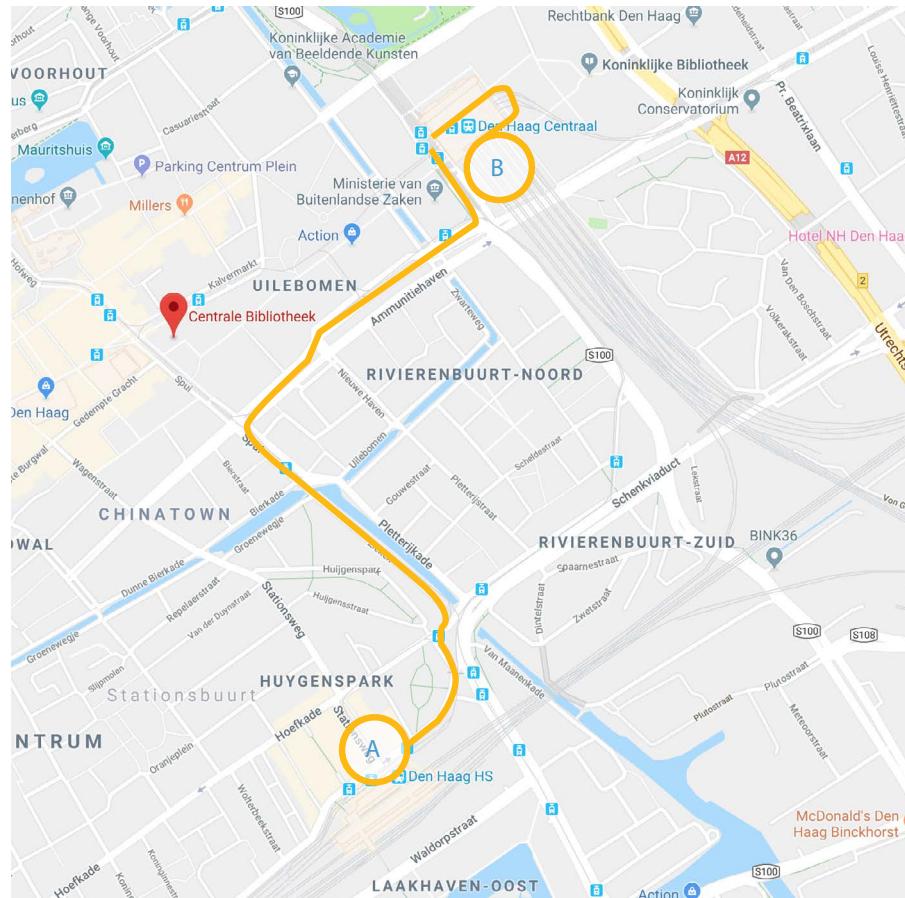


Figure 7: Figure FIXME: Map of the study in Den Haag, Part 4.



**Figure 8:** Map of the study in Den Haag, Part 5.

## *v. Personal narrative Veronika*

Walking in Den Haag Centraal was not stressful to me, even though I didn't see very well. I was following the guideline, and looking out for the people to move away from it. When we exited the station at the quieter side, a political activist lady was asking me if I'll vote, and she said she hoped that I'll vote for the party she was an activist for. I also noticed that it was really hard to navigate when lights change. When there was shadow on the ground, I couldn't see at all. I even needed to ask Thijs to take my arm and guide me, as I became completely disoriented. I also experienced that it is much harder for me to navigate in a smaller space, so when entering a store, or when inside the station the space wasn't that open I lost the ability to navigate. I also had trouble around entrances and exits. I noticed that navigating in Den Haag was harder than it was in Leiden or Delft, as there is much more traffic and more complicated crossings and situations. People are much more in a hurry, I didn't feel that I can rely on the bystanders' awareness of my conditions. High rise buildings also make it more difficult to navigate, as they block a lot of light.

When we wanted to buy coffee, I felt a bit lost. I didn't even know if the places are open or not, and I had no idea where to go. I wasn't just able to look around, look at the coffee places and decide if they look welcoming or sympathetic. I could only rely on Thijs's assessment of coffee places. When we entered the cafe, I didn't see at all what was going on. I couldn't see the layout of the place, I didn't see where the people are, if they are in the line of they are there at all. When ordering, I was completely incompetent in reading the situation. I wasn't aware of the distances, if the lady was looking at me or not, if she is close or far away, so I couldn't adjust my voice. It wasn't a pleasant experience, I was extremely self conscious. I felt I was missing out on the reactions, the facial expression. It was an exhausting experience. I felt my senses were overloaded, and conditions were swiftly changing. I felt that I couldn't keep up with it, and I just got tired of trying to.

After switching, we decided to go to the Hema to buy some food. I wasn't feeling very much in control of the situation, so I mostly passively consented to the suggestions Thijs made. I was led by him through a crossing and I was feeling quite vulnerable. I had no means to assess the situation, I wasn't aware if I am crossing at the right place, or if I got to the other side yet. I managed easily to get to the HEMA from the crossing. Thijs suggested that we got something to eat at the ground floor, but I really didn't favour the idea. I am not fond of eating and walking at the same time, and without seeing properly it only became less appealing. We walked around the HEMA and it didn't prove to be particularly challenging. I was only feeling a bit of aimlessness, as we were only walking around for the purpose of walking around. After exiting the HEMA, we started off to the direction of the HS. Thijs remarked that I don't get looked at that much as have been in Delft for example. As I was thinking about it, I noticed that I am walking much more confidently as I know the area and I had a goal in mind. So I wasn't that hesitant, I was just following the route to the Hollands Spoor. It gave me confidence that I am aware of the surroundings so well. It didn't require that much effort to navigate, I started to enjoy the walking much more.

## *vi. Personal narrative Thijs*

Walking around in Den Haag was immediately terrifying to me. When putting on the glasses, the noise of the city became hard to deal with. Walking past busy traffic, construction sites and numerous people in bicycles zooming past me, navigating on my own became increasingly hard. Veronika tried to give me a sense of place by naming the buildings we were walking past, but they all sounded unfamiliar to me - and looked the same. Walking through the city felt a little sinister, the high rise buildings to my sides looming over me. Because I could only discern shapes and the buildings around were columnated white, it felt like walking around ancient Rome. When we came to a turn, we had to traverse under a small overpass or tunnel. I completely lost my sight here, and had to just keep walking to the light with no idea of the surface I was walking on. I felt anxious to cross because of the audio overload and the many inputs around me. Cyclists didn't stop when I tried to cross and I was happy to have Veronika there. When walking through a more quiet street, I could finally catch a little bit of my breath. We ended up walking behind two men talking loudly amongst themselves. One of them was wielding what looked like a stick that I supposed he must have found somewhere and was carrying home. They suddenly walked slower and moved out of their way and I could feel their eyes burning in the back of my head. They stopped talking when we passed, which felt threatening. I turned the corner and was relieved when they did not. Veronika told me that those men were garbage collectors, and suddenly the stick made sense. Walking through this new street I started to notice groups of people waiting outside stores. I suddenly realised that it was still early in the morning and that these people were waiting for work. This thought came and went quickly and pretty soon I asked Veronika if we could enter the Bijenkorf. When she told me it was closed and a man was still cleaning the floor, I felt a little ashamed that I did not see that. We turned the corner and I suddenly felt the relief of recognising where I was. This was the point that I decided to stop my first round of walking because I was mentally very exhausted.

My second round of walking for the day was quite a long route. We started at the Grote Markt, after a short break and decided to head to the library to compare and document notes. Walking the street to the Spui was no challenge as by now I had grown accustomed to walking with the modified glasses and cane again. This street was not that busy and mostly consisted of stores, whose brands I could recognise easily enough, though I could not discern the contents of most of the posters on the windows. We passed some groups of people waiting until they could enter their places of work and I felt looked at by some of these groups. When we reached the library we, or rather Veronika, discovered it was closed.

I took the glasses and cane from Veronika. Walking in this neighbourhood was easy for me as I had already observed previously that the residents here did not pay us any mind. Approaching Den Haag Hollands Spoor was stressful though, since there was lot of traffic and the crossing were unclear. People seemed to be in a hurry and did not stop to let us pass. Veronika had to help me cross but once we reached the broader pedestrian street I felt more at ease. I knew we were going to Hollands Spoor to take the tram and as we approached the tram station I felt a knot form in my stomach. Taking the tram was a scary thought as I expected it to be cramped and dark, a rollercoaster. To reach the tram station, we had to cross the tram tracks thrice. There were people all around and trams passing us multiple times. It was chaotic and the lack of overview and sense of when and where to cross made me feel glad to have Veronika there. I could read the board showing the departure time of the trams vaguely, if I really focused my eye on it. The six minute wait seemed like an eternity and I tried to make it passable by making stupid jokes. Going into the tram was hard because I could reason where the entrance should be, but judging where to enter the tram and how high I had to step was impossible. I leapt into the tram just to be sure I got in. The next challenge was to find where to check in my OV-chipcard. Because I had rode these trams before, I knew where to put my card but I could imagine this being hard for completely blind persons. I stumbled towards somewhere where I could stand securely, which was no easy feat because three ladies with prams were fighting for spots and I almost tripped multiple times. The tram started moving and I felt very claustrophobic. The people in the tram looked like shades because of the low light conditions and my inability to discern their faces. I became quiet. On the outside I smiled and looked serene, but my heart was pounding in my chest and I wanted to get out as soon as I could. The tram twisted and turned and I felt like I was on a ghostly amusement park ride, but with nothing amusing to it. A long way before our stop at Centraal, I tried to see where the exits were and where to check out, so that everything went smoothly. At every turn, I said "here we are", only to be disappointed at the next turn. The ride seemed to take forever. When finally exiting the tram, I hesitantly stumbled out of it, trying to check out with my OV-chipcard on the wrong side (attempting to use a pole for that purpose). I found myself in the middle of a crowd. Veronika had to help me through this crowd because it was stifling. We walked through the station following the guidelines, people did not move away. We exited through the back and I removed the glasses. I was exhausted.

# C. Observation of Margot Scheltema.

## I. Observation in Rotterdam, Den Haag and Amsterdam.

### i. Planning.

#### Goal of study:

The goal of this participant observation is to get a clear picture of Margot's attitude to her visual impairment and the reactions/interactions/ of the participants in the activities we will partake in during the day. It is also first step towards mapping her context through the daily activities she undertakes. We will also observe the difficulties she encounters during these activities.

#### Methods:

The day during which we will observe Margot Scheltema's (change name) behaviour will consist of a morning activity and an afternoon activity. In the morning, we will pick her up from metro station Wilhelminaplein in Rotterdam and walk to the Nederlands Fotomuseum, where she will give a tour explaining what it's like to go to a museum while visually impaired. At 15:30, a reception will be held in the Tropenmuseum in Amsterdam. We will travel there by public transport. This will be an interesting event to observe as it will be a social one in a dimly lit context and Margot has expressed worries about that as she will have difficulties identifying people and navigating. The data will be mostly gained from participant observation, meaning we will pay close attention to details like what people say, body language and other meaningful interactions. We will especially pay attention to bystanders' behaviours and attitudes towards Margot's visual impairment, as well as Margot's behaviour and attitudes. We will also note down specifics in the environment that cause these attitudes and behaviours to occur. A complete list of points of interest can be found in the section below. Observation sheets will be produced that will be filled in rapidly right after observation. This will be done during the train ride home. After this, notes will be expanded on and a visual overview of key observations will be produced. An interview will be scheduled sometime after observation to discuss points of interest discovered during analysis.

#### For Margot:

- Body language.
- Way of navigation.
- Annoyances.
- Habits.
- Attitude.
- Personal stories.
- Statements.
- Interactions with specific persons.

#### For bystanders:

- Body language.
- Attitudes.
- Personal stories.
- Statements.

- Interactions with Margot.

For the surroundings:

- Physical properties (light, material, layout).
- Body language.
- Attitudes.
- Statements.

Tools:

- Mobile phone for audio and video recording.
- Field notebook.
- Pen.
- Consent forms.
- Observation sheets.

## ii. Results.

Observations Thijs.

At the Nederlands Fotomuseum.

Observation	Interpretation	Notes
During the first meeting, the people from Nederlands Fotomuseum ask Margot personal questions about how much she can see. Margot gives generalised answers such as "my eyes take longer to adjust to differences in lighting conditions".	Margot feels uncomfortable talking about her visual impairment to people she has just met. She does seem to warm up after a while though.	
Margot remarks: "When I have to look for the button to call the elevator, I'm always happy when no-one's around".	Margot is self-conscious about her visual impairment and how that affects her behaviour.	When asked whether the same is true when using the cane, Margot wholeheartedly agrees.
Margot remarks: "I feel like I am living in some kind of parallel world".	Margot feels like she experiences the world in a vastly different way.	
Margot bumps into a door and the bystanders get startled. One of the bystanders asks Margot if she's okay.	The bystanders feel like they should have guided Margot more. Margot herself feels self-conscious about bumping into the door.	

Observation	Interpretation	Notes
Margot tells how she finds traveling with public transit uncomfortable. "I've had a few occasions where I sat next to the only other person in the bus."	Margot finds it harder to act natural in social situations due to her limited vision.	
During the tour of the museum, the museum employees ask Margot if she can see every little aspect.	The museum employees want to make the museum more universally accessible.	I wonder if they are asking the right questions. What can they do for fully blind guests? Margot is only one specific case.
Museum guide points Margot the way.	The museum guide didn't take into account Margot cannot see where she was pointing.	
Museum guide tells story about how one of the artists that are exhibiting, Alfredo Jaar, fell of a stair because he couldn't see.	The museum has its issues in visibility, not only for people with visual impairment but people without 20/20 vision in general.	
Margot keeps bumping into people during the tour.	Margot finds it hard to judge distance.	
A gentleman coming down the stairs, did not know what to do when Margot - who was going up the stairs - suddenly stopped walking up. He kept standing, waiting for Margot to pass.	It is not visible that Margot is visually impaired. As such, she showed weird behaviour for a "sighted" person.	

On the way to the Tropenmuseum.

Observation	Interpretation	Notes
Margot remarks that "the white cane is stigmatising".	Margot worries about being more visibly visually impaired.	
Margot seems quiet on the bus.	She might be disoriented.	
A girl in the wheelchair on the bus became annoyed when people offered her all kinds of help when trying to board or disembark the bus. She did, however give me orders when I tried to help her.	This girl feels awkward when she gets unwanted attention because of her handicap. She does however know how people can help her and isn't afraid of telling so to bystanders.	
Margot's house is very orderly, classic and adorned. There are many paintings on the walls.	Margot clearly still cares about aesthetics, even though her vision deteriorates.	She did remark that she recently had more lights put in, in order to see better.

At the Tropenmuseum reception.

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
The snacks being served are very basic, among which cheese cubes, sausages and bapao.	The party wants to stay grounded. There is no grandeur.	
Margot remarks that she can "sort of discern people, but faces are a problem".		
The room is very dynamic, with people moving about, meeting and mingling.	People here know each other and are eager to reconnect. The atmosphere is one of "see and be seen".	Margot has difficulties recognising people in this dynamic atmosphere. It's hard for her to recognise faces in this dim environment.
There are mostly older people attending, 60 and over.	This is an event for the Triodos employees that are higher up the ranks.	
Men are in formal clothing, mostly suits.	This is quite a formal event.	The researchers do not know if the men attending also wear these suits at work.
Women are also in formal clothing, but are more trendy. They show their individual style with their earrings and handbags.	The women try to show off their jewelry and handbags.	The researchers do not know if the women attending also bring this jewelry and these handbags at work. Margot wears a similar outfit to the one we had already seen her wearing, so the occasion may not be more special than normal.
The older people are sitting in the front, with younger people in the back. Friends of Marilou van Golstein-Brouwers are sitting in the front rows.	There is a strong hierarchy which is shown in the seating configuration.	
There are about 100-150 people attending the event. Most of them greet each other.	These people all know each other. Presumably they all work at Triodos bank or have worked with Marilou in the past.	
The event is hosted by a young businesswoman that has served in several boards and is introduced by the CFO of Triodos bank.	These people are well-connected.	
When introducing Marilou, a whole host of jobs is discussed.	Marilou has had a very broad career and has met people all over the international scene.	
The night is hosted in English.	The crowd is international.	
A video message from a CEO in the USA is being played instead of the CEO attending.	Marilou has a large international network and many admirers (professionally).	
Some people are sitting alone.	Not everyone is part of this tightly-knit network.	
The people sitting alone are the only ones frequently using their mobile phone.	These people are less interested in the contents of the evening.	It could also be that these people that are sitting solo want to give themselves posture.

<b>Observation</b>	<b>Interpretation</b>	<b>Notes</b>
The topics discussed during the panel are mainly focusing on sustainable banking and inclusivity.	In Marilou's career, sustainable banking was a big topic.	It all seemed very circlejerky.
Margot called this a "laid back event".	This kind of event is quite normal when some board member retires.	
Quite some people arrive late.	These people try to squeeze this event in their schedule. They might not be too close to Marilou.	
Almost none of the men wear beards. The men that do, are younger.	A clean-cut image is appreciated at Triodos bank.	
The keynote speakers compliment amongst themselves a lot.	They know each other well, and want to show it to the audience.	It seems like a strategy to justify their position on stage, and a humblebrag.
The keynote speakers perform a lot of shoutouts to members of the audience.	The keynote speakers are well connected, and want to show it to the audience.	It seems like a strategy to justify their position on stage, and a humblebrag.
During the break, there is a musical performance by jazz singer Denise Jannah.	Jazz is both cultured and hip, and appeals to most everyone.	
Denise Jannah plays the songs "Nature Boy" and "What a Wonderful World".	These songs are selected to be in keeping with the ecological message of the entire event.	It seemed a little bit too congratulatory for my tastes.
Announcing the special guest of the night, the hostess makes a joke about the Prime Minister not showing up last time, but says this one is more special.	She builds up the tension for who the special guest is.	
Accompanied by security and the Mayor of Blaricum, Her Majesty Queen Maxima enters the room.	This Marilou must be something quite special for Maxima to show up.	
Everyone stands up, only to sit again when Maxima takes her seat.	These people are aware of the status the Queen holds.	
The Mayor gives Marilou a speech, praising her accomplishments.	Marilou has done impressive things on a national level for the Mayor of Blaricum to compliment her.	
Marilou gets knighted by the Queen.	Marilou has done some very impressive things on an international level.	Makes me wonder how many other people in this room got knighted.
The Queen notes that her "... husband signed this document with pleasure this morning".	Marilou is known at the Royal Court.	
Marilou gives a closing speech with a lot of shoutouts to the audience.	Marilou is thanking the people that helped her become who she is today.	She says she is overwhelmed with emotion, but does not show it.

Observation	Interpretation	Notes
Margot gets help down the stairs.	She asked someone to help her down the stairs.	She does not seem to be as ashamed of this as she would be using, for example a white cane.
Margot looks around in a disoriented way.	The room is too dynamic and dimly lit for her to see well.	
A waiter offers Margot some snacks, Margot looks at him puzzledly.	Margot does not see the snacks the waiter offers her, and questions his motives.	This can be an uncomfortable situation for both parties involved.
Margot is touched by others for attention.	Others know of Margot's visual impairment.	Being touched all the time could increase confusion.
Margot walks very slowly while looking for people.	She is taking her time, making sure not to approach the wrong person.	It can be awkward to recognise someone for the wrong person.
Margot asks us if we would join her on her tour around the room.	She feels like someone to help her find others would be useful.	Is she scared on her own?
There is no music during the reception.	This is an event for talking.	
The majority of the staff is coloured.	I don't want to make too many assumptions here.	
Margot gets led to the people she wants to meet by a friend.	People know of Margot's visual impairment and help her navigate.	
Margot frequently puts her hands above her eyes.	I assume this helps her see as it limits the light from above falling into her eyes.	It is a bit of misplaced action in this cramped, dimly lit room.
There are no smokers outside.	Smoking is frowned upon in this company.	
A part of the guests leave rather early.	Some of the attendees are not that close to Marilou and the core guests group and would rather go home.	
Among the gifts are jewelry, champagne and books.	Pretty standard gifts for this high-class audience.	
"A few wines will make this less intimidating", Margot says.	She needs some social lubricant in order to deal with situation.	
She wants to stay for ten more minutes after her car is supposed to pick her up.	Margot is having a good time and does not want to go home.	
The nuts are spooned on people's hands instead of people reaching for them inside of the bowl.	This is high society.	
Margot holds on to me when going down the stairs to her car.	Margot cannot walk down the stairs alone, as well as go home alone.	

## Observations Veronika

### On the public transport

Observation	Interpretation	Notes
Margot says it is hard to adjust to changing light conditions, for example between two rooms, or between outside and in the underway/tunnel, when we are nearing the entrance to the underground		
She says doesn't feel embarrassed if she needs to explain the situation and ask for help (in the museum)	She doesn't feel embarrassed to talk about her condition	
She prefers to walk with someone to walking alone, therefore she makes sure that she won't visit a museum for example alone	Her condition requires a lot of planning on her side, and preparing for different situations	
Walking down the stairs is more challenging than walking down, and also she feels that there is a bigger risk when falling  <i>"you cannot fall up on the stairs"</i>		
She had a bit of mascara in her hair	I assumed she starts to have problems with doing her makeup and getting dressed, she confirmed this when I asked about changes in getting dressed, choosing outfits and shoes. She said that her condition has an enormous effect in this area in her life, she no longer likes to shop for clothes (she loved it before), it is hard to create an outfit, matching colours (tights)	
She only goes to stores where they already know her and her condition, as it is a hassle to explain it, and what kind of help she needs	It is hard to get it through to people what her condition implies, and what can she do herself, what is hard and what is not really possible	
She only wears heels now when she is sure she won't have to walk alone	She prepares for all the possible situations that can arise during the day, and dresses accordingly	
"I'll just bluff if I don't recognise someone, it takes too long to explain" she said about the event later on	She wants to avoid awkward situations that can arise as the effect of her vision problems	

Observation	Interpretation	Notes
It is easier to recognise people who she got to know before her vision problems	It is getting harder for her to store visual memories	
She sometimes ask for a list of guests, it makes recognising people easier, as she knows who to expect	She likes to be in control and prepared	
When on the bus she had a hard time noticing that someone offered a seat to her, the other lady had to repeat her offer several times, as Margot didn't see the gestures and the background noise level was high	when she enters the bus, she doesn't pay that much attention to the surroundings as she doesn't expect to notice things	
She had to install more light sources in her home	It is becoming difficult to navigate even at home	
She feels like she is in grey mist, it becomes worse with low light		
She uses public transport as much as she can, but in the evening she is not able anymore		
She travels a lot less than she used to		
She changed her flat shoes to heels when we stopped briefly in her home between the two events, as she knew already that we will accompany her on the whole event	She seizes every opportunity to dress up	
She mentioned she was slightly anxious about the event before, but she feels more safe now that she knows we'll be there to guide her (for example finding her seat, getting there, on the train station etc)		
She wants to avoid Amsterdam Centraal, as it is just too crowded	She prefers controlled situations	
She doesn't favor turning doors, and she prefers the type where she is the one pushing and not the automatic " <i>I like to be in control</i> "		

On the event/reception

Observation	Interpretation	Notes
The microphone was relatively low for most people and they didn't adjust it between speakers	Looked unprofessional	
People brought jewelry, cashmere, maybe books for gifts	The guests want to show their status	

Observation	Interpretation	Notes
People seemed wealthy, mostly well in age and white		
The waiters and personnel were mostly coloured people		
Before the event the catering was more refined confectionary, tea and coffee, after the event there were typical Dutch party food (cheese and sausage, vegetable sticks, bitterballen, beer, wine, juice, nuts, chicken steamed balls)		
She is immediately helped upon our arrival, we weren't even needed to guide her to the seat	People at the event are helpful and they look out for each other	
She was asking for help when going down the stairs from someone she knew	She started to feel more comfortable	
At the reception she was first hesitant to mingle, she felt disoriented and overwhelmed by the crowd " <i>There are a few people I want to meet, but I don't see where they are</i> "	She was overwhelmed by the crowd and started to worry	
She decided to just walk around and then someone will recognise her " <i>I will just walk around and someone will recognise me</i> "		Shortly after this happened, a lady took her by the elbow to say hello
She was helped by this lady to find the people she was looking for  First they walked to the wrong man, as the lady didn't know him, and Margo didn't see if it was him or not		
She was enjoying herself, she wanted to stay longer than originally planned		
She used the heels of her shoes to feel the edge of the stairs when going down	She developed a set of tricks to navigate by other senses	

## II. Observation in Den Haag and Baarn.

### i. Results.

Observations Thijss.

Observation	Interpretation	Notes
Margot calls extensively with her gardener about her yearly 'plant plan' .	She cares a lot about the aesthetics of her house and her garden.	
During the drive, Margot mostly takes the time to make calls and answer emails.	This is time for business. She cannot afford to make extensive small talk during the drive.	
Margot says during a call "I'm calling you now so you don't have to read about it in the newspaper."	The talks on the phone during the drive are pretty serious in nature and large in scope.	
Margot: "The worst about these kinds of nights is to ask for help in mundane tasks."	She feels a bit embarrassed about asking for help in public situations.	
Margot: "I hate not knowing what the room will look like and what I will encounter."	When she can prepare, the night becomes easier.	
When we encounter some traffic, Margot keeps checking by how much we are delayed.	She is nervous about the talk and wants to make sure to be there ahead of time.	
Margot: "We are getting close now."	She says this out of nerves.	
During one call, Margot gets a little pushy: "Hurried is not good, quick is good."	She means business. She sounds disappointed in her colleague.	
Margot: "I still greatly enjoy travelling, but like to stay in one place now. Learning a new hotel room every night is exhausting."	Her visual impairment is limiting in some sense.	
Upon arrival, Margot is received by someone that guides her to the room downstairs carefully.	The event's organisation is expecting her and does know of her visual impairment.	
Margot tells the technicians that she is visually impaired.	She is not ashamed about telling them, and wants the talk to go well.	
The room is dimly lit, not enough light for Margot to read her talk.	The event's organisers are not fully aware of Margot's needs.	
The technicians help her come up with solutions.		
Margot seems tense.	The chaotic nature of the preparations has thrown her off.	

Observation	Interpretation	Notes
After deliberation, Margot agrees that a handheld microphone should do fine.	She is making concessions, seems annoyed at the organisation.	
When I return, the technicians are outfitting her with a headset.	She did in the end get what she wanted.	
A gentleman recognises Margot: "Are you Margot Scheltema?"	Margot is well-known in these circles.	
Two men standing next to me are talking about their day and name dropping a lot.	This is a networking event, and these men are flexing their muscles at each other.	Most people here seem to know each other by some degree - there is even a matchmaking app.
The first thing Margot does as part of her talk is announce her visual impairment.	She wants to add explanation for any unexpected things that might happen.	
During the talk, Margot bumps into a chair behind her.		
There is a certain palpable awkwardness in the room after this.	People don't associate this kind of clumsy behaviour with classy, elegant women like Margot.	
Margot gets handed a bottle of champagne after the talk, this goes pretty smoothly. She does look startled.	She often has trouble with people reaching out their hands or reaching her things, so she is weary for these kinds of situations.	
Margot has trouble sitting down on her chair after the talk and almost falls down.	She did not see the chair against the carpet and was 'winging it'.	
Some people in the audience gasp or talk amongst each other after this.	It is quite unexpected that someone almost falls down at such a professional and semi-formal event.	Almost looks like gossiping.
Margot talks to people at the drink after.	Everything seems really normal and people	
A lady is showing Margot tricks on LinkedIn on her small iPhone.	She is not aware Margot is unable to see these kinds of small things on a small screen.	
Margot acts excited about this.	She does not want to embarrass the lady.	
She stays a bit longer than anticipated.	She's having fun!	
Back in the car, Margot jokingly suggests I make shoes with sensors that help me find her chair.	The entire ordeal shook her up a little bit. She would rather avoid situations like this in the future.	
She goes back to work in the car.	There's always enough work for Margot.	
The atmosphere does seem a lot more loose, she jokes with Theo (the driver).	She did have a nicer afternoon than expected.	

Observation	Interpretation	Notes
Margot plays a game of WordFeud.		
Margot asks us to describe where a hot air balloon is, instead of pointing at it.	People tend to point things out to Margot. This obviously doesn't work and she tells us so in a deliberate but slightly annoyed tone.	
She would still like to do everything, but has no bucket list. "I sometimes do feel like my life is almost over."	Retinitis Pigmentosa is slowly limiting her world and she is pessimistic about that.	She does go to a lot events for work still. What would be the point of that if life is almost over?

# D. Observation of various activities at Visio Den Haag.

## I. Observation of the training of a cane walker.

### i. Results.

#### Observations Thijs

Observation	Interpretation	Notes
Michelle gives Jaap the direction to the door by pointing his cane.		
Jaap uses the cane to probe his surroundings very carefully.	He is a little unsure about where he is, or is practicing good technique.	
Jaap follows the guideline flawlessly.	Guidelines are useful.	
Jaap has some trouble with a pole and orientation - he steps to the wrong side of the pole.	With round objects, it is hard to gauge where you are using the cane.	
Jaap is here to learn a very specific route from his house to the bus station at Den Haag Mariahoeve.	Navigating takes a lot of practice and a lot of remembrance.	
The bumpy road is hard for Jaap to walk on. He sometimes trips.	Small differences in height can be very invasive when trying to walk straight.	
When arriving at the crossing, cars drive more slowly when they see Jaap.	They are careful, maybe they don't want to startle him.	
Another visually impaired person with a cane walks over the crossing towards us. The cyclists that are approaching are visibly confused.	Dealing with one VIP on the road is hard enough, let alone two.	
Jaap meets Seb, the visually impaired man approaching. They recognise each other, make jokes and are friendly.	The two men already know each other, maybe from Visio. They are friendly because they might be going through the same.	Everyone at Visio seemed very friendly.
When asked whether people are more careful with him now: "Not all of them. Some people don't. Central Station sucks."	He seemed kind of bitter about it.	
He uses his hearing carefully to navigate.		

Observation	Interpretation	Notes
The traffic lights turn red way too quickly for Jaap to be able to comfortably pass.	City planners don't take these people's needs into account as much.	This can make him and other VIPs feel more "in the way".
A man on a bike stops for us at great distance.		
When asked if it would help if he visited this place before he became visually impaired: "Yes, it would certainly help. But I didn't."	He seemed to find the question irrelevant and wanted to focus on the situation at hand.	
Jaap is sceptical of a way for him to be as visible to the outside world in a nicer way: "What, with lights, a horn or electrocution?"		
Jaap doesn't know whether he liked being more visible with the white cane: "It's a little bit of a double-edged sword, isn't it?"	He has a love-hate relationship with his daily tool.	Surely this can be improved.
Jaap tells us that learning this route to the bus really opens up options.	He is going through this hardship in order to still be able to live a rich life in possibilities.	
Jaap sighs after the first practice lap. "Now, now."	It is exhausting for Jaap.	

## Observations Veronika

Observation	Interpretation	Notes
Michelle first tells Jaap that they will look for the bench, and Jaap will look for the bench (still inside Visio building)	He first has to know what will happen	
Jaap has a prosthetic leg, so he has "double handicap"		
He lives in social housing	He has low/no income	
He started to learn to use the cane in 2015	It takes a long time to learn to use the cane efficiently	
He uses a telescopic cane with a rolling end. It is a light cane, but a bit hard to fix the joints		
Michelle tells Jaap what will they do in the lesson, which route will they take		
Michelle uses the cane that Jaap holds in his hand to show the direction of the exit	He can feel directions with the cane handle	
Jaap finds it hard to use a turning door		
Jaap strongly relies on the edges and the guideline to keep direction	His sense of directions is poor	
Jaap keeps checking if the guideline is turning		
Jaap manages to find the pole with the button at the crossing, but he needs help to find the direction he needs to take to cross after he pushed the button	It is hard for him to sense and keep directions. He lost the direction when he was pushing the button, and he got disoriented.	
Jaap meets another man walking with the cane. They know each other. The man cheers him on with the training.	Jaap seems happy about the support of his peer.	
Jaap has difficulty walking straight at the crossing. There is no guideline.	He needs a guideline to keep walking straight	
Michelle warns us not to block the sight of Jaap with the cane, so that the cyclists and the cars would see him		
The tram rails are an extra barrier, as the cane can get stuck		
The green light is too short for Jaap to cross	The crossing is designed without considering people with different abilities	

Observation	Interpretation	Notes
Jaap remarks that at the Centraal Station people are blocking the guideline, put their luggage there and stand on it	He is reluctant to go there	
He only walks alone if he knows the way already		
There is a tricky crossing near his apartment, it only has sound signal at one side but not the other	It is confusing that the two sides of the same crossing use a different system to inform people	
While walking, Michelle tells Jaap what is on the square, and which of these things make a noise		
Michelle notes that the fountain in the square is probably only working in the summer	Jaap needs to know the seasonal differences of sound sources to be able to navigate year round	
Jaap needs to practice the bus stop for getting on and getting off separately		
Michelle shows Jaap the longer and the shorter route to get to the bus stop	It is good to have the possibility to choose	
From time to time Michelle asks Jaap if he still knows where he is		
Michelle gives Jaap different cues in navigation: the sound sources, the shades of a building		

## II. *Observation of an ICT-related training.*

### i. *Results.*

#### *Observations Thijs*

Observation	Interpretation	Notes
During the last time, Irene learned how to use e-mail.	This is not her first class.	
The voice application using the iPad uses a lot of shortcuts.	Of course it is hard and expensive to design a more suitable interface, but there must be a better way.	There is a map of shortcuts on the wall, presumably for the teacher to remember them.

Observation	Interpretation	Notes
Teacher and Irene complain about updates changing shortcuts.	The designers of this particular application don't take this into account.	
Irene remarks that lists can take very long to go through.	She is bored or annoyed with the entire process.	
They use Siri a lot, but only for basic commands like opening applications.	Maybe Siri is too prone to mistakes to use it reliably.	A few mistakes with Siri do happen over the course of the class.
The iPhone and iPad are operated in a different way.	This makes it so VIPs need double the training.	
"The rotor function moves the focus to a different part of the screen."	A lot of technical terms that are not intuitive. They use visual memes for description.	
"It sometimes doesn't work, so most people do it the old way."	There is some level of distrust towards newer technologies.	It might just be that they don't work well enough.
Irene remarks that "(...) it is true that you have to remember a lot, but you can do it by ear if you know the basic commands."	She is optimistic about the capabilities of the system, or isn't able to imagine any other way that might be smoother.	
The voice commands use a lot of technical terms.	This is not intuitive to learn.	The terms are also very visually oriented.
There are a lot of sensitive gestures necessary to go through lists.	These are prone to failure and thus annoyance.	The VIPs have to rotate a dial they don't even see. This makes no sense.
The class is pretty chaotic, as the teacher, Irene and voice application are all talking.	While it is an informal class, it seems badly organised.	
The teacher explains a lot of concepts in skeuomorphic terms.	This might help the VIP make a mental image that is useful in use.	Does this differ between people that have gone blind and people born blind?
Irene is able to use the iPhone very effectively and rapidly through gestures.	She has learned to use it through a lot of practice and is competent in doing so.	
The keyboard consists of little keys that all feel the same.	It is not designed for visually impaired, but for sighted users.	
A lot of people use the keyboard because the gestures don't always work as intended.	It is the best of the two mediocre options.	
"Typing things is better than dictating them, especially for emotional content."	She doesn't want others to know her personal stories. Dictating is public.	
"Using this technology is mentally very tiring."	Listening to the voice and remembering the gestures is mentally taxing.	
"I have started to hate that lady (the voice)!"	She hears the voice all day, every day.	It is a jarring, robotic voice.
"I am a little bit of an illiterate when it comes to computers."	It is harder for VIPs to really get to know computers and learn how they work.	

Observation	Interpretation	Notes
"Using this technology with the voice application can cause audio overload."	Listening to the voice on her phone and the sounds around her is auditory overstimulation.	
"Remembering all the shortcuts will always be a problem. At least it is supposed to help against dementia!"	She doesn't see a better solution than the current one. She is humorous about this, however.	
Teacher to Irene: "You're there... listen a little longer the next time."	The teacher tells Irene to be patient, even though they both know it takes a long time to go through lists.	There are a lot of lists.
The keys on the keyboard are indistinguishable without proper training.	Not designed with visually impaired users in mind.	
The teacher and Irene make sarcastic jokes to each other about the application.	They both know it doesn't work optimally.	It's weird that the teacher participates in this, it's not fully encouraging.
Explaining the shortcuts is a long and arduous process.	They are hard to remember.	There are a lot of technical terms and explanations of which key was which again.
They mimic and make fun of the generated voice the application uses.	They both find the voice annoying and repetitive.	They have inside jokes about it.
Even the teacher doesn't know the answer when confusion arises whether they are in "rotor mode" or not. The teacher suggests rebooting the iPad.	The application still has bugs. Sometimes the best solution is to just shut off the device.	
"I'm also learning braille. Just a few classes to pick it up again."	Irene does continue to develop herself to try to live a full life.	
Irene became visually impaired slowly and took twenty years to admit it to herself. "Walking with a cane is admitting."	It was hard for her to come to terms with her disability.	
"Eventually you have to, and you get over the fact that people see you differently."	This kind of shuts down utopian thinking. Do they really accept there are no better options?	
"When using a cane, people don't dare to talk to you anymore."	Maybe the reason is that they don't know how to approach VIPs.	
One time, she walked outside with a cane and a child yelled she saw a blind woman. "That was very rude and confronting."	This is an aspect of being visible that might not be that beneficial.	
"The cane seems very confronting, pointing people to facts they don't want to accept."		She means that sighted people come to terms with their own abilities - and some lack of it.
"When walking with a dog, people offer you help a lot quicker."		I don't know why this is.
"They don't do that when you use a cane."		

Observation	Interpretation	Notes
"I walked into a restaurant with a cane a few times, and it instantly became quiet."	This is stigma at its most immediate.	

## Observations Veronika

Observation	Interpretation	Notes
the training is about using the iPad with voice over		
Eva remarks "you can be robbed if you walk with the cane. They don't want to use it because of that"	The cane can make you more vulnerable	
Lights are dimmed in the room, so that the client will feel more at ease		
The client (Irene) is already skilled in using voiceover on her iPhone		
It can be challenging to find time to practice for the lessons		
Software updates can be hard to handle. Especially if it changes the page/app layout or structure	They only learn the actual version of the apps, practice that layout	
Irene is practicing to use the mailing on the iPad		She already has experience with mailing on the iPhone. This is a bit different, as the layout is not the same
Irene is told about the layout of the mailing application, and which parts are left, right, etc	This requires a lot of mental effort, memorizing	
She is told where to zoom on the page, and where to click		
Some features don't work all the time, they need to prepare for it.		
sometimes the iPad and the iPhone both respond to the voice command, which can be confusing	Irene cannot be sure that the right device will respond to her command. This adds to her mental load.	
Irene is interested in how to open attachments		
the voiceover is giving information on the mail you select		

Observation	Interpretation	Notes
the voiceover keeps updating you in which mailbox you are	This is useful, especially for beginners. For Irene, this is sometimes not needed, and she only listens to the first second. This repeating few second of voiceover only adds to the her noise load	
navigation between folders in the drive can get time consuming		
learning the hotkeys makes the use quicker		
Irene uses her iPhone with black screen she is navigating in her emails quickly and confidently	She only needs the touchpad functionality of the touchscreen	
while using a keyboard she doesn't have to worry about accidentally zooming in or out, or turning the screen		
Irene uses both typing and dictation when messaging. Some words are easier to say, some are to type		
Typing gives her a sense of privacy, she cannot be overheard		
Irene always listens back to the text before sending	she wants to check if she typed/ dictated it the way she wanted	
when listening to the voiceover sometimes the pronunciation is off, it makes it harder to understand or unpleasant to use		
Irene talks about learning to touch type	She doesn't feel confident with her typing abilities	
She believes she uses the computer for similar things as seeing people		
Irene doesn't have many photos on her phone	Photos are not accessible to her	
She is yet to use audio memos, but she is interested		
she wears an earplug, plugged in to one ear when using a phone in public	she doesn't want to be overheard or stand out	
navigation with a phone is hard, she has a dog in one hand and the phone in the other		
It is annoying for her to listen to the phone all the time.	It is overloading her senses.	

Observation	Interpretation	Notes
the iPad keyboard is small, she has to pay extra attention to the gaps between keys		
accepting your limits is harder when you are visually impaired. you can always say to yourself: I can still do this. But if you are blind, it is easier to accept - Irene remarks		
it consumes a lot of energy to walk with the cane, it is much easier with the dog, Irene remarks		
the reactions of people are different if you enter with a cane or with a dog, Irene remarks		
Irene is a bit puzzled about dealing with photos	She is curious about them, but has no means to deal with them.	

After the ICT lesson, with Eva

Observation	Interpretation	Notes
Standard cursus is 10 lessons+intake, usually it is not enough		
about apps: not all of them are usable with voiceover, some lacks the appropriate design		When developing apps, some companies do not take VIPs into consideration. Sometimes not even big companies and banks. Visio can help with advising.
revalidation: to teach clients how to build up their lives again, how to work, how to be independent		
sometimes they have to quit their previous occupation, and they might receive some pension from the government		This can be slow and needs a lot of paperwork.
Visio helps clients to change careers if necessary		This is sometimes needed if the previous occupation is to reliant on vision.
Eva also gives advice to the clients and provides support, but from time to time she advises them to seek the help of a psychologist (also a service provided by Visio)	For some clients it is easier if they can talk to someone outside of the family. They feel they can confide in Eva, they are not afraid of the consequences.	
Group sessions can help with coping, by providing experiences, advice, tricks from people in struggling with similar problems. this can make you stronger - Eva says		

Observation	Interpretation	Notes
they also do sessions with family members and friends, to help them understand each other and what the condition implies more		
Eva sends voice recorded materials to the clients to help them practice. A lot of the times it is easier with a separate voice recorder, as using the voice memo app and navigation on the same device can be confusing. Other materials can be emails and booklets. It depends on the vision level and the client.		
The content of the classes depend on the client needs and also on their previous experience with technology and ability to learn new things.		
Eva gives also lessons to people with dementia. In this case first there are a couple of trial lessons to determine if the client is still capable of learning.		

### III. Observation of a talk with a social worker.

#### i. Results.

##### Observations Thijs

Observation	Interpretation	Notes
Menno has had a stroke and lost a part of his vision. This is called hemianopsia.		He has lost the left side of his vision.
He has used a viewing strategy training to get his driver's license back.	Menno is working hard to get his old life back.	
His newfound visual impairment costs him a lot of energy and the company doctor doesn't recognise this.	There is a lot of misunderstanding in his surroundings about the full extent of his disability.	
Neither does his brother.	Even within family.	
When he gets misunderstood, he goes "on the barricade".	Menno gets angry when people think he can do more.	He might have trouble dealing with expectations and emotions.
He scored too high on the capability test done at Visio, because he tried extra hard.	Sometimes, visual impairment is not visible.	
Aviva: "You tried too hard."	VIPs might want to prove to themselves that they are still capable of performing daily tasks normally.	
Menno: "Yeah, I was happy that the day was over."	Tasks are mentally draining for him.	
Aviva: "I think I did not exaggerate in my report."	She is serious about the situation and was written down what she feels is right.	Aviva wrote a report to the company doctor explaining the severity.
Ria: "Maybe when you called him very visually impaired."	Ria finds it hard to come to terms with her husband's visual impairment, and tries to play it down.	
Aviva: "When people see the words "visually impaired", they think it can be solved with glasses."	Most people only come to action or change their opinion when you emphasize the severity of the visual impairment.	
Menno has worked at a bakery for forty years, but soon has to leave due to his disability.	This is painful for him.	This is a manual job consisting of a lot of checking.
Aviva: "It will be exit bakery. Be prepared for the end of your working life."	Aviva is very realistic to Menno and doesn't want to get his hopes up.	

Observation	Interpretation	Notes
Aviva: "Maybe we can find you some suitable volunteering work." To which Ria agrees.	It is important for Menno to still contribute to society.	Ria seems to be very involved in the conversation, maybe more so than Menno on some points.
Menno is sitting back comfortably, resting his head on his hand.	He is present in the situation, but also kind of averse to it.	
Menno makes a lot of annoyed, militant points. He seems angry.	He has become bitter by the entire affair.	He always seems to be on the defensive. Can also be side effect over overstimulation caused by brain damage.
Aviva: "Maybe we have to give you a job below your level, which you might not want. See this as an exploration."	Aviva tries to encourage Menno not to wallow, but to try new, out-of-the-box things.	
Menno gets upset by noises and crowding.	This is a side effect from his stroke.	He previously complained about a lawn mower outside.
Menno is very humorous about it all: "The bus has arrived and here I am!"		Menno is referring to the bus with which disabled interns arrive at the bakery.
Menno is 64 years old, they are talking about early retirement.		
Menno: "I'm just going to try driving, small bits first. We will see."	He is optimistic about getting his drivers license back and the possibilities that offers.	
Menno and Ria seem very happy about getting Menno's drivers license back.		It opens up a lot of options, of course they are happy.
Aviva will make Menno a visual passport to combat ignorance amongst people around him.	Menno has trouble explaining his condition to people himself.	The visual passport consist of certain things he can and cannot do or see.
Menno: "You can't see anything about the impairment so that's the problem, really."	Menno tries to reason and see the ignorance from the other's point of view.	
Menno and Ria have a busy schedule visiting a lot of doctors and hospitals.	They are working hard ensuring Menno is healthy and comes out of it right. They are in it together.	
Last week, they talked about processing and coping.	This is important in the process.	I don't know if it is more important for Menno or a standard part of the process.
Menno said he is good at actively tackling his issues, avoiding them and giving himself comforting thoughts.	He still has some willpower in him and tries to go on as normally as possible.	
He is not very good at sharing concerns with friends.	He seems to be very down-to-earth about his condition, and finds it unnecessary to bother others with it.	
Menno: "That guy lives very far away and we don't see him that often."	Menno avoids talking about his new impairment with some people.	He doesn't want to bother others with his ailments.

Observation	Interpretation	Notes
Menno and Ria have joined group therapy - Oog Voor Elkaar.	They look to others for help and understanding.	
Ria: "It's nice to see that some aspects of this all are the same across people."	Sharing the pain with other spouses of visually impaired gives Ria solace.	
Aviva: "You will both have to learn to cope with changing patterns of behaviour."	She is realistic about what the couple will need to do, and the work it will take.	She seems very kind while saying this, and knowledgeable.
Ria is tired of explaining her husband's behaviour all of the time. "People keep asking me, why isn't he joining this time?"	She says this in an annoyed tone, like she can't understand why others don't get it.	
Menno: "These are dilemmas that people just don't get."	Menno agrees with her. This fact saddens him, too.	The dilemma is whether he is going to see his granddaughter's ballet.
Ria: "We still try to do everything, but then a little bit adjusted."	She is realistic about the situation, and optimistic.	They both seem very down-to-earth.
Menno: "While in fact, we can't."	Menno seems less optimistic.	

### Observations Veronika

Observation	Interpretation	Notes
Menno has his vision problems since 2018		
Menno was learning viewing strategy to compensate for his limited field of vision.		
People in his surroundings have hard time understanding the implications of his condition, in what way can it cause problems.  "You have bad vision? You just have to put on glasses."		
Menno finds it harder to perform at his workplace.		
It is probable that Menno will have to quit his working life.		
Menno will need to look for occupations he is still able to perform.  "If you can't do it, you can't do it"		
Aviva will help in making a visio passport to help communicating about his condition		

Observation	Interpretation	Notes
He managed to get his driver's licence, but he cannot drive in the dark or outside of the country. Also he cannot take jobs that require a licence, it is only for private use		
They talk about coping mechanisms. In Avivia's view Menno needs to rely more on the support of the community (friends, etc, but preferably people from his own generation)		
Menno has the dilemma of going to a dance performance of her granddaughter	He wants to go, but it is a tiring thing for him to have a whole evening in the city	

## E. GEM cards

**Visual impairment can cause disagreement in families.**

Observation at Visio Den Haag 02-04-2019



Ria: "We still try to do everything, but then a little bit adjusted."

Menno: "While in fact, we can't."

**Visual impairment often leads to tough dilemmas.**

Observation at Visio Den Haag 02-04-2019



Menno has the dilemma of going to a dance performance of his granddaughter, or keeping his energy up.

**Interacting normally is hard when visually impaired.**

Visio self-experience 01-03-2019



*"Walking towards the elevator, we met another of Femke's co-workers, with whom it was hard to get a normal interaction. I felt a little bit awkward and just waved in all directions, making jokes to alleviate my own distress." - Thijs*

### Visually impaired persons sometimes avoid contact.

Autoethnography in Delft 06-03-2019



*"When entering the cheese store, I felt a moment of hesitation. I even asked Veronika if she would go inside for me in advance and announce our arrival." - Thijs*

### VIPs can interpret things negatively.

Autoethnography in Delft 06-03-2019



*"I felt like she (the lady in the sandwich shop) was talking to me in a childish voice, like you do to toddlers." - Thijs.*

### VIPs are often alienated less than they think they are.

Autoethnography in Delft 06-03-2019



*"In the cheese store I felt that the interaction was normal, and I didn't notice people staring at us or acting unnatural." - Veronika*

### Bystanders can feel responsible for a VIP's safety.

Autoethnography in Delft 06-03-2019



A man rolling a trash bin from his house across the street apologized for being in our way, quickly crossed and then stood still.

**Some types of help are necessary, while others are too much.**

Autoethnography in Delft 06-03-2019



1. Employee no. 1 at Flying Tiger kept looking at Veronika.
2. Employee no. 2 was looking around nervously, and not at Veronika, when helping her pay for her items. She wanted to help in small ways like holding the PIN-machine.

**VIPs can look very vulnerable to the outside world.**

Autoethnography in Delft 06-03-2019



A car driver at a crossing near the central station stopped for us at a very large distance, signaling with headlights that we could cross.

**VIPs underestimate their own abilities.**

Autoethnography in Delft 06-03-2019



*"Before crossing the small bridge with the stairs, I was expecting that it will be kind of challenge to cross, but it turned out to be much more simple than all the other crossings." - Veronika*

**Help can be unnecessary and invading.**

Autoethnography in Delft 06-03-2019



*"I felt that Thijs was offering me more guidance than I needed. HE was for example taking my elbow at crossings, while I didn't feel it was necessary." - Veronika*

### **VIPs have trouble maintaining their appearance.**

Participant observation with Margot Scheltema 07-03-2019



Margot has a bit of mascara in her hair. We assume she has a hard time maintaining her appearance. When asked this, she confirmed that choosing the right clothes becomes harder and shopping is a lot less fun than it used to be.

### **VIPs sometimes do not feel ashamed asking for help.**

Participant observation with Margot Scheltema 07-03-2019



1. Margot says she is not embarrassed if she needs to ask for help in a museum.
2. Margot asks for help getting down stairs.

### **VIPs do very much still care about their appearance.**

Participant observation with Margot Scheltema 07-03-2019



At her home, Margot takes the time to change from flat shoes into heels.

### **VIPs have more to take into account when dressing.**

Participant observation with Margot Scheltema 07-03-2019



Margot says she only wears high heels when she's sure she doesn't have to walk alone.

### It can be difficult to talk about your visual impairment.

Participant observation with Margot Scheltema 07-03-2019



During the meeting at the Nederlands Fotomuseum, Margot has trouble giving exact answers to the personal questions she is being asked. She gives generalised answers, instead.

### VIPs can be ashamed of behaviour due to visual impairment.

Participant observation with Margot Scheltema 07-03-2019



Margot remarks that *“Sometimes, when fumbling for the elevator button, I’m happy that no one is around.”*

### VIPs can be ashamed of products due to visual impairment.

Participant observation with Margot Scheltema 07-03-2019



Margot says that the cane is a clear indicator of visual impairment and is very “handicapping” and stigmatizing.

### Bystanders can overreact to VIPs’ struggles.

Participant observation with Margot Scheltema 07-03-2019



Margot walks into a door at which point the people giving the tour at the Nederlands Fotomuseum get startled and ask if she needs help. She was completely fine.

### Non-visible impairments confuse bystanders.

Participant observation with Margot Scheltema 07-03-2019



A gentleman coming down the stairs at the Nederlands Fotomuseum did not know what to do when Margot - who was coming up the stairs - suddenly stopped walking up. He kept standing, waiting for Margot to pass with a confused look on his face.

### People attract unwanted attention because of impairment.

Participant observation with Margot Scheltema 07-03-2019



A girl in a wheelchair on the bus became annoyed when people offered her all kinds of help when trying to help or disembark the bus. She did, however, give me clear instructions when I tried to help her.

### VIPs still care a whole lot about aesthetics.

Participant observation with Margot Scheltema 07-03-2019



Margot's house is very orderly, classic and adorned. There are many paintings on the wall.

### Women in Margot's social circle care about aesthetics.

Participant observation with Margot Scheltema 07-03-2019



Women are also in formal clothing, but are more trendy. They show their individual style with their earrings and handbags.

### Staying in control takes a lot of planning from VIPS.

Participant observation with Margot Scheltema 07-03-2019



She prefers to walk with someone to walking alone, therefore she makes sure that she won't visit a museum for example alone.

### Indicating the amount of help needed to others is hard.

Participant observation with Margot Scheltema 07-03-2019



She only goes to stores where they already know her and her condition, as it is a hassle to explain it, and what kind of help she needs.

### Explaining your condition again and again is cumbersome.

Participant observation with Margot Scheltema 07-03-2019



"I'll just bluff if I don't recognise someone. It takes too long to explain everything to them."

### Creativity is needed to manage as a VIP.

Participant observation with Margot Scheltema 07-03-2019



1. Margot decided to just walk around. Someone will recognise her: "I will just walk around and someone will recognise me."
2. She used the heels of her shoes to feel the edge of the stairs when going down .

**VIPs can have the feeling of living in a different world.**

Participant observation with Margot Scheltema 07-03-2019



Margot remarks: "I feel like I am living in some kind of parallel world".

**People will feel they can touch VIPs more easily.**

Participant observation with Margot Scheltema 07-03-2019



At the reception, Margot is touched by others for attention.

**People will feel they can touch VIPs more easily.**

Participant observation with Margot Scheltema 07-03-2019



At the reception, Margot is touched by others for attention.

**There is a large variety of products and services for VIPs.**

Visiting the ZieZo fair 16-03



The exhibits ranged from special vacations for visually impaired to high-tech zooming devices that VIPs can use to read.

**There is little to no innovation when it comes to white canes.**

Visiting the ZieZo fair 16-03



*"We did not see any innovation on any other product front, and a strong absence of white canes. This can indicate that there are opportunities, or can indicate that there is no need for innovation when it comes to white canes." - Thijs*

**There are some efforts that allow VIPs to participate in society.**

Visiting the ZieZo fair 16-03



*"Another highlight was a voting booth, adapted for the visually impaired. I thought it was wonderful to see that there are efforts to give these people the means to participate in and put their mark on society." - Thijs*

**Being amongst other VIPs can be a safe space.**

Visiting the ZieZo fair 16-03



*"We saw that VIPs who attend were in a positive mood, greeting each other. I don't suppose they meet so many fellow sufferers very often, and at this fair they were the "normal people", the sighted were the ones out of place." - Veronika*

**Products and services concerning VIPs expression have impact.**

Visiting the ZieZo fair 16-03



*"(...) this includes style and colour advising, make up, but also self presentation and body language. I did find it inspiring that they leapt over offering purely functional help, and are giving tools of self expression to their clients." - Veronika*

## Impending social interaction can be scary.

Autoethnography in Leiden 19-03



*"I was scared about people asking me if I needed help and me accepting their help." - Thijss.*

## The amount you are being watched varies tremendously.

Autoethnography in Leiden 19-03



Most people are too absorbed in their own thoughts to notice us.

## The amount you are being watched varies tremendously.

Autoethnography in Leiden 19-03



Most people are too absorbed in their own thoughts to notice us.

## Some tasks seem daunting for VIPs.

Autoethnography in Leiden 19-03



Veronika seems scared to enter Lebkov and Sons. It is a little bit crowded and a large, open space without any landmarks. It is also quite dimly lit.

### People stare at VIPs more when they have nothing to do.

Autoethnography in Leiden 19-03



People are very aware of her presence. Maybe they notice it more because they are just waiting around and have nothing to do. I am also getting glances.

### Lack of consideration concerning guidelines can be frustrating.

Autoethnography in Leiden 19-03



1. A van is parked on the guideline in front of the station.
2. *"My annoyance reached a peak when a van was parked right across the guideline, as if to mock me."* - Thijs

### Using the cane while you still have vision can feel like cheating.

Autoethnography in Leiden 19-03



*"I was scared about people asking me if I needed help and me accepting their help. It feels treacherous and unfair to pretend to be blind."* - Thijs

### Feelings of incompetence arise in the simplest of situations.

Autoethnography in Leiden 19-03



She feels a bit awkward about touching every sandwich. She feels like she is not making an informed choice.

## Being a VIP changes your priorities in surprising ways.

Autoethnography in Leiden 19-03



*"When I payed for the sandwich I was very happy with my choice of banks, as my card is bright orange, so it was easy to find it in my card holder." - Veronika*

## People are sometimes ashamed to stare at VIPs.

Autoethnography in Den Haag 20-03



A man was looking at Veronika, noticed he caught my eye and then looked away all the way behind him. He proceeded to pretend like he was looking around at his surroundings with great interest.

## People sometimes touch VIPs when they talk to them.

Autoethnography in Den Haag 20-03



The ladies that stood on the guideline touched Veronika on the shoulder when talking to her. Veronika found this annoying as touch is very personal.

## Confidence affects how visible VIPs are.

Autoethnography in Den Haag 20-03



We looked at more than in Delft. Thijs is less confident because it is a very different city.

### There can be too much information in navigation.

Autoethnography in Den Haag 20-03



Veronika tries to give Thijs cues in the navigation by naming the buildings, but it doesn't help him. As Thijs is not really familiar with the city it only adds to the information overload already created by all the audio, so he is not happy about this.

### When VIPs need help, they will often ask for it.

Autoethnography in Den Haag 20-03



Thijs starts to act proactive in asking for help at crossings. Veronika didn't provide enough guidance or he is getting tired and needs more guidance than before.

### VIPs often are concerned about certain activities in advance.

Autoethnography in Den Haag 20-03



Thijs remarks he is concerned about the tram ride - he is unsure about what to expect.

### Anxiety in VIPs is not always shown to the outside world.

Autoethnography in Den Haag 20-03



People generally reacted less to Thijs on the tram than on the street. They don't try to move farther from us or let us pass. They just try to squeeze themselves inside, and they don't mind the cane and goggles.

## Disability to read body language makes communication harder.

Autoethnography in Den Haag 20-03



*"I was completely incompetent in reading the situation. I wasn't aware of the distances, if the lady was looking at me or not, if she is close or far away. [...] I was extremely self-conscious." - Veronika.*

## Confidence in VIPs makes navigating more enjoyable.

Autoethnography in Den Haag 20-03



*"[...] I wasn't that hesitant, I was just following the route to Hollands Spoor. It gave me confidence that I am aware of the surroundings so well. It didn't require that much effort to navigate, I started to enjoy the walking much more." - Veronika.*

## VIPs can feel preyed upon due to bystander behaviour.

Autoethnography in Den Haag 20-03



*"They suddenly walked slower and moved out of their way and I could feel their eyes burning in the back of my head. They stopped talking when we passed, which felt threatening." - Thijs.*

## Knowing the culture of their surroundings puts VIPs at ease.

Autoethnography in Den Haag 20-03



*"Walking in this neighbourhood was easy for me as I had already observed previously that the residents here did not pay us any particular mind." - Thijs.*

### Distress is not always visible in VIPs.

Autoethnography in Den Haag 20-03



*"I became quiet. On the outside I smiled and looked serene, but my heart was pounding in my chest and I wanted to get out as soon as I could. The tram twisted and turned and I felt like I was on a ghostly amusement park ride, but with nothing amusing to it." - Thijs.*

### A lot of the times, you don't control the situation.

Autoethnography in Den Haag 20-03



The ladies apologising to Veronika touched her on her shoulder while talking to her. Maybe they felt Veronika would be startled by their voices if they didn't touch.

### Overstimulation of the senses hinders navigation for VIPs.

Autoethnography in Den Haag 20-03



Thijs remarks there is a lot of noise and he feels that his senses are a bit overloaded. "I kind of understand what they meant at Visio with audio overload."

### Everyday phenomena can be puzzling to VIPs.

Autoethnography in Den Haag 20-03



When passing a group of people in front of a store Thijs asks what are they doing in the street at that time. They are actually waiting for their shift to begin, they work there.

**A big part of the perceived stigma is only in our head.**

Autoethnography in Den Haag 20-03



Passers by casually look at us and look away. They consider us a normal sight.

**It is hard to get sufficient information to make choices.**

Autoethnography in Den Haag 20-03



*"I wasn't just able to look around, look at the coffee places and decide if they look welcoming or sympathetic. I could only rely on Thijs's assessment of coffee places." - Veronika*

**VIPs still care about the aesthetics of their surroundings.**

Participant observation with Margot Scheltema 28-03



Margot calls extensively with her gardener about her yearly 'plant plan'.

**VIPs can be reluctant to ask for help in mundane tasks.**

Participant observation with Margot Scheltema 28-03



Margot: "The worst about these kinds of nights is to ask for help in mundane tasks."

### **VIPs are always limited in some way or the other.**

Participant observation with Margot Scheltema 28-03



Margot: "I still greatly enjoy travelling, but like to stay in one place now. Learning a new hotel room every night is exhausting."

### **Being forward about the impairment depends on the occasion.**

Participant observation with Margot Scheltema 28-03



1. Margot tells the technicians that she is visually impaired. She is not ashamed about telling them, and wants the talk to go well.
2. The first thing Margot does as part of her talk is announce her visual impairment. She wants to add explanation for any unexpected things that might happen.

### **Showing impairment can make bystanders uncomfortable.**

Participant observation with Margot Scheltema 28-03



There is a certain palpable awkwardness in the room after Margot bumps into a chair in the middle of her talk.

### **VIPs can sometimes run into unpredictable obstacles.**

Participant observation with Margot Scheltema 28-03



Margot has trouble sitting down on her chair after the talk and almost falls down. She did not see the chair against the carpet and was 'winging it'.

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### VIPs can feel hostility from bystanders' negligent behaviour.

Observation at Visio Den Haag 02-04-2019



When asked whether people are more careful with him now: "Not all of them. Some people don't. Central Station sucks." He seemed kind of bitter about it.

### The design of an environment can make VIPs feel "in the way".

Observation at Visio Den Haag 02-04-2019



The traffic lights turn red way too quickly for Jaap to be able to comfortably pass.

### Being more visible is necessary, but doesn't feel great.

Observation at Visio Den Haag 02-04-2019



Jaap doesn't know whether he liked being more visible with the white cane: "It's a little bit of a double-edged sword, isn't it?"

### VIPs are often challenged financially due to their impairment.

Observation at Visio Den Haag 02-04-2019



Jaap tells us that he has been forced to live in social housing.

**VIPs have to work hard to be able to live a full life.**

Observation at Visio Den Haag 02-04-2019



Jaap tells us that learning this route to the bus really opens up options. He is going through this hardship in order to still be able to live a rich life in possibilities.

**Learning to navigate takes years of effort.**

Observation at Visio Den Haag 02-04-2019



Jaap tells us that he started to learn to use the cane in 2015.

**Certain environments can make VIPs reluctant to go there.**

Observation at Visio Den Haag 02-04-2019



Jaap remarks that at the Centraal Station people are blocking the guideline, put their luggage there and stand on it. He is reluctant to go there.

**VIPs can be subject to the changing seasons more than others.**

Observation at Visio Den Haag 02-04-2019



Michelle notes that the fountain in the square is probably only working in the summer. Jaap needs to know the seasonal differences of sound sources to be able to navigate year-round.

### Having a choice in navigation is nice.

Observation at Visio Den Haag 02-04-2019



Michelle shows Jaap the longer and the shorter route to get to the bus stop.

### Using technology takes a lot of remembrance for VIPs.

Observation at Visio Den Haag 02-04-2019



1. The voice application for using the iPad uses a lot of shortcuts.
2. Irene remarks that "... it is true that you have to remember a lot, but you can do it by ear if you know the basic commands."
3. "Using this technology is mentally very tiring."

### Using technology is tedious for VIPs.

Observation at Visio Den Haag 02-04-2019



1. Irene remarks that lists can take very long to go through.
2. Teacher to Irene: "You're there... listen a little longer the next time."

### Technology developed for VIPs doesn't work ideally.

Observation at Visio Den Haag 02-04-2019



1. A few mistakes with Siri do happen over the course of the class.
2. There are a lot of sensitive gestures necessary to go through lists. These are prone to failure and thus annoyance.

## Generated voices can become very annoying with daily use.

Observation at Visio Den Haag 02-04-2019



1. "I have started to hate that lady (the voice)!"
2. They mimic and make fun of the generated voice the application uses.

## The voice application uses a lot of technical terms.

Observation at Visio Den Haag 02-04-2019



"The rotor function moves the focus to a different part of the screen."

## VIPs and their trainers are sceptical of new technologies.

Observation at Visio Den Haag 02-04-2019



"It sometimes doesn't work, so most people do it the old way."

## VIPs use tools that were initially designed for sighted users.

Observation at Visio Den Haag 02-04-2019



1. The keyboard consists of little keys that all feel the same.
2. The keys on the keyboard are indistinguishable without proper training.

### **Voice control is a public interaction.**

Observation at Visio Den Haag 02-04-2019



1. "Typing things is better than dictating them, especially for emotional content."
2. Typing gives her a sense of privacy, she cannot be overheard.

### **Voice control can lead to auditory overstimulation.**

Observation at Visio Den Haag 02-04-2019



It is annoying for her to listen to the phone all the time. It is overloading her senses.

### **Using a white cane can make you vulnerable.**

Observation at Visio Den Haag 02-04-2019



Eva remarks that "... you can be robbed if you walk with the cane. They don't want to use it because of that."

### **Software updates can be very inconvenient to VIPs.**

Observation at Visio Den Haag 02-04-2019



Software updates can be hard to handle. Especially if it changes the layout or structure of an application. They only learn the actual version of the apps, practice that layout.

### **VIPs can become very skilled in their own ways.**

Observation at Visio Den Haag 02-04-2019



Irene uses her iPhone with black screen she is navigating in her emails quickly and confidently. She only needs the touchpad functionality of the touchscreen.

### **Using voice control can cause VIPs to stand out.**

Observation at Visio Den Haag 02-04-2019



"I wear an earplug, plugged in to one ear when using a phone in public." She doesn't want to be overheard or stand out.

### **Acceptance runs the gamut between degrees of sight.**

Observation at Visio Den Haag 02-04-2019



"Accepting your limits is harder when you are visually impaired. you can always say to yourself: I can still do this. But if you are blind, it is easier to accept."

### **People know assistive technology doesn't work properly.**

Observation at Visio Den Haag 02-04-2019



The teacher and Irene make sarcastic jokes to each other about the application. They both know it doesn't work optimally.

### Using the voice control app can be finicky.

Observation at Visio Den Haag 02-04-2019



There are a lot of sensitive gestures necessary to go through lists.

### Using a cane has a definite social effect.

Observation at Visio Den Haag 02-04-2019



1. "When using a cane, people don't dare to talk to you anymore."
2. "I walked into a restaurant with a cane a few times, and it instantly became quiet."

### Social stigma is different between using a dog and a cane.

Observation at Visio Den Haag 02-04-2019



1. "The reactions of people are different if you enter with a cane or with a dog", Irene remarks.
2. "It consumes a lot of energy to walk with the cane, it is much easier with the dog."

### Some VIPs work hard to get their old life back.

Observation at Visio Den Haag 02-04-2019



Menno has used a viewing strategy training to get his driver's license back.

### **VIPs surroundings sometimes misunderstand the struggle.**

Observation at Visio Den Haag 02-04-2019



His newfound visual impairment costs him a lot of energy and the company doctor doesn't recognise this. Neither does his brother.

### **Misunderstanding can cause VIPs to get angry.**

Observation at Visio Den Haag 02-04-2019



When he gets misunderstood, Menno goes "on the barricade".

### **VIPs might want to prove to themselves that they can function.**

Observation at Visio Den Haag 02-04-2019



He scored too high on the capability test done at Visio, because he tried extra hard. Aviva: "You tried too hard." Menno: "Yeah, I was happy that the day was over."

### **Being spouse to a VIP is an emotional experience.**

Observation at Visio Den Haag 02-04-2019



Ria finds it hard to come to terms with her husband's visual impairment, and tries to play it down.

### **The words "visually impaired" might not have enough impact.**

Observation at Visio Den Haag 02-04-2019



Aviva: "When people see the words "visually impaired", they think it can be solved with glasses."

Most people only come to action or change their opinion when you emphasize the severity of the visual impairment.

### **When impaired, your environment might let you down.**

Observation at Visio Den Haag 02-04-2019



Menno has worked at a bakery for forty years, but soon has to leave due to his disability.

This is painful for him.

### **When arranging your new life, you have to be realistic.**

Observation at Visio Den Haag 02-04-2019



1. Aviva: "It will be exit bakery. Be prepared for the end of your working life."

2. Aviva: "Maybe we can find you some suitable volunteering work."  
To which Ria agrees.

### **A spouse can be a very significant support unit.**

Observation at Visio Den Haag 02-04-2019



Ria seems to be very involved in the conversation, maybe more so than Menno on some points.

## Visual impairment can make people very negative.

Observation at Visio Den Haag 02-04-2019



1. Menno has become bitter by the entire affair.
2. He always seems to be on the defensive.

## Visual impairment can be hard to explain.

Observation at Visio Den Haag 02-04-2019



Aviva will make Menno a visual passport to combat ignorance amongst people around him. The visual passport consist of certain things he can and cannot do or see.

## VIPs do reason from sighted people's points of view.

Observation at Visio Den Haag 02-04-2019



Menno: "You can't see anything about the impairment so that's the problem, really."

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## Misunderstandings can hurt caregivers, too.

Observation at Visio Den Haag 02-04-2019



Ria is tired of explaining her husband's behaviour all of the time.  
"People keep asking me, why isn't he joining this time?"

# F. Sessions

## I. Generative session (23-04-2019)

### i. Planning

Time	Activity	Roles	Aim	Materials
T-0:05	Welcome	Researcher: Greet people at the door. Ruth: Place snacks and coffee.		
T+0:00	Introduction	-Researcher explains the planning. -Researcher explains the activities of the day.	Everybody gets to know each other.	Planning sheet for researcher
T+0:20	Validate assumptions - Guided conversation	-Researcher guides the conversation  -Starting point: experiences with the cane (+, -)  -Directions: product realted stigma and misunderstandings about the impairment and what it implies	Get to the focus of the ideation session	List of topics and GEMs for the researcher
T+0:50	Break	-Researcher creates a short summary of the conversation, ending with the goal of the ideation session	Close the first phase, leave time for incubation	Coffee, snacks
T+1:00	Ideation - Guided fantasy	-Researcher uses field recordings to guide the resource group between different life situations. (4x10 minutes)  - Provocative techniques can be used to stimulate resource group when stuck	Create as diverse ideas as possible	Field recordings  Speakers ( or laptop)  Prepared questions for provocative questioning
T+1:45	Break	-Researcher completes the notes on the results of the ideation session	Close the converging phase, leave time for incubation	Coffee, snacks
T+2:00	Reverging - Idea gallery	-Researcher welcomes the participants  -Researcher reads out the ideas created during the ideation.  -Participants clarify the unclear points.  -Preferences of participants can be signalled by raising their hands.	Develop a common understanding of the ideas created during the ideation session. Specifying the unclear ideas.	List of ideas (collected during ideation and also during the break)
T+2:20	Wrap-up	-Researcher asks participants to reflect on the selected idea directions	-Clarify underlying motivations behind the preferences	

T+2:30	Goodbye	-Researcher thanks the participants for their work in the session, and gives presents	Show appreciation of efforts and gratitude to participants	Easter eggs
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## ii. Notes

### Recording 1 (31:42):

#### Quote

Ernie: "You have to remember it all: a pole here, letterbox there... I'm not at the letterbox so in twenty meters there will be a little pole on the left, so that's exhausting."

Robert F: "Walking or navigating when visually impaired takes way more cognitive energy and power of memory."

Robert F: "I was walking down the street a while ago and saw a man walking with a cane using sonar to determine where a pole was. I was in awe."

Ernie: "The social aspect when comparing dog and cane is important. With a dog, people talk to you more. So that's very important for a lot of visually impaired."

Ernie: "When someone walks with a cane, people won't talk to you that often, but a dog gives people a lead to make small talk with you. And that gives life a different colour."

Robert F: "You're not seen as being full. I have a button that says "visually impaired". One day someone walked up to me and said "I don't believe it. You don't look retarded." Literally."

Robert F: "When someone is handicapped, you're automatically being put in the category of *unusable material*. So apparently there's a lot wrong with you."

Robert F: "I don't often use my cane, because I see just enough to see the world around me react to my cane. And I don't have the need to be seen as dependent and pathetic."

Robert F: "I once completely passed the headmaster of my son's school (who I know very well) because the location and the person didn't fall in the same category."

Robbert C (when asked whether the pros outweigh the cons in using a cane): "I don't have a choice, I don't see anything."

Robbert C: "One of the cons is that people see there's something wrong with your eyes, so you feel that you're being treated different. I could always see, I became blind in 2016, and you do notice a definite difference coming from your environment."

Ernie: "You do lose a lot of friends."

Murat: "I also has to do with the fact that you withdraw."

Mustafa: "I don't really notice that yet. I still do have very good friends. They haven't been treating me different but they do take my visual impairment into account."

Mustafa: "I think that, when I do finally have to walk with a cane, people will drop out."

Robert C: "You don't fit in their image of you anymore."

Ernie: "It's also the fact that people don't know how to behave, themselves. So they might avoid you for that reason."

Mustafa: "It's also new for them."

Robert F: "My brother in law recently asked me to come to an Ajax game. I came along. I wasn't going to see anything but I did come along for the environment and the being together."

Robert F: "Another example is birthday parties. The first question is always 'how are you?'. The second question is 'how's work?'. I always answered jokingly but my answers pushed people away."

Robert F: "People react way better when you say you do volunteering work."

Robert F: "I have an uncle that doesn't like to see the negative things in life. He once asked me: 'How are your eyes? Good, right?'"

Robert F: "So you have to learn to judge the reactions of people around you."

Robert F: "In Disneyland Paris I had a Korean man come up to me in karate stance because I accidentally bumped into his wife. They didn't know the white cane, it was a cultural thing."

Robert F: "A few times a year I have people coming up to me that don't believe my button. For example when I was playing football in the schoolyard. It's all about public perception."

Ernie: "People always ask you what you can still see. And that's hard to explain."

Robert F: "If I give you the answer that I can still see 20%, would that be enough information for you?"

Ernie: "A common question I get as well, if whether it would be worse to be deaf or blind."

Mustafa: "Some questions are just not appropriate."

Ernie: "That is because people don't know how to act."

Mustafa: "But that's understandable, right?"

Robert F (when talking about the difference in social aspects between using a dog and a white cane): "The cane is empty. It doesn't have any qualities that attract people."

Ernie (when asked about whether he feels eyes on him when walking in public): "No, I'm over that. I don't feel it and I don't care." Robert F: "Do you still register that people look at you more?" Ernie: "No, I'm preoccupied with my own route and my own thing."

Robert F: "When I walk with my cane, I see a lot of people looking at me as a caneuser."

Robert F: "The white cane is no reason to start conversation with people, but more a repulsive force."

Ernie: "We talked about using cell phones before. Sometimes I'm using my phone in public and that also make people curious."

Robbert C: "You're blind right? But you still have an iPhone!"

Ernie: "You're quoting them as if it's a reproach, but oftentimes they're just curious." Robbert C: "Especially when they hear you can still use Facebook and Instagram."

Robbert C: "Especially when the voice speed is fast, people are amazed you can use it. And then there's already a loss of a social barrier."

Ernie: "If there's a genuine interest in for example a guide dog or an iPhone, that breaks barriers. But you don't accomplish that with a white cane."

Ernie: "It's a dead object that signifies your impairment. They should have made the bands black instead because it's a black-and-white object."

## **Recording 2 (15:30):**

### Quotes

Ernie: "Some people forget that a dog is also a buddy for a visually impaired person."

Ernie: "That entire process from seeing to visually impaired is difficult."

Robbert C: "I did manage to extend my driver's licence! The people at the desk were confused when I asked for it but I did still get it."

Mustafa: "That weird, you're not supposed to have it."

Ernie: "You know what it is with a driver's licence. If you can't see it, you won't drive, but you are keeper of a driver's licence." Robert C: "For my mind, I like having it."

Robbert C: "I once did a stand-up show about visual impairment, which was quite crude, and I got a lot of negative comments on that from sighted people."

Ernie: "I once had dinner in a themed restaurant, and a magician got mad at me for not responding to his tricks. You experience things that are quite weird."

## Recording 4 (47:19):

### Quotes

Murat: "A system that tells you why the alarm went off, a doorbell with facial recognition..."

Murat: "A smart thermostat that uses speech to tell you what the temperature is."

Murat: "Smart goggles that allow you to tell you what you are looking at when you have lost something."

Robert F: "Things you drop on the floor are unable to be found, so goggles or your phone that tells you if you have to reach in some ways in order to grab it for you."

Robert F: "Facial recognition for doorbells would be very nice."

Murat: "Cleaning appliances would be nice to automate."

Ernie: "I can imagine that you can control appliances using your thoughts."

Robert F: "A lot of automatisation and making accessible for people that cannot see anymore. To make daily life easier."

Murat (when the subject gets changed to *going out in a busy bar*): "Avoid." People agree.

Ernie: "That has no value when you are unable to see it. You have to make your own images."

Mustafa: "A taxi service that gets funded for visually impaired."

Ernie: "If you go to a cafe, you are the one having to adapt most of the time. Sometimes bad things happen like bumping into people, you can apologize in a nice, breezy way or annoyed way, and that makes all the difference. If you do that in a place you come often, they will often look out of you."

Ernie (when responding to the question of what a visually impaired-friendly cafe would look like): "I think it will be devoid of people. Nobody would want to sit there."

Ruth: "The smart glasses came up again. You enter, the glasses tell you where there's a free spot, it reads the menu for your and helps you pay. On top of that, it helps you read the receipt, show you the road to the bathroom and call a taxi."

Robbert C: "I would like something that measures the decibel levels, finds places where there is an ideal sound level where you can talk."

Robert F: "A lot of sounds hampers visually impaired persons in social interaction."

Murat: "Someone to guide you towards friends or a spot would be ideal."

Robert F: "Last time I met a friend in a bar I walked into a black hole and only had my phone to count on. A host that does that would be nice."

Robbert C (when asked if being looked at was a reason to go out less): "No... not at all." Mustafa: "I would not like that at all. But you learn how to cope with it." Ernie: "It's all about your own attitude."

Ernie: "If you lighten up the mood yourself, people will deal with your idiosyncrasies in a very different way."

Ernie: "It would also be very useful if you have some sort of device that gives you some sort of information about the bar you enter."

Robert F (when talking about a cane-walker that uses only navigation): "The most important thing is learning how to use technology and learning to trust it."

Ernie: "The issue is about mobility, how do I most easily and accurately reach my goal. What's the solution to that? Navigation has to be as accurate as possible, or a robot dog."

Mustafa: "I always look it up very closely when I have to go somewhere. Or I look for accompaniment."

Murat: "In the year 3000, you only have to think it. Goodbye mobility problem. It'll all come to your house."

Murat: "Our solution is the same. Smart glasses with free public transit added. Other people can bike short distances but we have to use public transit for everything."

Murat: "Choosing the right products in the store using these smart glasses."

Murat (when asked about using the cane): "As long as I can go without a cane, I won't. Reason one is that I see it as a step backwards in independence. That to me weighs more than the extra effort needed to get around."

Ernie: "Contact with people will always be a point. You will always have to ask people for help. If you have a cane, it makes it that much clearer to people around you." Murat: "I don't have a need for that. People already ask me questions as is. I don't need a cane."

Robert F: "The cane might lead to unwanted help, that's something I want to avoid at all costs. That is my stage. I only use it in very busy streets when I otherwise run risks, that's when it has benefit to me."

Robert F: "You choose visibility, and the degree of visibility would be nice to be able to control."

Robert F: "I know I can carry a larger cane and the solution is there, but my emotions say that I'm not up for that yet."

Robbert C: "I had to skip that phase, I went from 0% to 100% in a few months. I never had the choice whether or not to use a cane."

Ernie: "Progressive disease make you get used to saying goodbye to certain skills. It's a period of transit and some people do and don't have that."

Robbert C: "For my self-image, I would not like everyone to see I am blind. But I am, I am someone with a double impairment. This is the way it'll have to be. If I don't use the cane, I won't be able to go outside."

Mustafa: "You will always be seen as a visually impaired user." Robbert C: "Of course you don't flaunt it. But it's a fact."

Robbert C: "If I try to hide it, I'm only kidding myself and more busy with someone else's thought."

Robert F: "If you don't walk around using a white cane, the world will judge you as a sighted person. And that's what you'll have to deal with."

Murat: "I've never heard someone that's sorry about going to use a cane."

## *II. Idea validation session (14-08-2019)*

### *i. Planning.*

#### *Goals*

V: Answer the following questions:

What information is most important for VIPs at a crossing? How does it differ with known/new places? In what form is it best communicated?

T:

What data can be shared amongst visually impaired and their confidantes?

Which types of data can help promote shared understanding amongst the two? When is this data most relevant?

Which types of data needs to be absolutely private? When is this most relevant?

#### *Activities*

## Guided fantasy

1. It is Wednesday morning. You leave your home, and start off on a familiar route. You walk a few minutes and listen to the sound of the traffic.

You arrive at a street crossing not far from your home. This is a place that you know very well. Stop here for a bit, and pay attention to the moment you stand still. What do you listen to? What do you do? What comes to your mind? What do you need to know to continue your route? [discussion point]

What information would you like to share or receive from your companion? What is the difference in companions in terms of information sharing? What do you want to keep private? Why these types of information? [discussion point]

2. You continue your walk. You are entering an unfamiliar neighbourhood. What changes? Who are you accompanied by?

You arrive to a crossing. This place is new to you. Stop here for a bit, and pay attention to the moment. You are standing still. What do you listen to? What do you do? What comes to your mind? What do you need to know to continue your route? How can your companion help you in this? How is it different from before? [discussion point]

What information would you like to share or receive from your companion? What is the difference in companions in terms of information sharing? What do you want to keep private? Why these types of information? [discussion point]

3. Let's say you explore this new neighbourhood by yourself. How is this different from exploring it with a companion?

You arrive to a crossing. This place is new to you. Stop here for a bit, and pay attention to the moment. You are standing still. What do you listen to? What do you do? What comes to your mind? What do you need to know to continue your route? How is it different from before? [discussion point]

What information would you like to share or receive from your companion? What is the difference in companions in terms of information sharing? What do you want to keep private? Why these types of information? [discussion point]

## Timetable:

T:0:00 - T:0:15 Introduction, explaining intent and programme of the session. Go over a "glossary".

T:0:15 - T:0:55 Guided fantasy.

T:0:55 - T:1:10 Small break.

T:1:10 - T:1:40 Plenary reflection.

T:1:40 - T:2:00 Wrap-up and extra time.

Time	Activity	Roles	Aim
13:40 T-0:20	Arrive at Visio. Prepare session space.  Walk in.		Be at the right place at the right time.
13:50 T-0:10	Greet participants.		Get inside the room.
14:00 T+0:00	Introduction.		Clear.
14:05 T+0:05	Explanation of intent. Go over a few terms.		Get a shared understanding of the terminology and the goals of the session.

		Depends on whether the session is going to be in English or Dutch.
14:15	T+0:15	<p>Go through the three individual guided fantasies.</p> <ol style="list-style-type: none"> <li>1. Known situation both without and with technology.</li> <li>2. Known situation (accompanied) both without and with technology.</li> <li>3. Known situation (individual) both without and with technology.</li> </ol>
15:00	T+1:00	<p>Encourage participants to think aloud.</p> <p>Encourage participants to think freely and outside of current boundaries.</p> <p>Gather insights into the necessary types of data, when to share these and when to keep certain types of data private.</p>
15:15	T+1:15	<p>Get some snackies and coffee.</p> <p>Relax.</p> <p>Incubate.</p> <p>Gain deeper insights in points that were discussed during the guided fantasy.</p> <p>Talk about points that were not discussed in guided fantasy but are still relevant to the researchers.</p>
15:45	T+1:45	<p>Closure.</p> <p>Check on participants' priorities.</p> <p>Leave for home, do not get stuck at Visio.</p>
16:00	T+2:00	End.

## ii. Notes

## Participants

Thijs

• researcher, TU student

Veronika

• researcher, TU student, session lead

Margot

- project initiator, visually impaired, future cane user
- Concerned about the unattractiveness of the cane

Aviva

• social worker at Visio

Ernie

- Volunteer at Visio
- Interested in mobility
- Guide dog user
- Was a trainer
- He uses a cane also, but only a signal cane

Robert

- Visually impaired, became blind in a year (2015-2016)
- Still learning
- Comedian
- Making jokes about visual impairment, some people are offended
- Motivated in volunteering in the development of new products/concepts
- Theater in de steeg, Bleyenberg/Comedy city

Notes from introduction

- Guide dog is “governing” daily life
- Guide dog permits faster walking than cane, but you have to like dogs
- Dog needs enough work, or else it will lose interest in the work, you have to train it all the time
- You teach the routes to the dog, “there is no navigation on the dog”, you learn the routes with a trainer or someone else

Introduction of the session/project

- Information sharing is a concept that is hard to get through

Scenario 1: familiar route, alone

The first thing that you think about/check/listen to

- Traffic
- Danger
- Point where I'm standing
- Poles, light poles
- Side curbs

What do you need to continue

- Which direction I'm standing [R]
- Listen to the traffic, check if it's safe [E]
- Traffic, facing the right direction, traffic lights are green (I never used to do this, but now I want to make sure, so that I would know it won't be my fault if anything happens) [M]

What info would you want to receive

- [A] there is a difference between people who are blind and other VIPs
- “if you still see, no matter how little, you'll always try to look first, so there is a big difference”
- Also if the traffic light gives sound signals
- [R] those stop to work at 11 PM, because of the noise in the neighbourhood
- [E] obstacles that are nearby, or close (amsterdametjes), poles, containers, belongings of other people
- [E] there are not everywhere lines (guidelines)

If you could ask anything from someone, what would you ask

- [E] avoiding obstacles, there is a change in the situation
- Mostly things that are different than normal

- Roadwork
- [M] direction/orientation
- If there is a route you want to follow, whether you're on it

On information sharing

Things you want to share

- [M] I'm 10 minutes late, there is something on the road and I need to find my way around it
- [R] obstacles
- [E] I find it hard to think about things I want to share
- Only if you're in a strange situation / new situation
- Unknown environment

Things you want to keep private

- [E] joking: if I'm with another girlfriend
- Who you're with
- [A] if you don't want other people to know where you are / some criminal activities / you need to have the choice to put it out
- [M] you need to have the possibility to switch it off, but I don't mind people knowing where I am
- [M] if I would see less than what I see now, I would never walk around with a lot of cash (to the suggestion if she would hide her location if she wants to withdraw money from the bank), because you are so vulnerable anyway
- [R] I don't carry a lot of cash, just to be safe
- [E] it can always help when you're in danger, but I don't see much value in a normal situation
- [A] if I want to know about emotions, you do it with other methods, with communication, with talk, not with a technical means
- [E] to keep it more human

Situation 2: new place, with someone

Who are you with

- Good friend
- Family
- Partner
- Children dog

At crossing – how is this different than when being alone

- [R] I just lay my life in their hands
- [E] Rely on them completely
- [M] it changes completely my stress levels
- I hate to go to new buildings alone
- If I go with someone, I'm totally relaxed
- If I'm alone, I might ask someone: I don't see well and I need to do this and that

Info received from walking partner

- The curbs, they might be different

- The height might be different
- Slopes
- Two lane street or one lane street

Do you ask? Or just take their hand?

- [E] it depends on the situation. If you are on holiday, you might want to know the environment around you, how it looks like. Not only the navigation, it is also what the place is like.
- [M] the description of the environment
- A description of what lies ahead, what to expect
- [R] if there are bikes, bikes are crazy these day
- [M] but they respond to the cane
- [R] I hope so
- [A] I have a friend, and for her it is important to tell things I see, if I see birds, trees.. make it a bit visual for her
- [E] for the people who used to see, it is good to know these things
- [E] but things are changing, the world is changing. Places what I used to see, when I used to ride my motorbike, it has changed

Do you have a preference about the person describing things?

- [M] for me it is important. If the person is a keen observer, and goes beyond 'there is a tree, there is a car'
- [E] I imagine it is a technical voice, like a Siri voice
- [A] not only listen to what things are, but also feel, smell...
- [M] two situations: for pleasure and for navigation
- It would be great if someone described the streets like the google streetview
- [R] I'm living now in a neighbourhood that I don't know, and it would be great to know how it looks like. But if I just want to go to the stores, then I don't give a damn, I just want to go to the stores
- [R] Walk mode – city mode

On audio notes by peers, what to look out for, how they experience a certain crossing

- [E] It is always important in the first place, but you have to find your own ways
- [R] what is working for me it might not work for Ernie. He can tell me that there is a flower shop around the corner, you can smell it, that is a good sign, but...
- But you also have to be careful with too much information
- [E] I use the cane in situations I feel a little bit insecure, and it makes other people to recognise more

Audio notes for yourself/describe crossings/places for yourself

- [R] not about how was it, but more: remember after the second traffic light there is a tram, or after the first traffic light there is a flower shop around the corner on your right, that might be useful

Information sharing

Situation 3: new place, alone

- [E] maybe a little backup if you're going in the right direction, but it's not so much about sharing

- [A] what do you prefer, walking alone or someone?
- [E] A combination
- [R] You also have to rely on yourself
- [M] If I'm walking with someone, I tend to totally rely on that person and stop thinking myself, which sometimes means that I'm more helpless than when I'm on my own.
- [R] I'm always kind of paying attention, like there is a bus, I can hear it
- [A] and it is also for the guide very difficult, what to tell, what not to tell
- [M] usually they say too much
- [E] if you have a partner who is experienced in this, she can enjoy it as well
- [E] there are people who are very good in guiding, and some people are less so
- [E] the information about walking in a safe way is most important, and if that is going well, it would be nice if there is some more information about the environment where you are. But on the first place is the information on walking in a safe way.

On what information exactly.

- [E] My brother was going to a cooking school with a friend, and there was a light pole. My brother walked into the pole, and the guy just continued talking, he didn't even notice. That's what I mean by safety.
- [E] If you have the feeling of safety, then other information can follow. If you don't have that, then it is more of an obstacle.
- [A] If you have the feeling of trust.
- [E] The iPhone is always the same. The guide dog is always doing the same things. But people, they are doing all different things. Your guide can get distracted.
- [E] if your guide is experienced with you, it makes all the difference.
- [M] Some people are very good with this. They know they shouldn't point. But if they say 2 o'clock or describing the direction. That is helpful. Or talking you to the toilet. Or ask: shall I take you there?
- [M] I think all VIPs have very strong bladders. Because we all avoid going to the toilet when you are out and about.
- [R] In the train it's miserable. I'm always taking someone with me, because I need to know where the toilet stands, and where can I find the faucet or where can I find the paper. It might be a little bit embarrassing.
- [M] I very often cannot find the paper after washing my hands. And I very often walk around with wet hands.
- [R] what natural guideline to follow

On how to make people better guides

- [R] Empathising exercises. Dark glasses, and just make them walk to the supermarket. And it helps the communication. Some are worse, because they'll have the urge to tell everything now, but it helps.

Wrap up

- Differences between impairments makes differences between people bigger
- [E] But the safe navigation is a problem for all visually impaired
- [A] Affinity for technology depends hugely on the age and upbringing and other factors, there is a big variety among VIPs in this aspect
- [A] People who do not want to navigate, don't have navigation problems
- [A] Older people often are less active, so they face less the problem of navigating, especially in new environments
- [M] When it is dark, and I go home I usually just ask whoever it is who drops me off if it is safe to cross. Sometimes I just close my eyes and pray

- Gathering info: 1. Navigate safely 2. Experience the place
- [M] To enjoy yourself, you have to stand still. To take it in, you need to stand still.
- [R] For me, it depends on who I'm walking with. Alone, only navigational information.
- On guideline [R] then you have to pay attention to follow the guideline

### III. Concept validation session (03-10-2019)

#### iii. Planning.

##### Session Goals

Evaluating the envisioned interaction, gathering insights on the concept. Evaluating the possible feedback types.

Points of focus:

Does the envisioned concept lift some of the cognitive load generated by the navigation with the cane?

What are the characteristics of an ideal feedback? Is the audio feedback sufficient in a commute situation? Does a vibration interfere with the navigation?

##### Activities

Technology demonstration with using a scenario. Open discussion about the concept, based on the scenario and the demonstration.

Scenario – a short route with a clear goal

1. *Plan route with the app. Discussion: how do the participant use the current navigation apps. What is missing, what is working well. Insights about the favourite places feature.*
2. *Start the navigation. Discussion.*
3. *Start the walk. Discussion.*
4. *Reach a dot. Demonstrate: different feedback possibilities to indicate nodes. [audio, vibration]. Possibility: different feedback if the direction is good and if it is not. [focus on: does it add to the cognitive load, or takes away from it]. Discussion.*
5. *Decide on the action: do I need the information or not. Discussion.*
6. *Button press: give the information. Discussion.*

Questions to ask at discussion points:

How would it be different if you did not have a clear goal, and were just walking for pleasure? How would it be different if you were in a place you don't know? A different city? A different country?

Time	Activity	Roles	Aim	Notes
14:40 T-0:20	Arrive at Visio. Prepare session space. Walk in.			Bring snacks.
14:50 T-0:10	Greet participants.			
15:00 T+0:00	Introduction.			
15:05 T+0:05	Explanation of intent. Go over a few terms.		Get a shared understanding of the terminology and the goals of the session.	
15:15 T+0:15	Go over user scenario. Use prototypes to demonstrate the technology and the envisioned interaction. After each step: discussion of the emotions and thoughts arising.	Encourage participants to think aloud. Encourage participants to think freely and outside of current boundaries.	Gather insights into the emotions arising at each step. Gather insights of the usability.	
16:00 T+1:00	Break.	Get some snacks and coffee.	Relax. Incubate.	
16:15 T+1:15	Plenary reflexion.		Gain deeper insights in points that were discussed during the first part.	
16:45 T+1:45	Wrap up.		Closure. Check on participants' priorities.	
17:00 T+2:00	End.		Leave for home, do not get stuck at Visio.	

## iv. Session notes

### Use navigation apps:

I can't use it alone, because I always have to hand it over to someone with eyes. Because it says head north. So what is north? So I am not using a navigation system.

Different types of cane handle feedback

On the audio only: „it is really soft.” „With the clicking system it would be more difficult as there is already a lot of noise around you.”

*What is the intensity that is ideal, considering that there is noise around you, and also there is vibration from the cane use already?*

*If the vibration is harder, will it interfere with the cane use and navigation?*

No, because I am taking to note that there is traffic and noise and, especially in the city, the buses, the trams, so it is better that it is longer and harder.

*Imagine that while you navigate, different feedback signals if you are on the right track than when you reach a node that is not on the planned route.*

To distinguish between different messages: an interval or the rhythm can be different.

It can be helpful if it is strong enough to catch my attention when I am in traffic."

If it is soft, than it will pass me by.

Ruth: But it can be annoying if it vibrates every time so hard, no?

R: No, because when you walk with the cane, you are constantly scanning the route, looking for obstacles. If than the cane vibrates softly, you won't even notice.

*When you reach a node, you have the option to decide to listen to the information or not. Where would you listen to the information?*

At certain points, I might want to know if it is two lanes or there is a tram.

Or how may meter it is to cross the street. But I just want to hear the useful information.

But the useful information is different between each person. I know people who are still use their remaining vision. Some of them are colour orientated, like after the orange billboard of the store, go to the right. But some of my friends have tunnel vision, but they still see 100% inside the remaining vision field, to them you can say "after Starbucks, go left". It really depends on what kind of rest vision you have.

You can make categories based on if they are colour oriented, clear rest vision or no rest vision. This can filter out the distractions.

There are also people with vision that is deteriorating, until there is none left. The device has to also respond to the change of the condition. Because now you maybe can say to them "after the Starbucks", but in a few years maybe there is no Starbucks anymore. Of course you can still smell it.

At crossroads, turns, corners. At changing points. Where I have to change my direction.

If I follow a guideline, I don't need that much information, just "Right", "Left", that's it. All the other information is just disturbing.

Just before you make a turn or cross the street. Because that is the point where you are already extra focused.

Amsterdam Central Station is the worst. So many noise and smell. And the trams the trains, the ferry.

Now it is also difficult in the Hague Central station. They are building the bus platform. Now if you follow the guideline, you'll end up in a construction pit. They even placed a concrete-mixer on the guideline.

At the Central Station you don't need too much information. You only have to know, that the first marker on the left, it's the NS ticket shop, first market is the Information booth. More information is not necessarily needed. Any more information than that is all distraction.

If you have too much information, you'll be listening to the information and you might get too distracted. Because there is also traffic ad trams and bikes and scooters...

*Before a store, you might want to know what kind of store it is. Or you might want to know which platform you are at.*

Yes. Or what track it is. And also what lies ahead. So which direction you need to go. For example, if you walk straight, you'll reach platform 1, if you turn right, you will reach platform 3 and 4. Or if you follow the guideline, where would you end up.

I think every blind person knows when they go to the Central Station, where is their starting point. It can be different among people, but they all know, when I go to the station I start from here. That can be a nice point to activate the cane.

*About recording personal messages.*

*If you can record the training session navigation cues, and you can practice alone later, it can be useful.*

*Experience with auditory navigation, like Google navigation.*

It is another kind of navigation. Than you don't have the guidelines. Than you have to navigate differently, By streets or corners or side curbs.

*Imagine that you're walking with no clear goal. What are the differences?*

Than you might want to know what the surrounding looks like. It would be nice to hear, if not necessarily needed. Because it won't change the fact if I am not safe.

I know that for example in Rotterdam Central station, where I am not going regularly, there it would be nice to have a programmed route on how to get through the station.

For example I am in Utrecht and I know that I will need to go to Hoog Catharijne. I know that I will arrive at platform 4, and then I can just calculate the route from there. But then I don't want to hear the touristic information, like "on the left there is Starbucks, and you get good coffee there"

If my goal is different, my destination is different, then I want to hear different information. If I want to get coffee, I will want to hear about it. But if I want to go to Hoog Catharijne, than it is distraction.

*Imagine that you know you want to eat something, but you don't know where you want to go, and you want to explore what the possibilities are.*

I think I wouldn't want to do that while walking. I would stop, because I have the information from the cane and my surrounding.

*Explorative situations, not clear goal*

City centre. Shopping. When I for example I need new shoes.

I would prefer to do that somewhere where there is no distraction around you. Preferably at home.

I wouldn't decide these things on the go. I am depending on my cane, and it is too demanding.

*About places that are not familiar.*

I know that there are several guidelines that are too close to the canals in Amsterdam. If I am alone, I would prefer to avoid these kind of unfamiliar and risky places. But if I am with someone, than I don't care, than I 'll just put my hands in their hands.

## G. Ideas sorted by the PIMS model

1. Camouflage or disguise stigma-sensitive product features
  - 1.1. Autonomous suitcase to guide the VIPs
  - 1.2. Using everyday objects (handbag, phone, jewellery, watch, glove, pendant, hat, glasses, gloves, umbrella) as interface between the guiding system and the user
  - 1.3. Handheld sensor to replace the cane functionality
  - 1.4. Augmented reality with haptic feedback in clothes
  - 1.5. Haptic guide-shoes
  - 1.6. Body modification: sonar hands
  - 1.7. Airflow guideline
  - 1.8. Visual cues placed in the environment, cameras and wearable haptic actuators guide VIPs
2. Diversion of attention divert the bystander's attention away from stigma-sensitive product features
3. Strengthen the product's individual identity in such a way that users wish to associate themselves with that product, and value it as an extension of or addition to their personality.
  - 3.1. Personalised cane: tailored for each user
  - 3.2. Cane personalising CAD system, to partly automate the personalisation
4. Strengthen the product's institutional identity Reinforce the link between products, their institutional context and roles people play in those institutions.
5. Strengthen the product's group identity in such a way that it enforces feelings of belonging to a social group or subculture.
  - 5.1. Pulsating cane handle to feel the pulse of the VIP community: enhance the feeling of belonging
  - 5.2. VIP 'scout vest' with badges representing VIP achievements
  - 5.3. The city is a secret VIP message board: Placing virtual messages that can only be picked up with a cane
6. Strengthen the product's brand identity Avoid negative brand associations and reinforce positive brand associations.
7. Eliminate physically or mentally confronting moments in product use Adapt the product's functionality or its usage rituals accordingly.
8. Integrate additional benefits and experiences Incorporate experiential benefits that pleasantly surprise the user beyond the strictly practical and functional product aspects.
  - 8.1. Musical canes: creating music with the guideline
9. Manage the frequency and intensity of product use Adapt the product so users can limit the frequency or intensity of product use and reduce social tension and exposure. – folding, use when needed only
  - 9.1. Easily folding cane
10. Focus on the ultimate product goal. By exclusively addressing this ultimate goal, the product could become obsolete in all other situations.
11. Reshape product meaning through advances in technology Applying new technology can make a product smaller, more performing, cheaper to buy and own, etc.

- 11.1. NFC capable cane
- 11.2. Connected canes: use the cane to connect and communicate with peers
- 11.3. Camera and face recognition helping VIPs to recognise acquaintances
- 11.4. Camera based navigation system in the cane
- 11.5. Buddy robot – the robot guide dog
- 11.6. VIP ally community: a community of helpers aiding the VIPs when in need, distress signal can be sent with a cane, and the nearest helper will receive a notification on their phone.
- 11.7. Bluetooth beacon guided cane
- 11.8. Magnetic guidelines

12. Reshape product meaning through advances in material technology Applying new technology can make a product lighter, more ecological, etc.

- 12.1. Cane with 3D printed textures
- 12.2. Carbon fibre cane

13. Reflects on meaningful interaction with other products. Strive for a semantic cooperation between complementary products / mimic the typology of a product that is accepted.

- 13.1. Light saber cane
- 13.2. Sword cane
- 13.3. Umbrella cane
- 13.4. Broom cane
- 13.5. Wand cane
- 13.6. Magician's staff cane
- 13.7. Conductor's baton cane
- 13.8. Glow stick – the party cane
- 13.9. Whip cane
- 13.10. Pistol cane
- 13.11. Shovel cane
- 13.12. Vacuum cleaner cane
- 13.13. Walking stick cane
- 13.14. Ski stick cane
- 13.15. Golf club cane
- 13.16. Pool cue cane

14. Endow the product user with extra abilities Instead of adding disabilities, try to increase the user's abilities above those of 'abled' users. Extra ability can also be suggested.

- 14.1. Self-defence cane
- 14.2. Information stored on NFC chips, read by the cane

15. Boost the user's social skills. Make the user rise above the reactions of others by making him or her visually or verbally more assertive.

- 15.1. The VIP "scout vest"

- 15.2. Police siren and light cane
- 15.3. Give spotlight to the VIPs: when a VIP walks on a guideline, they are lit by a bright spotlight
- 15.4. Winking cane: the cane winks back to staring people
- 15.5. Responsive badge: camera to scan faces, AI to identify facial expression, haptic actuator to notify VIP, badge to show the reaction emoji
- 15.6. Eye cane
- 15.7. Going out buddy: a buddy to walk you to the club, theatre or museum, and also helps to get you home safely

- 16. Campaigns or interventions that educate or change public views. Also consider interventions in public space to promote interaction or appropriate behaviour
  - 16.1. VIP badges
  - 16.2. VIP passport to help communication about the impairment
  - 16.3. Online advertisement: a layover on webpages simulating the effects of different visual impairments
  - 16.4. Advertising campaign on interactive ad boards
  - 16.5. Cane texts bystanders on their phone: sends them information on the impairment of the cane user
  - 16.6. Provocative cane designs
  - 16.7. The carnival of canes: marching with canes that are disguised as other objects or decorated
  - 16.8. Living library of visual impairments: people can “rent” a living book (a VIP), and talk to people with different impairments
  - 16.9. Impairment simulation in VR glasses
  - 16.10. Eye cane: a cane with a tip that looks like an eyeball
  - 16.11. Smiling bag: handbag reacts to the smiles of bystanders VIPs sometimes miss

- 17. Increase positive social visibility / product endorsement. Increase the social ‘visibility’ of the product / product endorsement by influential political, sports or media figures



# H. Code

## IV. Add Dot to database

```
#!/usr/bin/env python

import time
import RPi.GPIO as GPIO
from mfrc522 import SimpleMFRC522
import mysql.connector

db = mysql.connector.connect(
    host="localhost",
    user="nodeadmin",
    passwd="ketketket",
    database="nodesystem"
)

cursor = db.cursor()
reader = SimpleMFRC522()

try:
    while True:
        print('Tap node to\nregister')
        id, text = reader.read()
        cursor.execute("SELECT id FROM nodes
WHERE node_uid='"+str(id)+"')
        cursor.fetchone()

        if cursor.rowcount >= 1:
            print("Overwrite\nexisting node?")
            overwrite = input("Overwrite (Y/N)?
")
            if overwrite[0] == 'Y' or over-
write[0] == 'y':
                print("Overwriting node.")
                time.sleep(1)
                sql_insert = "UPDATE nodes SET
name = %s WHERE node_uid=%s"
                else:
                    continue;
            else:
                sql_insert = "INSERT INTO nodes
(name, node_uid) VALUES (%s, %s)"
                print('Enter new name')
                new_name = input("Name: ")
                cursor.execute(sql_insert, (new_name,
id))
                db.commit()

                print("Node " + new_name + "\nSaved")
                time.sleep(2)
finally:
    GPIO.cleanup()
```

## V. Search for Dots

```
# -*- coding: utf-8 -*-
"""
Created on Tue Sep 10 10:47:14 2019

@author: bebo
"""

#!/usr/bin/env python

#Libraries
import time
import RPi.GPIO as GPIO
from mfrc522 import SimpleMFRC522
import mysql.connector
import gpiodzero

#Disable warnings (optional)
GPIO.setwarnings(False)
#Select GPIO mode
GPIO.setmode(GPIO.BOARD)

#Set buzzer - pin 10 as output
buzzer=10
GPIO.setup(buzzer,GPIO.OUT)

#Set pin 5 to be an input pin and set
#initial value to be pulled low (off)
GPIO.setup(5, GPIO.IN, pull_up_down=GPIO.PUD_DOWN)

#connect to database
db = mysql.connector.connect(
    host="localhost",
    user="nodeadmin",
    passwd="ketketket",
    database="nodesystem"
)

#define database cursor and reader objects
cursor = db.cursor()
reader = SimpleMFRC522()

def button_callback(channel):
    #GPIO.remove_event_detect(5)
    print("Button was pushed!")
    print("You are at " + result[1])
    #GPIO.remove_event_detect(5)
    time.sleep(2)

def alert_user():
    #GPIO.remove_event_detect(5)
    GPIO.output(buzzer,GPIO.HIGH)
    print ("Beep")
    time.sleep(0.5) # Delay in seconds
    GPIO.output(buzzer,GPIO.LOW)
    print ("No Beep")
    time.sleep(0.5)
    GPIO.output(buzzer,GPIO.HIGH)
    print ("Beep")
    time.sleep(0.5) # Delay in seconds
    GPIO.output(buzzer,GPIO.LOW)
    print ("No Beep")
    time.sleep(0.5)
    GPIO.output(buzzer,GPIO.HIGH)
    print ("Beep")
    time.sleep(0.5) # Delay in seconds
```

```

GPIO.output(buzzer,GPIO.LOW)                               time.sleep(2)

print ("No Beep")                                         finally:
time.sleep(0.5)                                         GPIO.cleanup()

try:

    GPIO.add_event_detect(5,GPIO.RISING,-
callback=button_callback) # Setup event
on pin 10 rising edge

while True:
    print('Look for nodes')
    id, text = reader.read()

    cursor.execute("Select id, name FROM
nodes WHERE node_uid='"+str(id)')

    result = cursor.fetchone() #fetch
node data from db

    #print(result)

    if cursor.rowcount >= 1:

        alert_user() #call user alert
function

        print("Press button to get infor-
mation.")

        #cursor.execute("INSERT INTO
route (user_id) VALUES (%s)", (re-
sult[0],) )

        #db.commit()

        #event for button press

        #GPIO.add_event_detect(5,GPIO.
RISING,callback=button_callback) # Setup
event on pin 10 rising edge

        #GPIO.remove_event_detect(5)

    else:

        print("Node does not exist.")

        #GPIO.remove_event_detect(5)

```

