



The future of mobility in Rotterdam

A design roadmap for the introduction of Mobility
as a Service as a Public Transport Operator

Mieke Rikken

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Delft University of Technology
Faculty of Industrial Design Engineering
MSc Strategic Product Design

Graduation committee

Chair: Prof. dr. Dirk Snelders
Mentor: Dr. ir. Suzanne Hiemstra-van Mastrigt

Company

RET N.V.
Mentor: José van der Plaat

Author

Mieke (M.L.W.) Rikken
Student number 4216857

GLOSSARY

PT: Public Transport

PTO: Public Transport Operator

BTM: Bus, Tram, Metro

MaaS: Mobility as a Service

ABM: Access Based Mobility, used as a descriptor for non public transport services

OBM: Ownership Based Mobility

MRDH: Metropoolregio Rotterdam Den Haag

MIT: Motorized Individual Transport

AV: Autonomous Vehicle

DRT: Demand Responsive Transit

ADRT: Automated Demand Responsive Transit

ABT: Account Based Travelling

MUPs: Millennial Urban Professionals

LIUFs: Low Income Urban Families

API: Application Programming Interface

GHGE: GreenHouse Gas Emissions

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With this thesis I am completing my time at university – what a strange feeling. In my head it is only a short while ago that I first set foot inside the faculty. However when looking back on all the things I've learned seven years seem like an appropriate time.

During the last six months I spent my time working together with RET. The company and the people working there made this project a great experience. Especially José, thanks for always answering my questions so fast and being helpful and supportive! Furthermore, thanks to the MVS team and my fellow interns for a lot of Rotterdamse humor, Feyenoord talk and Tuesday lunches.

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EXECUTIVE SUMMARY

Mobility as a Service is a concept that integrates public transport and other access based mobility services into one easy to use platform. For users this means that they no longer have to do large investments while still having access to transport. They can perform door-to-door journeys in a way that suits their needs at a specific time. Transport providers can use this integrated system to create a network that serves the required area and its travellers in a more efficient way. Society can benefit from MaaS as it is centred around transport modes that have a lower negative impact on the urban environment, and use less space.

RET is currently looking to introduce a Mobility as a Service-system in the Netherlands, in cooperation with other large public transport operators NS, GVB and HTM. These four partners are working together to create the technical requirements for such a platform, and to develop partnerships with other stakeholders like access based mobility providers and societal partners. They however were unsure of who to develop for and what these users want from a MaaS-system. Thus, this thesis focuses on that question.

Target groups for MaaS in the Randstad

Through literature and expert interviews the target groups were defined. There are two main characteristics people with a high MaaS-readiness have: they are technologically apt, and they do not love using a car. This leads to the target group of 'Millennial Urban Professionals' (MUPs): their lives revolve around the Randstad's cities, and belong to a generation that is favourable of access based consumption instead over ownership based consumption. However, they often are provided with a

mobility solution by their employers, thus Urban Employers are important to target for reaching this group. Furthermore, tourists define the third target group. Tourism in the Netherlands (especially in Amsterdam) is growing very fast, and providing them with MaaS can help them reach their points of interests and spread the tourism pressure over the Randstad.

What do they want?

To get a better understanding of the target groups a Contextmapping study was done with MUPs. MaaS-journeys should be fast, flexible, reliable, and seamlessly usable. This requires having a high speed, high capacity backbone of trains, metros and lightrail services, supplemented with flexible access based mobility services like shared e-bikes, steps and scooters, and other public transport modes. These journeys should be doable in an easy way: the platform and infrastructure supports a seamless travel experience.

Design roadmap for MaaS in the Randstad

There is still a long way to go before a fast, flexible, reliable, seamless MaaS-experience can be realised. Therefore a long-term approach must be adopted by using a design roadmap. This provides the opportunity to work towards the full potential of a MaaS-system by keeping the future in focus.

Users should firstly become interested in MaaS and access based mobility through the integration of public transport and other access based mobility services. This creates a more fast and flexible journey. Then, MaaS should work towards providing for routine journeys, and finally towards covering daily urban mobility needs.

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INTRODUCTION

Mobility is a prerequisite for modern life. Our jobs, hobbies, family visits and daily chores like grocery shopping call for moving around the area, country, or even the world. Often this is done in private vehicles like cars. Bikes also support large amounts of the Dutch transport needs.

However, the impact of our current transport habits have a great impact on the environment by producing large amounts of greenhouse gases and noise. The space all these vehicles are taking up is enormous, even though most vehicles are idle most of the time. Especially urban inhabitants experience these negative side effects.

In most Dutch cities the public transport network is well developed. In particular in the Randstad (the conurbation in the West of the Netherlands which encloses Rotterdam, Den Haag, Amsterdam and Utrecht) trains, trams, buses, metros and other modes create a robust network of reliable transport. There is just one big problem with public transport: it does not pick you up where you leave, and does not deliver you exactly where you need to be. The so called first and last miles are not very well covered. Moreover, travellers are bound to the schedules that transport providers offer.

There are some newer transport services that offer for instance bike sharing, e-hailing taxis, or car sharing. But at this moment it is almost impossible to have a good overview of all the available options in your vicinity without having to download, register with, and check many different apps. And when using some of these services in combination with public transport or each other, it is very difficult to get a good overview of the total costs beforehand.

Mobility as a Service (abbreviated to MaaS) is a concept that bundles many different types

of transport services, from public transport to bike sharing to car rentals. Travellers can plan, book and undertake multimodal door-to-door journeys, all from a single digital environment. Internet of Things-connected vehicles and individual internet connectivity on mobile devices enable the functioning of a system like this. (Hietanen, 2014)

Such a platform tackles most of the issues travellers currently have with the public transport system. It has the potential to replace most of the trips that are currently done with private vehicles. When developed well, it could even replace the need for private vehicle ownership altogether.

RET, public transport operator in the Rotterdam area, is looking into opportunities to take an active role in the development of MaaS. Important for this development is the cooperation with other public transport operators such as GVB, HTM and NS, as well as with local mobility providers. RET is convinced that cooperation between operators is a key factor in a successful operating MaaS-ecosystem.

Thus, RET is researching the possible launch of a MaaS platform, in collaboration with other mobility providers. While they are working hard at creating partnerships with mobility providers and the technical aspect of the ecosystem, insight in the users of a MaaS system lags behind. With this graduation project I intend to help them get an understanding of the potential users of the MaaS platform: what is important to them in such a service, and how can we get them interested in using it? Furthermore, this thesis looks at the strategic development of a MaaS system over time: how should the ecosystem be developed in order to provide mobility for Rotterdam's inhabitants in the future?

To answer these questions, a four-phase approach based on the Double Diamond process is used (Design Council, 2005). In the first phase, Discover, the context of the challenge is analysed. This involves looking at the company RET and other stakeholders. Furthermore current mobility habits of Dutch people, Mobility as a Service, and competitors of a MaaS system are evaluated, as well as trends in society and mobility. Lastly the potential users of a MaaS platform are researched. A Contextmapping study is done to better understand one of the target groups.

After expanding the view in the Discover phase, the design challenge is formulated in the Define phase: "How can a MaaS-platform be developed to provide reliability, flexibility and speed for travellers while providing RET with the opportunity to balance Rotterdam's access based transport demand and supply, and reducing the negative impacts of personal transport on society?". This design challenge serves as a guideline for the phases to come, and frames what problems are tackled. Next to that, the direction for the remainder of the project is discussed.

With this design challenge the next explorative phase, Develop, is entered. With the base for the roadmap in mind the future context is analysed and envisioned. Furthermore a vision is created for the MaaS platform of the future.

In the last phase, Deliver, the final roadmap for the Mobility as a Service platform is presented and explained. This roadmap integrates the developments of the target groups, the system and the necessary resources over time.

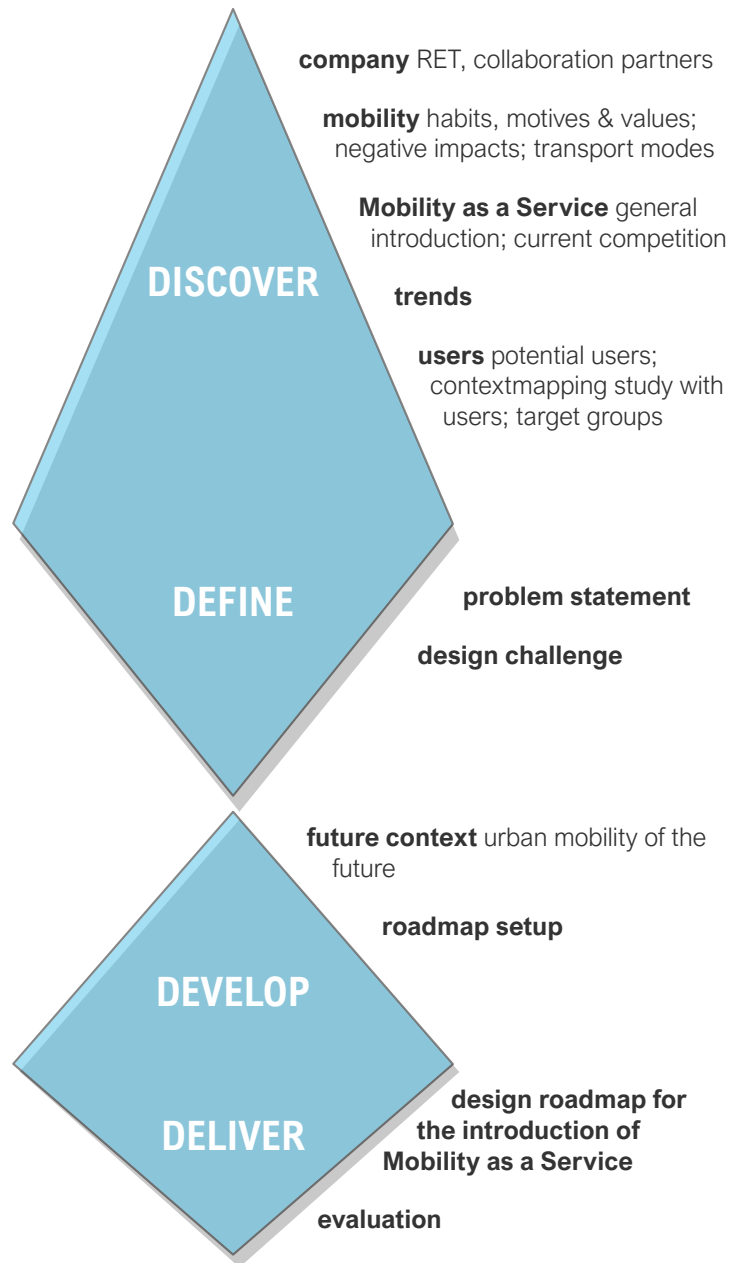


Figure 1. Visualisation of the process over time



CONTEXT

1. RET N.V.

1.1 RET: Rotterdamse Elektrische Tram

Founded in 1878, the transport company started with horse-drawn trams in Rotterdam. In the 140 years they have existed, they have added metro lines, buses, and a fast ferry line to their portfolio. At this moment, 58 bus lines, 9 tram lines, 5 bus lines and one fast ferry line are exploited. About 3500 employees work at RET at this moment.

In 1927 the company was taken over by the municipality of Rotterdam, but from 2007 on the company has been independent again. The current client is the Metropoolregio Rotterdam Den Haag (MRDH), a collaboration between 23 municipalities in the Rotterdam-The Hague area. (RET NV, n.d.-b)

1.1.1. Vision & mission

“RET strives to create perfectly organised and executed public transport with the highest quality for the traveller, now and in the future”

is the company's vision (RET NV, 2018). To make public transport an attractive option, RET has the goal of realising travelling within one hour from every origin to every destination within the Randstad. This should be done in cooperation with partners, with RET as the “mobility organiser” of the Metropole area Rotterdam Den Haag (MRDH). By being the mobility organiser, they want to direct public transport in the area and use their position as a semi-public organisation to ensure transport is developed

This entails comfortable and carefree traveling, a good price, and service with a smile. Their slogan to communicate this to the traveller is 'Aardig Onderweg', or 'On the right track' in English. The customer is central to the operation of the company, and they invest in great infrastructure, state of the art material, more and better services, and helpful and knowledgeable employees. (RET NV, n.d.-a)

Figure 2. RET's tram on the Erasmusbrug



1.2 Strategy & goals

RET is currently pursuing the following strategic directions:

1. Customer satisfaction: increase to an 8 in 2021
2. Employee satisfaction to an 8, work capacity up to 80%, reducing absence to 6% in 2021
3. Sustainability: CO2 emissions per traveller km is 75% lower in 2021 compared to 2017
4. Safety: proactive

To execute these strategies several initiatives are created, for example:

- Traveller centred working
- Insight in traveller behaviour
- Directors of mobility
- Innovative organisation
- Sustainable organisation

1.2.1. Improving the traveller experience

RET has been one of the most user centred PTOs in the Netherlands. They are generally fast to take opportunities and try many different small things to improve the traveller's journey. They were the first city transporter to implement the OV chip card: in 2005 travellers could check in for multiple RET modes with the OV chip card. In December of 2018 the RET started facilitating barcode ticketing. (NRC, 2015; OV in Nederland, 2018)

Internally the Kano model (Sauerwein, Bailom, Matzler, & Hinterhuber, 1996) is used to assess their service level. This model describes three types of requirements a product or service can have, and their influence on user satisfaction. Firstly there are the 'must-be requirements': if these are

not fulfilled, the user will be very unsatisfied. They take these for granted and are often not expressed, as they are 'obvious', so their fulfilment will not increase satisfaction. Secondly, there are the 'one-dimensional requirements'. User satisfaction is directly related to the level of fulfilment. These requirements are usually explicitly demanded by the user. Lastly, there are 'attractive requirements'. These have the greatest impact on user satisfaction, but they are not explicitly expressed or expected by the user. Fulfilling these requirements better leads to an exponentially higher satisfaction. There is no feeling of dissatisfaction when these requirements are met. (Sauerwein et al., 1996)

The must-be and one-dimensional requirements like punctuality, frequency, cleanliness, safety etc. have been optimised fairly well in recent years, and the traveller values this. As a result, the customer satisfaction level has increased from around 7.2 to 7.7 in the last 8 years. However, they find that the customer satisfaction level will stabilize around 7.5 when only the functional attributes are optimized. To further improve the experience, attractive requirements need to be added.

One example of trying to improve the excitement attributes is the implementation of sound and light in metro stations. During peak times, many travellers experience their travel as a 'must'. The atmosphere changes to calm and clear by playing relaxing music and adapting the lights to bright, cool colours. Non-peak travellers enjoy more stimulating music with warm, dimmed lights. It enhances positive emotions and the sense of safety (NRC, 2015).



Figure 3. RET's logo

1.3 Operational area

The RET covers all of Rotterdam with their public transport services. Metros, trams and buses cover the municipal area and some of the adjacent cities. Metros, the RandstadRail and Fast ferry cover the area up to Zoetermeer and Den Haag Centraal to the north, Hoek

van Holland to the West, and Europoort/ Maasvlakte and De Akkers to the South.

As can be seen in figure 5, there are several areas in the city that are not that well served by train and metro. Especially the south of the city relies heavily on buses and some trams for public transport.

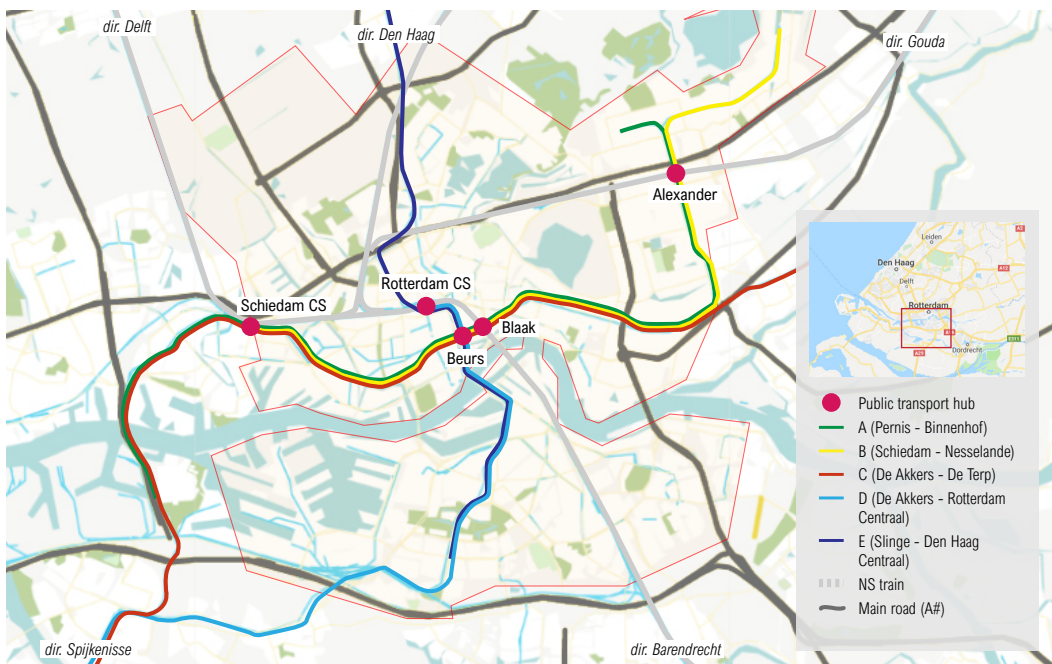


Figure 4. Main public transport lines and hubs in the city of Rotterdam

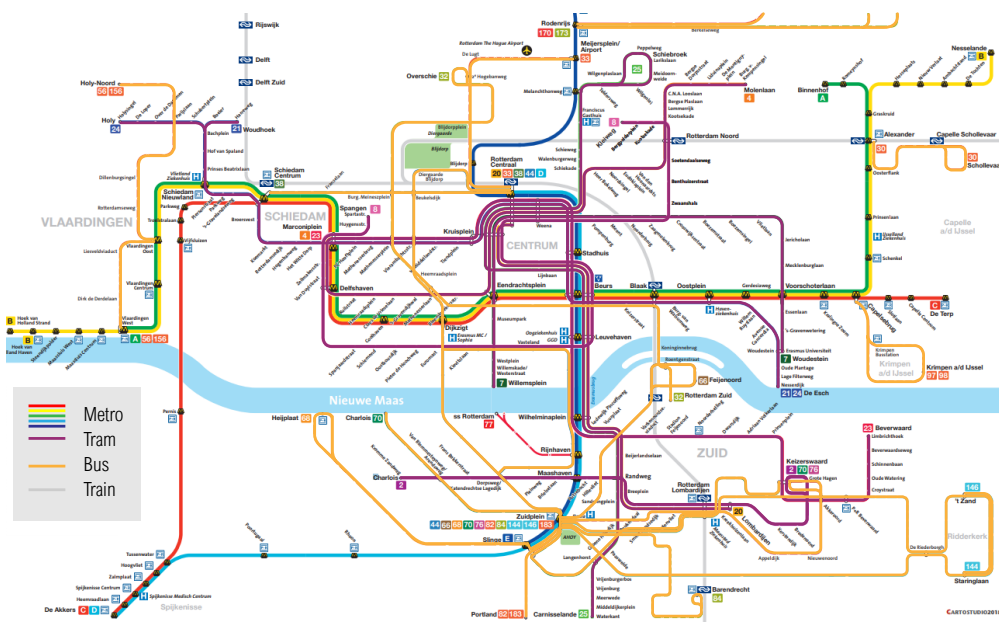


Figure 5. Coverage of the city by train, metro, tram and bus

1.4 Network capacity

1.4.1. Overcrowdedness

In the last years, RET has seen a large growth. When looking at the passenger kilometres, a measure that shows the amount of travelled kms per individual, a large increase can be

seen. If this growth continues, the company expects several parts of the current system to overflow. Metro lines in just about the whole urban area and the RandstadRail that connects to Den Haag are expected to be overcrowded within a few years.

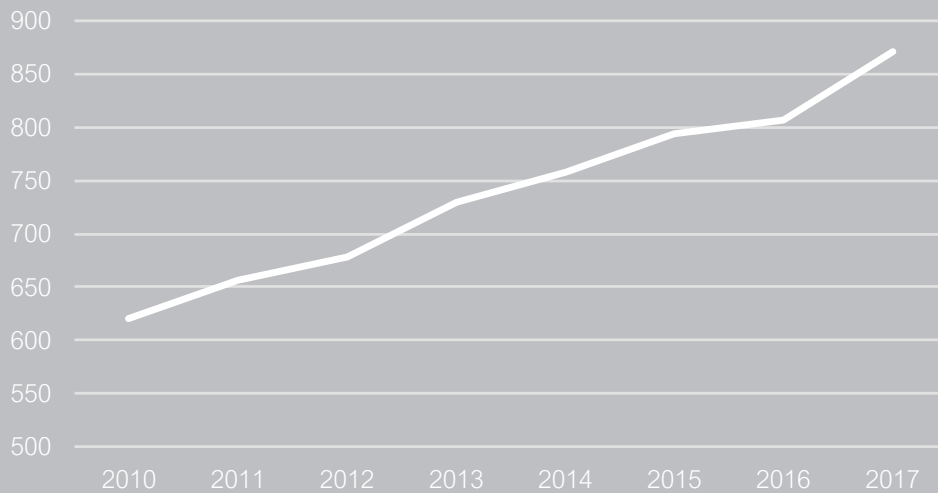


Figure 6. RET's traveller kilometre growth



Figure 7. The expected crowdedness of RET metros (RET, n.d.)

1.4.2. Unprofitable areas

Overcrowdedness is not the only problem. Some lines to more distal areas are experiencing the opposite: a lack of travellers make the existing lines unprofitable to run. To still keep the area accessible, a new approach is being tried at this moment: in December 2018 RET started a new on-demand bus service called STOPenGO. After 20:00 it is now only possible to travel by bus after requesting it on the STOPenGO app or the RET website in the area Lansingerland (north of Rotterdam). This bus departs every half hour from a central point, and will only visit the stops that have been requested. Using this on-demand bus helps the transport to be more efficient, while still maintaining the required service level.

For STOPenGO, a large 8-person van is used instead of a regular bus. The passenger can request a ride up to 15 minutes before departure, and is picked up at a bus stop at the pre-arranged time. The van then takes the fastest routes between the requested stops, thus it is not following a set route. Passengers still pay for travelling with their OV chip card: each trip costs about €2.

1.4.3. Capacity challenge

It is clear that the company is experiencing

capacity issues. On one hand, the denser urban areas are seeing packed vehicles during peak hours, on the other hand the offering is being changed in peripheral areas to keep the service profitable. An extra challenge arises from the company not being able to measure the exact numbers of passengers at a given moment, making it hard to optimize the offering by balancing demand and supply of transport. RET is working on getting more insight into real time passenger numbers, but it can still take while before the data can be used accurately to provide a better service.

1.5 Products

The transport provider offers several different ways of travelling with public transport in Rotterdam, which are described below. Tickets can be bought at vending machines at metro stops, with drivers in buses or trams, at several service points and shops like Primera.

The most used way of travelling at this moment is by the OV chip card - just check in and out, and the credit will be taken from your account. The base tariff for travelling this way is €0.96, with an additional €0.147 per km. Travellers under 11 or above 65 travel for the reduced fare of €0.63 base tariff and €0.097 per km. This is the same for bus, tram and metro.



Figure 8. Barcode ticketing for RET transport

Other tickets that RET offers are:

- Day tickets (€8)
- 2-hour tickets (€4)
- Weekend night bus (€5)
- FastFerry (€4 single, €6.50 return)

Lastly, there is the Tourist Day Ticket, which gives the traveller access to most bus, tram and metro services in Zuid-Holland, including the Waterbus. This ticket costs €13.50.

More information on the subscriptions that RET offers can be found in appendix A.

1.5.1. Barcode ticketing

Starting in December 2018, several of these tickets can be bought in barcode form. The RET 2-hour ticket, BOB bus ticket and Fast Ferry single trip are available through the RET Barcode smartphone application.

1.5.2. Ticket resellers

Next to the official RET ticket sellers, bus and tram tickets can be bought on Tranzer. This platform supplies so called 'sight tickets' that can be used in buses and trams. Metro tickets might be available in the future, as digital barcode tickets were introduced in December 2018.

1.5.3. MobiliteitsManager (B2B)

In order to cater to employers that needs a broader range of transport solutions for their employees, RET offers a product called the Mobiliteitsmanager ("Mobility manager"). The company and RET select a set of services that are available to a specific employee. This can include shared cars and bikes, taxis, parking, trains, BTM, fuelling and more.

For employers, this service helps to reduce costs they have in providing their employees with transport. Furthermore it can lower the company's environmental impact by stimulating public transport and active transport modes use, and boost employees' health in the same way.

1.5.4. OVmiles

This is the transport provider's loyalty programme. With OVmiles travellers accumulate points while travelling with RET. These points can then be exchanged for discounts for local activities, such as Feyenoord football games, tickets for shows in concert venue Ahoy, and restaurants like Dudok Patisserie. The traveller has to create a separate account and activate their OV chip card in order to use the service.

RET has a long history of transport in Rotterdam and its surrounding areas, and offers a wide variety of products to bring their transport services to travellers. At this moment optimizing the network capacity and hereby the service that is delivered for passengers provides a large challenge.

By interviewing employees, the following strengths and weaknesses were identified:

Strengths

- Strong position in Rotterdam's & Randstad's transport landscape: they have public transport exclusivity for the city region
- Brand 'RET' is well established in Rotterdam
- Good ties with municipality, MRDH, and government

- Open company culture
- Not afraid of innovation on different levels
- Consistent growth in traveller kms
- High customer satisfaction rate: 7.7
- High employee satisfaction rate: 7.6

Weaknesses

- Unexperienced with large, radical innovation projects
- Emphasis on operational excellence leads to strong short term focus in development
- Unexperienced with digital innovation
- Unexperienced with user centred innovation
- Average employee age: 51
- Being a semi-public company can reduce possibility to act quickly

2. COLLABORATION PARTNERS

In the development of Mobility as a Service, RET believes collaboration with other big transport providers is crucial for the success. In this chapter the current collaboration partners of the MaaS project and their clients are discussed. More information on their ticketing and subscription can be found in appendix A.

2.1 Collaboration setup

To have a much larger reach and make the costs easier to handle, RET is working with three Public Transport Operators. Each of these PTOs are a well-established brand in their area, either on a regional or national level. Within each organisation a responsible project leader is appointed. These project leaders have regularly scheduled contact moments, on which they are joined by a varied group of people from within each organisation. By having a specific person in each organisation that is responsible, and only meeting with the people that are important for the process at that specific moment, the development process is made more efficient.

2.1.1. Efforts of the collaboration

At this moment, the partners have been focusing their efforts on several things. Firstly, the legal basis for the development of a new service by four large companies in a new market needed to be sorted out. In order to now be shut down by the Authority for Consumers and Markets (ACM), extensive research and documentation had to be done. Furthermore, as this is a government funded project, it needs to be approved by the European Committee. Only after this approval has been given the tender for platform developers can be released.

Besides this, the technical framework and requirements for the MaaS platform are developed. This describes what the first version of the platform must be able to do and what it should look like. Thus, it serves

as a guideline for the tender for development companies.

Lastly the project partners are working to establish cooperative relationships with other mobility providers. These are vital for the actual functioning of a the MaaS platform, as it depends on the offering of multiple different transport options.

2.2 Public Transport Operators

2.2.1. HTM (Den Haag)

HTM offers bus, tram and lightrail services in Den Haag and surrounding areas. The transport provider transports around 270.000 passengers per day. They are looking to improve their offering by becoming more sustainable: some tram lines will be powered by solar energy in the near future. Furthermore, they are planning to get a self driving minibus. This minibus will transport visitors and patients between the public transport stop Leyweg and the entrance of the Haga Hospital. (HTM, n.d.)

2.2.2. GVB (Amsterdam)

GVB takes care of the public transport in Amsterdam and the surrounding areas. They are currently transporting around 850.000 people per work day, and are looking to grow to one million passengers per day. They offer bus, tram, metro and ferry services. (GVB, n.d.-b)

In July 2018, the Noord-Zuidlijn opened: after years of building and multiple delays this new metro service is finally ready. GVB is emphasizing the role of the metro as the backbone of their transport network. This means that some of the trams and bus services that run in the north/south direction are riding less frequently, because this area is now better served by the new metro line. West to east connections are increased in frequency, mainly for trams. (GVB, n.d.-a)

2.2.3. NS (Dutch Railways)

The Dutch Railways, or NS, provide for most of the train transport in the Netherlands. Every day they transport more than 1.1 million travellers throughout the whole country. They are currently looking to improve their service through three core activities. The first one is to improve the performance on the main rail network, which includes the high speed lines and international trains. The second one is to improve the experience on stations by creating good connections and a safe and comfortable stay. This is done in cooperation with ProRail and local authorities. The third core activity is to contribute to a door-to-door journey by creating better connections to other transport modes like tram and metro. (NS, n.d.-a)

2.2.4. Other services

Furthermore, they offer two big services: the OV bike and the NS app. OV bikes are available at most NS stations in the country. They are 'back to start' type of shared bikes, meaning that they have to be returned to their origin. It is possible to hand it in at another OV bike location, but a €10 premium must be paid for this. (NS, n.d.-b)

The NS app is one of the most used public transport planning apps in the Netherlands. It offers detailed information on trains, like the available services, and how long or busy the train is. Other public transport modes are integrated in this planner as well. Recently, it has become possible to select what transport mode (public transport, walking, car, or bike) to use after the train trip, if the destination is not an NS station.

2.3 Government and municipalities

2.3.1. Ministry of Infrastructure and Water Management

This ministry is the government body that is responsible for creating an accessible country and improving mobility while maintaining good quality of life.

2.3.2. Metropoolregio Rotterdam – Den Haag (MRDH)

The MRDH is a cooperative organization of 23 municipalities in the south-west of the Zuid Holland province. It is the only client of both RET and HTM. The goal of this region is to be sustainable. Therefore it wants to create an area with clean air, green surroundings, and space for sports, recreation and nature. On the other hand, the area includes the world renowned Port of Rotterdam, Greenport West Holland (the high tech agricultural cooperative organisation), and Den Haag as international city of law. This creates many opportunities for the area to be an economically flourishing region.

2.3.3. Metropoolregio Amsterdam (MRA)

In Amsterdam, the is MRA the client of the public transport operator GVB. This region includes Amsterdam, the Schiphol area, Haarlem, Almere and Lelystad, and most of the surrounding parts of the province Noord-Holland. In recent years, the tourism in Amsterdam has increased immensely. This has placed much stress on the quality of life in the city. A MaaS solution can help the city better spread the tourist mass.

For the development of a MaaS-system, RET is working together with three other major PTOs: city transporters of Den Haag and Amsterdam (HTM and GVB) and the Dutch Railways (NS). Together they have a much larger reach and financial base. Next to that they all have a well respected brand within their own operational area, thus can help bring more travellers to the new service.

For the remainder of this project the focus will be on RET in their area, Rotterdam, and their role in the project. Results however are likely to be translatable to other areas, as cities in the Randstad carry many similarities.

3. CURRENT MOBILITY HABITS: TRAVEL MOTIVES & VALUES

In the mobility world the distinction between transport of people and transport of goods is made. Transport of people, or personal mobility, can be done with private or public transport modes. This chapter looks at why people travel, how they travel and why they make that choice. Furthermore how people experience and what they base these experiences on is discussed. Lastly the concept of transport poverty is looked at.

3.1 Drivers of transport behaviour

3.1.1. Choice & constraints

In many attitude theory-based empirical studies travel behaviour is considered the outcome of both choice and constraints. The theory of ipsative behaviour (Frey, 1988) has been used to predict map constraints that influence transport behaviour (Klößner & Blöbaum, 2010). These constraints can be objective, subjective, or ipsative. Objective constraints are e.g. limitations in time or income, available technology or infrastructure, and influence actually executing a behavioural alternative. Subjective constraints affect the willingness to execute a behavioural alternative, such as beliefs in what is pleasurable. Ipsative constraints simply prevent an individual to think of an alternative – it just doesn't come to mind. Each of these constraints create a specific possibility set, and people use these sets to come to a choice.

3.1.2. Habit

As Verplanken, Aarts, Van Knippenberg, and van Knippenberg (1994) stated, habits play a major role in transportation behaviour, which is characterised by a stable context and repeated behaviours, especially for commuting trips. This causes the so-called behavioural inertia, or stickiness to habits. Habits are very useful for our daily functioning, as they diminish

the conscious attention with which our acts are performed, thus releasing cognitive resources that can be used elsewhere. By having freed this mental space during the travel time, other activities can take place. Like Middleton (2011) explained, walking as an urban travel mode is rarely done with the sole purpose of getting from A to B: most participants used the walk time to chat with their partner, walk the dog, bring the kids to school.

However, younger generations seem to be less habitual in their travelling. This could be because habits have simply had less time to form. But a more likely explanation is that their daily activities, and therefore transport needs, are less predictable. They make a new planning for each of their days, and plan their journey and used transport modes to suit their specific needs of that day. The mobile availability of travel information and journey planners helped this developed along.

3.2 Mode choice

The factors that influence the transport mode choice can be classified into three groups: characteristics of the trip maker, characteristics of the journey, and characteristics of the transport mode (De Dios Ortuzar & Willumsen, 2011).

3.2.1. Characteristics of the trip maker

- Car availability and/or ownership
- Possession of a driving licence
- Household structure (young couple, couple with children, retired, singles, etc.)
- Income
- Decisions made elsewhere, for example the need to use a car at work, take children to school, etc
- Residential density

3.2.2. Characteristics of the journey

- The trip purpose; for example, the journey to work is normally easier to undertake by public transport than other journeys because of its regularity and the adjustment possible in the long run
- Time of the day, when the journey is undertaken; late trips are more difficult to accommodate by public transport
- Whether the trip is undertaken alone or with others

Commuter travels are often paid for by the employer. This is usually done by giving the traveller access to a lease car, or giving out public transport business cards. Therefore the traveller is influenced on their mode choice, as some of their mobility needs can be fulfilled on the expenses of another.

3.2.3. Characteristics of the transport mode

These are discussed in chapter 5.

3.3 Experience of a journey: attributes

Travellers base their experience of a journey on several attributes. They can be divided into qualitative and quantitative factors (De Dios Ortuzar & Willumsen, 2011; Redman, Friman, Gärling, & Hartig, 2013).

3.3.1. Qualitative factors

- Flexibility: when using this mode within the Randstad, can you do whatever you want, or do you have to confine to schedules?
- Comfort: can you relax, do other things when using this mode?

- Activeness: does it require physical exertion? Are there any fitness/health benefits, does it make you sweat?
- Safety: are you protected, do you feel secure when using this mode? (CROW-KpVV, 2017)
- Demands of the tasks: how much of your attention needs to be paid during the task, how much effort does it require to get from origin to destination?
- Prestige: how much status will the user feel when using this transport mode?

3.3.2. Quantitative factors

- Costs
 - Investment/fixed costs: initial investments, insurance, subscriptions etc.
 - Variable costs: fuel, OV credit etc.
- Speed: how fast is the journey on average, so how far can you travel in a given time?
- Environmental impact: what is the environmental impact of your journey? How much emissions, noise, congestion and urban space usage are related to it?

3.3.3. Each journey: a mix of attributes

Various studies have shown that a person's decision to travel by car or train is based on the differences in the mix of journey attributes. The importance that travellers attach to these attributes varies with their travel purpose. The trip objective or destination largely determines the focus in the desired quality mix. Requirements that must be met demand fast and reliable service. In contrast, pleasure trippers attach more value to the ease and comfort of the journey.



Figure 9. Journey attributes - the values of transport (de Dios Ortuzar & Willumsen, 2011)

3.3.4. Hierarchy of attributes

Peek and van Hagen (2002) have created a version of Maslow's pyramid that ranks most of these transport attributes for public transport journeys (see figure 10). Safety and reliability form the base of the pyramid and must be organised well, otherwise public transport is not even an option, reliability being Reliability is defined as the probability that a product, system or service will perform its intended function adequately for a specified period of time, or will operate in a defined environment without failure (ASQ, n.d.). Above that we find the values of speed and flexibility. These are dissatisfiers: they just make travellers unhappy when unfulfilled. The top of the pyramid is formed by comfort and 'experience'. The attributes are satisfiers.

3.4 Travelling motives

Travelling is almost never a goal in itself, it is a means to do other things that we cannot do in our direct vicinity. The most important division that can be made regarding personal transport are in the frequency of the made journey.

3.4.1. Single mode vs. multimodal journeys

A journey can be done with one transport mode, or consist of several trips with multiple modes: an intermodal journey. When undertaking a multimodal journey, it starts with the 'first mile', at the ingress side of the system. The traveller then enters the main transport network, until they have reached their destination, or are transferring to the next transport mode. The last trip before reaching



Figure 11. Example of a multimodal journey

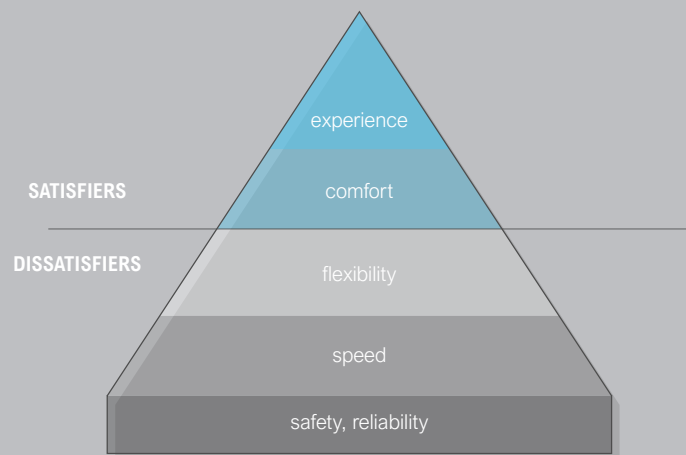


Figure 10. Maslow pyramid adaption for Public Transport (Peek and Van Hagen, 2002)

the destination is often referred to as the 'last mile', at the egress side of the system.

3.4.2. Frequent journeys

Frequently undertaken journeys are commutes for work, education, weekly hobby activities, and shopping. These trips are generally done out of habit, and the traveller has a specific journey they take often. The used modes and travel times are more or less constant.

However, within RET a trend is seen that the younger generation (people under 35) is becoming more flexible with their work schedule. They don't work at the same time in the same place every day, but vary working at the office, at another workplace, or at home. As a result, their travel planning is done again for each new day. Any activities they have planned after work are also included in their travel plan for the day. Especially the urban inhabitants in this category are fairly flexible with their commuting travels, with the many travel mode options they have at hand.

3.4.3. Irregular journeys

Irregular trips are more often done with a leisure motive, like visits, day trips to another city, and infrequently practised hobbies. As

these journeys are not undertaken often, the traveller does not have a set routine. It is likely that each new journey is planned in advance.

3.4.4. Dutch travelling data

Statistics of Dutch transport give some insight in the large picture of travelling habits. The most common transport motives can be identified from this (CBS, 2018):

- Shopping
- Leisure, hobbies
- Commute
- Visits
- Education, day care
- Touring
- Services, care

Figure 12 shows the amount of trips undertaken per year for different travelling motives, split per transport mode. Striking is the amount of trips that is undertaken by car: for commuting it is by far the most used transport mode, but trips for shopping, visits and stays, and sports and leisure motives also often done by car. More local trips are frequently done by bike in these categories. Public transport (both train and BTM) is mostly used for commutes and education, but in comparison to other modes the attribution to total trips is very small.

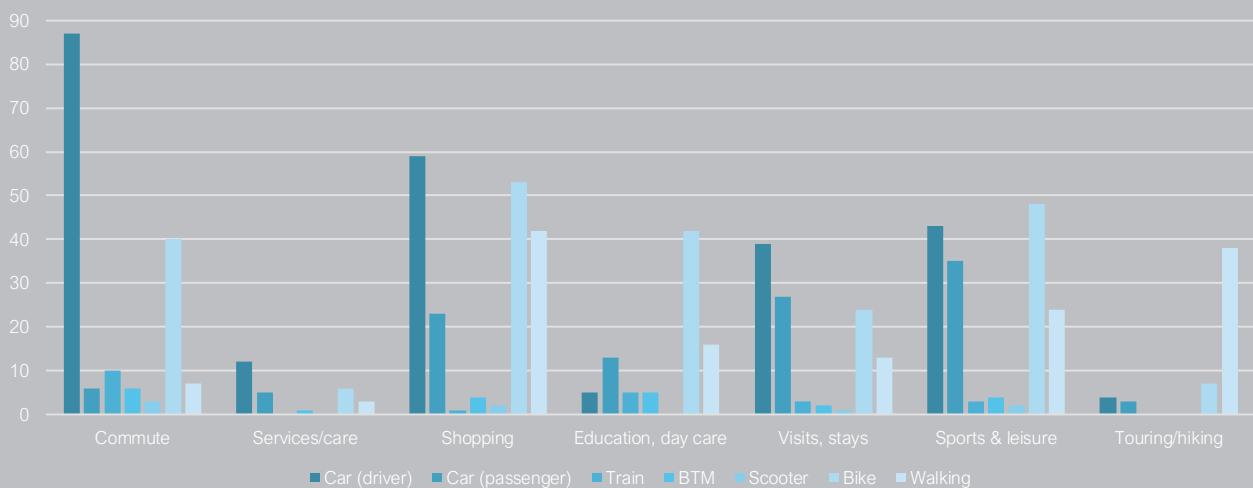


Figure 12. Amount of trips per year for different transport motives, modes (CBS, 2018)

3.5 Modal split in the Randstad

At this moment, there is still a big preference for the modalities that offer a bigger range of freedom like the car and bike. For commuting within the city there is a general preference for the bike, for commuting to a destination outside the city a preference for the car can be seen. Rotterdam especially is very car-based, with almost 40% of intracity and 70% of intercity commutes being done by car. (Kennisinstituut voor Mobiliteitsbeleid, 2017a)

3.6 Transport poverty

In recent years the concept of transport poverty has gained attention. When a person is subject to transport poverty, they cannot travel to where they need to be to participate in society, e.g. find work, go to a doctor et cetera. It consists of three main factors: transport affordability (the inability to meet transport cost), mobility poverty (the lack of (motorized) transport), and accessibility poverty (difficulty of reaching certain key activities such as employment, education). (Lucas, Mattioli, Verlinghieri, & Guzman, 2016)

Several groups are especially exposed to transport poverty (Verne Transport Research Institute, 2018):

- Low income households
- Households without a motorised vehicle
- Persons unable to drive
- Persons with physical or cognitive limitations
- Ethnic minority households
- Immigrants

In rural areas transport poverty often results from a lack of available transport options. In urban areas there more often is a dense public transport network and the distances are usually short. However, the availability of transport options does not always mean that people have the capabilities to use them: it can be hard to have a good overview of tickets, stops and subscriptions. (Kampert, Nijenhuis, Verhoeven, & Dahlmans, 2018)

Bicycle availability in the Netherlands does help curb transport poverty for both households with and without cars. Its effects however are limited for elderly people. The spatial reach of bicycles also forms a barrier, which leads to the bike having a smaller effect in rural or suburban areas. Lastly, the bike seems to have a limited effect on employment accessibility. The distances are often perceived to be too far to bike, thus decreasing the geographical scope. (Martens, 2013)

In this chapter the characteristics of the traveller and the journey that influence mode choice are discussed. Next to that the attributes on which journey experiences are scored are listed:

- Qualitative: flexibility, comfort, activeness, safety, demands of the task, prestige
- Quantitative: cost (investment and use), speed, and environmental impact

Furthermore the distinction between single-mode (the whole journey is done with one transport mode) and multimodal journeys (a chain of trips done with different transport modes) is made.

The Maslow pyramid adoption of Peek and Van Hagen (2002) shows that safety and reliability are a must. Convenience and

speed are dissatisfiers, while comfort and experience are satisfiers. These can be used to compare e.g. transport modes to each other, but also complete journeys. How they are experienced differs per person, so these provide a base for future user research.

Furthermore the concept of transport poverty is addressed. Lack of transport options can lead to disability of participating in society, such as not being able to visit healthcare or to get a job. Rotterdam (and the Randstad in general) houses many of the groups that are prone to having transport poverty, like low income households and ethnic minorities.

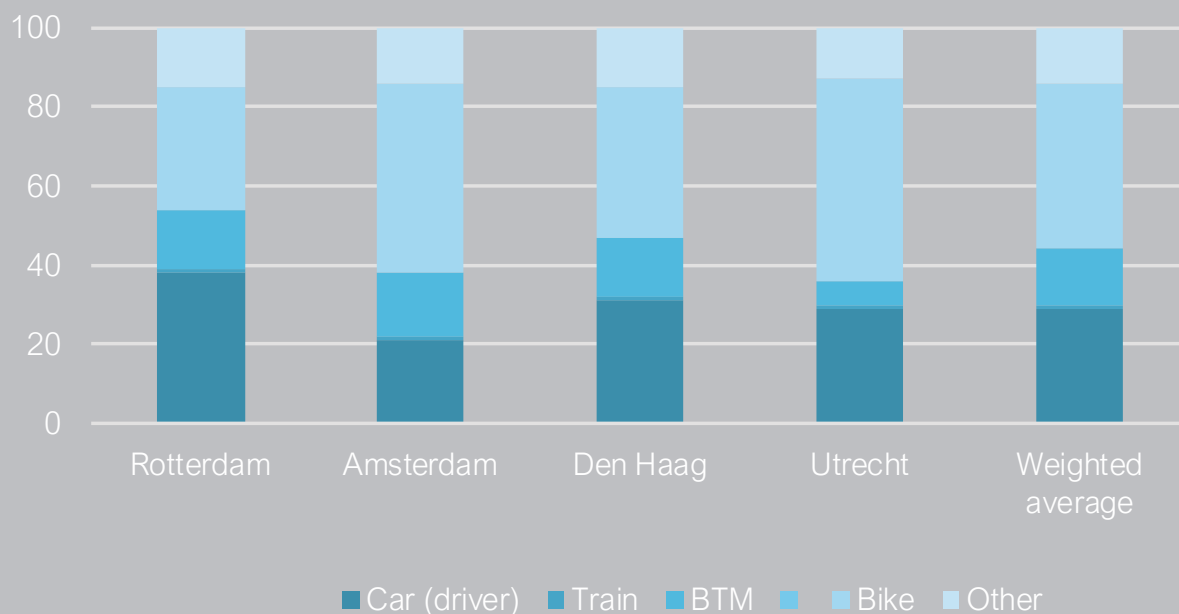


Figure 13. Modal split for commuting within the city (Kennisinstituut voor Mobiliteitsbeleid, 2017a)

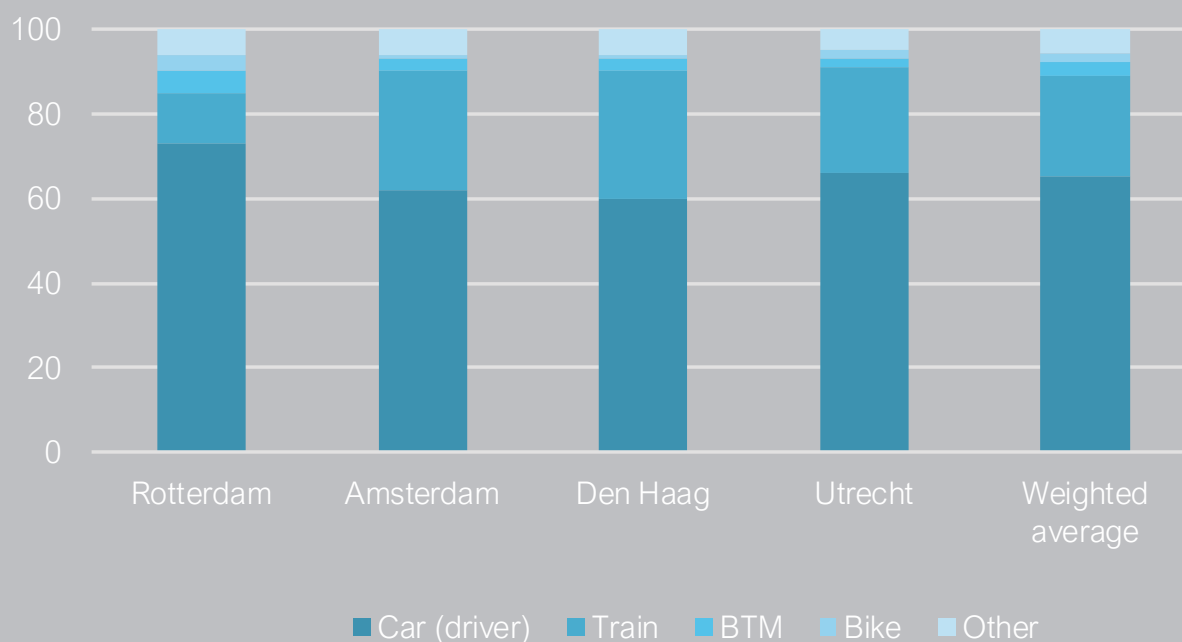


Figure 14. Modal split for commuting from destination to another city (Kennisinstituut voor Mobiliteitsbeleid, 2017a)

4. IMPACTS OF PRESENT DAY PERSONAL TRANSPORT

It seems that most people have developed mobility habits that allow them to live their life the way they want, frustration with congestion or full trains during peak hours aside. Motorized Individual Traffic (MIT) is one of the most flexible and convenient ways of travelling. However, the negative side effects of transport are also highest with MIT. The most important effects of our travelling habits are outlined below.

4.1 Congestion

Traffic congestion is one of the worldwide urban problems, which can lengthen journey time, increase energy consumption, aggravate environmental pollution and result in traffic accident. After lowering between 2008 and

2013, the congestion in the Netherlands has increased again in recent years. Five of the ten most congested roads are situated in or around Rotterdam. (Rijkswaterstaat, 2018)

Building more roads has long been a strategy to try to reduce congestion. However, new roads only help in the short term: the extra space attracts more vehicles, leading to congestion again. It is mainly due to the large amount of vehicles on roads at the same time, thus better spreading of vehicles over time could help alleviate pressure on the road system (Kennisinstituut voor Mobiliteitsbeleid, 2017b). Yet work times seem to not be flexible enough to facilitate better use of the road system, so other options to reduce congestion should be looked at as well.

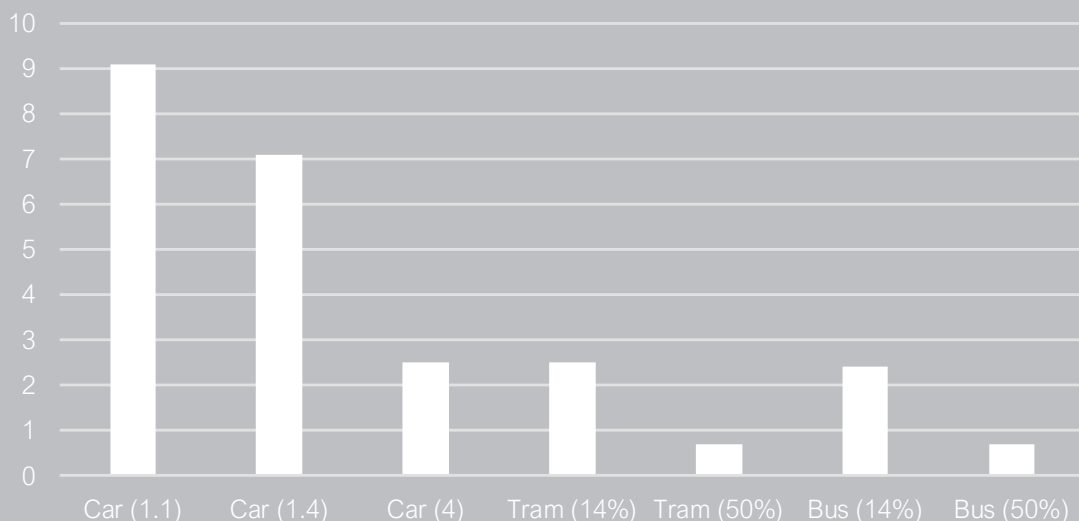


Figure 15. Used space in m² on the road per vehicle per passenger (amount of passengers/occupancy rate) (CROW-KpVV, 2014; RET, n.d.)

4.2 Urban space usage

Considering how much of the time these cars are idle, parking does not seem to be an efficient way of using the urban space. Especially in densely populated areas (like the Netherlands's urbanities) space is precious, thus making more of it available for better purposes seems valuable. Most of the destinations in urban areas are accessible with other means of transport like bikes and public transport, so a pure reliance on private motorized vehicles does not have to hold this back necessarily. When autonomous vehicles become more commonplace in the future, the situation will change massively anyways. More on that can be read in appendix I.

When in use, average cars are filled with only 1.4 people on average, while taking up double the space per person for an averagely filled bus or tram. RET's buses and trams only need to be filled for 14% to be more efficient with space than a filled car. A side note of course must be made for public transport, as stops and infrastructure also permanently take up urban space. Cycling and walking take up even less space. (CROW-KpVV, 2014; RET, n.d.)

4.3 Environmental impact

4.3.1. Energy consumption and greenhouse gas emissions

It has been known for a long time that our mobility patterns require a lot of energy. This has a great impact on our environment. The energy used for mobility still mainly comes from fossil fuel. The European transport sector in total used 17.1 million terajoules in 2016, of which 12.6 million terajoules came from road transport (including freight transport). (Eurostat, 2018a)

In 2016, the transport sector contributed 24% of total EU-28 greenhouse gas emissions (GHGE) (Eurostat, 2018b). This includes freight transport and international aviation. Still, passenger cars accounted for almost 45% of the total transport emissions: about 10% of total emissions. As a comparison – railway transportation only accounted for 0.5% of the total transport emissions.

CO₂-emissions per passenger kilometre is a measure to compare the environmental impact between vehicles. This number takes the occupancy rate of each vehicle into account. Trains are the most efficient way of travelling, followed by filled cars. Tram, metro and bus

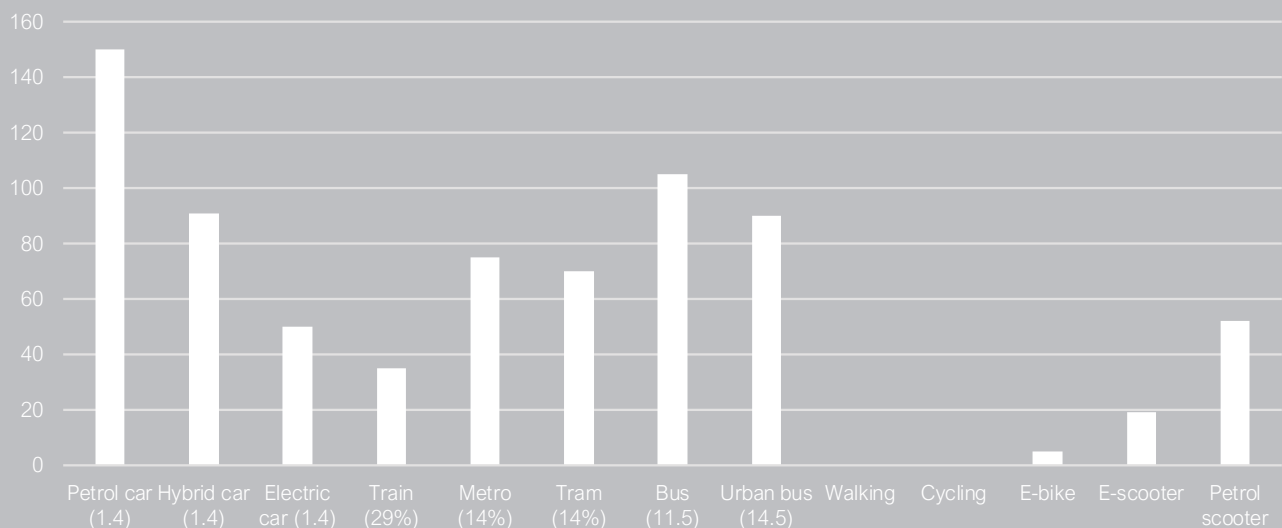


Figure 16. Grams of CO₂ emitted per passenger (amount of passengers/occupancy rate) (CROW-KpVV, 2014; Milieu Centraal, n.d.)

create at least double the emissions of trains. Averagely filled (1.4 passengers) petrol cars perform far worse. Commuter cars are averagely filled with 1.1 people. Hybrid and electric cars with 1.4 passengers approach train transport much more, edging out present-day BTM. See figure 16 for a visual overview. (CROW-KpVV, 2014; Milieu Centraal, n.d.)

In the Netherlands, the total GHGE from transport have increased with 30% in the 1990-2015 time period. Transport emissions need to fall by around two thirds by 2050 in order to meet the 60% greenhouse gas emission reduction target for the transport sector. (European Environment Agency, 2018b)

4.3.2. Air quality

Next to having an important effect on climate change, air pollution through GHGE is considered to be the largest environmentally related health threat. It can cause a wide range of diseases like cancer, asthma and heart disease. Especially fine particulate matter (PM2.5) and NO2 are harmful to our health. NO2 mostly comes from fossil fuel combustion, thus road transport currently is a big contributor to this issue. In Europe 90% of the population is exposed to levels of PM2.5 that are above World Health Organisation's guidelines. (WHO, n.d.)

The Dutch air quality is on average not great. When looking at big cities or transport related locations such as airports, ports and highways, industrial and intensive animal agricultural areas, the PM2.5 concentration is far above the WHO norm. The air quality has improved greatly since 1990. However, even air that meets WHO norms is still harmful. Any air quality reduction also has a negative effect on health. The current levels of air pollution leads to a lifetime loss of 13 months on average, and account for about 6% of days absent from work. (RIVM, 2018)

4.3.3. Noise pollution

This factor is discussed less than air pollution with its large effects on both planet and people. However, noise pollution is the second largest environmental health threat in Europe. The stress reaction it evokes in the human body can lead to diseases, cognitive impairment, sleep disturbance, hypertension, and... annoyance (European Environment Agency, 2017). In Rotterdam 45% of the inhabitants are exposed to high noise levels during the day (>55 dB), and 27% during the night (>50 dB) (European Environment Agency, 2018a).

Our current private motorized vehicle based transport habits have quite a few negative side effects. The most obvious one is congestion: our infrastructure is not built to handle the inefficient road space usage volume during peak hours.

Furthermore, private vehicles are idle most of the time. These parked vehicles take up much space. As urban space is only becoming more valuable due to urbanisation, cities are becoming more aware of better options for using these areas. Besides the space related issues, several

environmental impacts can be identified. Firstly the energy consumption and related greenhouse gas emissions need to be lowered in order to meet national and European climate goals. This also leads to high levels of air pollution, which has a large negative impact on the population's health. Lastly, urban transport creates large amounts of noise pollution. This can also negatively impact health.

5. CURRENT MOBILITY HABITS: TRANSPORT MODES

This chapter elaborates on the available transport modes at the moment: how do people travel? The available transport modes can be divided into three main categories: motorized vehicles, active transport modes, and public transport modes. Next to this the difference between ownership based mobility and access based mobility is discussed.

5.1 Ownership vs. access based mobility

Traditionally mobility has been centred around owned transport modes, like the car and bicycle. However, access based mobility is becoming more popular. This is mainly done through shared mobility services, which allows users to access transportation services as needed. It encompasses carsharing, bikesharing, peer-to-peer ridesharing on-demand ride services and more. The increase in shared mobility services helps shift more of the ownership based mobility.

For private transport modes the user pays for the asset. Public transport modes are characterized by the payment per ride. Newer access based mobility services are usually paid for per time period.

5.2 Access based mobility types

There are various ways in which access based mobility is organised. The most common types are discussed below.

5.2.1. Back to start

Shared vehicles that belong to this type must be returned to the origin at the end of the use period. Therefore they are usually rented out for a longer period of time, e.g. one day. OV bikes and more established shared mobility services like Greenwheels operate this way.

5.2.2. Docked

This is the type of sharing system that is often used by city bike sharing programmes like the Boris bikes in London. Shared electric bikes also use docks often, to ensure that the bikes are always charged. A vehicle can be picked up at any docking station. Rides are usually limited to 30 minutes (or another time limit), with a premium for extra time the vehicle is used. The ride ends when the bike is parked at one of the docking stations. This does not have to be the same as the dock at the origin.

5.2.3. Free floating

This is the type which gives the user the most freedom. It is mostly used with bikes, scooters or e-steps, sometimes also with cars. Just find a vehicle that is parked somewhere within the service zone by using the accompanying app, grab it, use it, and leave it in any legal parking space (as long as you stay within the service zone). The service area border is controlled by a geofencing system. Travellers can usually ride to outside the service zone, but vehicles must be returned to the zone to park.

However, when you leave the vehicle, someone else can grab it, thus giving no real security for the return journey. To reduce this issue, the operator usually plants many vehicles. This abundance of vehicles can be experienced as a nuisance. Furthermore, when uncontrolled, the amount of vehicles can actually work against one of the main reasons to implement shared mobility services – the lack of urban space.

5.2.4. Ridesharing

With ridesharing, multiple people that otherwise would have travelled by themselves travel together. Traditionally this was done mostly as carpooling, where e.g. coworkers would meet up at a certain location and

travel the rest of the journey together by car. By using GPS technology, smartphone advancements and reliable mobile internet ridesharing has been commercialised. Uber has quickly become one of the most influential mobility services in the world. Booking, payment and pick-up help are organised through their app. Ridesharing can help cover areas that are not covered by public transport and can serve one-time trips, giving the traveller more freedom to adapt the journey to their needs.

5.2.5. Shared mobility instead of...?

The question to what trips are actually replaced by shared mobility services remains. In an ideal situation, trips made with larger, more impactful vehicles are replaced by trips made with less impactful vehicles. But maybe trips that were previously done by bike or feet are replaced by trips with e-steps, e-scooters or public transport. This might then increase the impact of our transport system instead of lowering it.

In Tallinn, Estonia's capital, public transport was made free in 2013. People are of course happy with it, provided that the service quality of public transport is maintained. One would assume this could reduce car usage. Instead, car usage stayed the same, while short trips that were otherwise walked or biked were replaced by public transport trips. (Vice, 2018)

5.3 Motorized transport modes

For these transport modes users need a driver's license. They also require the highest initial investment cost. Faster speeds and flexibility are a given, but at higher environmental impact and cost of use.

5.3.1. Fossil fuelled car

High costs, high returns: the car delivers much value as a transport mode due to the flexibility, comfort, speed and security, but it's very expensive to buy, costs a lot per month, and has a very high environmental impact, especially when used by only one passenger. Parking and issues that generally arise from this decreases the flexibility of this mode. The car is probably the transport mode from which most prestige is felt by owning it.

5.3.2. Electric car

The electric car is becoming more commonplace in our transport landscape. When compared to a fossil fuelled car, the environmental impact is lowered by about half. However, you are only mobile within a limited range, and depend on availability of charging stations for driving longer distances.

5.3.3. Motorcycle

Delivering more freedom for a lower cost than the car. Feel like a bad ass and bypass

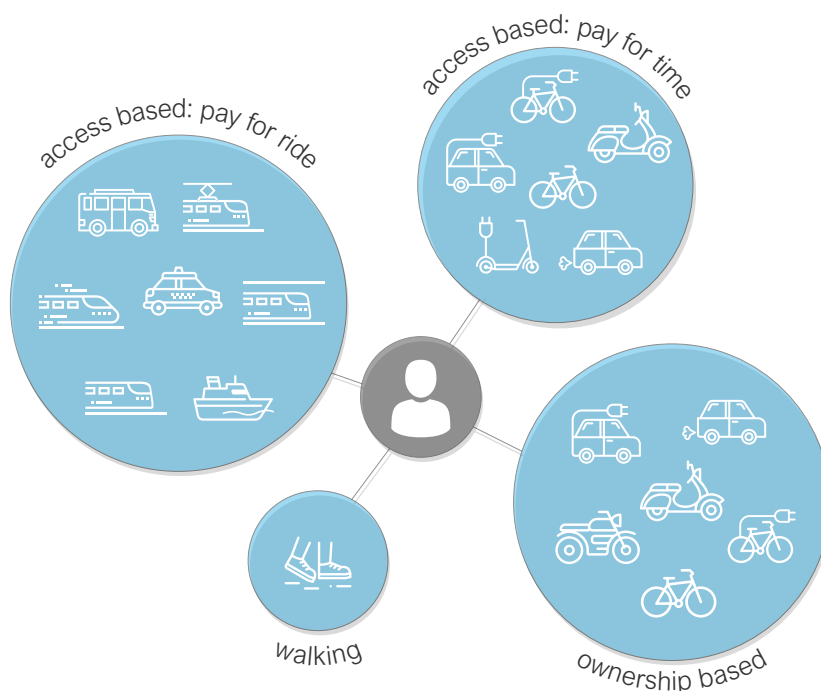


Figure 17. Distribution of transport modes

traffic jams, but the accident numbers for motorcycles are much higher, so users need to be more alert when driving a motorcycle. The environmental impact of is surprisingly about as high as a car.

5.3.4. Scooter/moped

Popular among people who are not allowed to drive cars yet, but still want to invest in a faster and less active transport mode. Parking is much easier than with a car or motorcycle.

5.3.5. Electric step/kick scooter

This transport mode was the big revelation of 2018 in the USA: electric steps popped up everywhere over the course of the summer. No driving license is required to use an electric scooter. They offer a great amount of flexibility: you can just ride around and park just about anywhere. These steps let you ride with a speed of around 25 km/h for 15 to 25 km on one charged battery. The provider can easily redistribute the steps by collecting them with a car or van.

At night, people that are enrolled in a 'step charging programme' roam the streets to pick up empty steps and charge them at their house. The programme then gives them a decent sum of money (\$5-10 per step) after they have placed the fully charged step in a designated location.

5.4 Active transport modes

Instead of being powered by fuel, these transport modes are powered by humans. They deliver great freedom and provide fresh air and some form of fitness, but comfort levels are very dependent on the weather and time of day: no one looks forwards to having to bike or walk home in the rain, especially when it's dark.

5.4.1. Electric bike

With the electric bike, the average speed of a bike trip increases while the effort decreases. Therefore, people generally travel larger distances with the electric bike. The range of electric bikes is between 12-14 km per 100 Wh, giving between 25-100 km of support. When the battery is empty, the bike can be used as a regular bike.

5.4.2. Bicycle

The Dutch's favourite transport mode for shorter distances. In the Netherlands, biking infrastructure is very well developed and all road users are familiar with cyclists' behaviour, making it relatively safe.

5.4.3. Walking

The simplest, oldest form of moving around.



Figure 18. Electric scooter riders

5.5 Public transport modes

For these transport modes there is no initial investment required: just hop on at any station or stop. Public transport is a lot lower in environmental impact than private travel modes (especially rail transport), but users have to take schedules into account. In the urban areas most stops and stations are frequently attended, however in more less dense areas they might only stop once per hour. Still, transfers in intermodal journeys bring a big disadvantage that is perceived to be bigger than just the waiting and walking time in between two modes.

5.5.1. Train

The fastest way to travel between cities without having to own a vehicle, it accounts for about 25% of intercity commutes in the Randstad. Trains give great comfort and have no demands for the task, leaving the traveller with time to spend on other things during their journey.

5.5.2. Lightrail

A rail transport mode that is somewhere in between the train, tram and metro: faster than tram, but has shorter distances between stops and generally higher frequency (1 per 10 minutes) than trains (one example is the RandstadRail).

5.5.3. Metro

Very comparable to the Lightrail (the RandstadRail trains use the metro infrastructure in Rotterdam), but even more frequent (1 per 5 minutes). However, perceived safety on metro stations and trains at night is lower.

5.5.4. Tram

A very old type of transport, this overground rail mode was in many cities the first type of public transport. It's much slower than a metro, but more environmentally friendly and perceived to be more comfortable than a bus.

5.5.5. Bus

Many cities have a bus service in place, as it does not require much special infrastructure to run. It has a higher environmental impact than rail modes, but often just a bit cheaper than other modes.

5.5.6. Fast ferry/water taxi

In the Netherlands, most big cities have either a large river running through, or feature some canals. Therefore transport over water has always been available. In Rotterdam a fast ferry is used to connect to the Port of Rotterdam.

5.5.7. Taxi

Usually only used when there is no other option: taxi transport is very expensive. Flexibility, security and comfort are very high, and demands very low. Just get in at your current location and get out at the destination, and have all the travel time free to do whatever you want.

5.6 Transport mode characterisation

Each transport mode that is used frequently in the Netherlands is rated on several factors that describe costs, influence the way we experience the travel mode, and environmental impact. The used factors are the journey attributes that are mentioned in chapter 3. See figure 19 for a visual overview. Details can be found in appendix G.

5.6.1. Comparing the three identified categories

When looking at this overview, several differences can be identified quickly aside from the obvious. Firstly, the lack of need for investment for access based mobility, and the low environmental impact of active transport modes. Furthermore, the demands of the task are usually lower for public transport journeys (yet demands of the task likely depend on a person's expertise with any category).

Besides this, the flexibility motorized vehicles provide is much larger than active based modes or public transport. Flexibility on shorter distances is not as much as a problem for active modes, they could provide even more flexibility than motorized vehicles – parking troubles with bikes are much less persistent than with cars. The excellent cycling infrastructure in the Netherlands also contributes to this.

Longer trips however are a different story. Dutch people are usually not prepared to cycle distances longer that far exceed the average cycle trip length of 3.6 km on a regular bike

or 5.5 km on an e-bike (Kennisinstituut voor Mobiliteitsbeleid, 2017a), leaving the choice between motorized vehicles and public transport. A 2003 study showed the Dutch give car transport a 5.5/7 for flexibility, while public transport only scored 3/7. Even when correcting for frequent car use, the car scored much higher (Linda, 2003). Present-day public transport is unlikely to have made up this difference in the 15 years that have passed since this study.

Comparing the speed of a journey between the same origin and destination that is done with different transport modes or mode combinations is difficult. It depends highly on several factors, including:

- Origin and destination location: close or far away from (higher speed) public transport stops? City centres are generally hard to reach by car
- Distance: for shorter distances active modes are more competitive with PT or motorized transport

- Time of day: congestion in peak hours negatively impacts car journey time much more than e.g. PT journey time

Besides this the travel time within one public transport journey is not experienced the same. Time within a multimodal journey is not experienced the same: a minute spent waiting on e.g. a bus is perceived to be longer than a minute spent in-vehicle. This leads to an even larger imbalance between the subjective travel time of motorized vehicles and public transport. (Kennisinstituut voor Mobiliteitsbeleid, 2017b)

Lastly, costs are frequently named as a difference between public transport and the private car. When including all fixed and variable costs, car related costs are between €296 for a mini car and €617 for a large car per month (Nibud, 2018). A single person could travel quite much with public transport for that sum. However, when travelling with multiple people car costs are shared, while public transport does not offer the same cost share opportunities.

Traditionally, transport can be divided into motorized, active, and public transport. All these transport modes can be scored on the journey attributes mentioned in chapter 3. This provides an between-mode comparison (see figure 19).

In recent years a different categorization is becoming more apparent: ownership based and access based transport. The first type consists of modes like private cars, motorcycles, and bicycles: ones which people would own, either themselves or with their household.

Public transport is a traditional type of access based mobility: the traveller pays for a ride between two specified locations. Taxis also fall into this category.

Advancements in technology have facilitated a new type of access based mobility where the traveller pays for the used time. In this category, all sorts of transport modes are found: bicycles, e-bikes, e-scooters, e-steps, cars, and more. These are mostly usable through smartphone apps.

Access based mobility services provide different levels of freedom. Back-to-start services require the user to return the vehicle to the pick-up point. Docked systems give the traveller the option to pick up and return vehicles at multiple locations in the area. Lastly there are the free-floating services, with which travellers can pick up vehicles anywhere in the service area, and leave them wherever they like in this area.

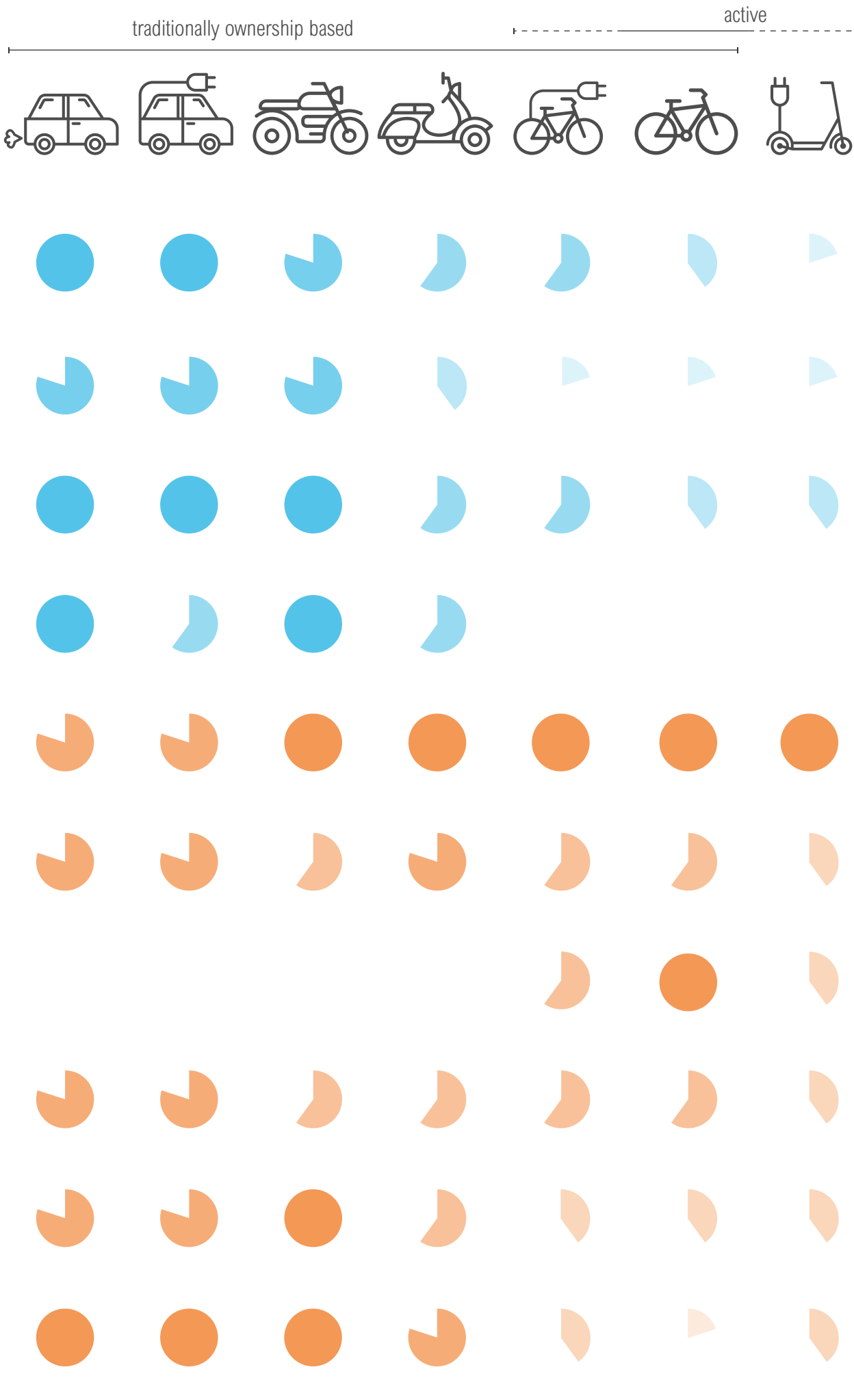
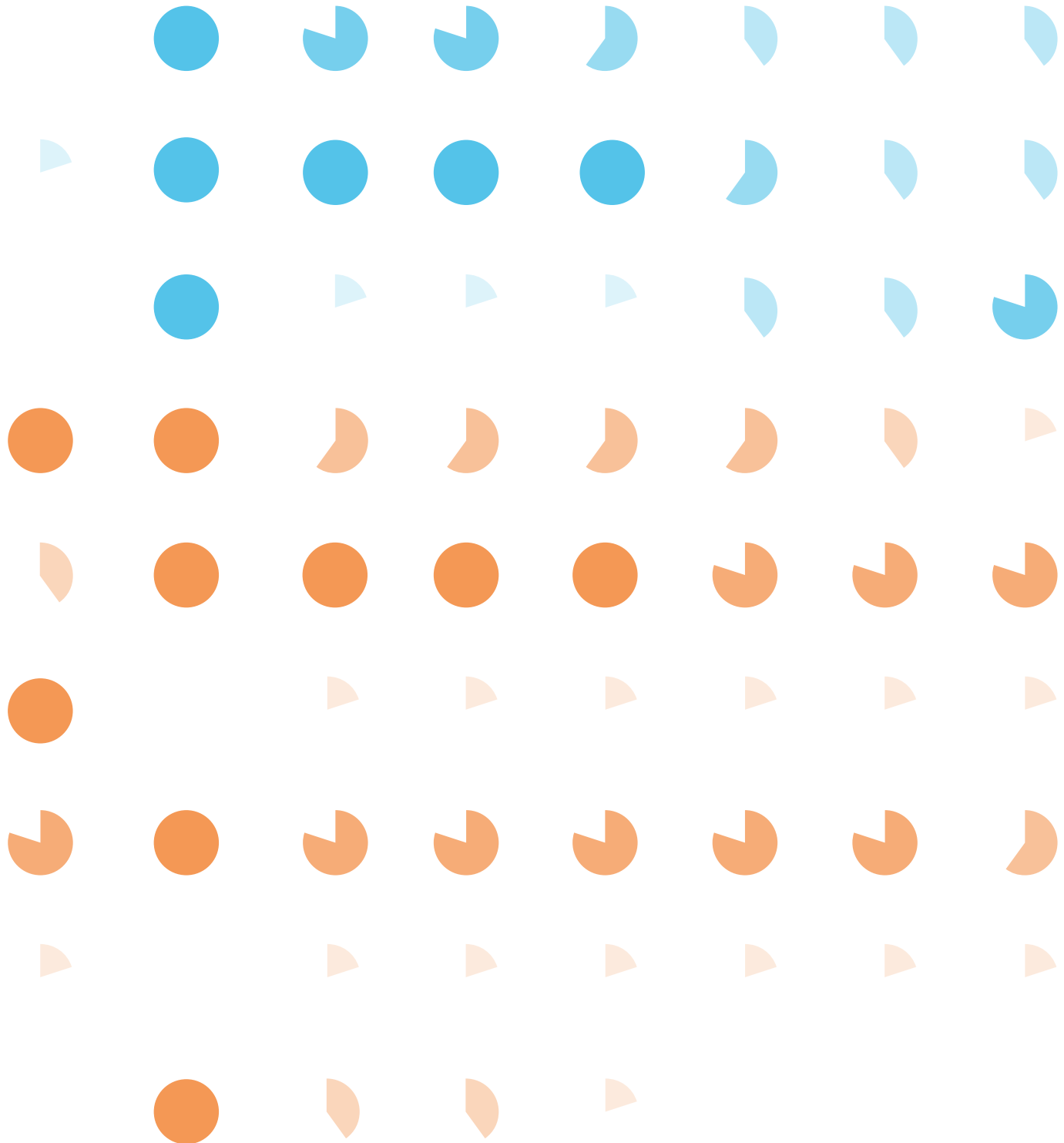


Figure 19. A characterisation of major transport modes . See chapter 3.4 for explanation of values on the vertical axis

traditionally access based



6. MOBILITY AS A SERVICE

Mobility as a Service (henceforth referred to as MaaS) is a new mobility concept that has gained a lot of attention in recent years. It is a mobility distribution model that delivers access based transport through a single interface of a service provider (Hietanen, 2014). In a MaaS platform, a varied set of mobility providers give travellers the option to tailor their journey to their specific needs at that moment. Travellers can use the platform to plan a journey, book necessary tickets or vehicles, pay for the transport, and perform their travels.

In this chapter the concept of MaaS is discussed by looking at its components and the levels of MaaS-ness that a system can have. Besides this, the benefits and risks for MaaS-operators, users and public authorities are looked at, and the implementation of MaaS as a public transport operator is discussed.

6.1 Components of a MaaS system

What does MaaS consist of? Numbers of scholars have written about the concept and its definition in recent years. This list of elements is based off of several authors' work (Jittrapirom et al., 2017; Kamargianni, Matyas, Li, & Schäfer, 2016):

6.1.1. Platform functionality

- Integration of transport modes: public transport, taxi, car sharing, ride sharing, bike sharing, car rental, on-demand bus services, bike parking, car parking, and even long distance modalities like trains, flights, ferries, etc
- Tariff options: pay-as-you-go or subscription based (either time based, km based, or points based)
- One platform: only one system is needed to plan, book, pay, receive tickets, and get real time information. Checking in, transferring, and checking out is all done with this one platform

- Registration: enables service personalisation and customisation. One account can be for one person or a group/household/etc
- Personalisation: ensures end users' requirements and expectations are met more effectively and efficiently. Provides tailor made solutions based on their profile, expressed preferences, and past behaviours
- Customisation: modify the offered service option to their own liking to increase MaaS attractiveness among travellers, and user satisfaction and loyalty

6.1.2. Multiple actors

- Demanders of mobility: travellers
- Suppliers of transport services: Public Transport Operators (PTOs), access based mobility providers
- Platform owner(s)
- Potentially: local authorities, payment clearing, telecommunication and data management companies

6.1.3. Technology

- Use of technologies: devices (smartphones, tablets, computers), reliable mobile internet, GPS, e-ticketing and e-payment system, database management system, integrated infrastructure of technologies
- Demand orientation: offer transport solutions that are demand-responsive

6.2 Levels of 'MaaS-ness'

There are several levels of 'MaaS'-ness, depending on what functionalities are included in the platform. Sochor, Arby, Karlsson, and Sarasini (2017) describe these levels of MaaS, see figure 20.

6.2.1. 1: Integration of information

For Public Transport in the Netherlands, this tier is already very well established: integration of information. These include the journey planners like 9292, NS app, and Google Maps. Travellers are not willing to pay for the information they get from planning apps, so the business model usually revolves around ad revenue. As this level of MaaS is already established, a new service must enter at a higher tier in order to provide more value than travellers are already used to.

6.2.2. 2: Integration of booking an payment

On the middle tier booking and payment of tickets is integrated on top of the planning service. The platform operator takes responsibility for valid tickets, accurate bookings, and the purchase, but not necessarily for the actual travel services. The value added in this platform is being a 'one stop shop': travellers only need one platform to provide for a multimodal journey.

This type of MaaS-service is not widely offered yet. Two companies are leading the way: Tranzar and GoAbout. In these apps it is possible to play multimodal journeys, book and pay for tickets and use these for travelling. These parties have agreements for reselling public transport tickets in barcode/QR form, and sometimes include other mobility providers.

6.2.3. 3: Integration of the service officer

When a service officer is integrated in the MaaS system, it is most likely transport will be offered in a bundled way, possibly per household. Travellers pay a subscription fee and get access to a (personalized) mix of access based mobility services in return. Pay-per-use travelling can still be available, as the necessary means are already in place.

This level is the first to become competitive with car ownership. The MaaS provider takes responsibility for delivering the service to the customer, thus becoming more of a mobility broker than providing a mobility marketplace. The MaaS provider has resources to provide more reliability. Some trips might be sold with a profit, some with a loss. The price the MaaS provider pays to the service is not necessarily the same as he earns from the customer.

On this MaaS tier the platform is a means to run the business, as opposed to the previous level, where the platform creates the business. Travellers can still use the platform to plan and book journeys, but payment is done in a (semi) fixed fashion.

At this moment, the MaaS systems on this level are mostly pilot projects in a local area (most likely urban). Whim is a good example of a MaaS platform that functions on this level: they offer their subscription based mobility service in Helsinki, Antwerp and the West-Midlands region in the UK.

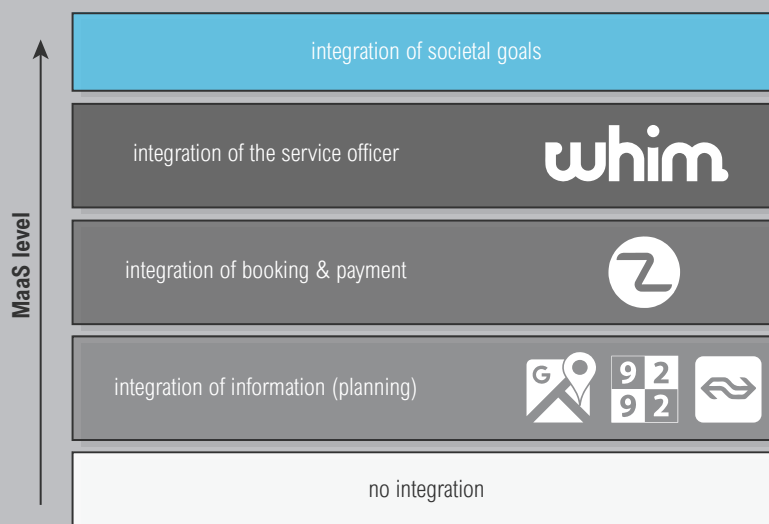


Figure 20. The different levels of MaaS-ness (adapted from Sochor, Arby, Karlsson, and Sarasini (2017))

6.2.4. 4: Integration of societal goals

The societal implications of a transport system that no longer revolves around private car ownership are big, as discussed in chapter 11. MaaS systems can contribute to this shift by giving incentives to people to travel in a preferable way. Public authorities on multiple levels are to be included in deciding on these incentives, at least the authorities that dictate the use of infrastructure and public space, and the public transport operators. It is challenging to combine these public and commercial services, so good agreements have to be made on the goals that can be pursued with the help of MaaS, and what all parties have to contribute and earn from it.

6.3 Potential benefits of MaaS: users

6.3.1. Convenience: plan, book, pay and travel with one application

No more need to have fifteen different apps on your phone to complete your journey. Planning the journey, booking tickets and transport services, paying, real time information and more are included in one platform.

6.3.2. No more enormous investment costs

As seen in chapter 5, the investment costs that are needed for privately owned transport modes are very big. By mainly relying on access based mobility, the traveller only pays for mobility they actually need.

6.3.3. Easy access to many different mobility services

At this moment, it is very hard to have a good overview of all the available mobility services in the area. All these different services are bundled in a MaaS platform, so the user always has insight in the options.

6.3.4. Flexibility: adjust to your current needs

Modern travelling requires more and more flexibility, as our schedules have become less rigid. By not having to invest in expensive privately owned vehicles, travellers have the resources to be flexible in their mobility approach. This way travelling can be done in a way that suits the specific situation best.

6.3.5. Insight in total mobility costs

With a MaaS platform, more transport is done through one integrated system. This creates the possibility of having better overview of travel expenses, especially when most or all transport is done within one platform. When subscriptions are included, the simplicity of understanding travel expenses is increased.

6.4 Potential benefits of MaaS: PTOs

6.4.1. Increased accessibility of public transport

Public transport journeys are almost always multimodal journeys, which consist of several trips with different transport modes strung together. This often creates a barrier for travellers to choose for public transport: getting to a public transport stop, transferring, maybe transferring again, and then having to get to your final destination from the final drop off point does not make for an easy and comfortable experience. In a MaaS system these first and last miles are taken care of in a much better way, as more mobility services are easily accessible. This should lead to more people choosing public transport for (a part of) their travels, thus increasing the market share.

6.4.2. Transport network optimization through data

The data that from the MaaS system is extremely valuable, as it gives insight in travelling habits. The information can be used to improve the transport system: which public transport lines to strengthen, which to reduce in capacity, or which to replace by other transport services. This helps PTOs to better allocate resources and provide an overall better experience for travellers.

6.5 Potential benefits of MaaS: other access based mobility providers

6.5.1. Increase in customer exposure

Many of the mobility providers that can be included in a MaaS system are upcoming, like shared e-bikes. Others like car rental services are already established companies, but are currently not seen as regular transport options that could replace private car ownership. All these companies can benefit from connecting to a platform where people are looking for a wide variety of mobility services.

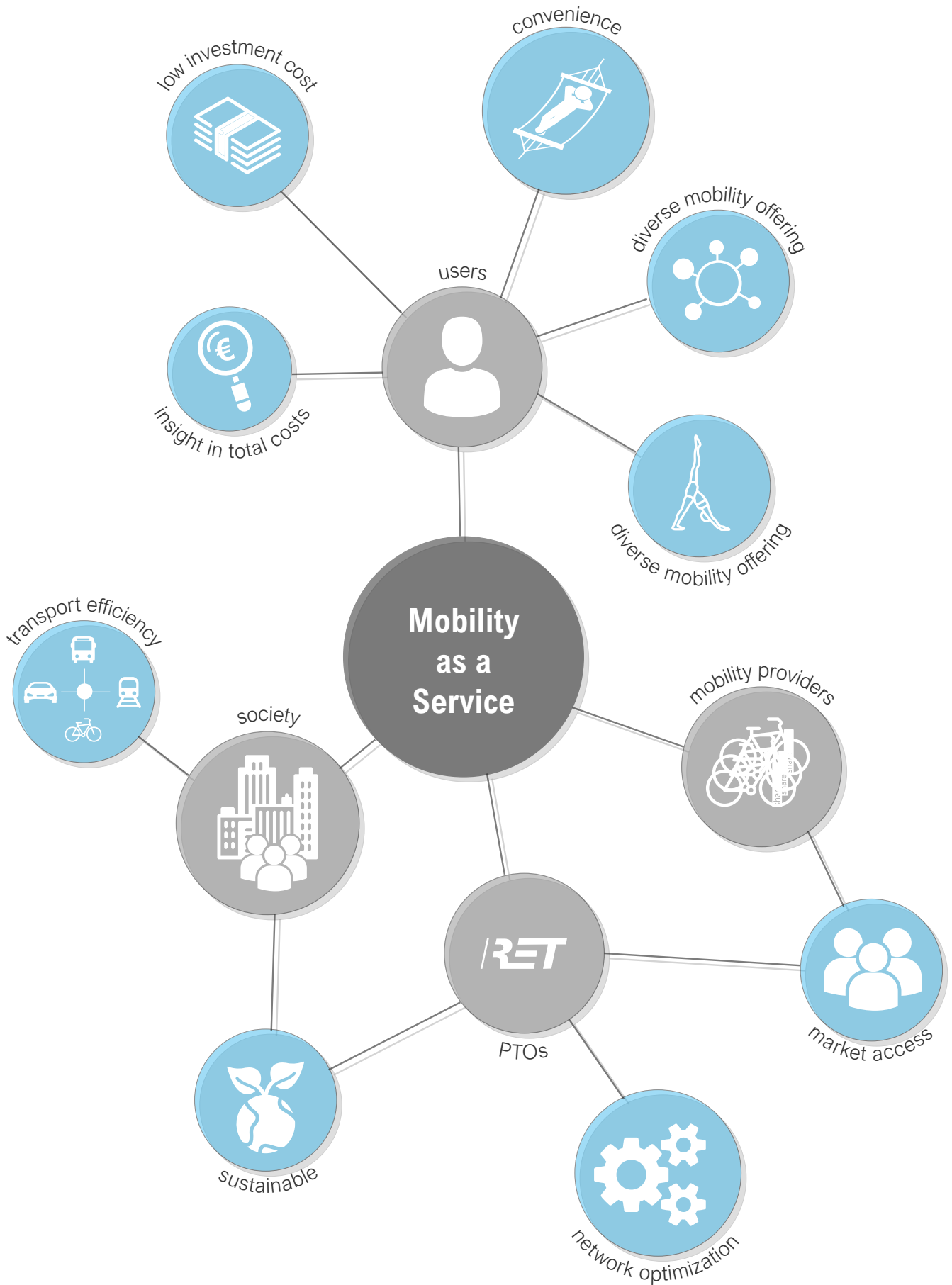


Figure 21. Benefits of MaaS for different stakeholders

6.6 Potential benefits of MaaS: public authorities

6.6.1. Potential to reduce environmental impact

Transport with private cars is proven to have many negative impacts on the environment. National climate goals require the largest impact creators to change. Furthermore, Rotterdam is known to have a very bad air quality. This is also due to the airport and port that are situated next to the city, but reducing motorized transport helps the situation.

6.6.2. Improved transport efficiency

Many urban authorities struggle with the congestion that motorized individual transport creates. It is expensive and creates unreliability of the transport system. Many of the measures that are applied to lower congestion help, but not enough. News reports of increases in congestion keep rolling in (NOS, 2018a). With MaaS, the transport system can become less dependent on private car ownership, thus being an interesting option to look to for reducing congestion.

6.7 Potential risks of MaaS

One of the large risks of MaaS for mobility providers in general is that they can lose contact with travellers. The platform starts serving as a middle man, thus both mobility providers and travellers only interface through this middle man. Good contact with the platform owner is crucial to keep in touch with users.

Besides this, public transport operators should ensure that they are not replaced by other transport modes offered in the MaaS system, like taxis. With the introduction of Uber and in the future autonomous vehicle taxi fleets, these formerly premium services are becoming much more affordable. Many people might be fine with paying a bit more for these more convenient and comfortable transport modes, and travel with them instead of public transport.

Moreover, MaaS's functioning depends on a large amount of transport options being available from one platform. However, it might happen that many different regions all have their own MaaS system. This will not lead to a better travelling experience for inter-area

travelling, as users will still need to organise their journey through multiple platforms.

Public transport operators can experience a dip in public transport usage when the service is first being used, as many of the users are likely to start using other transport modes that are offered in through the platform. New options are usually more interesting than the known. However, as time goes by this effect should not become big. Public transport is likely to still be the fastest and easiest way to travel over longer distances.

Furthermore it can be expected that less people travelling from within the city centre will choose public transport. At this moment, most of the new mobility services focus on availability in the city centre, thus this becomes a more apparent option when travelling from there. To minimize this effect RET should work together with other mobility providers to create a good dispersion of mobility services.

Lastly, transport providers should ensure that transport does not become too unavailable for people who are not tech-savvy. MaaS providers should aim to work towards a solution that is usable for people that are not comfortable with technology, so the platform has a larger reach.

6.7.1. Travellers

For users, it is a risk to become dependent on an external service, especially when it concerns something as important as mobility. As discussed in chapter 3, transport poverty is a very serious issue that can have numerous negative effects. Thus, it is important that users of a MaaS system can always depend on the system for their transport needs.

It is also a risk to depend on internet connections for transport: transport should still be available when internet is unavailable, due to technical malfunctioning or just because the user is in an area with bad connectivity.

6.8 Conditions for implementing MaaS

In order for a MaaS platform to function well, several conditions need to be met (Goodall, Fishman, Bornstein, & Bonthron, 2017):

- A high coverage ratio of smartphones on a 3G/4G/5G network, for users to connect to the platform while they are on the go
- Many people have high connectivity-

- ty levels: not only have the possibility to connect a lot, but actually do it
- Secure, up to date, dynamic information on travel options and schedules and updates
- Cashless payment systems

In the Netherlands (especially in the Randstad) these conditions are well met. All big telecom providers offer full 4G coverage in the Randstad (4Gdekking.nl, n.d.). 90% of people is connected to the internet through a mobile device, 87% of people use the internet every day, and 80% uses mobile internet frequently (CBS, 2018). Furthermore, most public transport operators offer real time information regarding travel times and delays, even though it is not always perceived to be accurate (CROW-KpVV, 2017). Lastly, all big banks in the Netherlands offer a mobile phone app that lets users pay easily without having to use cash, a debit or credit card. Therefore, there should not be any problems with the introduction of MaaS in the Netherlands from a technical perspective.

6.9 Getting involved in MaaS as a Public Transport Operator

It is obvious that MaaS offers many opportunities for transport providers, users and authorities. However, it is easier said than done to get involved in MaaS as a PTO, as there are many factors to consider before moving in one direction. Several things have to be taken into account, which are discussed below.

6.9.1. MaaS organised by the public sector

Smith (2017) provides three scenarios for the introduction of MaaS, in which PTOs each take on a different role. In one of the scenarios PTOs take on the role of both MaaS provider. This scenario has the highest potential for MaaS to solve societal issues that stem from excessive Motorized Individual Transport. Public actors are not focussed on maximizing revenue, but strive towards reducing the amount of travel and increasing the modal share of PT, which is an inexpensive product compared to e.g. carpools and rental cars. However, there will be doubts from transport service providers on the distribution of demand and the journey advice that is given through the platform. Clear agreements have to be made on which transport mode is given the trip in what situations. A middle way in this scenario could be to

have a public MaaS provider, but let that be an organisation that is independent of public transport operators. Smith sees this scenario as the most promising to create the most value. A public party would still watch over the societal benefits that MaaS could offer. At the same time there would not be any conflict of interest.

6.9.2. MaaS organised by the private sector

In contrast, MaaS can also be developed in a market-driven way. The competitiveness of the market is thought to be helpful in creating a solution that can compete with private car ownership. There are some doubts regarding the potential of these MaaS platforms to solve the societal issues that stem from present-day transport. It is not unlikely that these platforms will advise the trip types on which the most profit can be made, instead of which trips have the most potential to spread out crowds over time and modes to reduce the environmental and spatial impact of transport.

For public transport operators, this would be an easier option, as it would mean that their operations stay the same as they are now, or would even become less extensive. Eventually, parts of the operation the RET is currently doing themselves are likely to be outsourced to these external parties, like sales, finance etc. And if these platforms become larger than public transport operators themselves, they are likely to demand a special position by requiring a participation fee or a share of the profit that is made through the platform. Therefore, it is perceived to be risky, because of the large degree of uncertainty.

Companies that are interesting in this scenario are MaaS startups like Whim and Tranzer. Google and Uber are also worth keeping an eye out for, as these are companies that have extensive technological knowledge and expertise in the mobility or transport sector.

6.10 The role of public transport in a MaaS system

Experts believe that no matter how the mobility pieces are puzzled together, public transport will always be the big part of people's travelling. By providing high-quality, fixed-route transit it will be the most efficient means of moving people along dense urban corridors in the near future. However, this might reduce at some point due to the development of other

transport services like autonomous vehicle fleets. Public transport can still provide the high capacity backbone, while other transport modes might serve less populated areas and more complex routes or citizen needs to a greater extent. (Smith, Sochor, & Karlssona, 2017; Tsay, Accuardi, 2016; UITP, 2016)

6.11 Existing MaaS pilots

In different regions pilots with a MaaS system have been done, or are currently being done. Several initiatives are discussed here.

6.11.1. Full MaaS pilot: UbiGo (Sweden)

A 6-month pilot project in Gothenburg, Sweden introduced a MaaS service by uniting existing transport solutions and providers, including public transport, taxi, carsharing and bikesharing, and rental cars (UbiGo, n.d.). The target users were inner-city households that were judged to have sufficient access to existing transport solutions, in particular to carsharing and public transport, and had large enough travel needs for the service to be financially competitive with their current solution. 70 of these households consisting of a total of 195 persons (173 adults, 22 children) in the Gothenburg area participated in the field operational test. Users paid for a monthly subscription that gave them a 'mobility budget' with units for mobility services, like a mobile phone subscription. The minimum prepaid credit was about €130 per month, credit could be topped up during the month, and the subscription could be modified on a monthly basis.

Participants expected the service to be based around high quality public transport and readily available car sharing services or rentals, and the platform to reliably provide them with transport: the platform owners should take care of any problems that arise. Furthermore the platform needed to be easy to use and people felt that their privacy should be protected.

The pilot resulted in people having better insight in their travel expenses. Next to that, people had a better attitude towards shared mobility than before the pilot, which shows the positive experience travellers had with it during the pilot. Lastly they enjoyed having

more transport modes accessible to them: the increased flexibility was valued.

There were some perceived gaps in the service, the largest one being that a location was unreachable through public transport or a car sharing/rental service (the time the trip would take would not justify the costs). Furthermore, transport providers were hesitant to make bikes and cars more accessible in areas that were primarily used as a residential area, due to the uneven demand across time: week days and weekend were found to give very different amounts of requests. This shows that good communication between transport providers is necessary to ensure the whole service area is covered well.

6.11.2. The Netherlands: government initiated pilots

At this moment, the Dutch government is organising seven pilots for MaaS-services all over the country (Rijksoverheid, 2018). Interested parties can apply for development. If the pilot is successful, the company can continue to pursue the business, and has the possibility to expand beyond their current service area. For more information on the specific pilots, see appendix B.

One of these pilots is focused on increasing accessibility of the Rotterdam-The Hague Airport. RET should keep this pilot in sight to see if a possible collaboration or competition arises. Other pilots that perform well and that are located in areas that have a high connectivity with the Randstad (like Eindhoven) could also provide a valuable collaboration for expansion of the service area.

6.11.3. Rotterdam: Verkeersonderneming pilot

In Rotterdam itself a 4-month pilot study is being carried out, called the '100 Huishoudens' (100 Households). In this study 100 people that represent Rotterdam's population are given a mobility budget of 200 euro per month. They start with access to public transport, taxis and bikesharing, but each month extra mobility services are added.

7. TRENDS

In order to get a better understanding of the trends that need to be taken into account when developing a roadmap, a trend analysis is done using the DEPEST framework. Furthermore trends in mobility are examined.

7.1 Mobility

7.1.1. Electric Vehicles (EVs)

Plug-in electric cars (PHEVs) and fully electric cars (FEVs) have become much more popular in recent years. At the beginning of 2014, there were around 5000 fully electric cars and 25.000 plug-in hybrid cars. At the start of 2018, there were almost 22.000 FEVs and 97.000 PHEVs: almost quadruple the amount of five years earlier (CBS, 2018c). It is expected that in 2040, 55% of all new car sales and 33% of the global car fleet are electric (BloombergNEF, 2018).

The Dutch government is also looking to stimulate electric driving by providing refunds of up to €6000 for newly bought EVs (b). EVs bring a strong decline in environmental impact of vehicle use. This of course can be applied to personal cars but also to buses, scooters and more.

It can be expected that vehicles currently running on fossil fuel will largely be traded in for EVs. This will lead to a large increase in electricity prices and the required capacity of the electricity grid, but it can also provide opportunities for grid storage of electricity. For more information on EVs, see appendix I.

7.1.2. Autonomous Vehicles (AVs)

In the 'self-driving car'-world, five levels of automation are identified, in ascending order of some small steering or acceleration tasks performed autonomously, to full automation in all conditions. There are many applications for each of the automation levels, but especially from level 4 (full automation in urban areas)

on radical new opportunities can be identified. It's very likely the first autonomous vehicles will appear as taxis or ride-sharing vehicles, operating in limited conditions and areas, so operators have full control over all details. Autonomous vehicles are most likely electric vehicles. (TechEmergence, 2018; Wired, 2018a).

GM is currently developing an electric self-driving car specifically for ride-sharing, and is planning to introduce these vehicles in 2019, to create an integrated network of on-demand autonomous vehicles in the US. Renault plans to release a level 4 autonomous vehicle in 2020, Ford and BMW in 2021. Many others are in the pursuit to release a self-driving car on highway automation or urban automation level as soon as possible. (TechEmergence, 2018)

It's likely that AVs will operate in a "taxi" fleet: whenever you need to go somewhere, you just hail the AV, it brings you to your destination. The AV will then ride on to pick up the next traveller, or go to the storage area to charge or be maintained.

The autonomous driving technology is not only relevant for cars, but also for other vehicles that currently require a driver. Autonomy for metros, trains and trams is already implemented in cities like Copenhagen, Kobe, Potsdam, Paris, and many more (Railway Technology, 2018).

Other implications of autonomous vehicle introduction can be found in appendix I.

7.1.3. (Automated) Demand Responsive Transit

At this moment, public transport is mostly organised in with a regular schedule. There are some downsides to this: some lines are not cost-effective enough for it to continue, even

though there are still people to be served in that area. Now this problem is usually solved by implementing a 'belbus' or bus on demand, which has to be booked in advance, usually by phone.

The combination of internet connectivity of users and autonomous vehicles in the future might be a much better option to provide for these areas by providing 'automated demand responsive transport', or ADRT systems. An ADRT service is restricted to a defined operating zone within which journeys start and finish. These journeys can be free form journeys, or ones that are guided by a (loose) timetable and route. A specified start or end point like a city centre or transport hub can be defined. Users are given a specific pick up point and time window for collection.

It is most likely that minibuses are used for these services, as they reflect the low ridership in these areas. These minibuses must operate on at least level 4 on the AV scale, as described above. Advantages of these are that they can also visit residential streets, hereby providing a door-to-door service.

When implemented in a MaaS-system, automated demand responsive transit can offer a great solution for first and last miles. They can also be used to provide for complete journeys, if they are short enough. (Liang, de Almeida Correia, & Van Arem, 2016)

Trials are already being run in the Netherlands with ADRT services, like the WEpod in Wageningen. The WEpod trial consisted of two electric autonomously driving buses that could transport up to six people. The vehicles have a maximum speed of 40 km/h, although the limit during the test was set at 25 km/h (Robot Engineered Systems, n.d.). One of the WEpods is moved to Airport Weeze, where it eventually will transport people between the parking lot and the airport terminal. At this moment the vehicle is driving around without any passengers, to obtain data (Zelfrijdend Vervoer.nl, 2018).

7.1.4. Account based travelling

At this moment, the public transport system in the Netherlands is card-centred: a traveller's information is stored on one OV chip card. Account based travelling, or ABT, is a system in which the information on the traveller like tickets and subscriptions is stored on a personal account in the back-office of the system. Cards or other identifiers like QR codes can be used to enter the public transport system: the traveller are that they can choose the type of identifier that is most suitable for them (or use multiple identifiers). The hardware required for an ABT system is less expensive, as the software becomes more crucial to the functioning of the system. (Medium, 2017b)

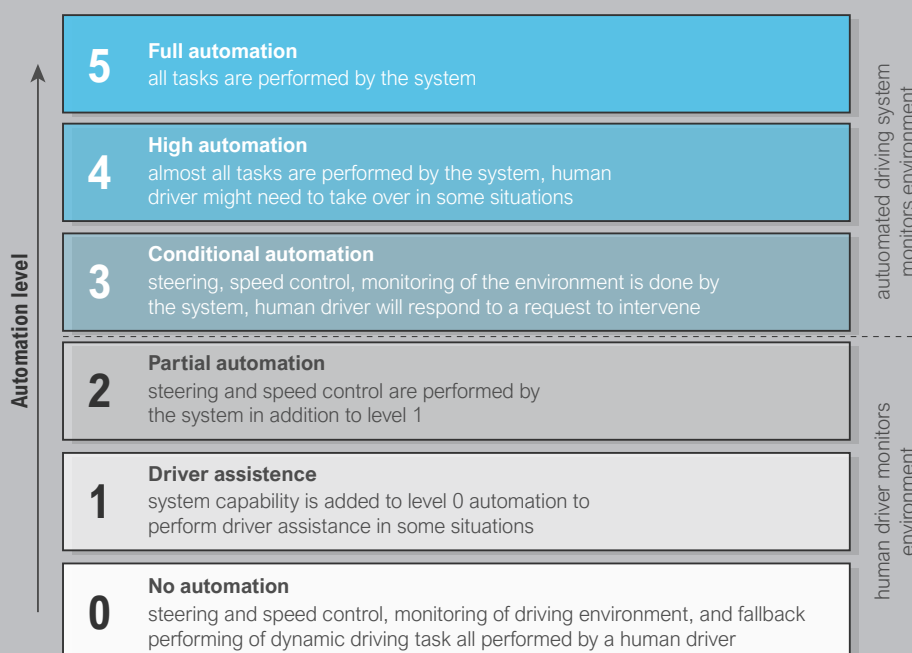


Figure 22. Levels of vehicle automation (SAE International, 2018)

7.2 Demographic

7.2.1. Urbanisation

It is predicted that in 2030, sixty percent of the world's population will live in urban regions. the population in Dutch cities grows about twice as fast as the nationwide average. CBS (2016) is predicting a big population growth in the Randstad between 2015 and 2030: the population of the city of Rotterdam is expected to grow with 10%, Den Haag with 13%, Amsterdam with 18%, and Utrecht is predicted to grow with a whopping 21%. It seems likely that the Randstad will become one large metropole area with several cities as cores.

This leads to many challenges, including the questions how we can enhance mobility while reducing congestion, accidents, and pollution. (European Commission Mobility and Transport, n.d.)

7.3 Environmental

7.3.1. Environmental awareness & sustainability

Sustainability has been on our agenda for years, and with the introduction of the 2015 Paris Climate Agreement it has been even more present on the radar. Society is demanding organisations and businesses to become more green in their activities. Especially millennials are willing to adjust their consumptions and behaviour to be more sustainable, and are looking for brands that better align with their values. (Ethical Corporation, 2018; Nielsen, 2015)

7.4 Economic

7.4.1. The sharing economy: access based consumption

According to Belk (2014), an increase in consumption models that don't require ownership but work by enabling access through sharing or pooling can be seen. Well known examples for companies that work with models like these are Netflix, Spotify, and Uber: the user pays a set fee for a limited access time. Public transport is also an of access based consumption type. Within this consumption type, transactions can be market

mediated, but no transfer of ownership takes place (Bardhi & Eckhardt, 2012).

There are two commonalities to any sharing or collaborative consumption initiative (Belk, 2014):

They use temporary non-ownership models of utilizing consumer goods and services
They rely on the internet, and especially Web 2.0 (websites that allow users to contribute content and connect with each other)

7.4.2. Servitization

By offering services to complement products, companies have improved their offering. It's characterized by increased customer satisfaction, and a more sustainable, predictable revenue stream. It makes it harder for competitors to copy a company's effort, because of the complexity of the product-service system that is required for a service centred business. (IEDP, 2017)

7.4.3. E-commerce growth

Following the rise of internet availability, buying things online instead of a physical store have become a part of everyday life. Some items are bought in a digital form only, like music and films. Next to that many physical items can now be bought online, including electronics and clothing. Even grocery delivery services are becoming commonplace, and the first completely online/delivery based supermarkets are growing. For customers this means they no longer have to leave their house in order to get many items. In the future this might even mean that all goods are delivered instead of picked up at a store.

7.4.4. Fast and cheap delivery services

Following this rise in e-commerce, delivery services like PostNL are experiencing a large growth in parcels to deliver. While only several years ago it was normal for items bought online to arrive days later, at this moment many large web shops offer next day delivery, even when ordering late at night. McKinsey (2016) describe what the future of parcel delivery can look like. Firstly, they mention that there is a considerable group of people that are willing to pay a premium in order to get same-day or instant delivery. Younger participants were even more likely to choose to pay extra for

faster delivery. The other part preferred paying less and waiting a little longer.

Furthermore, three groups are likely to be most present in the market for instant-delivery parcels: autonomous vehicles, drones and bike couriers, the latter being responsible for by far the smallest amount. In non-instant delivery there is more room for human delivery, for e.g. grocery delivery services, as carrying the crates into the house and returns are (for now) better organised by people than AVs.

7.4.5. The flexible work environment

No longer is it the standard to work at the office from 9 to 5 every weekday. As the work environment digitalized with technological developments, the opportunities of diversifying our schedules grew massively. It is allowed for employees to work from home, a trendy coffee place, or a flex office environment, at times that suit the employee best. This results in a more output based assessment of the employee rather than input (in time). Furthermore, it greatly changes the mobility needs surrounding work. (ManagementSite, n.d.)

7.5 Social

7.5.1. Living online

At this moment, 97% of people in the Netherlands over 12 have access to internet. 90% have a smartphone or mobile phone that is connected to the internet, even among the > 65 year old group 65% has access to internet through a mobile phone or smartphone. When comparing this to 2012, when only 57% of the population over 12 had access to internet through a mobile phone or smartphone, it is clear that in recent years being connected to the internet everywhere has become a part of our everyday life. It's likely that the amount of mobile internet usage will increase even further with the introduction of 5G. (CBS, 2018b; Deloitte Insights, 2018)

7.5.2. Tourism increase

Since 2010, the amount of money spent by foreign tourists in the Netherlands has doubled. The tourism sector is expected to grow explosively in the coming years, from 18

million in 2017 to 29 million in 2030. 60% of these tourists stay within the Randstad. (CBS, 2018a; RTL Z, 2018)

7.6 Technological

7.6.1. Blockchain

The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value. It can be used to transfer e.g. tickets without an intermediary, giving users access to transport without having to worry about the payment process – this is included in the exchange process. It can also handle information regarding the user and what type of transport they should have access to, e.g. inhibiting people without a driver's license to use a shared car. (Disruption, 2017; Medium, 2017a; Reply, n.d.-b)

7.6.2. Internet of Things & Real Time information

The IoT market is expected to triple in the next five years. Users are already starting their own IoT network, wearables and smartphones are well established. In the coming years these will be supplemented by digital assistants like Siri and Google Assistant, home hubs and controllers, and many more connected devices. (Reply, n.d.-a)

Because we are more and more connected, we also expect more real time information. When travelling with public transport, we all want to know when delay is expected, so we can find out if we can still make that transfer, or if we have to find an alternative. This need for up-to-date intel continues to increase the coming years. (Business Analytics.biz, 2018)

7.6.3. 5G internet

In the next few years, 5G network connections are likely to be available. While not immediately making a huge difference for users on their smartphones (4G network is currently supporting internet needs very well), the increased network capacity 5G can realise is crucial for Internet of Things development. Autonomous vehicles produce an amount of data that would be impossible to communicate

through 4G or Wi-Fi networks alone, thus needing 5G to function properly. (Deloitte Insights, 2018)

The first 5G network in the Netherlands is expected to launch in 2020, but it's still unsure when full coverage can be expected. (AndroidPlanet, 2018)

7.6.4. Big data & Artificial Intelligence

More and more data is available digitally. With big data, enormous volumes of varying data can be analysed and used more quickly. This has led for instance to Google being able to recognize traffic jams by analysing individual phones' GPS data, and showing this traffic jam on their Maps application. Data like this can be used to adjust any service to users' needs, including MaaS. Artificial Intelligence can use this data to help users have a better and more enjoyable experience, by performing actions that support them in achieving their goals. (Datamation, 2018; John Heaven, 2018)

7.6.5. Privacy

It's been a hot topic for the last few years: people's awareness regarding the security of their personal information has grown following numerous mentions of data leaks from all sorts of companies. With more and more connected products that require users to give some information, industry experts predict consumer concerns over data security to increase. However, it seems that consumers are accepting of sharing data, as long as the company is transparent on how they intend to use the data, if they allow the user to withdraw data sharing permissions, and give clear privacy policies and agreements.

If there's something in it for them, they even increasingly willing to share data. Strategies used to increase consumer willingness to share are: make it easy for them to choose what they do and don't share, offer valuable benefits to those who do share, and customize the company's data gathering strategy to different age groups. (Deloitte Insights, 2017)

Trend research has given insight in developments in different areas that provide both opportunities but also threats for the development of the new MaaS service.

Mobility

At this moment we are about to experience a large disruption in the mobility market. With the expected introduction of autonomous vehicles a lot of new opportunities arise for travellers: taxi fleet-like AV services mean the need for privately owned cars decreases significantly. AV technology can also be used to create small-scale demand responsive bus services. These types of transport options are especially useful to bring high quality mobility options to low-demand areas or on low demand times, where other mass transit services would not be profitable.

Furthermore, identification in the access based mobility is shifting towards cloud-based instead of smart-card based. This system, called Account Based Ticketing lets users choose their own identifier, and makes it easier to access data.

Other trends

Urbanisation is still happening at a large scale: the large cities in the Randstad are expected to grow 10-20% between 2015 and 2030. This leads to more demand for transport in already busy areas.

Furthermore, tourism is expected to continue its explosive growth. Amsterdam can barely handle the amounts visiting the city. Other Randstad cities also experience this growth.

At this moment almost everyone owns a smartphone and stable internet connection in the Netherlands. This leads to people having a large online presence, and relying on the flexibility and personalizability this gives them,

This increased connectivity is also seen for other items. The Internet of Things (IoT) ensures that it is possible to always have contact and realtime updates from everywhere. An upgraded mobile network based 5G enables this further with higher internet speeds.

8. THE CURRENT STATE OF MAAS-TYPE PLATFORMS

These platforms that offer a MaaS solution are currently available in the Netherlands, or are planning to release at the moment of this project. They are categorized by MaaS-level (see chapter 6).

8.1 Level 3: integration of subscriptions

8.1.1. Whim

Currently only available in Helsinki, Antwerp, and Birmingham, but is planning to roll out in the Netherlands. It offers access to local public transport, taxi services, shared cars or rentals, and shared bikes in a specified service area. The exact offer depends on the location. The user is responsible for choosing the mode themselves.

Planning a trip can be done in various ways. The destination can be entered in the search bar, selected from the favourites list, or chosen from the a calendar appointment. The planner gives options for public transport, a taxi, or walking. The user chooses their option and pays. A QR public transport ticket is issued to the user, or the taxi is sent to the user's location.

By choosing mode first, the user can select taxi, public transport, bikes, or a car. For the taxi and PT the destination must be filled in, and it further follows the same procedure. For cars and bikes, locations of available vehicles are shown. Bikes can be accessed using the Whim app, rental car reservations can be

redeemed at the car rental place, and shared cars can be accessed using Whim.

There are multiple subscriptions available. In Helsinki, where Whim is most advanced in its development, there are three: Whim To Go (pay as you go), Whim Urban (€49/month), Whim Unlimited (€499/month). With Whim Urban, the user gets unlimited public transport tickets, unlimited city bike access, taxi rides (<5 km) for €10, and car rentals for €49 per day. Whim Unlimited every available mode is usable without a limit.

8.1.2. Hely

Hely wants to change the way people move, within neighbourhoods and cities by offering access to multiple shared mobility services. This MaaS application is currently piloting their service in several cities in the Netherlands (Amsterdam, Delft, Utrecht).

They offer four different subscriptions, each giving the user access to a different set of mobility solutions. The S subscription gives access to bikes and e-bikes, M to e-scooters and cargo bikes, L to small and medium cars or e-cars, and the XL subscription to station wagons. Public transport is not included in this service. Hely's vehicles are available from their "Hely-hubs".

Hely has not included public transport in their service at this moment: they are focused on providing various car and bicycle transport options.

8.2 Level 2: integration of booking and payment

8.2.1. Tranzer

Tranzer is a startup that released their application about one year ago. It works through a smartphone application that lets travellers plan a journey on their mobile phone, buy their tickets, and travel with the bought tickets in several buses, trams, trains, and several taxi services. After giving the app permission to use GPS locations, the user simply tells the app where they want to go. The app then gives them a few options, including the total price for the complete journey. The given options are either a public transport option that is sandwiched between walks, or a taxi ride. If there is one that suits the traveller, a trip can be purchased with iDeal or Credit Card. The user then receives a QR ticket for the train, or a sight ticket for bus and trams. Therefore, the OV chip card is not necessary to use.

8.2.2. GoAbout

GoAbout is a Dutch semi-intermodal planner that aims to deliver personal travel advice based on the user's profile. It includes public transport (most local and national BTM and train services), shared bikes (OVfiets and MacBike), car parking (Q-Park, P1 Parking, Interparking), shared cars and rentals (Snappcar, Greenwheels, Europcar, Hertz, many more). In 2019 they started adding the possibility of buying train tickets directly from the app. Other public transport tickets (like RET tickets) are likely to be added in the future.

The planner shows options for public transport journeys, which are still the core of the planner. Users can enter which mode to start and end the trip with (PT, bike, or car). It gives suggestions for bike rental places if bike is selected as the post PT mode. For each journey the total price and CO2 emissions are displayed.

8.2.3. Uber

This multi-billion dollar company was founded in 2009 and has attracted a lot of attention in the 10 years it's been active. The app based taxi service creates a platform for

users to book taxi rides from their current location to wherever they want to go. It's also possible to make money by becoming an Uber driver, using your own car as a taxi (in the Netherlands drivers need to have an official 'chauffeur card' from the CBR, the national driving license institute). Uber taxi rides are usually much cheaper than traditional taxi rides.

Next to the more well-known branch of taxis, in some other countries they also have a large selection of other mobility solutions like UberPOOL (carpooling), Uber Rent (car renting), Jump Bikes (electric bikesharing), and possibly electric scooters in the near future. Subscription pilots are running in the US, giving the user a flat, heavily discounted ride fare.

8.2.4. AV taxi services

In the near future, the autonomous vehicles (AVs) will enter the mobility landscape, approximately between 2020 and 2025 self-driving cars will be available. This will trigger the development of new mobility models like car-sharing, carpooling, e-hailing taxi alternatives and peer-to-peer car rentals. These offerings are shaping to be competitors of mobility solutions like MaaS. (McKinsey, 2015)

It is expected that AVs will mainly be available as taxi services that operate in large fleets. Operators will release a large amount of AVs in one region. Thus, a large disruption in the mobility market is assumed when this introduction happens. It is important to keep this in sight, as it is likely to have a large impact on all established mobility.

The largest player in the self-driving car business at this moment is Waymo (formerly known as the Google AV project). Many other automotive companies are working hard as well to develop AVs. Some are working together with established ridesharing companies like Lyft and Uber to link vehicles to existing platforms.

This also provides opportunities, as the inclusion of taxi services in a MaaS platform can mean an easier link to AV services.

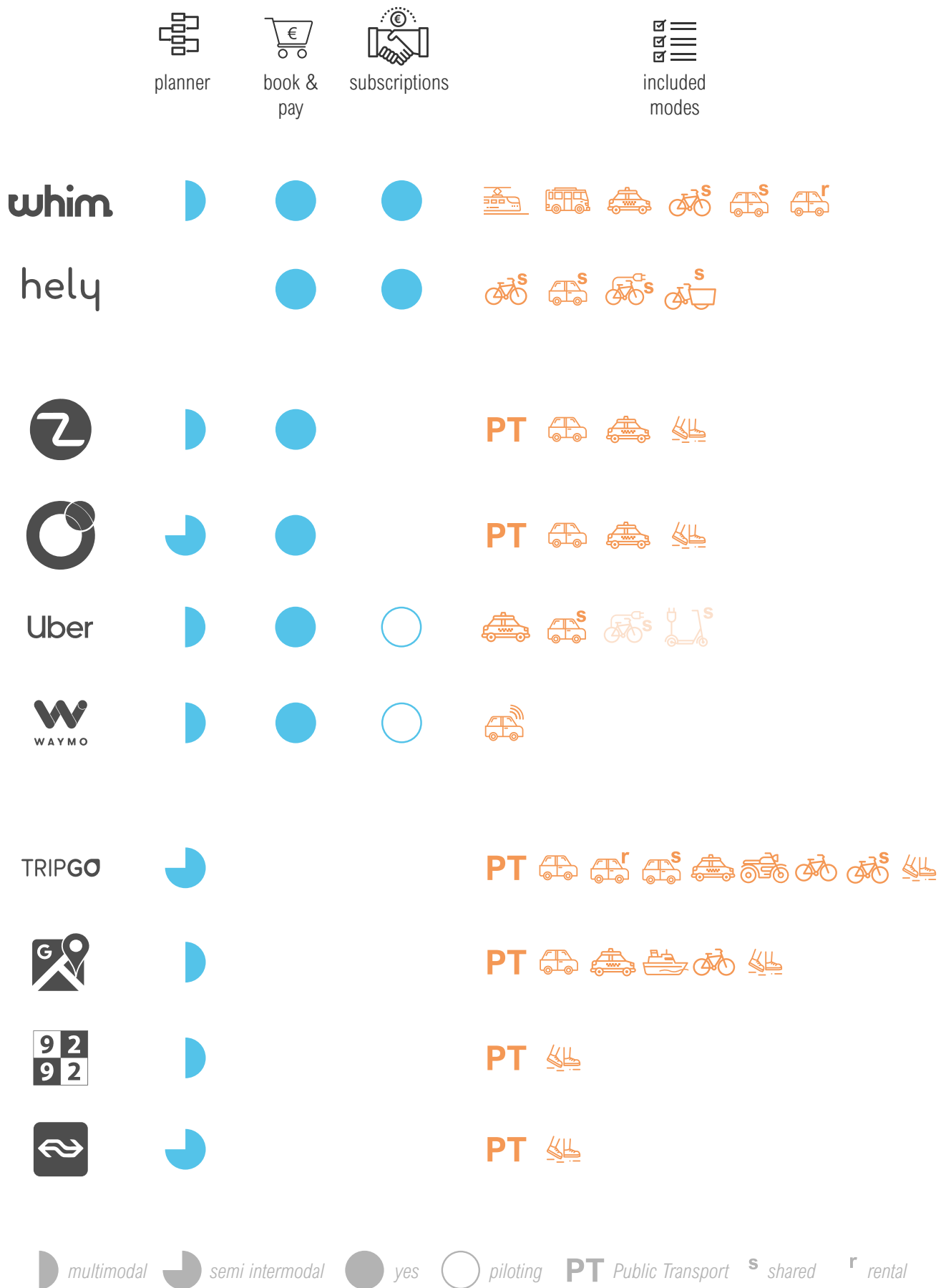


Figure 23. Overview of the offering of competitors

8.3 Level 1: integration of information

These journey planners are mostly focussed on planning public transport journeys. Some of them include the option to plan for bikes and cars. Planners are available in several grades of smartness. Firstly there are the multimodal planners: these can plan a journey that consist of only one transport mode (public transport counting as one in this case), with maybe a walking route option for the first and last mile. Secondly there are semi-intermodal planners: these give the user more choice in terms of first and last mile transport modes. Lastly there are multimodal planners, which can plan chains of all the included transport modes. This is the most advanced type of planner and provides the most value for users, but at this moment there is no company that can truly provide a multimodal journey planner.

8.3.1. 9292

9292 is a very well-known Dutch public transport planner, and also the most used one. It simply asks the user for their departure location and destination, and gives them the fastest journey. Each transfer is sandwiched by walking. For each trip, the price is displayed. The price can also be shown for several discounted options.

8.3.2. NS app

The second largest PT planning app is offered by Dutch Railways company NS. This app also includes other public transport options, but it prefers journeys to be centred around train trips. Users can choose their preferred first and last mile transport mode to be walking, PT, the bicycle or the car.

8.3.3. TripGo

This service offers a semi-intermodal trip planner available through an app and website. When first opening the app, it asks you to enter your home and work location, which transport modes to include. After that, it asks you to

rate on a scale how much you care about five journey characteristics: saving money, saving time, decreasing CO2 emission, less hassle, and activity level. When planning a journey, it gives you options that match your preferences and entered modes. It plans single-mode journeys or public transport journeys sandwiched between a walk or bike ride.

At this moment, TripGo offers many different transport modes. Next to public transport planning, they also offer Uber, taxis, BlaBlacar, Flinkster, car rentals, cars, motorbikes, bikes and walking in their planner

8.3.4. Google Maps

Being one of the most well-known tech companies in the world, it is no surprise that Google also has their fair share of influence in the mobility world. The planner that is included in their Maps application is adopted by many: just enter where you want to go and it will give you options no how to get there fastest by car, public transport, bike, taxi, or by foot.

8.4 Privately owned transport

The main function of a Mobility as a Service platform is to provide mobility. At this moment privately owned transport is still a large competitor that must be taken into account.

8.4.1. Private car

The amount of cars and car kms in the Netherlands is still growing every year. Even though congestion is still a big problem and the unpredictability of travel time by car increasing, we're still driving more and more (Kennisinstituut voor Mobiliteitsbeleid, 2018). People seem to have an irrational bias towards cars and tend to choose the car as their transport mode over public transport (Innocenti, Lattarulo, & Paziienza, 2013). Therefore, we can expect privately owned cars to still be a big competitor for public transport and MaaS solutions in the future.

8.4.2. Bikes and E-bikes

The bike has been popular in the Netherlands for a very long time: with almost 23 million bikes in the country and about 900 bike kilometres per inhabitant, there is no denying the Dutch's love for this vehicle. The average trip length by bike is 3.6 km, the acceptable distance is 10 km for both commuting and recreational purposes.

However, the E-bike has changed this landscape slightly. This vehicle used to be driven mostly by seniors, but is finding its way towards other user groups as well. With an E-bike, the distance we find acceptable shifts to 15 km for commuting, and 30 km for recreational purposes. The average trip length is 5.3 km (Kennisinstituut voor Mobiliteitsbeleid, 2016).

8.4.3. Speed-pedelec

This new type of high-speed e-bike could become a widespread mode for medium distances. It has pedalling support up to 45 km/h: therefore they are classified as mopeds. This means riders must be over 16, have the correct license and wear a helmet. At a price point of around €4000,- Speed-pedelects are not very accessible to the general public at this moment, but they are on the way to becoming serious competition for medium-distance modes. (Fietsenwinkel.nl, n.d.)

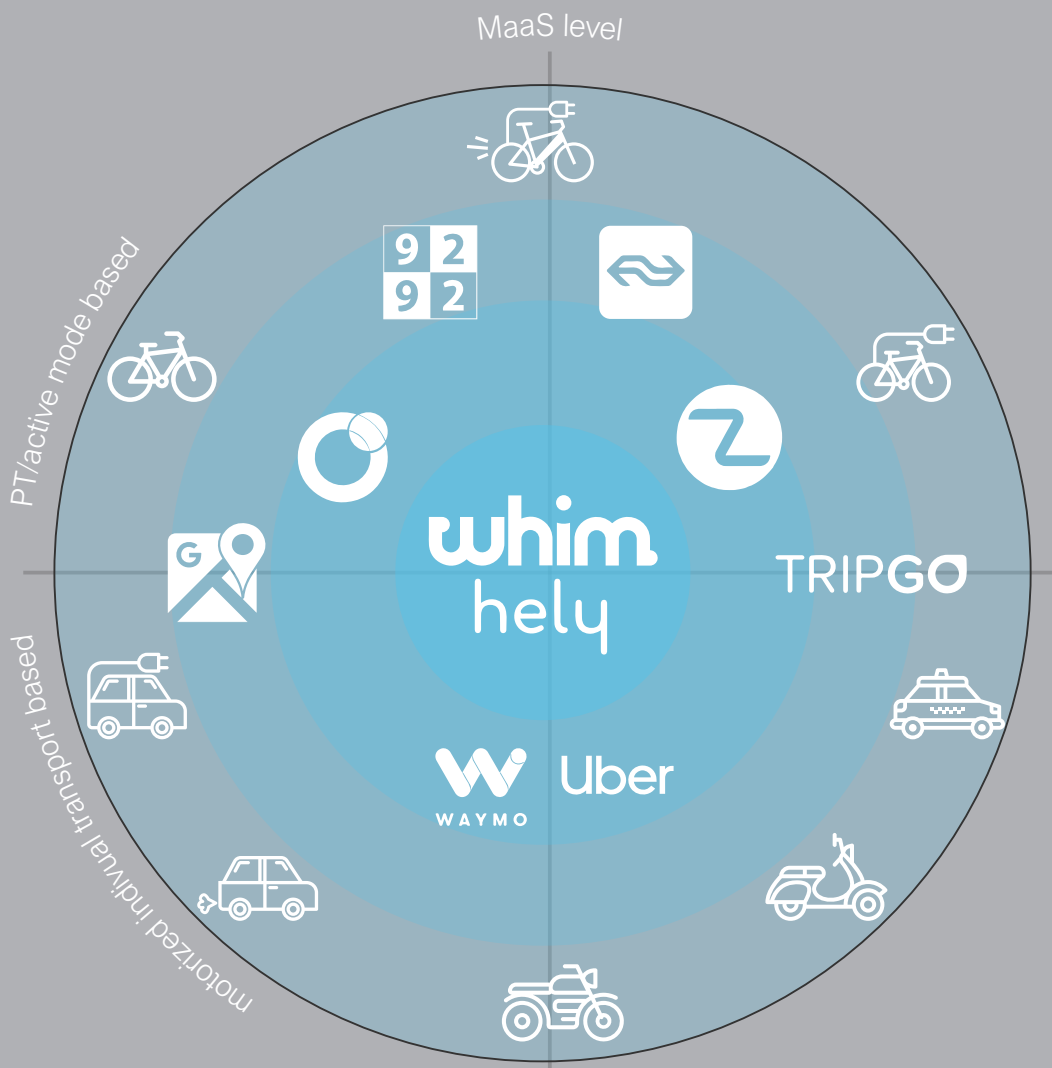


Figure 24. Competition of a MaaS platform

9. POTENTIAL USERS OF A MAAS PLATFORM

Based on literature, experts and trends several general target groups for MaaS can be identified. In this chapter these target groups are discussed and related to Rotterdam and the RET. This results in selecting the most promising users for the MaaS platform and the design roadmap in the next phase.

9.1 Characteristics of potential MaaS users

9.1.1. Literature findings

Sochor and Sarasini (2017) examined results of a national questionnaire (n = 1305) to explore the Finnish perspective on MaaS in 2014. The researchers asked them questions regarding their opinion on many components of MaaS, which could be scored from 1 (not at all attractive) to 5 (very attractive), see appendix D for details.

Potential early adopters:

- Adults younger than 35
- People with high digital maturity
- Frequent public transport/com-
bination of mode users
- Low income households

Potential laggards:

- Older adults
- People with low digital maturity
- Frequent car users

Furthermore, they found that a MaaS platform would be more attractive for leisure trips than for commutes. This could be due to the fact that leisure trips are less often based on a routine, as opposed to strong habits regarding commute journeys.

9.1.2. Expert interview

María Alonso Gonzalez, PhD researcher on the evaluation and forecast of new mobility services including MaaS, has done a study on 'MaaS-ready' individuals in the Netherlands. She found several characteristics that influence potential interest in MaaS (see appendix E).

The first one is technology adoption: having a smartphone and mobile internet and feeling comfortable using it. The second one is a love for cars: people that are very fond of their car are less likely to be interested in MaaS, yet people that do not really care for cars are much more likely to be into MaaS. The third one is public transport/multimodal transport supportiveness: people with this quality are also more inclined to be interested in a MaaS solution.

9.1.3. Conclusion

Both sources tell a similar story: MaaS-ready people are technologically apt, and either do not love cars, or love public transport, thus resulting in more frequent public transport usage. These characteristics can be translated to several target groups, which are discussed below.

9.2 Potential target groups

9.2.1. Millennial Urban Professionals (MUPs)

MUPs are people born between 1980 and 2000, that have a lifestyle that is centred around urban life and have at least a modal income. There are several characteristics that make Millennial Urban Professionals a good initial main target group for the MaaS platform. Firstly, they usually are technologically apt as

they have grown up in a digital era. Secondly, millennials do not value ownership of goods like previous generations: instead, they just want to have access to what they need (Goldman Sachs, 2018).

Next to this, they live and work in an urban area. As a Mobility as a Service-platform functions best in areas where there is enough demand for access based mobility services to become profitable, urban-centredness is crucial to be able to rely on MaaS. Furthermore, RET and other collaboration partners mainly operate in urban areas, thus it is logical to cater to people whose life is centred around their service area.

Moreover, transport is necessary for life. Thus, relying on others to organise all transport brings a certain level of riskiness. People with a higher income and education level are more

willing to take risks in general (Dohmen et al., 2011).

Lastly, MUPs are expected to be more on the innovator side of the innovation adoption spectrum. These people look for new technologies and services and accept flaws in return for the added value.

9.2.2. Tourists

In recent years a large increase in tourism in the Netherlands is seen. Tourists usually do not have access to privately owned transport modes, thus are designated to public transport or rental vehicles. A system that gives them a good overview of the available transport within and between cities is very helpful to them. Right now many tourists mainly go to Amsterdam. Some visit multiple of the big cities in the Randstad for one or more days.

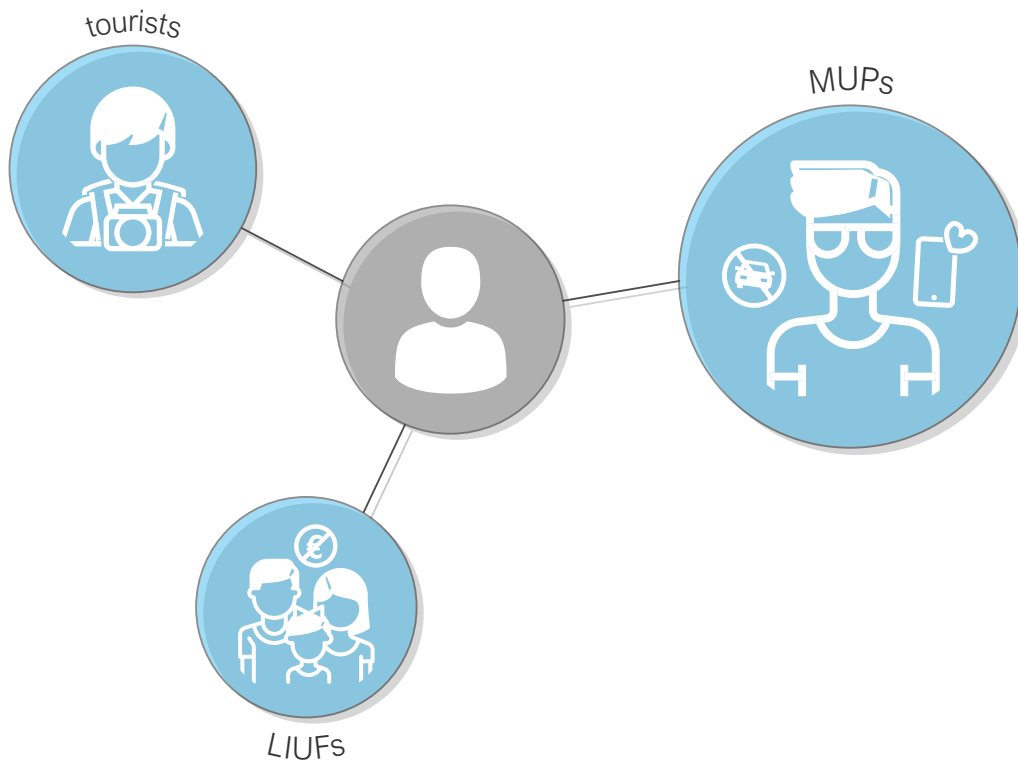


Figure 25. MUPs, LIUFs, and tourists

A MaaS system can help take some of the pressure off of Amsterdam by providing transport to other main cities.

An interview with Rotterdam's tourism office has shed light on the current situation of tourist mobility and on their needs (appendix F). The current transport offering for tourists is not very well developed: they usually follow the advice of tourism offices. This consists of: buying day or week public transport tickets, and use the 9292 application to plan journeys. Thus, it seems that there is a lot to win by just promoting a more convenient way of travelling through tourism offices. By collaborating with these offices the same service can reach more people.

9.2.3. Low Income Urban Families (LIUFs)

These people are frequently subject to transport poverty. Especially in the larger cities in the Netherlands, many of them are also a minority. This leads to an even larger chance at transport poverty. They often do not have access to motorized vehicles, cannot

afford other transport options, or do not really understand the public transport system. People from ethnic minorities, especially women, do not use a bike, hereby further limiting their options. Having a MaaS-option at their hands which gives them a better overview of their options and the costs would be very helpful for them.

Rotterdam is one of the cities with the highest percentage of poverty in the Netherlands (RTV Rijnmond, 2019). These people can benefit a lot from having easier access to suitable mobility: reduced transport poverty has a positive impact on many aspects in their life. Thus, this group definitely one to keep in mind while developing a Mobility as a Service-platform. However, after interviewing multiple experts in Rotterdam on low income groups and families (appendix C), it very much seems that they are a difficult and diverse group to target. Therefore the choice is made to not focus on this group within this project, but they should be looked after in the next phases of the development of the MaaS platform.

There are several characteristics that 'MaaS-ready' people possess. Firstly, they must have a high digital maturity. A MaaS platform is based around a digital environment and connectivity, thus it is crucial for users to feel comfortable relying on technology. Secondly, people should have a positive attitude towards public transport, or a neutral to negative attitude towards private cars. As it asks people to move away from relying on cars, MaaS users need to be open to this.

This leads to three main target groups for Mobility as a Service in the Randstad:

- Millennial Urban Professionals (MUPS)
- Tourists
- Low Income Urban Families (LIUFs)

The first two groups, MUPS and tourists, are very suitable for the MaaS platform RET and partners are developing. MUPS suit the

'MaaS'-ready profile very well. Furthermore they are more inclined to take risks, and are OK with a service not being perfect in exchange for it providing something new. Tourists are currently not provided for very well, so any easy to use platform that provides access based mobility is a win for them.

The last one, LIUFs, is prevalent in Rotterdam and would benefit from better mobility access without accompanying investment costs. However, people in this group are very different from the other two groups in their mobility needs and wishes. It is not feasible to include them in this project due to the short time nature, as it would require extensive research. However, they should not be forgotten in the future: RET and partners should strive to understand the needs of LIUFs and develop a MaaS-solution for them.

10. MUPS: INSIGHT THROUGH CONTEXTMAPPING

In the previous chapter, several potential target groups were identified. To get a better understanding of the most promising target group, Millennial Urban Professionals, a Contextmapping study was done. This chapter elaborates on this study and the insights that are gathered.

A more extensive overview of the research method, setup and results can be found in appendix H. The transcript and insight clusters of the study are stated in appendices II A and II B.

10.1 Research goals

This explorative Contextmapping study is done to get a better understanding of travel habits of Millennial Urban Professionals (MUPs) in the Randstad area. There are several topics on which the study focuses:

- Travel modes: which do they use frequently, less frequently, never and why? Which combinations of travel modes are seen for multimodal journeys?
- Shared mobility: which shared mobility services have they used (or not)?
- Journey planning: how do people plan their journey, and what do they take into account when planning?
- Travelling on work vs. free days: what are the differences between routine and non-routine journeys?
- Exploring journey attributes: how do they experience the journey attributes mentioned in the Current mobility habits chapter when travelling?

10.2 Method

Contextmapping is a generative research method to let people construct their view of the context, by calling up their memories of

the past and hereby eliciting their dreams of the future. Generative research methods help people express what they know, feel and dream, uncover tacit knowledge and latent needs (Visser, Stappers, Van der Lugt, & Sanders, 2005).

The setup of Contextmapping research is divided into three parts. Firstly there is the preparation part, in which the research goals and setup are established. Then methods and techniques that will be used are decided upon. Finally, the study materials are prepared and participants gathered.

The second part of a Contextmapping study is gathering the information. In this case the information is based upon three main sources:

- Introductory interview: this interview had two main goals, getting to know the participant, and explaining the research setup and booklet to them. Each interview was done one-on-one and lasted for about 15 minutes.
- Sensitizing booklet: asked the participant to keep a travel diary for 5 days, including both work days and free days. This helps the participants keep track of their choices and how they experienced this.
- Group session: two two-hour sessions with 6 participants each were held. In this group session the booklets are discussed and two creative exercises are done to help the participants express their ideal journey.

The final part of the study is to analyse the gathered information. To get insights from this study, it is needed to transform the large amount of information gathered from the booklets, the group sessions and the creative assignments into quotes or evidence pieces. These can then be used to follow the analysis procedure are described by Visser et al. (2005), which is based on the Grounded

Theory approach (Corbin & Strauss, 1990). The quotes and evidence pieces are put in clusters, which are named to describe the evidence in the cluster. These are then used to create patterns and an overall view.

10.3 Participants

The target group for this research were the Millennial Urban Professionals, or MUPs (see chapter 9). To ensure that they were at least familiar with public transport and/or multimodal travelling, the criterium of frequently using public transport was added.

This resulted in a final group of 12 participants (of the 14 gathered participants, 1 did not meet the criteria, and 1 did not show up for the group session). There were 6 male and 6 female participants, ranging from 25 to 37 years old. They all lived in Rotterdam, except for one person who lived in Rijswijk. Four people lived by themselves, six people lived with a partner, and two lived with a friend. Five participants had one or more children. They worked in either Rotterdam or one of the other big cities in the Randstad. Two of the participants had an MBO education, nine HBO, and one WO.

10.4 Results: introduction interviews

The most important learnings of the study are discussed here. For a more extensive overview of the findings, see appendix H.

Several things surfaced immediately from the introduction interviews:

- MUPs do not have transport subscriptions, unless their employer gives them one
- No one used shared mobility services, with the exception of the OV-fiets, which was used by some people when visiting a place they did not visit frequently
- Routes to work are usually done out of routine, most people remember the schedule of public transport they use to get to their work. They do not look up schedules and travel options anymore, except for when they are already at their station or stop and the journey they usually take is not available anymore. Most people use 9292OV, some use specific apps for

the transport provider they want to travel with (RET Realtime app, NS app)

- People that lived close to the city centre did not have a car anymore or are seriously considering selling theirs: they do not feel like owning a car is necessary with all the public transport options around them, and a lot of destinations in a bike-able range

10.5 Results: sensitizing booklet, group sessions and creative assignments

This explorative study has given much insight in travelling habits of urban inhabitants and their wishes. Even though not all the participants fit the 'MUP'-profile, all of them gave interesting insights in their travel behaviour.

10.5.1. Needed from transport: flexibility, speed, reliability

As Peek and Van Hagen (2002) described, these three values are the foundation of a mobility experience. Reliability is a must, and speed and flexibility are dissatisfiers: if they are not met, people become unhappy (see chapter 3).

Almost all participants expressed their wish for flexibility in transport systems: either by bike, car, or through living very close to public transport hubs. This is also elaborated on through their wish to have different transport options available when the situation asks for it, be it because of the weather, nature of the activity at the destination, or simply because of a mood.

Speed is what most people look at firstly when planning their journey. They often compare different transport modes and look at what is fastest. For routine journeys they usually know the fastest route ("I always take the bike for this trip, because I know it is the fastest"). However, speed is not the only thing that is taken into account: comfort and price must be at an acceptable level.

As can be expected from 'must-have' values, reliability was not discussed extensively: participants implied that they just expect transport to be reliable.

10.5.2. Choices are influenced by what employers provide

One of the findings is that choices are very much constrained by employers. Often they provide for commuting transport, either by giving a public transport subscription or a lease car. As the commute travels were undertaken more frequently than irregular journeys, most of their journey choices were not based their own preferences, but from what their employer had provided them. As one participant said, “For me it’s pretty cheap because I have an NS business card. So I don’t pay for my transport”.

Furthermore, they could often use these transport options in their own time as well, therefore influencing their irregular journeys as well. Thus, when developing a MaaS platform, it should be taken into account that travel choices are likely to depend on what employers offer.

10.5.3. Routine vs. irregular journeys

There is a vast difference between how routine journeys and irregular journeys are experienced. Routine journeys are often done in an automated way: no travel information is searched for, as timetables are more or less memorised (“I don’t really plan it anymore, I know at what time the metro and train leave, so I just get in and then I know at what time my connection runs. So I just know if I’m going to miss it or if I have to adjust my plan”). This leads to travellers missing information on changes in their travels (“When there is a new timetable, I usually see the notice but I still forget about it, so I do not arrive on time when the new schedule starts”). The unawareness of changes in timetables was confirmed by the booklets.

Furthermore, many of the participants had created a sort of emotional numbness regarding these journeys. They knew they had to get through it anyway, so they got themselves to stop feeling negative about unpleasant journeys: “At some point I just feel neutral about it, you just do it. Just get in and out. It’s not my favourite, but I feel neutral about it. I have to, so I do it”. Another participant felt the same: “I try to not think about the travel time, otherwise I’ll just get annoyed”. The strong routine most people had developed for their commute travels looks to

be difficult to change, and might not be suited for a MaaS platform initially. However, providing information on changes in their routine journey would be very valuable.

Irregular journeys however are very different. This category can be split into two types of journeys, depending on whether a specific arrival time must be met or not. If this is the case, people were quite meticulous in their planning, often taking extra time for the journey to ensure they had some play room in case anything did not go to plan. Without a required arrival time the participants were more loose in their approach, often not planning in advance, just leaving their location when it suited them. Irregular journeys look to be the most suitable to get people to start using a MaaS platform, as it includes more planning. Next to that there often is less awareness of the travel options in the destination area, making them more likely to try new mobility services.

10.5.4. Unfamiliarity with access based mobility services

A well-functioning Mobility as a Service-platform depends on travellers using different mobility types. Most participants however never used new mobility services. They often had experience with OV bikes before and really liked them, but no participant had used another service like Mobike, Felyx or car2go. This shows the need for actively getting travellers acquainted with new mobility services, as there is no certainty they will actually start using them once they are integrated in a MaaS platform.

10.5.5. Transferring is not inherently unwanted

Connections are not necessarily seen as bad. When the transfer is just right in timing, people did not seem to mind that much. However, this is a fine balance: on busy stations transfers are usually not preferred, as the crowds create stress for making the next transfer. Sometimes people are willing to sacrifice comfort for this (“I usually sit next to the doors in the IC Direct, if I sit in the carriage I always miss my transfer because there are so many people”).

When provided with the choice to either have longer travel time but less transfers, or a shorter time with more transfers, the option

of less transfers seemed to be favoured by several participants. This transfer stress is associated with services that run on a timetable: public transport. For other access based mobility services this stress is mainly induced by not knowing availability. It seems that providing accurate information is helpful to solve this problem.

10.5.6. When are other modes preferred?

Other insights were that even these frequent public transport users preferred the car sometimes. This was mainly due to the large speed gap in these journeys, or the destination being very hard to reach with public transport (“By car you’re just more flexible. You can

come and go when you want instead of being bound to certain times”). Having to transport many (larger) items also influenced participants to choose the car over public transport.

10.5.7. Dependence on one item is frustrating

Lastly, the current dependence on the OV chip card was seen as very frustrating at times: when not having the chip card at hand, a well-functioning public transport system suddenly transforms into an expensive, unpleasantly complicated system. Therefore, it is desirable to have multiple options to use the MaaS platform.

Millennial Urban Professionals (MUPs) are around 20 to 40 years old, their life mainly takes place in an urban environment, and they have a relatively high income. They are technologically apt and interested in access based consumption. This makes them a very suitable target group for a Mobility as a Service system.

In this Contextmapping study their travelling behaviour and preferences were analysed. Several things became apparent: firstly, their journeys consist mostly of routine journeys, which they know by heart and do not look for information for, and irregular journeys, which are not done out of habit. These journey types are experienced very differently.

Secondly, their employers usually provide them with a transport subscription to cover their mobility needs. For most people, they could use this subscription in their own time as well (sometimes for a small extra fee). Thus, MUPs are very much influenced in their mobility choices by the transport their employers provide them with.

This leads to the addition of Urban Employers to the target group selection. To change MUPs’s travelling behaviour they should not only be target themselves, but their employers are to be included in this as well.

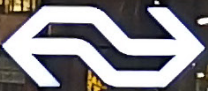
Thirdly, they are very unfamiliar with the range of access based mobility services that are available nowadays. The only service that has been used by multiple people was the OV-fiets. They were very enthusiastic about the OV-fiets, but had not tried other services. Getting them to try ABM services thus is crucial for the success of a MaaS-system.

Moreover, MUPs want fast, flexible, and hassle-free transport. They are happy with the speed high quality PT modes like trains and metros provide, but are not content when a journey has long first and/or last miles. Furthermore flexibility is important to them, as they want their journey to be adjustable to their situation or mood. Lastly they just want their transport to be easy to use, and not depend on the OV chipcard for this ease.

Lastly, they do not see transfers as an inherently bad thing. When these transfers are stressless due to having a right transfer time window and the right information on where to go, they are fine with transferring. That said, not having to transfer is still preferable: when provided with the choice to have a shorter journey with an extra transfer, they often choose not to go with this option.



Lijn Bestemming	Vertrek
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E Den Haag Centraal	12 min



DESIGN CHALLENGE

11. DESIGN CHALLENGE

With this chapter the first phase of the project is concluded. Firstly the most important findings are summarized. After this a design challenge is formulated to guide the design process in the next phase.

11.1 Problem identification

11.1.1. Society

As seen in chapter 4, our current transport habits have quite a few negative side effects: congestion, space usage, excessive energy consumption, greenhouse gas pollution, urban air quality reduction and noise pollution. Urbanisation will result in these effects becoming even larger. Therefore, urban mobility is considered to be one of the great challenges for the future (Sochor, Strömberg, & Karlsson, 2015; Van Audenhove, Kornichuk, Dauby, & Pourbaix, 2014).

11.1.2. RET

At this moment, the capacity of the public transport network barely suffices. During peak hours many of the vehicles are very crowded, which makes travelling uncomfortable. The traveller growth is expected to continue in the coming years. However, some areas are experiencing the opposite: there is too little demand for a full service to be justifiable. RET feels it is their responsibility to provide reliable and good public transport to the whole Rotterdam area. Currently they are already piloting new services in low demand areas, however in high demand areas this problem is not easy to solve. Therefore it is important to look for new ways to better balance the transport offering with the demand.

11.1.3. Users

Peek and van Hagen (2002) developed a hierarchy of transport needs, in which flexibility and speed are seen as dissatisfiers. Reliability is even more crucial as it is perceived as a must-have. Other research has shown that public transport and active modes are perceived to be less flexible, comfortable and fast, even in urban areas (Redman, Friman, Gärling, & Hartig, 2013).

The Contextmapping study that was done with Millennial Urban Professionals (chapter 10) confirmed this. The participants were already frequent users of public transport and most of them actually liked using it, but were still feeling there is a lack of speed, flexibility and reliability when travelling with PT. This was mainly reflected by their worries about travelling late, or to remote locations or ones they were unfamiliar with. They would rather travel by car, as this would provide them exactly this. Furthermore, the changing lifestyle of less rigidity in schedules asks for more flexibility in the future.

As our transport behaviour depends strongly on habits, it will be difficult to let people choose a new option, unless it provides clear benefits over our current habits. The high investment costs of owned motorized transport modes proves to be a large downside which access based mobility does not have. However, the reliability, flexibility and speed it gives seems to still be worth it for many at this moment.

11.1.4. Technology

At this moment there already are quite a few different access based mobility services. Traditional ones like public transport, but also

newer ones that provide shared mobility in the form of bicycles, e-scooters and e-cars. Public transport uses a whole separate ecosystem with planning apps and the OV chip card. New mobility services are usually accessible through their own application or website. Thus, in order to use all these access based mobility services the traveller has to use a wide variety of applications, each with a different account, booking system and payment options. To find available shared mobility options in the area, many different apps might need to be used to locate the preferred one. Besides this it is hard to keep track of the total expenses.

Furthermore, it is likely that the mobility market will change a lot in the coming years: the introduction of autonomous vehicles can pose a big threat to access based mobility services. However, it does not need to solely be a threat: including AV services could also provide numerous opportunities for strengthening the transport network where public transport or other access based mobility services do not satisfy.

11.2 Mobility as a Service: the solution?

In a MaaS-system different mobility services are bundled. Travellers can plan, book, pay for and travel multimodal journeys. By doing so access based mobility could approach the flexibility and speed of ownership based motorized transport, without the accompanying investment costs. However, for travellers to completely trust a system, they need to feel they will never be left stranded: it must be reliable.

So, how can a MaaS platform be developed to provide reliability, flexibility and speed for travellers while providing RET with the opportunity to balance Rotterdam's access based transport demand and supply, and reducing the negative impacts of personal transport on society?

11.3 Approach: design roadmap

In order to realise this goal time is needed. Travellers need to be given time to switch their ownership based mobility habits towards access based mobility habits, and the MaaS service should help them in this transition. Furthermore, it can not be expected that all necessary technology and partnerships can be developed on a short timescale.

Therefore a more long term approach for the development of the MaaS platform must be adopted. A design roadmap is suitable for this, as it is a strategic document that helps the design or development team to guide activities over a longer time. It shows milestones and activities that need to be undertaken in order to reach these milestones. A structured approach with a long term vision like this helps to keep development efforts on track.

11.4 Challenges

11.4.1. Speed and flexibility

Especially metros, trains and lightrail services provide a good amount of speed and flexibility, while having a low impact on society. In urban areas and in the Randstad they run frequently and in many directions. Thus, these transport modes are a great backbone for a MaaS-system.

However, the first and last miles towards and from these high quality public transport are equally as important for a good multimodal journey experience. Fast and flexible transport modes like e-scooters, e-steps and e-bikes and bicycles, whether owned or shared, are good options. But in some circumstances these modes do not suffice for the goals a traveller has, so additional transport modes that provide more shelter need to be included to ensure speed and flexibility outside of regular cases.

Furthermore the transfers between these trips need to be as easy as possible. This includes not having to struggle with locating

vehicles and/or parking spaces for vehicles, short walking distances between arrival and departure locations, and short waiting times. As people experience waiting time in a much worse way than in-vehicle time (Kennisinstituut voor Mobiliteitsbeleid, 2017b), the fastest journey that includes more waiting time might not be the most optimal in terms of traveller experience.

11.4.2. Providing reliable transport

With the integration of more flexible transport modes to connect to fast transport, the flexibility and speed of the offered transport can be increased a lot when compared to present-day access based mobility. However, reliability is a much larger challenge. It is very easy for people to feel more dissatisfied with things they feel they have little control over than things they do feel they have control over (getting stranded because of train malfunctions versus running out of car fuel), so ensuring travellers feel the service is very reliably is crucial to the success of the service.

Transport however is not the only part that is offered: besides this, the service and platform itself must also be reliable. Providing good information and customer service is crucial for this. User testing helps to ensure the information is complete and accurate.

11.4.3. Choices influenced by provided mobility

Lastly, many people have some form of agreement with their employer for their mobility needs. This can be in the form of a lease car, but public transport subscriptions are also given out more and more. While of course aimed at providing commuting options, the ability to use the provided options in their own time is frequently included. Thus, travellers are often influenced in their choice by transport options their employers have provided them with.

11.4.4. Integration of data and systems

There are several challenges for developing such a system. Firstly, the data and systems of public transport and new mobility services need to be integrated into one back office, so users can actually plan, book, pay for and travel with different services, all through one platform.

11.4.5. Being a mobility director

RET has a strong brand in the Rotterdam area: most people and companies know the transport operator. Besides this they are the largest access based mobility provider in the area. The company can use this position to become the mobility director of the Rotterdam area. As the mobility director they can try to organise the total offering of access based mobility in such a way that each area has a good offering of reliable, flexible and fast transport. These can be RET services like metros, buses and trams, or new mobility services.

In this way, the company can optimize their transport network better. The unprofitable lines and services that do not meet the traveller's requirements can be replaced with services from other mobility providers. Thus, the total mobility offering quality can be improved, and RET can use the freed resources to improve their own offering.

11.4.6. Prepare for the future: introduction of autonomous vehicles

The introduction of AVs in urban areas in the Netherlands is expected to happen in the coming years. As AVs are likely to be operating in large taxi fleets, the access based mobility market will be disrupted by this introduction. Preparing for this challenge is very important for the success of the company in the future. Good ties with the municipality and Metropole area (MRDH) can help keep policies favourable of public transport. Furthermore the integration of these AV fleets into a mobility ecosystem should be considered.

DESIGN ROADMAP FOR THE INTRODUCTION OF MAAS



12. CONTEXT: URBAN MOBILITY IN THE FUTURE

The city's inhabitants need mobility in order to do what they want, in a way that suits them yet does not take away from liveability. Therefore it is important to think about what Rotterdam looks like in the future: the city is the context in which mobility will take place. The municipality's vision for the Rotterdam is 'Building a strong economy in an attractive city to live in'. (Rotterdam, n.d.) However, this does not create a clear picture of what this attractive city with a strong economy looks like in 2035. To get an idea of what to expect for the city of the future, some of the trends and visions for the are discussed below.

Besides the change in what a city looks like in 2035, our mobility needs will also change. Trends and developing technologies like AVs and fast delivery services (see chapter 7.4) influence if, how and when we need to move. This is also discussed in this chapter.

12.1 The city of the future is...

12.1.1. Sustainably liveable

Above all, cities should be liveable: pleasant to live in. This means the environment is not harmful to our health, but provide opportunities for people. Space in high-demand areas is used for things that actually benefit our improve our quality of life. Private motorized vehicles are banned from high-demand areas to create more space. More green is incorporated in streets and vertical gardens become widespread. These measures improve the air quality, which helps our overall wellbeing. (Nieuwenhuijsen & Khreis, 2016)

12.1.2. Multipurposed

There are less and less monofunctional areas in a city. Living, working and leisure spaces can be developed in the same area. Anyone can choose where they want to live, and the city facilitates multiple styles of living: in the hustle and bustle of the centre, or more

spacious and green living in the outskirts of the city. Technology enables many people to work from wherever they want. Having spaces for this close to home helps us to spend more time on things we actually want to do, like utilising the available leisure opportunities in the area. To create multifunctionality in high-demand areas space is sought in height. (Badenhorst, 2016)

With more multipurposed areas, people will be able to do more within their own area. Therefore the mobility needs are also shifting more towards intra-city mobility, or even intra-neighbourhood mobility.

12.1.3. Smart

Cities follow the megatrend of being connected. Among those are increased safety through better monitoring and crime prediction, and a better living environment by automating systems using energy and dynamic electricity pricing. Furthermore it can enhance social connectedness by creating digital communities that facilitate real-world interactions. (McKinsey, 2018)

12.1.4. Accessible

In order to fully enjoy the benefits the city of the future has to offer, urban spaces have to be accessible for everyone. In high-demand areas the focus will shift towards public transport, active modes and shared mobility. Motorized vehicles are only let into these areas in exceptions. The perimeter of and areas outside the city centre is accessible with other transport modes. Especially in areas that are (currently) not well served by public transport motorized vehicles will have a place. Even further in the future these will be replaced by AVs. These measures increase the available space, mainly in high-demand areas. Streets are split into several lanes for vehicles with a comparable speed to increase safety and travel speed. (The Architect's Newspaper, 2018)

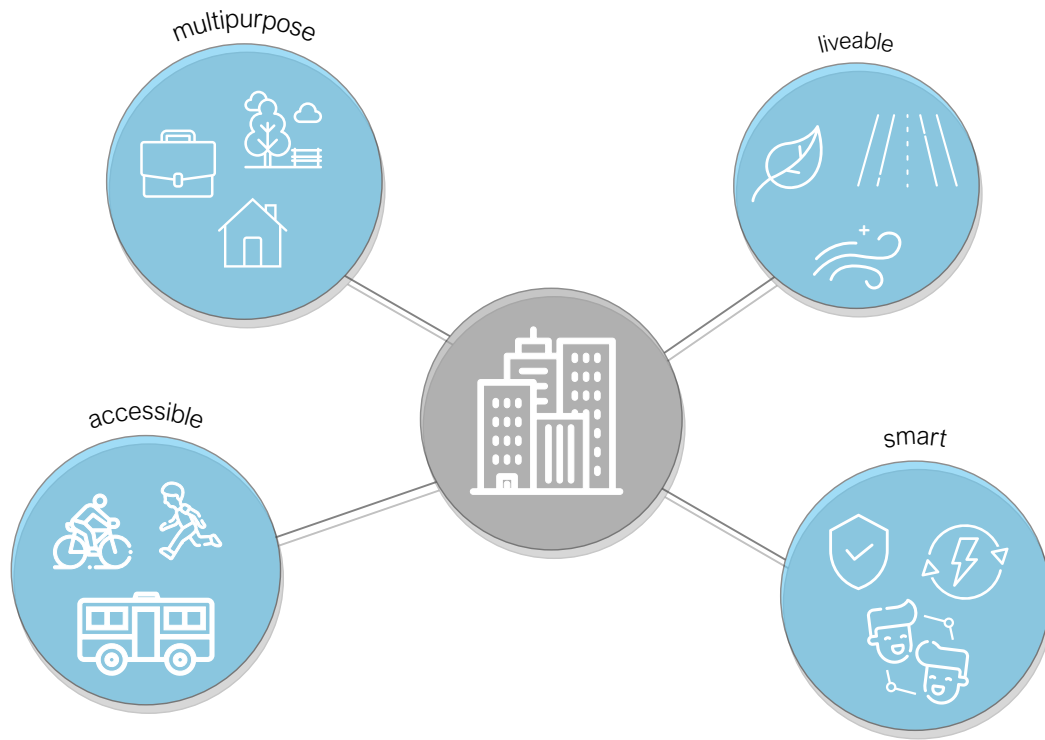


Figure 26. The city of the future: multipurpose, accessible, liveable, smart

Figure 27. Coolsingel in the future



12.2 Travel motives in the future

As described in chapter 3, Dutch people currently travel with the following motives: shopping, leisure activities/hobbies, commuting, visits, education/day care, touring, and services/care. These activities can be loosely categorized in the following way:

- Work: commuting
- Leisure: leisure, hobbies, visits, touring, shopping
- Necessities: education, shopping
- Care: travelling for others' motives

In the future, our travelling needs will change from the present-day needs. For some of these motives we no longer have to travel: instead of having to leave the house, it comes to us: trends and new technologies (chapter 7.4) take over part of why we need to move now. A good example of this is the development of online shopping for necessities like groceries, as well as many other goods: instead of having to go to the store to buy these things, we can order them online and get them delivered the next day (or even the same day in some cases). Below an expectation of our travel needs for each category is described.

12.2.1. Work

Technological developments and changes in the expectations and culture surrounding working leads to less travelling for work. Employers become more trusting and focused on results, letting employees work wherever they want, as long as they deliver. Meetings are gradually becoming less dependent on face-to-face communication, as digital solutions are developing even further.

It is expected that both the city and our mobility needs will change in the future. Our cities will be reshaped to be sustainably liveable, multipurposed, accessible and smart. This leads to a better quality of life for the city's inhabitants.

With cities becoming more multipurposed, people can do more within their own city. This creates a larger emphasis on intra-city mobility, or even intra-neighbourhood mobility.

12.2.2. Leisure

The second big category that people still need to travel for is leisure. This entails activities like hobbies, social activities, sports, cultural activities, trips and holidays. Many of these activities have a social side, which leads to more travelling, as face-to-face contact is still an integral part of our social life. Shopping is an activity that can fall in both the Necessities category as the Leisure category. Which of the two it is depends on the person, the situation and the items that are bought. Most of these journeys will be done within person's home city. The journeys with this motive are still very much based on routine, yet less than nowadays.

12.2.3. Necessities

Journeys to school, the doctor, and personal care like hairdresser visits require us to leave our homes in the foreseeable future. Some of the things that we have to travel for nowadays change do not necessarily require us to travel anymore. Delivery of goods, both small and large, places the travelling part of getting things to our house out of our own responsibility. Therefore we have more freedom in choosing spending time on shopping or not. These journeys are very varied in nature.

12.2.4. Care

These journeys are done for someone else, like a parent bringing their child to school. It is highly personal and dependent on the situation whether or not these journeys will still be undertaken.

Some things will still require us to move around. There will still be activities that require physical contact, like team sports, hairdresser appointments or social events.

Trends and new technologies ensure that we do not have to leave the house anymore to get something: instead it will be delivered to us in a fast and easy way. Working will also shift more towards digital environments, so we need to move less for this as well.

13. DESIGN ROADMAP FOR MOBILITY AS A SERVICE

As discussed in the design challenge (chapter 11), the goal of the design roadmap is to develop a MaaS platform to provide reliability, flexibility and speed for travellers while providing RET with the opportunity to balance Rotterdam's access based transport demand and supply, and reducing the negative impacts of personal transport on society.

A design roadmap is a visual portrayal of design innovation elements plotted on a timeline. These elements include value, product, market and resource choices. It helps to plan design innovations to turn a future vision into reality (Simonse, 2018). This chapter elaborates on the elements that are used on the roadmap towards urban mobility in the future.

13.1 Future vision

The future vision for the product-service system points to the destination. It provides a strategic reference point, and aims to establish a tension between “what is” and “what could be” (Simonse, 2018). The design challenge can be translated into the following future vision:

Flexible, fast, seamless, reliable access based mobility for a sustainable urban environment

13.2 A MaaS platform: integrating traveller needs with mobility provider and societal needs

Travellers require fast, flexible, seamless, reliable travelling. Society and mobility providers require a mobility balance for a sustainable urban environment. The MaaS platform acts as a connection between the travellers and the offered mobility. It provides integrated mobility, in terms of transport modes, information, booking & paying, all in one digital environment.

13.2.1. Flexible, fast, reliable mobility

For users, having flexible, fast and reliable mobility means that they can make a door-to-door journey in a way that suits the needs of that specific moment in a fast way, any time of the day.

Reliability is a prerequisite for travellers to want to use a certain mobility service. Public transport in the Netherlands is fairly reliable, especially in urban areas. Only when travelling to remote areas or at night it becomes unreliable. Therefore, the MaaS platform should integrate transport modes that can provide reliable access based mobility: (public) ADRT vehicles serve areas that are underserved by other high quality transport modes. Furthermore, AVs can provide a both flexibility and speed, but this transport is likely to come at a higher price than other multimodal ABM journeys.

Furthermore, providing accurate and easily understandable information helps users know what they can expect, before, during and after the trip. This helps the system's experienced reliability to increase.

13.2.2. Mobility for a sustainable urban environment

Access based mobility can help work towards lower societal impact of transport. By aiming to only work with space efficient transport modes like trams, buses, and separated transport modes in the form of trains and metros, in combination with AVs that just pick up/drop off, the space requirements in busy urban environments are lowered. Furthermore transport should be optimized to operate with vehicles that suit the amount of passengers that require transport. This also helps to optimize the environmental impact of personal mobility. These faster, yet relatively rigid transport modes should be supplemented by environmentally friendly flexible yet fast(ish)

transport modes like e-bikes, e-steps, e-scooters, and regular bikes. Autonomous vehicles can provide reliability at times other transport modes fail to provide.

Urban public transport operators like RET focus on providing high quality, high capacity mobility in the form of metros, lightrail services, and trains. The future of public transport will see a rise in rail transport capacity through more infrastructure and automation of vehicles (see appendix J). These transport modes feed into the busy areas of the city. Areas where these transport modes do not get to are served by either existing tram lines, e-buses where demand is high enough to fill vehicles. Flexible mobility services like e-steps and bikes

provide the first and last miles to complete the door-to-door journey. ADRT vehicles serve areas that are underserved by other high quality transport modes. Furthermore, AVs can provide a both flexibility and speed, but this transport is likely to come at a higher price than other multimodal ABM journeys.

Subscriptions provide transport providers with the necessary resources to adjust the mobility offering to the user. Furthermore, it provides a better basis for a long-term relationship with the user, as they will be recurring users of the service. Mobility providers and the MaaS operator feel more responsibility for providing good service, as the user has already paid.



Figure 28. Suitable mobility modes for a MaaS system

13.2.3. Seamless

The MaaS platform adds to the flexibility, but is mostly responsible for creating a seamless experience. This seamless experience must be supported by transport providers in transport availability, but also in infrastructure: it must be easy for travellers to get access to the transport system and vehicles. Travellers do not need to actively organise their transport anymore: it is organised by the platform, and the user can just focus on using this seamless, flexible, fast transport to live their life. The information they need is provided to them before they want to look for it.

Subscription-based services support this wish for seamless mobility. First, there's the simplicity of subscriptions that removes the thinking out of a purchase decision. Subscribers never have to remember to reorder every month, which gives them the reassurance that they will have whatever they need before they actually need it. Second, subscriptions offer a flat rate which helps customers stay within their budget. Lastly, subscriptions bring added value to the customer through bundling or getting it all for the price of one. (Entrepreneur, 2015)

13.2.4. Need for long-term approach

At this moment this vision cannot be realised to its full potential. Thus, in order to make this future vision a reality, a phased long term approach must be adopted. In each phase an extra part of this vision can be realised,

working towards the final goal of completely seamless, fast, flexible access based mobility for a sustainable urban environment.

13.3 A long-term approach: design roadmap

This long-term approach is best visualised on a design roadmap. A roadmap is usually based on the three horizons model, a long term time pacing strategy for innovation (Curry & Hodgson, 2008). The 1st horizon looks to enhance design value to current product or service lines. The reuse of existing modules and functions is essential for this horizon. The 3rd horizon captures a disruptive innovation with a new value proposition. It seeks to create a strategic fit with emerging trends and developments. The 2nd horizon falls between the enhancement and the disruptive horizon. It looks to bridge the gap between the development of the future vision and the enhanced scenario, and encompasses overcoming the dilemmas for reaching the third horizon. In this phase new insights from design research can be implemented.

13.3.1. Horizon 1: spark interest in MaaS (2020)

In the first horizon, the product-service system aims to integrate public transport and other access based mobility services. Public transport makes the system fast, and other access based mobility services make the flexible.

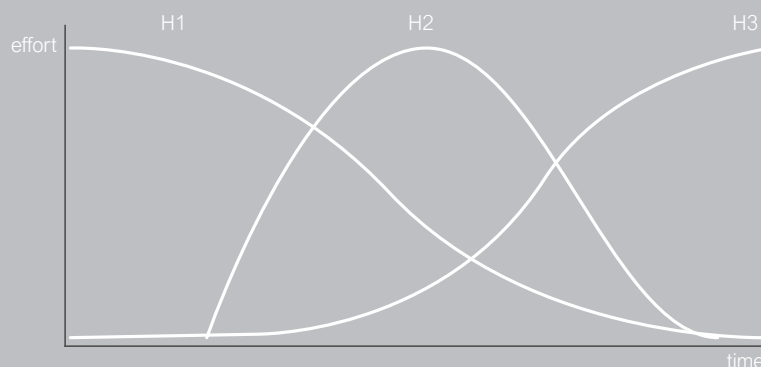


Figure 29. Horizon time pacing (Curry & Hodgson, 2008)

At this moment travellers are not familiar at all with Mobility as a Service; they are mostly not even familiar with many of the available new mobility services. Thus, interest should be sparked for travelling in a flexible, purely access based manner. This is done by targeting irregular journeys, as these are most likely to be planned due to the lack of routine on these journeys.

This also allows for the developing team to learn more about users, create partnerships with urban employers and other ABM providers, and set up for the next horizon.

13.3.2. Horizon 2: provide for routine journeys (2022)

Most of the journeys that are made are routine journeys. These journeys are a great basis for providing a more seamless experience. They take place on the same route at similar times, thus the PSS can support the user by becoming more proactive with planning.

The introduced subscriptions make payment less of an activity: they just have mobility budget available to them. These subscriptions can also be provided by employers.

13.3.3. Horizon 3: carefree urban mobility (2025)

A MaaS-system has the potential to replace personally owned motorized vehicles. In order to do this, the mobility that is available through the system must be fast, flexible and reliable, and be available in a seamless way. Because of the lack of investment costs this is an attractive proposition for users.

In this horizon travellers only have to worry about how they actually travel: they are provided with information they need before they look for it.

This is still not true seamless travelling; unfortunately it cannot be expected that technology of the travel ecosystem is ready for a more seamless travelling experience in 2025. Thus, even though this horizon is the end of this roadmap, there is much more to be achieved with this MaaS system.

13.4 Roadmap elements

To work towards this future vision, several elements must be developed over time: strategy, target groups, the product-service system, and the resources. These elements are explained below.

13.4.1. Target groups

The product-service system is aimed at the following identified target groups (chapter 9):

- Millennial Urban Professionals (MUPs)
- Tourists
- Urban Employers (UE)

13.4.2. Product-service system

This section looks at how the vision of this horizon is carried out by the PSS. What does it bring the user?

This is divided into the active part, in which users have to take action themselves, and the automated part, which provides them with a proactive service.

13.4.3. Mobility providers

The second strategic direction looks to create a mobility balance in the urban environment. In a MaaS-system urban transport is provided through an integration of different mobility providers. This includes both public transport and other access based mobility services.

13.4.4. Partners

Besides mobility providers, the functionality of the MaaS platform depends on other partnerships as well. These include technological, societal and business partners.

13.4.5. Technology

These are the technological components that need to be in place in order for the MaaS system to function well.

TARGET GROUP

MUPs
tourists
UEs



PSS

FLEXIBLE, FAST

FLEXIBLE, F

user activities



plan - pay - travel irregular journeys



plan irregular

platform activities



pay - p

integration

PT & ABM; information, payment, booking, travel

service officer; B2B
calendar, weather

RESOURCES

mobility

PT

urban BTM, train, watertaxi

DRT

ABM

bike, e-bike

e-step

e-scooter

new flexible ABM providers

partners

business

platform launching partner; tourism offices

B2B partners

society

MRDH, ministry I&W

technology

platform developer

ABT provider

technology

IoT

vehicles

DRT

gates

APIs

mobility integration in platform

payment

data

collect

FAST, SEAMLESS

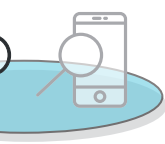


journeys - travel

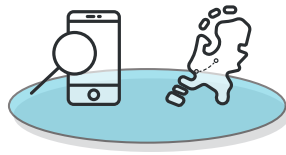
FLEXIBLE, FAST, SEAMLESS



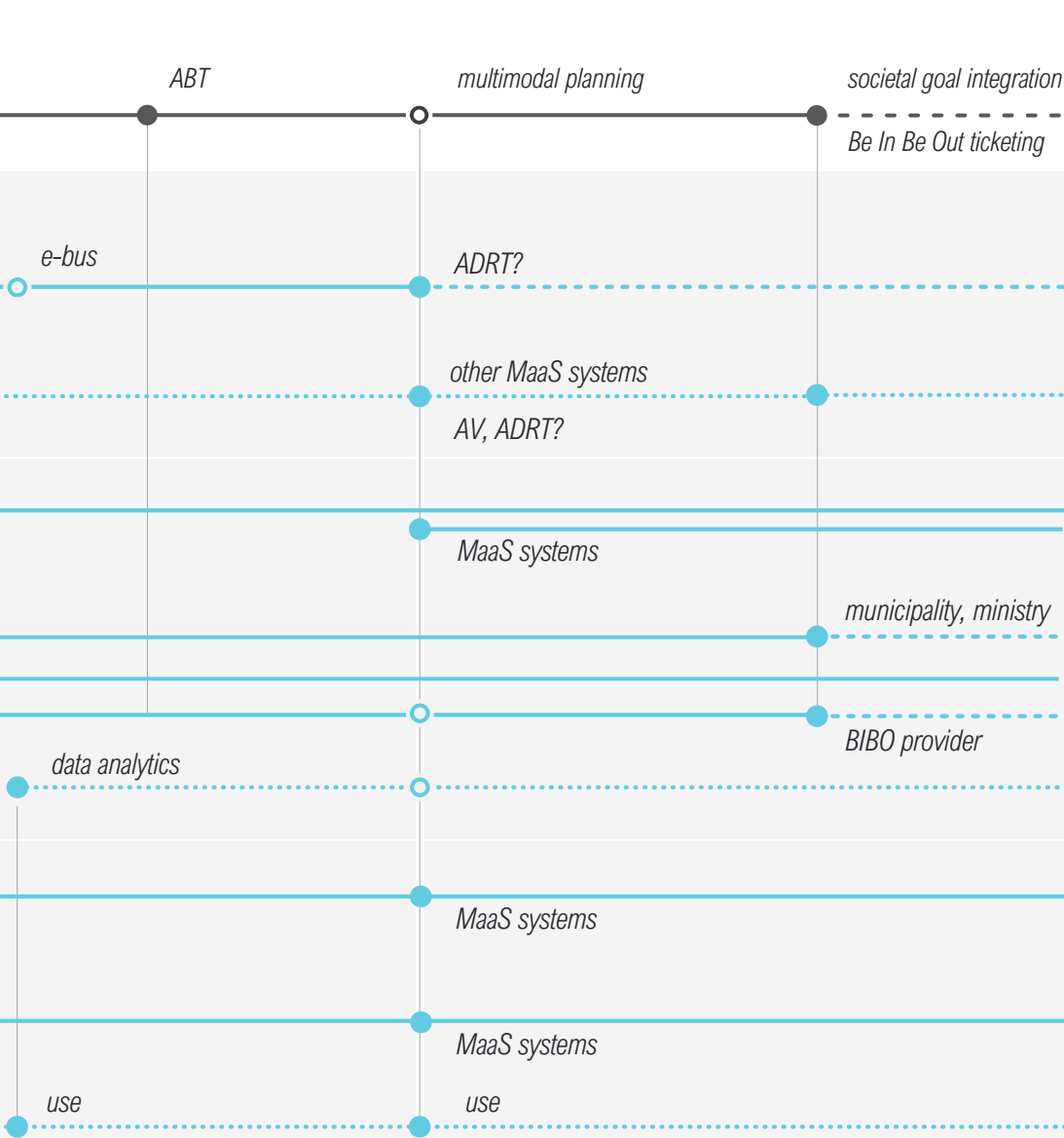
travel



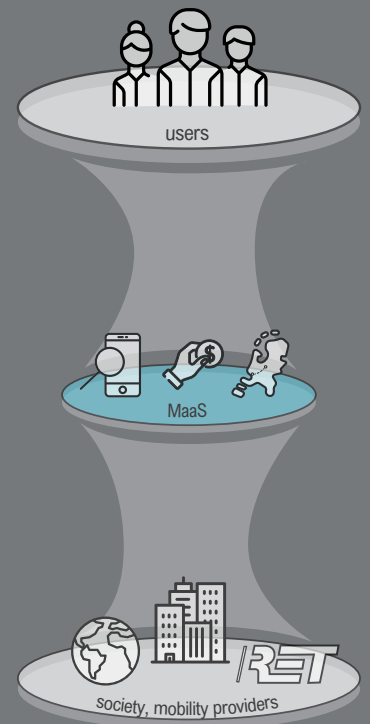
plan routine



pay - plan



FLEXIBLE, FAST, SEAMLESS, RELIABLE ACCESS BASED MOBILITY FOR A SUSTAINABLE URBAN ENVIRONMENT



14. HORIZON 1: SPARK INTEREST IN ACCESS BASED MOBILITY

14.1 Vision: Spark interest in MaaS

A Mobility as a Service-platform is based on the assumption that people use access based mobility instead of ownership based mobility. However, in the Contextmapping study (chapter 10) it became apparent that most people do not use non-public transport access based mobility services. The OV-fiets was the only service that people were frequently used, and loved using. Therefore it is vital to get people more acquainted with access based mobility (ABM) service.

To do this, new mobility services that are not used that frequently should be pushed more to the front of the platform, and sometimes reduced fares or even free trials should be used to get people into trying new options. When London's transport office, TfL, wanted to introduce the possibility of using a bank card as a means of travelling, they actually organised two 'Fare Free Fridays'. On these days people that used their bank card to check in were not charged anything. This same strategy was used again for pushing the usage of Samsung Pay. Of course a strategy like this can only be used if funding is sufficient, but it can be very effective. (MasterCard, 2018)

14.2 Target groups

The target groups for this phase are Millennial Urban Professionals and tourists. MUPs are frequently visiting new places, usually within larger cities, thus they often undertake irregular journeys. Furthermore they are more often interested in trying new things than other target groups.

Tourists are also addressed unfamiliar with transport in the Netherlands, and spend most of their time within the Randstad. This means that the platform should also be available in at least English. German would also be a good addition, as about three quarters of tourists visiting the Netherlands are German (NBTC Holland Marketing, 2018).

Furthermore, this phase should contain a preparation stage for the next horizon, in which a 'MaaS professional' is offered for the business market. With their current clients of the Mobiliteitsmanager deals should be made about the continuation of this service in a new environment. New clients should also be sought.

14.3 Product-Service System

As learned from Simonsen (2018), the products and/or services in the first horizon are enhanced versions of the current ones. From the Contextmapping study several issues travellers have with current planning apps were picked up. These should be addressed in the platform versions in this horizon. Furthermore, several new features should be added.

14.3.1. Integration of transport: fast, flexible mobility

The most important feature of the MaaS platform in this horizon is the integration of public transport with other access based mobility services. This leads to travellers being able to plan, book and pay for journeys consisting of trips with different mobility services from one environment.

The integration of fast high quality public transport with flexible and reasonably fast first and last mile solutions like bikes, e-bikes and e-scooters makes multimodal mobility more fast and flexible than it is now. This leads to there being less walking involved in travelling.

For good functioning of the MaaS platform in this horizon, the ABM services must be located near high quality public transport stops, and have a large enough service area for people to reach their destination without walking far. Otherwise, the benefit of transferring to an ABM service is not apparent.

14.3.2. Integration of information

This phase is increased through providing improved information. On a transport level this information relates to:

- Public transport schedules
- Planned or unplanned schedule changes
- Departure locations for PT
- Pick up/drop off locations for ABM
- Total travel time, cost
- Estimated walking time for transfers
- Vehicle crowdedness for PT

Furthermore, good customer service is very important: users must feel they can always contact the platform owner or organisation in a quick and easy manner. Communication with users is key for understanding what they struggle with, thus what can be improved. Therefore this customer service must have frequent contact with the platform development team.

14.3.3. Integration of booking and payment

Integration of payment is available, albeit in a non-ideal manner. RET estimates is not achievable for all ABM providers to have a their back end set up in a way that allows integration within another platform. Thus, travellers will need to install the ABM provider's app to book transport. When trying to book such a service through the MaaS platform, they will be sent to that app through a

deeplink. This is an undesirable solution, as the platform does not solve one of the challenges it sets out to do this way. As there is no other short-term solution available it is the best way to go as it still allows the platform to integrate PT and ABM in some way, but the platform owners must work towards a solution that lets travellers book from within the MaaS platform itself.

Payment of the trip can be done from one basket. The platform owner transfers fees for the used vehicles to the ABM providers. It should be possible to both pay per journey, or to buy credit. Pay per use is mainly useful for MUPs, as they familiar with mobile banking. Credit options are useful for tourists, as they do not necessarily have the possibility to pay through mobile banking. Credit should be for sale at transport provider service points and machines, and at tourism offices.

Booking can be done for journeys undertaken with non-scheduled vehicles. Caution should be taken however regarding the booking system: when are booked vehicles available again for another traveller, if they are not picked up? As much as booking of vehicles provides reliability for travellers, it also can become a danger if it does not lead to a more efficient transport system.

14.3.4. Integration of travelling

Unfortunately, the current check in/out infrastructure of the OV chip card does not allow for travelling on saldo prices without an OV chip card. This is the only identifier it recognizes. Newer infrastructure parts have the opportunity to use barcode tickets for travelling. However, these barcodes can only be sold as time-based tickets (2h, day tickets). This makes travelling with PT on shorter distances with barcodes very unattractive. Unfortunately it is not possible to change this until new check in/out infrastructure is installed, but this is not planned to be until at least 2023.

14.4 Resources

14.4.1. Mobility

The mobility that is provided in this phase is divided into three sections. Firstly, there is public transport. Especially high quality public transport like trains, lightrail services and metros can provide a fast backbone for a multimodal journey. Buses and trams largely serve other areas and can provide additional capacity in busy areas.

Then there are flexible and affordable access based mobility services, like bikes and e-bikes. These are a good fit for everyday use as a supplement to high quality public transport.

Lastly, there are transport modes that combine flexibility and speed, but at a much higher price. Taxis and e-scooters fall in this category. These serve as a supplement for when other transport modes are not deemed sufficient by travellers.

14.4.2. Partners

On the business side, the first horizon looks for multiple partners. On the business side, the first one is the platform launching partner. This partner is necessary for the platform to quickly gain traction. The second partner group are local and national tourism offices. This is necessary for tourists to easily find the platform and to be able to use it.

As the MRDH and ministry of Infrastructure and Water Management are the clients of RET, HTM, GVB and NS, they need to be included.

Technology wise the platform development company is the most important partner. As none of the collaboration partners are experts at developing platforms, an external party that can provide them with what they need is crucial.

14.4.3. Technology

For a well-functioning platform, all vehicles should be connected to the Internet of Things. This way users can be updated with live information on locations and schedules.

Furthermore, APIs are necessary for integration of mobility services (both public transport and access based mobility services) in the platform, and the possibility of in-app payment.

Lastly, as soon as people start using the platform data collection should start. Anonymized data on travels can provide insight in what transport modes are used in combination with each other, in which circumstances they are used and more. This helps to optimize the mobility offering to what travellers find best.



Figure 30. Customer journey for a MaaS-journey in horizon 1

15. HORIZON 2: PROVIDE FOR ROUTINE JOURNEYS

15.1 Vision: Provide for routine journeys

In the second horizon, the new platform should be about catering for individual routine journeys. Most of the journeys nowadays are routine journeys, as the Contextmapping study also proved.

This also poses the challenge of having to change current routines. People will only change their routine when a new option is easy to use and provides (much) more benefit than their current routine.

15.1.1. Inclusion of B2B

An important way to work towards this is by including B2B services. Many people rely on transport their employer offers them. If travellers are using the MaaS platform for their commutes, they are more inclined to start using the service in their own time, as they already understand its functionalities.

The platform should be usable for both professional and personal travels. To have this functioning well, boundaries of the available subscriptions must be clear and customizable. E.g. an employer can choose to pay for all travels made on work days between specific times, for specific transport modes, or just for all travels. Other travels are billed to the traveller's personal account.

15.1.2. Account Based Travelling

In the previous horizon travelling with PT could only be done with time-based barcode tickets. As this would make travelling shorter distances with public transport highly unattractive, it is crucial to introduce a solution for this as soon as possible.

At this moment, all information on the traveller is stored on the OV chip card: the gate itself does not know where the traveller entered the system until it is told by the OV chip card. This leads to the traveller being charged the correct saldo price.

With ABT this situation changes. The information on the traveller is stored in the cloud, and the identifier is used to gather the right data from the cloud. By communicating with the cloud the system knows what to charge the traveller.

ABT can provide a greater degree of seamlessness than the current transport system. One of the main benefits is that multiple types of identifiers can be used, and people can use multiple identifiers for the same account: smart cards, phones, smartwatches, barcodes, QR codes to name a few.

For a complete system the public transport system should also be usable with ABT. For this the current technical infrastructure has to be adapted. The current card-gate system is not developed by transport providers themselves but by TransLink, they are also dependent on them (or another provider) for the introduction.

15.1.3. Integration of the service officer

Through the integration of the service officer subscriptions can be provided to travellers and business clients. The service officer ensures that the agreements with clients are suitable and increases the reliability of the system: it is now their responsibility to provide the traveller with mobility.

15.2 Target groups

The target groups for this phase are MUPs, tourists and Urban Employers. MUPs are a group that is very interesting to provide individual subscriptions for. However, their employers are often the ones that provide (part of) their transport, so they cannot be addressed by only targeting themselves. Thus, the employers should also be addressed.

15.3 Product-Service System

In this horizon the service starts helping the traveller by becoming more proactive. The user should be supported to make routine journeys as easy as possible. As these journeys often take place on the same route, around the same time, the service can easily learn the patterns and provide travellers with journey information before they start looking for it.

Part of this proactiveness is the integration of the user's calendar and the weather, as this influences the way people want to travel, thus the provided travel information should also be adjusted based on this information.

However, the option to plan a journey should always be available, so that irregular journeys are still possible to make with the service.

15.3.1. Mobility offering & subscriptions

In this phase, the product service system should provide for routine journeys. In order to do that, more insights need to be gathered on specific combinations of transport modes that are frequently used. These can then be used to optimize the mobility offering the platform offers, and to offer subscriptions with mobility mixes that match well.

This also means that the platform owners need to be on the lookout for new mobility services to include in the ecosystem as well. This helps to enlarge the service area of the platform and ensure that more travellers can use the system.

15.3.2. Introduction of Account Based Travelling

Furthermore, through the introduction of ABT the system becomes more flexible and reliable. Travellers are no longer dependent on their OV chip card or expensive barcode tickets to travel with public transport. The information on their PT use can now be integrated into their MaaS account, so this gives better insight in e.g. total time spent and cost of mobility.

With the introduction of subscribed users the reliability of the system must also increase. This is included in the service offering, so it must be pursued by the platform owners. This reliability depends on the agreements between service officer and client, and comes from the available transport modes.

15.3.3. Updates from H1 platform

The information that is provided to users should be updated regularly. This can be done by using feedback from customer service, and by user testing. This ensures that the provided information stays relevant.

Furthermore, the booking and payment of ABM should be available through the MaaS platform. This enhances the ease of use, as travellers no longer have to download multiple applications to be able to use all the available transport modes.

15.4 Resources

15.4.1. Mobility providers

The pilots with Demand Responsive Transit that are already being carried out should lead to an optimization of the current bus system. Busy lines can still be catered to with regular buses, although an effort should be made to drive with electric buses as soon as possible. However the less busy lines should be done with DRT. This enhances the flexibility and speed of transport, as it becomes more personalized.

As mentioned before, the platform owners should strive include more different mobility providers in the system.

15.4.2. Partners

This phase focuses largely on including the B2B market in the service. Therefore the platform owners and mobility providers should work to create partnerships with local

businesses that want to provide transport to their employees. The collaboration partners can use their well known brands for this. The network of current B2B efforts should also be included.

As mentioned before, the platform depends on other ABT providers for a good integration of public transport. Therefore collaborations with TransLink Systems (or ABT providing companies) should be established.

15.4.3. Technology

Technological efforts in this phase are focused towards the inclusion of DRT and ABT. For DRT, the Internet of Things plays an important role. This enhances the fast response time for vehicles, to serve travellers fast. ABT is a cloud-based system, thus always requires connectivity to function.

Furthermore first steps can be made towards the integration of data analytics to optimize the service offering.

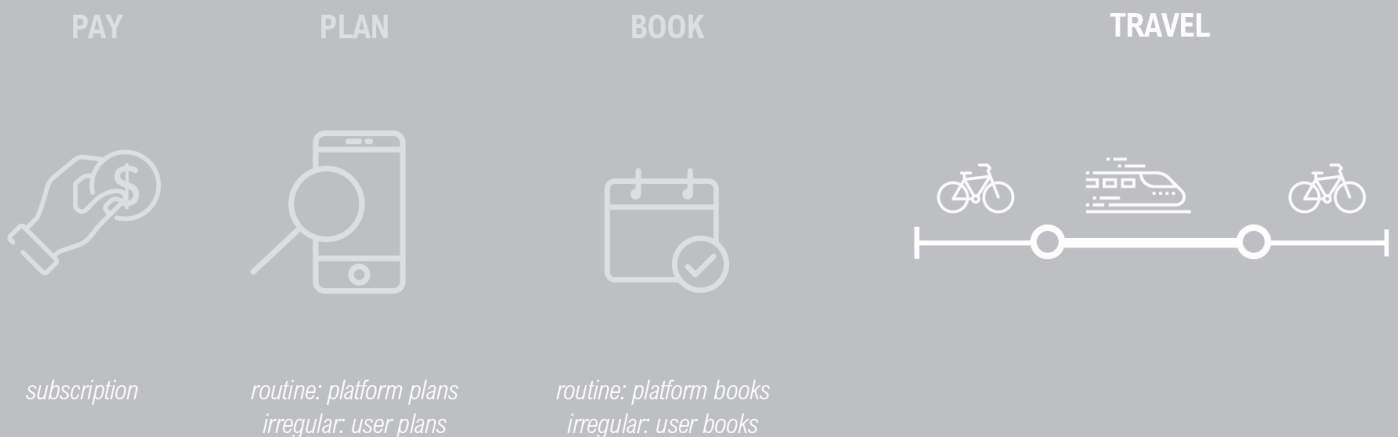


Figure 31. Customer journey for a MaaS-journey in horizon 2

16. HORIZON 3: COVER DAILY URBAN MOBILITY NEEDS

16.1 Vision: Cover daily urban mobility

This phase is focused on creating a reliable mobility experience for daily needs. This means that other Mobility as a Service-platforms that operate in areas uncovered by this one should be linked, so that users feel they can always rely on MaaS for their urban travelling needs. For non-urban travelling needs alternatives need to be included, such as cars, and possibly autonomous vehicles.

A big challenge in this phase will be to get travellers to rely fully on access based mobility. As many aspects of life depend on the possibility to move around, MaaS should be trustworthy enough in order for people to depend on this.

Furthermore, this is the phase in which the mobility market is expected to disrupt through the introduction of autonomous vehicles. This does not have to solely be a threat, it can also provide opportunities to strengthen the access based mobility network. It is very important to watch out for companies that are working towards AV introduction, as timely notice provides more preparation time for action.

16.1.1. Mobility balance for a sustainable urban environment

It is important to start steer individuals to travel in a way that reduces the negative impacts transport has nowadays. To do this, it is important to offer a wide range of variety in transport modes, including carsharing. By including cars in the subscription it will become easier to say goodbye to an owned car, as journeys for which cars are still experienced as the favourite can still be made (e.g. holidays and IKEA trips). Especially when using electric vehicles with multiple people, the impacts of a car are comparable to public transport (see chapter 4). The UbiGo pilot (chapter 6.11), which included carsharing, also showed that the participants of this pilot changed mobility behaviour with a MaaS system: 48% used the

car less than before, and switched to using more BTM (50% more often) and shared car options (57% more often).

Furthermore, a connection or integration should be made with other MaaS systems. As the government is subsidizing MaaS pilots at this moment (see appendix B), in some other regions a MaaS system could also evolve. Especially Eindhoven, as one of the strongest economic regions in the Netherlands, and Utrecht, but also other large cities outside of the Randstad are important to integrate.

16.2 Product-Service System

16.2.1. Multimodal planning

At this moment, it is still not possible to include true multimodal planning, in which the system can calculate which combination of transport modes will be the fastest, cheapest, most environmentally friendly, or optimize for other things a traveller might find important. There are no estimates for when this will be possible, but it should be worked towards.

Multimodal planning will improve the seamlessness and flexibility of the system, as users nor the system itself have to define which of the transport modes to include. It simply gives the best options for the situation.

16.2.2. Integration with other MaaS-systems

Platform integration should be sought with other MaaS systems that operate in another region. This creates a larger usable transport network. Furthermore the data that is gathered up to now can be used to optimize the public transport system. By using information on traveller volumes, the capacity of the network can be adjusted to be more efficient.

16.2.3. Mobility balance

As mentioned before, including a good amount of shared electric vehicles in the platform

makes it easier for people to shift towards a MaaS system. They feel safer to adjust their behaviour knowing that they will always have the option to use a car through sharing systems. To maximize the impact EVs are a better choice than regular cars or hybrids.

Lastly it can be expected that in these years pilots with Autonomous Vehicles and ADRT are started. Integrating successful pilots in the platform makes it very attractive, as of course many people are interested the introduction of AVs, but it will also make a MaaS ecosystem much more reliable: high quality transport will also be available in areas and at times where it normally lacks.

16.3 Partnerships

16.3.1. Mobility & society

At this moment there is still a lot of uncertainty surrounding the introduction of AV taxi fleets and ADRT. Two main challenges on this depend on regulations made by governmental bodies: whether or not ADRT will be funded by it (thus becoming more of a public responsibility), and if AVs are allowed in city centres. Public transport providers should lobby to have AV taxi fleets and ADRT serve as a supplement to existing mobility ecosystems, rather than as a competitors. Good ties with the municipality are also crucial for this, as they are ultimately who decide where in the city AVs will be allowed.

16.4 Working towards the future

Providing mobility will remain at the core of RET and the other mobility providers, also after 2025. A roadmap is a document that guides innovation. For this the future is mapped based

on expectations, however these expectations are likely to not be completely correct. It is important to frequently revisit the roadmap and update it with the latest information, so that it will stay relevant in the future. Two important directions for further development into a seamless mobility system are discussed below.

16.4.1. Integration of societal goals

Until this point, the integration of societal goals mainly comes down to the good intent of the collaborating companies. However, to have a larger impact it is needed to also include societal partners such as the Ministry of Infrastructure and the municipality of the collaborating cities. Policies in support of MaaS (regarding ADRT, car-free zones etc.) and monetary support can only be favourable when working together with these societal partners.

16.4.2. Be In Be Out ticketing (BIBO)

Checking in and out is still an action that travellers do not like. As mentioned by Contextmapping participants, they felt like these gates were creating a bottleneck: it is slow, as everyone needs to grab their card, tap their card, see if the transaction happened, and then continue walking.

To further increase the seamlessness of the system, these barriers must be taken away. With BIBO ticketing users just walk into a vehicle and are charged the correct amount when they exit, leading to a handsfree travelling experience. This can be used for both public transport and other ABM services, thus it is suitable for a MaaS platform. An example of a technology that can be used for this is Bluetooth Low Energy (BLE).



Figure 32. Customer journey for a MaaS-journey in horizon 3



EVALUATION

17. EVALUATION

In this thesis I looked at the implementation of Mobility as a Service by Rotterdam's public transport operator, RET. While the company itself has been busy creating guidelines for the development of an initial technical platform and establishing partnerships with other mobility providers, I focused on gathering insights on how the platform can bring value to users. Which people are most suited for a MaaS-system at this moment, what are they looking for in a mobility solution, and how can this be brought to them? This chapter discusses the findings and project.

17.1 Discussion

17.1.1. Target group choice

By analysing the broad context of a MaaS service several potential target groups were identified: Tourists, Millennial Urban Professionals, and Low Income Urban Families. As tourism is growing explosively in the Netherlands they are an easy group to target. Their needs are not very complicated, and they want a convenient mobility service that is easy to use.

The latter two target groups are largely present in Rotterdam and the Randstad on a daily basis. During this project there has been a lot of discussion on which of these groups to focus on: both groups have their own qualities and challenges. People in these target groups are vastly different from each other, and have very different needs from a MaaS service. As this project is only 6 months of individual work, researching and designing for both groups was too ambitious. Therefore the choice had to be made for who to design.

The MUPs are a group that is easier to target as they suit the profile of MaaS-ready people

very well: they are technologically proficient, and belong to a generation that is more interested in access based consumption than ownership. On the other hand, MUPs are less financially inclined to change their behaviour. Furthermore their mobility habits are largely influenced by the mobility solutions their employers provide them with, thus they can mostly be targeted indirectly.

LIUFs, while not being a initially MaaS-ready, are a group that will benefit a lot from improved mobility accessibility: reduced transport poverty can have a big impact on their life. As they are prevalent in Rotterdam and other big cities in the Randstad, providing them with mobility can bring much value to society. However, especially in Rotterdam this group in itself is extremely diverse. Research done by the Verkeersonderneming (appendix C) showed that the many different minorities the city houses have very different mobility patterns and preferences.

The challenge of which of these groups to target for a new MaaS project proved to be one that was hard to decide on, and during the whole project there has been much discussion about the right way to go.

Furthermore, within RET there is a lot of discussion on pricing of mobility in the system. At this moment the company and its payment infrastructure are not ready to let users travel for saldo prices, thus all their available public transport tickets are time-based. These tickets are expensive – the cheapest ticket is €4, for 2 hours of access. It would not provide LIUFs with cost reductions: the one thing a MaaS-system would bring more value with.

Moreover, one of the main goals of RET from this MaaS project is to learn what it

means to be part of a MaaS ecosystem as a public transport operator. Part of a learning experience is the possibility to experiment. MUPs are more likely to be open to this experimenting due to their less risk averse nature.

Thus, developing MaaS for MUPs seems a less risky choice, as it supports the company to continue along their currently chosen path. Therefore the choice was made to continue to develop MaaS for MUPs. However, the impact of developing a sound MaaS platform for LIUFs in Rotterdam probably has the potential to be higher due to the large amount of people in the city that will benefit. At this moment it is very hard to decide if the right choice has been made. Both groups are valuable to serve: MUPs maybe more in the short term, while LIUFs could be more interesting in the short term.

17.1.2. Obtained insights from user research

To get insight in what MUPs want from a MaaS-system a Contextmapping study was done. Twelve people were included in an intensive research process, of whom six could be classified as true MUPs. This amount of people is still sufficient to get a good understanding of their value drivers regarding mobility. However, the application of the insights that were obtained have not been evaluated or validated with users, thus it is very important to continue to involve users in the development of the service.

Furthermore, research must be done with Urban Employers. It became apparent that many of the MUPs were heavily influenced in their travelling behaviour by the mobility solutions that were provided by them by their employers. However, it has not been possible to obtain direct insight into how these Urban Employers can be targeted, and what they want and need from a MaaS-system. Thus, RET should use their knowledge and contacts they have obtained through their B2B service, Mobiliteitsmanager, to gather more insights on how to get the service to be interesting to this target group.

17.1.3. Validation of roadmap

In order to know whether the roadmap is actionable as it is, and where it can be improved, the roadmap must be validated

with important stakeholders, from inside and outside the company. Unfortunately I did not manage to find these validations due to time shortage. Thus, it is important for RET to discuss the directions taken in the roadmap with others.

17.2 Conclusion

Mobility as a Service is a concept that integrates public transport and other access based mobility services into one easy to use platform. For users this means that they no longer have to do large investments while still having access to transport. They can perform door-to-door journeys in a way that suits their needs at a specific time.

MaaS-journeys should be fast, flexible, reliable, and seamlessly usable. This requires having a high speed, high capacity backbone of trains, metros and lightrail services, supplemented with flexible access based mobility services like shared e-bikes, steps and scooters, and other public transport modes. These journeys should be doable in a easy way: the platform and infrastructure supports a seamless travel experience.

Besides this, MaaS can give mobility providers like RET the possibility to optimize their transport network. They can focus their efforts on creating high capacity, high speed public transport in areas that need this. Other areas are better served by more flexible and lower capacity transport modes, which are provided by access based mobility services. Society can benefit from this as well, as personal mobility is performed in more efficient way: using less urban space, and having a lower negative impact in the environment.

There are two main characteristics people with a high MaaS-readiness have: they are technologically apt, and they do not love using a car. This leads to the target group of 'Millennial Urban Professionals': their lives revolve around the Randstad's cities, and belong to a generation that is favourable of access based consumption instead over ownership based consumption. However, they often are provided with a mobility solution by their employers, thus Urban Employers are important to target for reaching this group. Furthermore, tourists define the third target

group. Tourism in the Netherlands (especially in Amsterdam) is growing very fast, and providing them with MaaS can help them reach their points of interests and spread the tourism pressure over the Randstad.

However, there is still a long way to go before a seamless MaaS-experience can be realised. Therefore a long-term approach must be adopted by using a design roadmap. This provides the opportunity to work towards the full potential of a MaaS-system by keeping the future in focus.

User should firstly become interested in MaaS and access based mobility through the integration of public transport and other access based mobility services. This creates a more fast and flexible journey. Then, MaaS should work towards providing for routine journeys, and finally towards covering daily urban mobility needs.

At the end of this roadmap the goal of providing flexible, fast, seamless, reliable access based mobility for a sustainable urban environment is not fully reached. Thus, the developing team should keep on looking for improvements that can be made after the third horizon to better achieve this vision. Besides this, the roadmap should adapt over time due to developments in the context.

17.3 Recommendations

17.3.1. Catering for other target groups

While this project has been very insightful towards Millennial Urban Professionals, there are of course other people that can be served by a MaaS system. As a public transport

operator it is important to provide services that are not exclusive to a certain part of the population. Thus, research into how MaaS can be set up to serve others is very relevant for the success of the MaaS platform. Especially as the back office and infrastructure are already established with this project, building on it with new insights is likely to be less intensive than developing a new system.

17.3.2. Involving users more often

Up until now, there has been little contact with users to get insights in what they want and need from a new service. I would strongly recommend to keep involving the people you are developing for, as this creates a much larger chance of successfully making what people are interested in. This can be done in a variety of ways, but qualitative research methods more suitable due to the deep understanding of users they tend to create.

17.3.3. Keep a focus on the future

During my time at RET it became apparent to me that there is a strong focus on improving on a short term. As a company that is very much oriented towards operational excellence, that is not strange – but it does often keep the focus away from the bigger picture.

A long term focus is especially important in the coming years. With the introduction of autonomous vehicles and related innovations, the mobility market will be disrupted. This will also have a big influence on public transport companies. While it may pose a threat, it can also be an opportunity if the relevant players are identified early on and effort is made to have these mobility services as a complement rather than a replacement for public transport.

18. PERSONAL REFLECTION

I am writing this reflection at the end of 6 months of hard work: this project has been an absolute blast at times, but very difficult at some other moments. Below I will discuss how I experienced this project per phase.

18.3.1. Project setup

Before starting this project I already knew that solo projects are not my preferred way of working. I have very little experience with it (the last bigger solo project being my bachelor end project), thus my confidence in my solo skills was not very big. Knowing that I have to get through it anyway, I set out to make a good project setup and planning to help me keep an overview of why I was doing what. I hoped this also helped me to keep track of time, so I would not work on one part for too long. This worked pretty well, I kept adjusting and revisiting my planning during my project, and this helped me keep track of what I had done and what I had forgotten to do.

18.3.2. Pre-Christmas break

My project started on October 29th, 7 weeks before the Christmas break. In this period I tried to gather as much insight on the context as I could. This is what I have focused on in many of my group projects, so I felt confident in my ability and was enjoying it. I think this led me to keep working on diverging my knowledge for too long. However, the Christmas break made for a good milestone to finish this phase and continue with other activities after the break.

In this part of the project I started to really miss teammates, as I felt some decisions I was making lacked proper argumentation. I am used to having discussions with others about difficult decisions, and I realise I need these discussions to feel like the right choice was made for the right reasons. I had conversations

with others regarding the decisions I had to make, but felt these conversations lacked depth as I was the only one with all the knowledge – simply explaining my point of view did not always help me feel more secure about it.

The Christmas break was also the moment that ended up being a turning point in my project. My grandmother, who fell ill just before I started my project, turned out to be untreatably ill and was expected to die soon. This had a lot of influence on the remainder of my project.

18.3.3. Post-Christmas break

After the break I tried to pick up where I had left off, continuing with Contextmapping. I very much enjoyed this part of the process. I had never used this method by myself but had experienced its value during the Joint Master Project course I did a year earlier. Although I think the materials I made for this study were not great, I still got a lot of interesting insights from it. If there is one thing studying design has taught me, it is that you need to talk to people and try to truly understand their experiences if you want to develop something for them.

In the weeks after the Christmas break my grandmother's situation worsened quickly, and this gave me a lot of stress had a large impact on my ability to concentrate and my sleep. However I also felt I needed to continue working on my graduation project, as I really wanted to finish my study time. My 'midterm' meeting was planned in this period and as it had been a struggle to get all my supervisors together due to conflicting schedules I tried to still make this meeting happen. The day before this meeting I got the notification she would be dying the next day and I finally realized I could not proceed with the meeting. However, the

stress leading up to this meeting while coping with my grandmother's situation had already taken out quite a lot of me.

Luckily the week after this happened was the spring break week, in which I had planned to be free anyway, so I could take some time to recover.

18.3.4. Post-spring break

The stressful period before the spring break had a big impact on me and it took a long time before I was able to fully get back to work. As I had taken about two weeks off, I was completely out of touch with what I had done before the break, and being on my own did not help me pick up where I had left off quickly. At this point the deadline for my green light meeting was approaching rapidly. I worked very hard to finish the analysis of the Contextmapping study and finish the Discover and Define phase.

I knew that I still had to make a good start with the development of the roadmap, as this was an integral part of meeting the green light requirements. This led me to jump ahead of myself and not write a good design challenge to depart from. I had much of a focus on meeting the requirements for the green light instead of taking a step back and doing what I could do well. As a result I found myself redoing a lot of things after the green light meeting that I could have prevented by zooming out and looking at the bigger picture.

18.3.5. The last stretch

After the green light meeting I was very happy to proceed to the final stages of the project, but the stress and hard work to get through the green light resulted in struggling to pick up the pace again. I was not very happy with what I had done in the develop and deliver part of the project thus far, and again I realized I missed having people around me to design with. I know I am not a great designer, especially on my own, and having to work on this part of the project for a prolonged time made me feel fairly incompetent.

About five weeks after the green light meeting I had planned a last meeting with my chair, which was very helpful as a push to keep on working on the project. It also gave me another stressful time of working on the same thing

over and over again, and at this point my motivation to finish strong faltered. The stress I had experienced over the three previous months became too much to keep moving forward quickly in a project environment that did not suit me very well. I tried to keep myself working, but it became very hard to stay productive at this point.

18.3.6. The end result

While I am happy with the analysis phase and the user research I did, I do not think I could use the insights I gathered to their full potential to develop a great roadmap and end result. Due to a combination of it not being my forte, having little experience with doing this by myself, and having to do it during a very stressful and hard period in my life I do not think the second half of my project turned out the way I wanted it to.

18.3.7. Personal takeaways

I did learn a great deal about what is important to me, what my strengths and weaknesses are, and what I should avoid in the future during this project. I already knew that I am very much driven by being surrounded by people and working together with others – this has always been a big reason for my enjoyment in especially my the MSc phase of my education.

Working in an environment that is not very familiar with design, and being the only designer around, was very hard for me. Even though RET was very supportive as a company, I still felt a bit like an alien doing my work in an environment that was focused on very different activities. This probably also led to me not feeling the connection with the company I had hoped to have. Everyone was very nice and fun to be around, but the fact that we were working on such different things stopped the bonding. I learned that this is not my preference: when I am doing design related work in the future, I will try to be surrounded by other designers.

I still feel very happy with having chosen this path of strategic design, because I believe in its powers to create value for people, and this has been very motivating to work for. I do realize that designing on my own is not the way to go for me, but I think I can be a good addition to a design team as a front end researcher.

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APPENDICES I

- A. Stakeholder PTO ticketing & subscriptions
- B. Government MaaS pilots
- C. Minorities, Low income families in Rotterdam
- D. Potential MaaS users: a study in Finland
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A. RANDSTAD PTO TICKETING & SUBSCRIPTIONS

A.1. RET

A.1.1. Subscriptions

The RET offers multiple types of subscriptions. Firstly there are the 20% and 40% discount subscriptions. The 20% discount is available for €6.70 per month, and is interesting for people that spend more than €33.50 per month on RET travels. The 40% costs €24.60 per month, and is beneficial when spending more than €61.50 per month on RET travels.

Secondly, there are the 'star subscriptions', which give the user free travelling in one or more zones, depending on the chosen subscription. This subscription includes services from RET, but also from Arriva, Connexion, EBS, HTM, HTMBuzz and Qbuzz. The area coverage includes Rotterdam, Den Haag, Zoetermeer and Leiden. A '2 star subscription' gives the traveller free access to one chosen zone, and all the adjacent zones. These subscriptions vary from €52 per month or €520 per year for a 1 star subscription to €251 per month or €2510 per year for a 6 star subscription. Complete RET net coverage can be bought for €261 per month or €2969.50 per year. These subscriptions are also available for a reduced fare (under 11 or above 65 years old), which gives the user 34% off of

the mentioned prices.

Lastly, there are the 'Always Reduction' subscriptions. These are not only valid for RET transport, but also for all other bus, tram and metro services in the Netherlands. The 20% reduction is €19 per month or €190 per year, and is suitable for people that travel for more than €95 per month or €950 per year. This subscription is interesting for people that have to be in various locations, thus a regional public transport subscription would not benefit them.

A.2. HTM

Travelling with the OV chip card costs €0.96 for the base fare and €0.166 per km. Reduced fares (children under 12, 65+) are €0.63 base fare and €0.109 per km.

HTM offers a 2-hour ticket for €4. A Day ticket is available for €7.10, and a 3-day ticket for €18. The tourist day ticket is available as well, offering public transport in Zuid Holland for €14.50. Night bus tickets are available for €5.

The star subscriptions are the same as the ones described in the RET chapter.

A.3. GVB

The regular pricing for OV chip card travels is €0.96 base tariff with €0.162 per km added. Reduced fares are €0.63 base tariff with €0.107 per km added (available for children up to 18 years, or people that are 65+).

1-hour tickets are available for €3.20, bus-tram-metro 1.5-hour tickets for €6.50 (which are also valid at Connexxion and EBS services). 24h are available for €8. GVB also offers 'multiple day tickets', which range from €13.50 for 48h to €36.50 for 168h (7 days). Night bus tickets are available for €4.50.

They offer the following subscriptions:

- GVB Zone (valid in one of Amsterdam's zones) for €49 per month or €490 per year
- GVB only for €97.50 per month or €975 per year
- Randstad Noord Zone (choose one centre zone, travel to adjacent zones based on the amount of stars, valid with GVB, Connexxion, EBS), price varies between €53.90 per month or €539 per year for a 1 star subscription to €250.20 per month or €2502 per year for a 6 star subscription
- Always Reduction: this is the same subscription as is described in the RET chapter
- Always free (full GVB coverage) for €296.95 per month or €2969.50 per year

A.4. NS

Travelling with NS trains can be done by using the OV chip card, by buying a ticket through the website or app, or at one of the ticket machines that are located on stations. A €1 premium is added to tickets bought at the station.

NS offers many types of subscriptions. The most recent addition to the range is the 'NS Flex' subscription: this gives the traveller the option to pay for all their travels at the end of the month. Other subscription types are:

- Off-peak 40% (40% reduction in off-peak hours and weekends) for €52 per year
- Always reduction (40% reduction in off-peak hours and weekends, 20% reduction in peak hours) for €28 per month or €276 per year
- Weekend free (free travelling in weekends, 40% reduction in off-peak hours) for €408 per year
- Off-peak free (free travelling in off-peak hours and weekends) for €1890 per year
- Always free (exactly what it sounds like) for €4152 per year
- Route free (unlimited travels on a specific route, off-peak hours 40% reduction), price depends on the route (Rotterdam Centraal to Den Haag Centraal free costs €165 per month)

B. GOVERNMENT MAAS PILOTS

The Dutch government is currently setting up seven regional MaaS pilots. For each of these projects, a MaaS provider can develop a solution, with the possibility of expanding the area in which they operate when the pilot proves to be successful.

B.1. Pilots

B.1.1. Rotterdam: accessibility of Rotterdam-The Hague airport

At this moment, the airport is only well accessible by car. International or national air travellers, airport employees and employees of companies that are situated close to the airport are in need of other transport options. If the pilot is successful, the MaaS solution can also be expanded towards the cities of Rotterdam and The Hague.

B.1.2. Amsterdam: providing alternatives for the (lease) car for the Zuidas

The Zuidas hosts many large, sometimes international companies. Employees of these companies tend to use the (lease) car to get to work and for business travel. It is expected that the current infrastructure cannot handle the demand, especially with large scale road improvement works that are planned for the coming years. MaaS could provide an answer, as long as it meets the requirements of improved sustainability, employee satisfaction, accessibility and flexibility.

B.1.3. Eindhoven: sustainability, smart mobility, co-mobility

This MaaS solution will focus on sustainable and CO2-neutral mobility. At first, the goal is to power all business related trips with sustainable energy, thus the MaaS platform will only show sustainable and CO2 emission free options. The service will be available for all inhabitants of the Eindhoven area.

B.1.4. Limburg: borderless mobility

The amount of car use is very high in Limburg, mainly because of the lack of options for border crossing mobility services. Providing this for inhabitants of Limburg, but also for German and Belgian visitors/commuters to the area is the goal of this MaaS solution.

B.1.5. Groningen-Drenthe: rural area accessibility

This area wishes to create a more integrated mobility system, in which private vehicle use is supplemented with a public transport and other mobility services, in order to keep the rural areas in these provinces accessible.

B.1.6. Twente: mobility for all

At this moment, the special care, educational, and daytime activity transport in Twente are organized by the 'Reisbureau', or travel agency. The type of transport is very much focused on specific target groups. The government body of the province wants to bring all these transport types together and add more mobility services to the total package. In time, the MaaS platform will be available for all inhabitants.

B.1.7. Utrecht-Leidsche Rijn: vinex-suburb accessibility

The Leidsche Rijn vinex-suburb has a spatial set up, many parking spaces and good infrastructure: the perfect recipe for a high private car usage. With the expected growth of this suburb, the mobility needs can only be assessed by increasing the share of public transport and bike in the modal split. The goal is to get people to use more active modes like biking and walking, and decrease peak hour travel through a discount. The service will be available for the whole city of Utrecht.

C. MINORITIES, LOW INCOME FAMILIES IN ROTTERDAM

Rotterdam is a very diverse city when looking at the population composition. Among the population there are many minority and lower income groups. These sometimes overlap, but not necessarily. In order to get insight in these groups, two interviews with experts are done. The first interview is with Cemile Sezer and Dinko Kajmovic of Sezer voor Diversiteit, an organisation that aims to connect and activate minority groups to help them participate in society in a better manner. The second interview was done with researchers at the Verkeersonderneming, a collaboration initiative between governmental organisations and large businesses in the Rotterdam area. They are currently running a large scale MaaS-pilot with a test group that represents the diverse population of Rotterdam.

C.1. Sezer voor Diversiteit

Within this group, there also is a big part that has a migration background. Rotterdam's population is very diverse, with 51% being people with a migration background. The largest ethnic groups are people from Suriname, Turkey, Morocco, the Antilles, Cape Verde, and people from other European countries.

For many people in this enormous group mobility is not a given. Sezer emphasizes the fact that mobility is necessary for everyone. Especially in the south of Rotterdam, many people are affected by the lack of mobility that is available to them. Mobility poverty has negative

effects on the chances one can seize: jobs are out of reach, leisure options become limited, and many more negatives. There are not that many job opportunities in the south of the city, thus people that have a limited area they can reach by themselves are excluded from work more often.

Sometimes this is due to ignorance, other times a language barrier plays a role. Societal expectations and pressures from their minority group can also influence a disregard for certain options that are available to them. There is a high variety between different groups in what causes transport poverty, and how people look to solve this issue. How they experience mobility also depends on different factors: their values differ greatly per group.

In general, people from minority groups rely much less on the bike than people with a Dutch background. The car is popular, especially among older people and in the Moroccan and Turkish communities. Public transport is used often by younger people and the Surinam and Antillean communities.

C.1.1. Conclusion

One thing that should always be kept in mind about the poorer groups in Rotterdam: they are extremely diverse. Their backgrounds and cultural expectations, plus their persona living situation heavily influence how they move around.

C.2. Verkeersonderneming

In 2018 the Verkeersonderneming ('traffic company'), a collaboration between the Rotterdam municipality, the MRDH, the Ministry of Infrastructure and Watermanagement, Rijkswaterstaat, and the Port of Rotterdam started an experiment to monitor what a MaaS platform could mean for the people in Rotterdam.

One hundred inhabitants that reflected the population composition of the city well were each given a monthly mobility budget of €200,- for four months. What that mobility budget could be spent on changed each month: in the first month, participants could only travel with public transport, bus, tram, metro, the OV-fiets, a taxi service, and Greenwheels. In the month that followed, Gobike and Mobike are added to the mix, the third month Felyx and Uber are added, and in the last month car sharing becomes available. Each trip is tracked, hence the researchers could examine their travelling behaviour. The participants were asked to leave their private car as much as they could, but it would still be available to them.

The results are split up in five ethnic groups:

no migration background, Moroccan, Surinam, Turkish, and other backgrounds. The results show that different population groups in the city behave very differently. The train was most popular with people without migration background or from other groups, while Turkish people were much less favouring this transport mode. They however were the highest using group when it came to trams. Metro usage was by far highest under Surinam and other groups. These differences could be due to group preferences and habits, yet spatial availability could also play a role. The insights from this research are a bit limited in the way that they only track what people did as far as paid mobility, as personal bike use is not included.

C.2.1. Conclusion

Like the experts at Sezer, the Verkeersonderneming researchers confirm the diversity that is present in Rotterdam's population. The data from this study gives some insight in what mobility solutions people use when they are provided with a budget that they can spend according to their own wishes. However, there is not much insight yet in how this would translate in a real-world situation where cost comes back into the choice making.

D. POTENTIAL MAAS USERS: A STUDY IN FINLAND

Sochor and Sarasini (2017) examined results of a national questionnaire (n = 1305) to explore the Finnish perspective on MaaS, which was done in 2014. 80% of the respondents lived in a suburban area or city center, and 66% used their car frequently. Their public transport connections were described as excellent or good in 53% of the cases, yet only 24% used it frequently. Half of the people had only used 1 or 2 transport modes in the last month.

The researchers asked them questions regarding their opinion on many components of MaaS, which could be scored from 1 (not at all attractive) to 5 (very attractive).

D.1. Results

Potential early adopters:

- Adults younger than 35
- People with high digital maturity
- Frequent public transport/combination of mode users
- Low income households

Potential laggards:

- Older adults
- People with low digital maturity
- Frequent car users

Furthermore, they found that a MaaS platform would be more attractive for leisure trips than for commutes. This could be due to the fact that leisure trips are less often based on a routine, as opposed to strong habits regarding commute journeys.

The following statements regarding MaaS were perceived to be very attractive or attractive by at least 50% of the respondents:

- Plan, book, pay, get tickets through one digital interface
- Help save money on transport
- Trying a new mobility service without needing a subscription
- Overview of transport costs
- Using your existing PT card to pay for other transport
- Better match mode choice to individual trips

E. INTERVIEW MARÍA ALONSO GONZALEZ

María Alonso Gonzalez is a PhD researcher in the Smart Public Transport Lab within TU Delft. Her PhD project involves the forecast and evaluation of new mobility services. In particular, she focuses on (sub)urban Demand Responsive Transport (DRT) (which includes both shared ride-hailing and microtransit). In her research, she takes the passenger perspective and analyses the usage of these services in relation to scheduled public transport, as well as the expected usage in an integrated network. Her research interests also include Mobility as a Service (MaaS), as full integration of the existing mobility services.

E.1.

E.1.1. What data was used for this research?

The data is from the Mobiliteitspanel Nederland, a panel that is organised by the Kennisinstituut voor Mobiliteit (KiM). Its data comes from of 2000 households that track all their movements during three days.

E.1.2. How were these groups identified?

The groups were defined using Latent Class Cluster Analysis. It is a clustering methodology. As input I had a series of attitudinal indicators that looked at different aspects of MaaS and UberExpress-like services.

E.1.3. What are the groups people are classified in?

See picture with the names I used in the clusters and the shares of each cluster. The first group, MaaS suited individuals, are people who love technology, and don't care about car ownership. The second group, Multimodal PT

supporters, are people who love technology, and are frequent users of public transport. These two groups are the most 'MaaS-ready'. Almost half of the population belongs to one of these groups. The third group is not particularly into technology or multimodal transport. The fourth group is into technology, but also very much into their car. The fifth group is the least MaaS-ready, as it consists of individuals who are technophobic, and love their car.

E.1.4. What are characteristics of people that were MaaS-ready?

They tend to be young (esp 18-34 age group), highly educated and live in areas where the level of urbanity is the high.

E.1.5. What do you see to be main drivers and barriers for people to start to use a MaaS system?

Main barriers as explained in the workshop: technology adoption and ownership need. Especially mobile internet accessibility is crucial for a well-functioning MaaS system. Main drivers: availability of transport service options and easiness in use.

E.1.6. What's your personal opinion on MaaS? Do you think it is the future of transport?

MaaS is the integration of all mobility options. In that sense, I do think that MaaS is the future of transportation (at least in urban areas). But my personal opinion about MaaS and its future potential depends on how it is exactly defined (it is still quite differently defined by different

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E.2.

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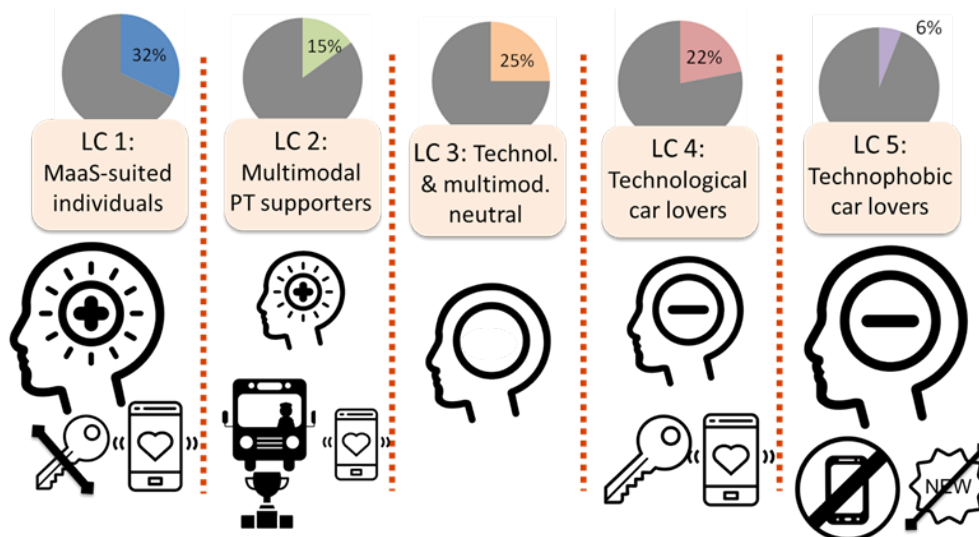
comes from of 2000 households that track all their movements during three days.

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F. INTERVIEW ROTTERDAM TOURISM INFORMATION

To get information on tourism in Rotterdam, I interviewed Martin Perez, who works at Rotterdam Tourist Information.

F.2.1. Types of tourists?

There are multiple types of tourists visiting Rotterdam, they can be divided into three main groups. Firstly there are the people who visit the Netherlands for 5-10 days. They usually stay in Amsterdam for a few days, and then visit the bigger cities in the Randstad for each one day. They are usually advised to buy an anonymous OV chip card at their arrival, so they usually use public transport to get from point to point. They come in to Rotterdam by train or bus (from the ferry terminal from the UK), into Rotterdam Centraal. If they don't have an OV chip card, they mostly buy day tickets (€8) or 'Tourist Day Tickets' (€13,50), which give access to public transport in the Rotterdam/The Hague area. Sometimes they want the Hop-on Hop-off bus ticket, which is €17 per day.

Secondly there are business travellers. They often get into the city through Rotterdam The Hague Airport, and either get a taxi into the city, or use public transport. These people often stay for a very short time, usually two days at most. Their travels are generally paid for by the company, so the individual travellers are not too concerned with costs.

Thirdly, there are Dutch visitors who come to Rotterdam for a day, or a weekend. Often these people are a bit older, 50+, or families. Sometimes they come by train, but there also many people that come by car and park in the city centre. Some people park in P&Rs at the border of the city and travel further with public transport, when they have an OV chip card this is a feasible method, as P&Rs are often free or very cheap when the journey is continued with public transport (scan OV chip card when getting the exit parking ticket). However, when people don't have an OV chip card, they have to buy a public transport day ticket for €8. When travelling with multiple people, it is usually about the same price or even cheaper to just park in the city centre and walk between highlights than to use the P&R system.

F.2.2. Where do they go?

Inside the city: mainly Markthal, Euromast, Erasmusbrug, Rotterdam Centraal, museums like Kunsthall, Boijmans van Beuningen
Outside the city: Kinderdijk, Europoort/MaaSvlakte

F.2.3. When are they in town?

The peak season starts in the spring holiday May and continues all the way until the fall holidays in October. During the Christmas holidays another peak period is experienced. Outside these periods it is much less busy.

F.2.4. How do they plan travels?

When they come to the tourism office, they rarely know how to plan a trip. Sometimes they just want to know how to get somewhere and the personnel of the office helps them using 9292. In some instances the tourist has downloaded the 9292 app. More commonly they use the Google maps planning feature or just go to a public transport stop and try to figure it out from there, or use a physical map.

F.2.5. How do they pay for travels?

Dutch visitors mostly pay with debit cards. Foreign visitors pay with creditcard or cash (about a 50/50 split).

F.2.6. What is important to them when travelling?

The most important factor is hassle-free travel. They don't want to spend their holiday time working out how to get to the interesting places. Therefore they often just buy a day ticket or rent a bike for a day.

For non-business travellers cost is important. According to Martin people never complain about the €8 for a day, so this is a very reasonable fee for a full day of public transport travelling (bike rentals cost about €6,50 per day). However, the €4 for a 2 hour ticket is not perceived well, mostly because people rarely feel like they get their money's worth: they just use the ticket to travel for 15 minutes and use up the rest of the two hours outside public transport.

G. TRANSPORT MODE CHARACTERISTICS

G.1. Quantitative transport values

(?) = estimate

G.1.1. Cost

Investment costs

- Car: €30.566 (new, C-segment (Volkswagen Golf))⁴
- Electric car: €39.758 (new, C-segment (Volkswagen e-Golf))⁵
- Motorcycle: €10.000 (?)⁹
- Scooter: €2000 (?)⁹
- E-bike: €1800 (?)⁶
- Bicycle: €600 (?)⁶
- E-kick scooter €30017

Cost of use

Owned

The cost per 30 min is based on average distance per hour (see Speed) and variable cost km prices (fuel, repairs etc.)

- Car: €573 per month, €5,29 per 30 min⁸ (Volkswagen Golf)
- Electric car: €535 per month, €3,29 per 30 min⁸ (Volkswagen e-Golf)
- Motorcycle: €400 per month⁹
- Scooter: €100 per month, €1,87 per 30 min¹⁶
- E-bike: €15 per month (?), €0,06 per 30 min¹²
- Bicycle: €2 per month (?), free per 30 min

Non-owned

- E-kick scooter: €1 for unlocking, €0,15 per minute: €5,50 per 30 minutes (?)¹⁰
- E-scooter: €0,30 per minute, €9 per 30 minutes
- E-bike: €2 per hour, €15 per day¹¹
- Bicycle: €1 per 30 minutes (Mo-bike), €3,85 per dag (OV-fiets)
- Walking: free!
- Train: €7,50 per 30 minutes (?), NS
- Lightrail: €4,50 per 30 min-

- utes (?), RandstadRail
- Metro: €3 per 30 minutes (?), RET/GVB
- Tram: €2,20 per 30 minutes (?), RET/GVB/HTM
- Bus: €2,20 per 30 minutes (?), RET/GVB
- Taxi: €75 per 30 min (regular taxi) (?), €40 per 30 min (Uber) (?)
- Fast ferry: €4 per ticket, RET

G.1.2. Cost comparison of one hour car use vs. multimodal journey

costs of use car/30'	5,29
costs of use train 30'	7,5
costs of use metro 15'	1,5
costs of use scooter 15'	4,5
costs of use bike 15'	1
1h car	10,58
1h multimodal train, metro, scooter	13,5
1h multimodal train, metro, bike	10

G.1.3. Speed (max with current regulations, average (km/h));

- Car: 130, 451
- Electric car: 130, 451
- Motorcycle: 130, 50 (?)
- Scooter: 25-45, 211
- E-bike: 25, 17 (?)
- E-kick scooter: 25, 13 (?)
- Bicycle: 22 (?), 131
- Walking: 7, 51
- Train: 160/140 (HSL/regular), 441
- Lightrail: 802, 452
- Metro: 100, 25 (?)
- Tram: 603, 183 (?)
- Bus: 80/50 (within/outside city area), 18 (?)
- Taxi: 130, 451
- Fast ferry: 41, 1415

G.1.4. Environmental impact

Well-to-wheel kg CO₂/km, with average amount of passengers

- Car: 0.22 (1,39 pax)13
- Electric car: 0.107 (1,39 pax) 13
- Motorcycle: 0.2614
- Scooter:0.2614
- E-bike: negligible
- E-kick scooter: negligible
- Bicycle: none
- Walking: none
- Train: 0.00613
- Lightrail: 0.02413
- Metro: 0.09513
- Tram: 0.08413
- Bus (non electric, urban): 0,14613
- Taxi: 0.22 (1,39 pax)13
- Fast ferry: ?

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H. CONTEXTMAPPING RESEARCH REPORT

H.1. Research goals

This explorative Contextmapping study is done to get a better understanding of travel habits of Millennial Urban Professionals (MUPs) in the Randstad area. There are several topics on which the study focuses:

- Travel modes: which do they use frequently, less frequently, never and why? Which combinations of travel modes are seen for multimodal journeys?
- Shared mobility: which shared mobility services have they used (or not)?
- Journey planning: how do people plan their journey, and what do they take into account when planning?
- Travelling on work vs. free days: what are the differences between routine and non-routine journeys?
- Exploring journey attributes: how do they experience the journey attributes mentioned in the Current mobility habits chapter when travelling?

H.2. Method

Contextmapping is a generative research method to let people construct their view of the context, by calling up their memories of the past and hereby eliciting their dreams of the future. Generative research methods help people express what they know, feel and dream, uncover tacit knowledge and latent needs (Visser, Stappers, Van der Lugt, & Sanders, 2005).

The setup of Contextmapping research is usually divided into three parts. Firstly there is the preparation part, in which the research goals and setup are established. The methods and techniques that will be used are decided upon. Finally, the study materials are prepared and participants gathered.

The second part of a Contextmapping study is gathering the information. In this case the information is based upon three main sources:

- Introductory interview: this interview had two main goals, getting to know the participant, and explaining the research setup and booklet to them. Each interview was done one-on-one and lasted for about 15 minutes.
- Sensitizing booklet: this booklet asked the participant to keep a travel diary for 5 days, including both work days and free days. This helps the participants keep track of their choices and how they experienced this.
- Group session: two two-hour sessions with 6 participants each were held. In this group session the booklets are discussed and two creative exercises are done to help the participants express their ideal journey.

The final part of the study is to analyse the gathered information. To get insights from this study, it is needed to transform the large amount of information gathered from the booklets, the group sessions and the creative assignments into quotes or evidence pieces. These can then be used to follow the analysis procedure are described by Visser et al. (2005), which is based on the Grounded Theory approach (Corbin & Strauss, 1990). The quotes and evidence pieces are put in clusters, which are named to describe the evidence in the cluster. These are then used to create patterns and an overall view.

H.3. Participants

The target group for this research were the Millennial Urban Professionals, or MUPs. To ensure that they were at least familiar with public transport and/or multimodal

travelling, the criterium of frequently using public transport was added. To gather the participants a research bureau was asked to select 14 participants based on the following criteria:

- Living in the urban area of Rotterdam (for accessibility reasons only Rotterdam area inhabitants are included)
- Between 25-37 years old
- Travel frequently with public transport
- Have a modal income or higher
- Work in an urban area
- Have a high education level

This resulted in a final group of 12 participants (of the 14 gathered participants, 1 did not meet the criteria, and 1 did not show up for the group session). There were 6 male and 6 female participants, ranging from 25 to 37 years old. They all lived in Rotterdam, except for one person who lived in Rijswijk. Four people lived by themselves, six people lived with a partner, and two lived with a friend. Five participants had one or more children. They worked in either Rotterdam or one of the other big cities in the Randstad. Two of the participants had an MBO education, nine HBO, and one WO.

H.4. Introduction interviews

H.4.1. Setup

The introduction interviews took place at a location of the participant's choice. With about half of the people this was their home, which gave a very interesting insight in what type of person they were. Three people chose their work location to meet, and two people chose a location in public space.

The main goal of this introduction interview was to get baseline information on the participants regarding their mobility habits and explain the travel diary to them, so the results from the booklet are valuable.

H.4.2. Results

Several things surfaced immediately from the introduction interviews:

- MUPs do not have transport subscriptions,

- unless their employer gives them one
- No one used shared mobility services, with the exception of the OV-fiets, which was used by some people when visiting a place they did not visit frequently
- Routes to work are usually done out of routine, most people remember the schedule of public transport they use to get to their work. They do not look up schedules and travel options anymore, except for when they are already at their station or stop and the journey they usually take is not available anymore. Most people use 9292OV, some use specific apps for the transport provider they want to travel with (RET Realtime app, NS app)
- People that lived close to the city centre did not have a car anymore or are seriously considering selling theirs: they do not feel like owning a car is necessary with all the public transport options around them, and a lot of destinations in a bike-able range
- People that live in a less central area (Rotterdam Zuid/outside of the 'ring') often take the car to a P&R like Capelsebrug or Kralingse Zoom, and travel onward into the centre from there. Doing the whole journey by public transport is not favoured, because they either have to transfer a lot of times, or the journey would take a very long time

H.5. Sensitizing booklets

To sensitize the participants they kept a travel diary for five days. Sensitizing is a process where participants are triggered, encouraged and motivated to think, reflect, wonder and explore aspects of their personal context in their own time and environment (Visser et al., 2005).

The booklet started with several questions about the participant on the following topics: residential/work city, hobbies, living situation, owned transport modes, having an OV chip card/driving license, public transport subscriptions, frequently used public transport stops, and used planning apps.

The next pages of the travel diary consist of

several questions which the participant is asked to fill out each day:

- Today I'm... *working/free*
- Today I travelled with... *bike/e-bike/car/electric car/train/metro/tram/bus/walking/scooter/other*
- Today I'm travelling for...
- I had this stuff with me:
- I planned my journey with...
- I travelled together with...
- I travelled for ... minutes in total
- This is what my travels looked like today (timeline to write each trip down)
- This is how I experienced my travelling today (rating scale)
- This is what I liked/disliked about my travels today
- This played a role in my choices for travelling today:

At the end of the booklet the participant is asked to reflect on their travels by rating several their travels on multiple topics on a scale: bad/good, cheap/expensive, slow/fast, inflexible/flexible, unsafe/safe, inactive/active, uncomfortable/comfortable, complicated/easy, bad/good for the environment, intensive/relaxing. These questions were used to discuss their experiences in the group session.

H.6. Group sessions & creative assignments setup

In the group sessions the twelve participants were split over two two-hour sessions. The sessions started with each participant discussing their booklet, showing what stood out to them, what they liked and what they did not like. The participants were encouraged to share experiences and use this time to start discussing with each other. This led to more insight in whether multiple people experienced the same situations, or if they experienced it in a completely different way.

After discussing the booklets two creative assignments were done. The first assignment asked the participants to create a collage about their favourite and least favourite transport mode. They were provided with multiple sheets with pictures and words, as well as writing and drawing materials. After 20 minutes of crafting they each explained the collage to the group in one minute. The second assignment asked them to create a collage about their ideal door-to-door journey. Again they were provided with pictures, words and drawing materials to express their ideal journey. At the end of the session, they each explained their last collage to the group.



Figure 33. Participants of one group session working on the creative assignment

H.7. Results

H.7.1. Participants: potential users?

Firstly, it seemed that only a few of the participants actually fall into the category of 'MUP' as described earlier. After getting to know them better during the interviews and the group sessions, only 6 of the participants suit the MUP profile. The other participants were not necessarily tech-savvy or interested in trying new experiences and products/services. One of the participants just finished studying, so the lack of income would also place them outside of the target group at this moment. However, he probably would fit into the target group when having a job.

Another criterium that needs to be added to the potential MaaS-user profile would be 'public transport-loving'. All the participants travelled with public transport frequently. Many of the participants did this because their employer paid for a public transport subscription. This heavily influenced their journey choices. However, there was a clear division within the participant group of people that liked travelling by public transport, and people that just did it because it was the obvious choice.

The public transport-loving participants explained they enjoyed travelling with public transport because they can spend their travel time on something else, like working, reading a book, listening to music, playing a game, using social media, just looking out of the window, eating, and catching up with friends.

The non-public transport-lovers said they would prefer taking the car, but circumstances prohibited this. Some did not have a driving license. In other cases the location that frequently had to go to was very hard to reach by car or parking was impractical.

H.7.2. Routine journeys

As expected, the participants made a clear division between their routine travels and irregular travels. Routine journeys are undertaken frequently, often multiple times per week. Irregular journeys are not undertaken on a regular basis. They have very different expectations and experiences with routine journeys and irregular journeys. This also leads to them finding different factors important during the trip.

Routine travels were mostly journeys between home and work locations. These were also the journeys they undertook most frequently. Because of this participants often memorised the schedule of their routes, including alternatives. It helped them to be more efficient with their travels.

However, this automation in the travelling process could lead to unawareness to changes. Many participants said they had missed the notifications of e.g. the holiday timetable, or a route not being available due to maintenance. Sometimes this happened because they had 'zoned out' during their journey, therefore not seeing the notification on in-vehicle screens or other announcements. This led them to be surprised and annoyed when getting to the station at their regular time and finding out it did not run as expected. Sometimes they actually did pick up a notification on changes but still forgot about them as they followed their usual routine. In this case they did not mind. They just felt stupid, and thought it was their own fault. This example shows how strongly ingrained a travel routine can be.

Another important factor with routine journeys is that the participants become 'emotionally numb' towards their travels. Even though they knew it was an unpleasant journey, having to travel in peak hours, they did not experience the journey as negative: they knew they had to get through it anyway. As one participant said: "sometimes you just have to. I don't enjoy my trip being an hour, but I just need to get there". Another participant explained she stopped thinking about the negatives of the journey in order to get less irritated: she could not do anything about it, so she got herself to let go of any emotion regarding the journey.

None of the participants mentioned anything regarding this numbness for positive emotions. However, they also did not mention anything on positive experiences during routine journeys at all. They just mentioned that they liked nothing going wrong ("I didn't miss my connection, so that was nice"). Thus, there it is uncertain whether there also is a 'positive emotional numbness', or whether there were no positive experiences during the diary period.

H.7.3. Irregular journeys with a required time of arrival

On the other hand there are the irregular journeys. Participants described roughly two types of irregular journeys: those that require a specific time of arrival, and those that do not.

Journeys of the first category were in general events with a very specific start time like work meetings at a client, concerts or flights. In these instances, participants preferred not taking any risks and took a train earlier to create a bit more play room in case they missed a connection, or to have some more time to navigate in unknown areas.

H.7.4. Irregular journeys without a required time of arrival

The second category of journeys included journeys to casual family or friend visits, hobbies like going to the gym etc. These journeys are a sort of 'in between'-category of journeys, as people usually know the route or what line to take to these locations, yet they have little familiarity with schedules. At most they know if the line runs frequently or not. Having to take an infrequently running line lead to planning their journey; otherwise they would just go to the stop. These journeys look to be the least stressful.

Irregular journeys that are undertaken with public transport are planned with a planning app, usually 9292OV or the NS app. Journeys by bike, car or similar were planned using Google Maps when going to an unknown location. Little to no planning was involved in going to well-known locations. It is clear that irregular journeys require more planning than routine journeys.

Because of the lack of routine in these journeys, the participants did not seem to close themselves off of emotions during the journey. Journeys with a required time of arrival had more potential to be stressful, but this problem was tackled simply taking more time to complete the journey.

H.7.5. Who pays decides

Many of the participants were given a (part of a) public transport subscription by their employer. Many people that both worked and lived in the Rotterdam area were given an RET

subscription, or they had to pay only a small part of the subscription themselves, being free to use it in their spare time as well. Some people received a 'traject vrij' subscription, letting them travel for free on a specific route. Others could just declare their travels costs after a certain period and get a refund that way. In any case the employer had a big influence on choices for routine journeys, and in some cases on other travel behaviour as well.

When participants had to pay for the travels themselves, they became more conscious about their travels and were more likely to look at multiple options.

H.7.6. Factors limiting travel choices

The participants mentioned two important factors that limited their transport mode options or heavily influenced them. The first one was not having a driving license (or having one, but not daring to drive). This obviously inhibited participants to travel by car themselves. They would often rely on their partner, family or friends to drive them. These people mentioned they would like to drive themselves, and said they would most likely use the car more often if they could. Public transport is the only way they can travel by themselves on journeys where they do not want to walk or bike.

The other important limiting factor was travelling with children. Almost all participants that had children travelled in a different way when travelling with their children than without. They would take the car or walk more often. If children were old enough, they would sometimes bike with them. Most of them did not take their children into public transport. The reasons for this remain guesswork. Many people were annoyed by children in public transport, so maybe they did not want to create these situations by bringing their own children.

A last factor that not always limited people's choices but did change the way they experienced the journey was having to transport large bags or other loads. Public transport, cycling and walking are not very suited to transport large (amounts of) bags. There often is no designated space. Sometimes there are baggage racks, but

they are often placed overhead. This made it hard to get heavy bags into the racks. Non-closable bags are also not trusted to be transported in these racks, as people were afraid their goods would fall out of the bags.

H.7.7. Speed gap between public and private transport

A well known problem with public transport is that it sometimes is not as fast as private transport. Especially on longer journeys, the difference between the time it takes to complete a journey by car or by train can be big due to (badly connecting) transfers. This is a reason for more people to want to take the car for longer distances. This is mainly true for irregular journeys. On routine journeys, which are often commute trips, people did not mind as much because they could utilise the time on the train to work.

On journeys or trips within the city, people were annoyed with the detours that buses and trams often take. There were no mentions of this problem with metros. However, sometimes people still use BTM because the distance is too far to cover by bike, or because they just do not like to bike.

H.7.8. Dependence on OV chip card

In general, there were no mentions of the OV chip cards functioning. The only problem participants had with it was that they highly depended on it for public transport to be easily accessible and affordable. When they forgot the card, they suddenly realised how many barriers are taken away by it. One participant told the group about her recent experience of forgetting the card when having to travel with multiple transport providers: "you have to buy a temporary card, which is €3.50. But then I have to transfer to the bus and get another card, because it is another provider. That means I just payed €7 for the trip. I know it is my own fault that I forgot my OV chip card but having to pay €7 again for the return journey, you know...". Other participants agreed with her wholeheartedly.

H.7.9. Transferring does not have to be bad

When transferring, there is a fine line between having to hurry, being perfectly on time and having to wait too long. When the connections are good, most people do not mind a transfer. However, there are many events that could

transform a good into a bad connection.

The first and most obvious reason is having to wait for the next vehicle for too long. When it is cold and the stop does not provide shelter a long transfer is detrimental to a good travel experience. This mainly counts for routine journeys or irregular journeys with a required arrival time. A kiosk or other type of store makes a long transfer less undesirable.

Directly following having to wait for too long is having a very short time. Especially during peak hours, when the public transport system is at its busiest, this created stress for the participants. They described getting very annoyed with others being slow, especially at the OV gates. One of them would sit next to the doors in the train, because it was the only way for him to make the connection. He chose a more uncomfortable train trip over potentially missing his connection.

However, there is a brief moment in between having to hurry and having to wait, where the connection is experienced as good. One participant explained that due to a change in bus service in her work area the connection became just right, and that this was a very pleasant part of her journey. Other participants reacted to this with agreement.

Furthermore, the participants weighed several factors when deciding on a journey with transfers. Speed was of course one of the factors, but they sometimes preferred having a transfer less, even if that meant the journey took longer.

H.7.10. Travel information

In recent years the availability of on-the-go travel information has increased. Travellers appreciate this very much, but is very important for this information to be correct and reliable.

Some of the participants used the Realtime app RET offers to check at what time their vehicle would arrive. If it showed to be late, they left their location later and vice versa. Other participants in the group did not know this app existed but showed enthusiasm for this feature.

As discussed above, for routine journeys travellers often do not look for information

anymore. However, when their routine journey changes, they are not always aware. In the case of an unplanned change in schedule, people want to know what this means for the rest of their trip: how are they going to reach their destination? This lack of information provides opportunities for a new platform to be better at than current solutions.

Furthermore, many people mentioned struggling with route planning for public transport. This often started with the app they were using not displaying the correct stops, e.g. when searching for a certain stop, they would just get streets with that word in the name instead of the stop.

H.7.11. Comfort

What people expected for comfort levels depended on different factors. Firstly, it depended on whether or not they had to travel during peak hours. They recognised that it would be very difficult to maintain their expectations during peak hours, so they usually were OK with having lower service levels at these times. They did really not enjoy being crammed together, which happened mostly in the metro. Transferring at Beurs during peak hours was also a negative experience due to the large masses crowding the station.

Secondly it depends on whether they had a short or a long journey. As one person explained, she just had to travel three stops with the metro, so she did not mind not having a seat. However, having a seat feels like part of the basic comfort level that should be provided. As one participant said, 'I've paid for it, so I want a seat'.

Thirdly, temperature proved to be very important to the participants. They discussed the in-vehicle temperature, which was said to be way too high in the winter: everybody is dressed in warm clothes with thick coats, and the temperature in vehicles was not adjusted to this. Furthermore they were very negative about having to wait for a vehicle in the cold. Especially bus and tram stops provide very little shelter. A side note for these comments is that the diary and group sessions were done in a very cold period, so the items they

mentioned here were maybe exaggerated.

Lastly many participants agreed to the bus and tram not being comfortable in general. This was mainly due to the vehicle shaking during the ride.

H.7.12. Activities during the journey

Many participants said they would use time on commute journeys to do some work. If travelling by train they used their laptop, while when travelling by BTM the phone was used more often. The train's interior is more suited to work with a laptop, while in BTM there is no tray table or space to put it. Reasons for working during the trip were mainly to reduce the work they had to do while in the office. Some participants mentioned they did not have strict work hours, so if they did some work while travelling, they could leave earlier.

To relax during the journey, most participants listened to music, read a book, used their smartphone for entertainment or just looked out of the window.

H.7.13. Privacy in private vehicles

One of the participants very much favoured the car over other transport modes. For him, this was also due to the privacy a car offers in comparison to e.g. public transport. He explained that he was very happy to take the car when going to a 'comic con' event, as he could wear his Batman outfit without feeling weird in a public space.

H.7.14. Awareness of travel factors

The only factor of the five asked factors at the end of the diary that all people had good awareness of was their total travel time. Most people confirmed their insight in total travel costs, but there were some people that expressed they had very little idea. However, many people were not aware of changes in their travels, like timetable changes. New transport services were also mostly unknown with these participants. This shows that there is still much to progress to book with information availability and clarity for travellers, in some cases when they are not looking for it themselves.

H.7.15. Descriptions of 'ideal door-to-door journeys'

One of the creative assignments asked the participants to create a collage for their ideal door-to-door journey. Some interesting suggestions are discussed here.

Firstly there was a participant that specifically asked for a multimodal planner. He said he would want to be able to travel with different travel modes depending on the time it takes, taking the car when it would be much faster (e.g. during peak hours), but having the option of taking public transport when it would suit the situation better.

Multiple participants wanted a multimodal planner that helped them decide. One participant had titled his assignment 'carefree travelling'. To him this involved giving an app his routine journey, and the app would help him decide what is best based on the weather and other circumstances. The app should let him know when he has to leave his location. The goal of this system was to arrive at your destination in a relaxed way, not having to stress about it. This vision was shared by more participants, expressing their wishes to actually enjoy their journey by relaxing or using the time to catch up with friends.

Another participant had a similar ideal journey, where the travel advice would be based on the distance. For short distances she preferred cycling, whereas for longer journeys she preferred taking the train.

Moreover, one participant had picked up on the high speed vacuum transport tubes that are in development at this moment, like the hyperloop. He said he would love to have his own personal connection to a hyperloop system, which enables him to travel anywhere he wants in a very short period of time, leaving him with more free time. This solved his struggles with having to adapt his travels to weather, and permitting him to bring on goods.

A last multimodal journey ideal was based more on new transport, but in a less futuristic way than the hyperloop idea. He would like to travel by electric step to a P&R, where he could just jump into a self-driving car he had booked in advance. This journey again showed that transferring does not have to be bad, as

long as it does not take much time and there is a certainty of not missing the connection.

H.8. Conclusion

This explorative study has given much insight in travelling habits of urban inhabitants and their wishes. Even though not all the participants fit the 'MUP'-profile, all of them gave interesting insights in their travel behaviour.

One of the findings is that choices are very much constrained by employers. Often they provide for commuting transport, either by giving a public transport subscription or a lease car. As the commute travels were undertaken more frequently than irregular journeys, most of their journey choices were not based their own preferences, but from what their employer had provided them. Furthermore, they could often use these transport options in their own time as well, therefore influencing their irregular journeys as well. Thus, when developing a MaaS platform, it should be taken into account that travel choices are likely to depend on what employers offer.

There is a vast difference between how routine journeys and irregular journeys are experienced. Routine journeys are often done in an automated way: no travel information is searched for, as timetables are more or less memorised. This leads to travellers missing information on changes in their travels. The unawareness of changes in timetables was confirmed by the booklets. Furthermore, many of the participants had created a sort of emotional numbness regarding these journeys. They knew they had to get through it anyway, so they got themselves to stop feeling negative about unpleasant journeys. The strong routine most people had developed for their commute travels looks to be difficult to change, and might not be suited for a MaaS platform initially. However, providing information on changes in their routine journey would be very valuable.

Irregular journeys however are very different. This category can be split into two types of journeys, depending on whether a specific arrival time must be met or not. If this is the case, people were quite meticulous in their

planning, often taking extra time for the journey to ensure they had some play room in case anything did not go to plan. Without a required arrival time the participants were more loose in their approach, often not planning in advance, just leaving their location when it suited them. Irregular journeys look to be the most suitable to get people to start using a MaaS platform, as it includes more planning. Next to that there often is less awareness of the travel options in the destination area, making them more likely to try new mobility services.

A well-functioning Mobility as a Service-platform depends on travellers using different mobility types. Most participants however never used new mobility services. They often had experience with OV bikes before and really liked them, but no participant had used another service like Mobike, Felyx or car2go. This shows the need for actively getting travellers acquainted with new mobility services, as there is no certainty they will actually start using them once they are integrated in a MaaS platform.

Furthermore, connections are not necessarily seen as bad. When the transfer is just right in timing, people did not seem to mind. However, when provided with the choice to either have longer travel time but less transfers, or a shorter time with more transfers, the option of less transfers seemed to be favoured by several participants. There is no clear insight in what these choices depend on exactly, so more research is needed to know how to take this into account for an advanced journey planner.

Other insights were that even these frequent public transport users preferred the car sometimes. This was mainly due to the large speed gap in these journeys, or the destination being very hard to reach with public transport.

Lastly, the current dependence on the OV chip card was seen as very frustrating at times: when not having the chip card at hand, a well-functioning public transport system suddenly transforms into an expensive, unpleasantly complicated system.

I. ELECTRIC VEHICLES, AUTONOMOUS VEHICLES

H.9. Electric driving

Plug-in electric cars (PHEVs) and fully electric cars (FEVs) have become much more popular in recent years. At the beginning of 2014, there were around 5000 fully electric cars and 25.000 plug-in hybrid cars. At the start of 2018, there were almost 22.000 FEVs and 97.000 PHEVs: almost quadruple the amount of five years earlier (CBS, 2018). It is expected that in 2040, 55% of all new car sales and 33% of the global car fleet are electric (BloombergNEF, 2018).

H.9.1. Expected cost reduction

In November 2018, the Dutch government announced plans to heavily subsidize electric driving. When buying a new electric car, consumers get €6000 euro back in 2021. The refunded amount drops to €2200 in 2030. Furthermore, electric cars can be bought without bpm (purchasing tax) until 2025, and after 2025 consumer pay a €350 fee instead of a percentage. Driving tax (mrb) does not apply to electric driving until 2025, also for second hand electric cars. Furthermore, taxes on fossil car fuel are planned to increase with €0.01 per litre (NOS, 2018a).

Prices of electric vehicles are largely made up by the cost of the power train. As figure 34 shows, the extra cost that is paid for battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs) and hydrogen fuel cell electric vehicles (HFCEVs) in comparison to a mid-range (€21.000) internal combustion engine vehicle (ICEV) is expected to decrease significantly in the coming years. This is mainly due to price reduction in the power train, especially in the battery: 75% of power train

costs are made up by the battery. (Wolfram & Lutsey, 2016)

H.9.2. Decreased environmental impact

Wolfram and Lutsey (2016) show the predictions for the decrease in CO₂-equivalent greenhouse gas emissions (GHGE) compared to the well-to-wheel energy consumption (kWh) per 100 km, and the adjusted EU emissions standard in 2021. Well-to-wheel energy consumption captures all direct and indirect emissions of fuel and electricity production and vehicle operation. For all power trains, both WTW energy consumption per 100 km and GHGE decrease strongly. This trend is expected to continue until 2050, although how far GHGE can be reduced depends strongly on the efficiency and electric driving policies and standards that are set (Lutsey, 2015).

H.9.3. Consequences for driving

Not only the transport sector is affected by the mass shift to electric driving. Firstly, the electricity sector has to be able to supply enough energy to charge all EVs. Uncontrolled charging can significantly increase peak load of the electric grid. Smart/controlled charging can help decrease peak load and smooth the electricity demand curve. The total electricity demand is increasing, making electricity more expensive – regardless of whether you drive an electric vehicle or not. In return, electric vehicles could become part of the electric grid by charging when there is an excess of energy supply (sustainably sourced energy supplies are usually largest off peak times). When peak times arrive, the EVs could discharge to the system. (Wired, 2018b)

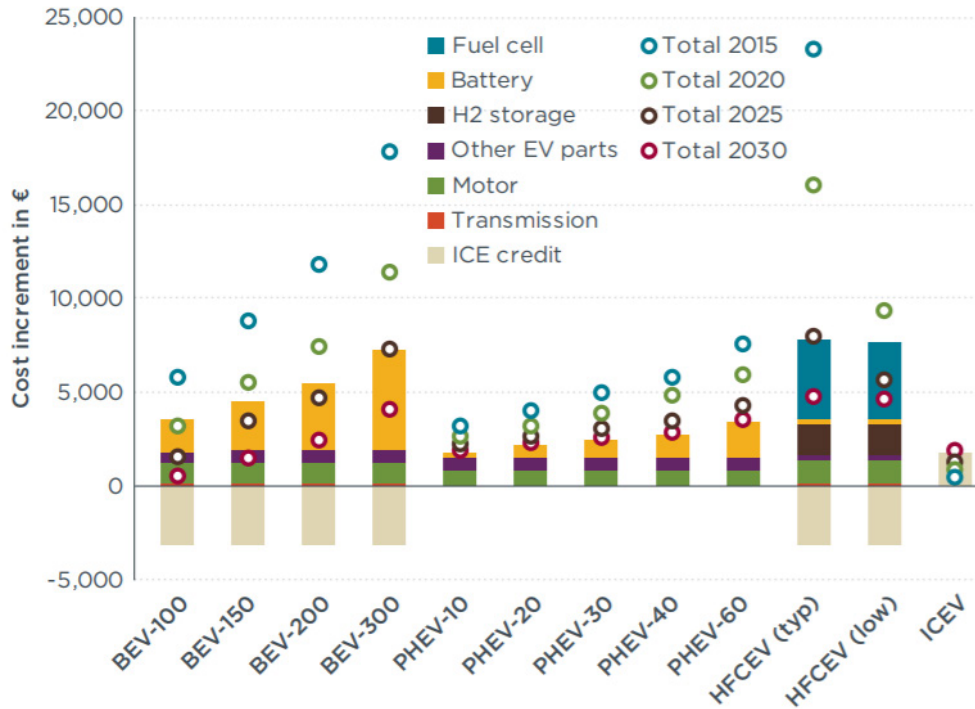


Figure 34. Cost breakdown of different power trains for a 2030 lower medium car. Circles show total incremental costs over a 2010 internal combustion engine vehicle (ICEV). The number (e.g. BEV-100) expresses the range in miles (Wolfram & Lutsey, 2016)

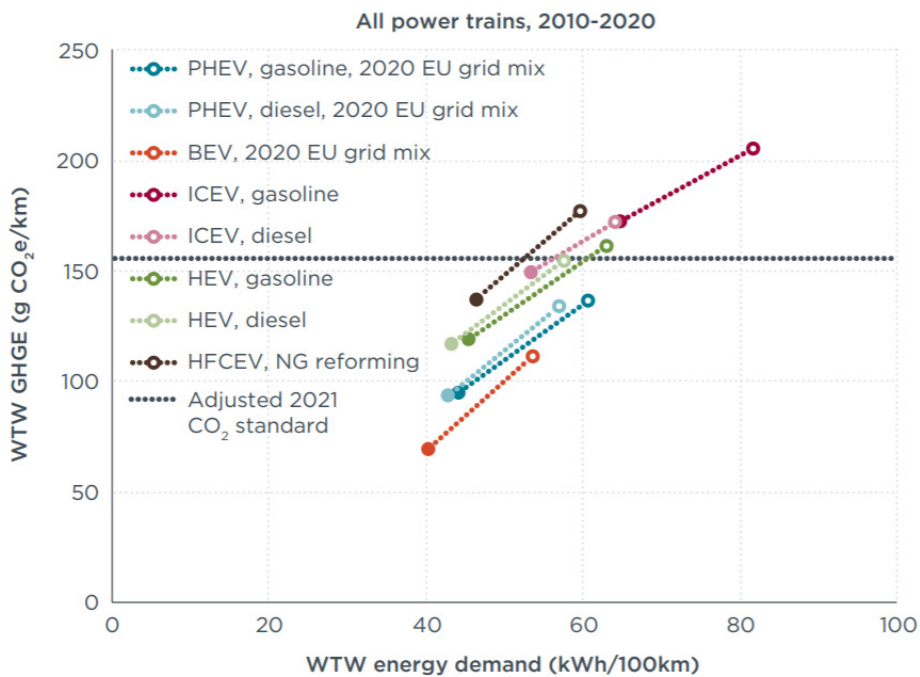


Figure 35. Well-to-wheel (WTW) greenhouse gas emission (GHGE) change from 2010 to 2020. Hollow dots represent 2010, filled dots represent 2020 (Wolfram & Lutsey, 2016)

H.10. Autonomous vehicles

In the 'self-driving car'-world, five levels of automation are identified, in ascending order of some small steering or acceleration tasks performed autonomously, to full automation in all conditions. There are many applications for each of the automation levels, but especially from level 4 (full automation in urban areas) on radical new opportunities can be identified. It's very likely the first autonomous vehicles will appear as taxis or ride-sharing vehicles, operating in limited conditions and areas, so operators have full control over all details. Autonomous vehicles are most likely electric vehicles. (TechEmergence, 2018; Wired, 2018a).

H.10.1. Development of AVs

Waymo (originally a Google division, now a separate company) is one of the frontrunners in the autonomous vehicle industry. Their cars have now driven more than 10 million miles on public roads. They are piloting with an autonomous vehicle fleet in Phoenix: people can actually use these autonomous vehicles to get around. (Waymo, 2018)

GM is currently developing an electric self-driving car specifically for ride-sharing, and is planning to introduce these vehicles in 2019, to create an integrated network of on-demand autonomous vehicles in the US. Renault plans to release a level 4 autonomous vehicle in 2020, Ford and BMW in 2021. Many others are in the pursuit to release a self-driving car on highway automation or urban automation level as soon as possible. (TechEmergence, 2018)

The autonomous driving technology is not only relevant for cars, but also for other vehicles that currently require a driver. Autonomy for metros, trains and trams is already implemented in cities like Copenhagen, Kobe, Potsdam, Paris, and many more. (Railway Technology, 2018)

H.10.2. Consequences of AV introduction

The impact of a transport system with autonomous vehicles instead of private car ownership are enormous. Below some of the expected effects are named, although there are many more expected (and unexpected) ones.

It's likely that AVs will operate in a "taxi" fleet: whenever you need to go somewhere, you just hail the AV, it brings you to your destination. The AV will then ride on to pick up the next traveller, or go to the storage area to charge or be maintained.

However, there are many other impacts of AV implementation that are less obvious. Present day cars are idle 96% of the time, while AVs could have a utilisation rate of 75%. As AVs do not need parking space in crowded areas, almost all parking lots in urban areas can be repurposed. Instead there will be many drop off points. (Duarte & Ratti, 2018)

Privacy is another controversial topic surrounding these vehicles. As there is no driver to keep watch, the vehicle itself will monitor the passengers, hereby knowing just about everything about them. If passengers are caught showing 'unwanted' behaviour, they can be denied access to AVs in the future. Next to keeping an eye on passengers, the vehicle can also monitor its surroundings. With large scale implementation of AVs, they are likely to become a surveillance system for street crime. Law enforcers can use data from vehicles to support decisions. (The Economist, 2018)

We will also be using our time on an autonomous vehicle completely differently from car time nowadays. Part of our rituals that surround transport can be shifted to in-vehicle time. Eating, working, having meetings, entertainment and many more things can be done while being transported. Personalised advertising during rides becomes commonplace, although it will be possible to buy ad-free rides at a higher price. (Medium, 2018)

J. THE FUTURE OF PUBLIC TRANSPORT IN ROTTERDAM

As described in the Challenge chapter, it is necessary to create a higher capacity transport network, yet keep the environmental and space impacts low. The most obvious solution for this problem is to increase the amount of travellers in public transport, while decreasing motorized individual transport. It however is the question if the current public transport network in Rotterdam can handle this increase in passengers. During peak hours some routes are already extremely busy.

J.1. National policies regarding Public Transport development

There are three pillars for the development of public transport towards 2040 (Ministry of Infrastructure and Water Management, 2019):

1. Focus on the power of PT
2. Door-to-door without barriers
3. Safe, sustainable and efficient

The first pillar emphasizes the focus on public transport between large cities in the Randstad and Zwolle, Arnhem-Nijmegen, Eindhoven and Breda. For Rotterdam's intracity mobility this document does not elaborate on specific directions, except for 'intensifying and improving the metro system'.

The second pillar is directed more towards MaaS solutions. The combination of (e-) bikes and public transport is said to be the optimal mobility solution in urban areas, as it is a relatively cheap, sustainable and healthy way of travelling. PT hubs are enhanced to create a better transfer environment and make multimodal journeys more attractive. Furthermore, transport providers are nudged to share data to make MaaS development easier.

The third pillar aims to make the whole PT sector emission free by 2030 by using green electricity and a circular approach in development and maintenance. Moreover the importance of liveability in cities is stressed, however there are no clear directions given for how policies on parking, the layout of public spaces and possible 'environmental zones' (milieuzones in Dutch).

How these goals are to be reached is still unclear. However, it is a good starting point and provides direction for all involved parties, including RET. Below the future of urban public transport in Rotterdam is discussed further.

J.2. Metro and lightrail connections

These high capacity modes are still very valuable for transporting many people in a very efficient manner. The per capita environmental impact of especially train services are very low. Therefore it is likely they still have a big role to play in the urban public transport of the future. However, adjustments need to be made to the system to facilitate the growth that is needed for a better urban environment.

Figure 7 shows RET's expectations for the used capacity of metros in 2025 and 2035 with a moderate growth rate of 3% per year. It is predicted that the system as it currently is will not suffice anymore somewhere between 2022 and 2029, with the peak hours being unbearably busy.

There are several options that are looked at to help alleviate the pressure on the system for the future. These plans are by no means final and sure to be executed, but must be looked at as the company's hopes of creating a better public transport system in Rotterdam.

J.2.1. Automation of the current metro system

For the existing lines (A-E) automation of the network can help create much more capacity. Driverless systems allow for higher frequency, letting metros through up to every 90 seconds. In the current system metros ride about every 3 minutes on the busier routes during peak hours, so this could lead to a large improvement in capacity. The automation is hoped to be introduced in a phased way between 2025 and 2040.

J.2.2. Connection north & south with metro F

To create better connections between the north and south of the city, an extra metro line is added that runs between Rotterdam Centraal, Dijkzigt in the north, Zuidplein and Feyenoord in the south, and then to the Erasmus University in the north. With plans for a new 'Feyenoord City' a part of south-Rotterdam will be redeveloped, making the need for transport to and from this area even bigger.

J.2.3. Extra connections between Dordrecht and Den Haag (line G & H)

The current rail connections between Den Haag and Dordrecht are to be transformed into a double track connection in both directions, allowing for much higher frequency. One track can be used for faster trains with less stops, while the other can be used for a lightrail/sprinter type connection that serves many stops within the area. This increases the total capacity of the train network a lot.

18.1 Future of motorized public transport

With electric buses, autonomous vehicles and Demand Responsive Transit becoming reality in the near future, the bus system is also up for a transformation. It is very unlikely that buses as we know them today will be present in the future public transport landscape, as newer options simply provide higher value for a lower impact.

Electric buses can provide a suitable alternative for conventional buses on high-demand routes, or on high-demand times. The environmental impact of electric vehicles

depends highly on what type of electricity grid mix is used to power the buses. When using a green grid mix the impact can be as reduced by more than half when comparing to a diesel bus (Green Tech Media, 2018).

J.2.4. On demand transit

Low demand bus routes can be replaced by other services, like Demand Responsive Transit (DRT) services. There are three main constraints that need to be taken into account when looking at such a service: the amount of passengers per vehicle, the pick-up location of each passenger (stop-to-stop or door-to-door), and the specificity in pick-up time of each passenger (REF). These factors influence the travelling time and costs of the total journey. For passengers, the ideal scenario is to be picked up at exactly their location of choice, at exactly their chosen time, and take the shortest route to their destination. However, this is might not be optimal for the complete transport system. Therefore one of the main challenges in developing a Demand Responsive Transit (DRT) is to balance the passenger needs and the optimisation of the system for the transport provider.

The choices the transport provider makes regarding these two constraints also influence the type of service the DRT service becomes. Systems optimised to passenger needs are likely to be much more expensive yet provide a higher service quality. They have a higher resemblance to present-day taxis than bus services, and are therefore more attractive to travellers looking for a premium service.

RET has already made a first step in this direction with their STOPenGO pilot (see chapter 1). The STOPenGO buses start from a central departure location, and then travel the fastest route between the requested stops. These lines still follow a certain timetable (at least the departure time from the central location) and have fixed pick-up/drop-off locations. Therefore, it is only a semi-on demand bus service.

J.2.5. An example of DRT: online carpooling services

In the USA, ridesharing has really taken off. Companies like Uber and Lyft offer various services that balance the convenience for the rider and the price. The best-known variant is

the taxi service like UberX, where one person or group of up to four people are travelling in a traditional taxi way. They are picked up at their location and time of choice.

Next to UberX, there is UberPool. UberPool fares are much lower than for an UberX ride. With this service multiple people that are headed in the same general direction are transported with the same vehicle. Furthermore, passengers are asked to walk a short distance at both ends of the journey to a pick-up point or from a drop-off point. This helps to optimise routing and travelling time for the vehicle. Thus, this service has a much higher resemblance to a small bus service, except for the fact that the pick-up/drop-off locations and routes are customised for each trip.

An iteration on UberPool is UberExpress Pool. In this case, all passengers are asked to walk a short distance to the same pickup location, and are dropped off at the same spot. This is possible by taking a few minutes after the ride is requested to match several passengers based on their current location and destination. Fares for these rides are even lower than for UberPool.

Obviously profitability of a system like this depends highly on the amount of requested rides: if there are no requested similar rides, it is still as expensive as a private taxi ride. The choice can also be made to have a minimum amount of riders for a trip to be executable with this service, yet this might lead to lower service levels for users when they are denied a trip. The lower cost benefit of a shared ride might then be outweighed by the inconvenience of the service. (The Verge, 2018)

J.2.6. DRT vehicle capacity

UberExpress Pool vehicles are optimally filled with three passengers (The Verge, 2018). The used vehicles are usually standard sized cars for 4-5 people, so three passengers plus one driver equate to a comfortable ride for all. The autonomous vehicles of WEpod can currently transport up to 6 passengers. It seems that a lower capacity is more suitable for DRT systems, yet more research needs to be done to find the optimal size in different conditions.

18.2 ADRT: a public or private responsibility?

If buses become smaller when adopting a DRT system, the line between taxi services, carpooling and buses becomes fine. This also raises the question which type of services are to be organised by private companies, and which should be facilitated by public transport. If the current situation is projected onto the future, at least taxi and probably carpooling services are provided by private companies. However, this becomes less clear when looking at DRT or even at Autonomous Demand Responsive Transit (ADRT). As much of the operational cost of a bus system (and especially when using smaller buses like in the STOPenGO service) comes from driver costs, in the long run ADRT is likely to be more cost-effective. The investments that are needed to adopt an ADRT bus system are possibly enormous, and it triggers the question whether it would be smarter to let private companies take care of it.

Which direction is taken highly depends on what policies are installed by the government, the MRDH and the municipality of Rotterdam. These parties ultimately have to finance any development of the public transport system, and have a big say in the way ADRT services are executed. Below two scenarios are outlined, which demonstrate the development of an ADRT system with or without government funding.

J.2.7. Scenario 1: ADRT is a public service

In this case, the ADRT service is likely to be an addition to the existing public transport network. This also means that the vehicles focus on areas that are underserved by existing public transport routes, especially in non-rail served areas. They can hereby replace present-day bus services in a more personalised and efficient way. When the destination lies outside the origin city or is on the other side of the origin city, the trips in AV buses should be part of a multimodal chain, where the main part of the journey is done by rail. This can be done by e.g. incentivising transferring to a rail service, or by constraining the area that can be covered in one ADRT trip.

As government bodies have a larger say in how this transport service is executed, it also

lends itself better for integration societal goals into the plans of the service. It provides large opportunities for keeping the busy areas in the city liveable. For example, time restrictions can be given to vehicles for staying within a certain area, or a higher fee is asked for trips into busy areas to discourage travellers.

Publicly organised ADRT is more likely to be a stop-to-stop service than a door-to-door service. A customised route is used to pick up or drop off the passengers at a few points that optimises the travel time. The vehicles used for a service like this are probably much smaller than conventional buses, but larger than a personal car. Services like this are more comparable to present-day bus services, and are therefore not experienced as premium services. The ride fare should reflect this as well.

The MRDH has expressed a big interest in developing autonomous public transport, and plans to invest in attracting pioneers in the AV market. This should help to make the region one of the first to pilot and adopt autonomous vehicles (OVpro, 2018). Several pilots throughout the region are probably realised before 2025.

Whether it is up to RET, another existing bus transport provider like Connexxion or EBS, or a whole new company is created to develop ADRT remains to be seen. The current contract for bus transport in Rotterdam is just renewed. With an end date in 2034 it can be expected that any major changes in the bus system are not done until this contract has ended.

J.2.8. Scenario 2: ADRT is organised by the private sector

When policy makers decide ADRT is not a

public responsibility, there is space for private companies to provide for it. To gain traction for the service the high demand areas are served first. This can lead to even more imbalance in the amount of transport options in high demand versus low demand areas. Moreover, when many people choose to visit the busier areas in the city with an AV, these areas remain very crowded, which does not lead to improved liveability of the city. Therefore the municipality should decide whether or not busy areas are to become low vehicle zones or not. This includes the decision if vehicles have to use designated pick-up/drop-off points, or if they can use any legal spot for this.

In the case that the private sector develops ADRT, they are probably more of an evolvement of taxi services, rather than evolving from bus services. Therefore the vehicle sizes are probably smaller, resembling cars. As described in chapter 7.1, many car companies are experimenting with creating AV taxis, and Uber is already experimenting with carpooling services. Two categories of ADRT services are probably derived from the existing businesses: expensive private rides, and cheaper shared rides. Shared rides do not have to be the lesser version of private rides, as they provide other opportunities of spending time with known or unknown people. Algorithms can help link people that are likely to enjoy spending time together. Ridesharing is still a more efficient way of travelling for the complete system, as it requires less space and resources, thus it is worth it to design these systems in a way that people prefer sharing rides over private transport.

As said in chapter 7.1, the first level 4 AVs can be expected to be released in the next three years. Therefore it is highly likely that by 2025 several private providers of ADRT serve urban areas.



Figure 36. Plans for the development of the future metro network (RET)

Figure 37. Imaging of the HTM ADRT service



APPENDICES II

CONFIDENTIAL

- II A. Transcripts group sessions
- II B. Contextmapping Insight clusters

II A. GROUP SESSION TRANSCRIPTS

Transcript session 1

I – welkom allemaal, leuk dat jullie er zijn. Hopelijk is alles goed gegaan met het invullen van de dagboekjes. Het doel van deze avond is om ervaringen met elkaar te delen die je aan de hand van het dagboekje bent tegengekomen. Als het goed is heb je nu een beter idee hoe je reist en wat je daarin belangrijk vindt. Iedereen is de expert van zijn eigen ervaringen, het gaat erom dat je jouw verhaal vertelt, er zijn dus geen goede of foute of rare antwoorden ofzo, alles is goed en interessant. Deze sessie wordt opgenomen met twee camera's, zodat dit gesprek later kan terugkijken. Dat staat verder beschreven in dit toestemmingsformulier dat jullie even mogen doorlezen en tekenen, zodat jullie op de hoogte zijn van wat er gebeurt met alle informatie.

Formulieren worden uitgedeeld, gelezen en ondertekend

I – mooi, dan kunnen we over naar het leukere deel van de avond. Zoals ik heb uitgelegd is het voor mijn afstudeeronderzoek om erachter te komen wat gebeurt er nou in het reizen in het dagelijks leven, en eh, wat vinden reizigers daar belangrijk in, waar lopen ze tegenaan, om dus zodoende reisdiensten van de toekomst eigenlijk wat beter te kunnen ontwerpen op wat er nou daadwerkelijk gewenst is. We beginnen even met de dagboekjes bespreken. Kun je vertellen hoe het is gegaan, het bijhouden, hoe je reizen er ongeveer uit hebben gezien op een werkdag en op een vrije dag en of er nog dingen zijn die je verrast hebben, waarvan je eigenlijk niet bewust was dat dat gebeurde. We beginnen per persoon maar het is goed om met elkaar de discussie aan te gaan, je mag op elkaar aanhaken en met elkaar dat gesprek voeren, daarom zijn we hier

ook met z'n allen bij elkaar gekomen. Zullen we met de klok meegaan? P1?

P1 – ehm nou ik heb dus vijf dagen aardig vermaakt, dag 1 dat was de donderdag en dag 2 vrijdag, toen ben ik gewoon naar mijn werk gegaan, dus ik heb dan de fiets gepakt vanaf mijn huis naar het station eh, stap dan uit op Rotterdam centraal en pak dan de metro om hier naartoe te komen, want ik werk hier in de buurt. Dus eigenlijk donderdag en vrijdag is dus hetzelfde gegaan. Ik had op zich geen vertraging, de terugreis was wel heel druk op de donderdagmiddag

I – waar zou dat vandaag gekomen kunnen zijn?

P1 – ja donderdag is altijd wel heel druk, meestal maandag dinsdag en donderdag zijn de drukste dagen dat iedereen naar kantoor gaat dus eh, ze hadden een klein treintje ingezet, dat moeten ze niet doen in de spits. En dan even kijken, zaterdag had ik familiebezoek, ben ik eigenlijk gewoon met de fiets gegaan, dus geen OV gebruikt, nog een tussenstop gemaakt in het winkelcentrum, ehm,

I – ging je daar boodschappen doen of andere dingen doen?

P1 – ja ik ging daar boodschappen doen

I – doe je meestal boodschappen op de fiets?

P1 – ehm ja meestal wel ja, als het geen zware spullen zijn doe ik dat op de fiets. Maar dit was gewoon op weg naar familiebezoek, even kijken, nou de zondag nog, ben ik naar een vriend gegaan in Delft, heb ik de fiets gepakt vanaf mijn huis en dan met de NS naar Delft gereisd. En maandag had ik een vergadering in Schiedam dus eigenlijk ook met de fiets naar het station en

met de trein naar Schiedam gegaan.

I – dus eigenlijk voornamelijk, als je dichtbij bent ga je met de fiets, en als je wat verder weg reist ga je met de trein?

P1 – ja. Maar toevallig had ik Delft, Schiedam dus dan moet je dat met de trein doen. Ja meestal als ik naar mijn werk ga gebruik ik de RET vanaf Rotterdam Centraal. Dit onderzoek viel net in het weekend dus we hadden inderdaad donderdag en vrijdag die werkdagen, dus ja.

I – ja dat is juist ook interessant! In je vrije tijd ben je ook aan het bewegen, en kun je gebruik maken van allerlei vervoersmiddelen. En als je naar de laatste pagina gaat, zaten daar nog verrassende dingen tussen, dat je dacht, eigenlijk ben ik best tevreden, of dit wist ik helemaal niet zo?

P1 – ja ik heb wel wat dingetjes waar ik me bijvoorbeeld aan erger ofzo, dat bijvoorbeeld in zo'n stiltecoupé dat eh, mensen met oortjes gaan zitten of met zo'n hoofdtelefoon en dat hoor je dan galmen ja dan is t niet echt een stiltecoupe meer, en even kijken, bij de NS dat ze een oude sprinter in zetten waar geen airco inzetten, dan is het erg benauwd, erg druk in vergelijking met die nieuwe sprinters.

I – dus dan is het niet zo comfortabel?

P1 – nee

P2 – ik heb temperatuur er ook in staan, omdat de RET zet heel vaak de verwarming heel warm, terwijl het is nu superkoud buiten, dus als je binnenkomt in je winterjas, is het heel warm

P1 – en de metro's zijn ook best wel benauwd, maar best regelmatig gaan die deuren open, maar je merkt dat het drukker wordt nu de economie in beweging is wordt het gewoon veel drukker, dat merk ik zowel bij de NS als de RET

I – dat merk je in vergelijking met hoe het eerder was op dezelfde soort reis, meer mensen in het OV?

P1 – ja. Meestal is het wel zorgeloos, je stapt in, je wordt gebracht naar een bestemming, je hoeft niet in de auto zelf je aandacht erbij te houden, op zich is het wel goed te doen.

I – ok. Dus over het algemeen best tevreden over hoe het loopt?

P1 – ja! Maar wel in de spitsuren de frequenties wat ophogen, dat de drukte wat meer verdeeld wordt, bijvoorbeeld bij evenementen bij Feyenoord ofzo, dan heb je ook trams die ze inzetten. Dat moet gewoon wat soepeler gaan.

I – ok, ik denk dat dat wel bekend is, dat het op de piekuren wel wat meer gereden mag worden om drukte te verspreiden. Ok, dankjewel! *tegen de groep* voel je dus ook vrij om in te haken op wat er gezegd wordt. P2?

P2 – nou, ik heb op werkdagen heb ik hier eigenlijk, drie werkdagen in, altijd hetzelfde omdat ik vanaf Blaak naar Spijkenisse centrum ga en daar pak ik de bus, en dat is heel relaxt, want er is daar een nieuwe bus, eerst was het Connexxion, nu EBS, en dat sluit altijd heel goed aan, vroeger niet, dan moest ik altijd heel lang wachten, er gaan dus niet zoveel metro's naar Spijkenisse, dat zou qua frequentie ook wel wat omhoog mogen, het is altijd druk in de metro. En ik fiets veel. Alles wat ik niet doe met het OV doe ik op de fiets, ook wel met sporten

I – wanneer maak je dan het besluit om in plaats van met de fiets met het OV te gaan of andersom?

P2 – nou daar heb ik ook over geschreven, omdat ik het te koud vond zondag, ik was brak, en toen wilde ik sporten, en toen dacht ik ja, ik heb geen zin om te fietsen, dus toen ging ik met de tram. En ehm, ik had inderdaad de warmte, dat viel me op. Spullen die ik bij me heb, sportspullen, eten, ik ben nog met de trein gegaan, en die sloot goed aan op de metro, daar was ik blij mee, dat is het een beetje. Oh en Alexander is een bouwput, dat is echt een mega zoi

P3 – daar heb ik ook iets over in staan!

P2 – ja? ik was even gedesoriëteerd, maar je kan wel alles vinden

I – moest je even zoeken naar hoe je op je perron of bushalte ofzo kon komen

P2 – nou waar je eruit moet! Normaal loop je helemaal naar links, dus dat doe je dan in je

automatisme, en toen kon er daar niet uit, dus toen moest ik terug. Maakt verder niks uit, maar dat was ff, ok. Inderdaad ook dat er, dat ze altijd zo vol zitten, je kan 's ochtends nooit zitten, je moet altijd wachten tot Dijkzigt, daar gaat op de een of andere manier, iedereen werkt bij Dijkzigt denk ik, en dan kun je altijd wel zitten, dat is wel ok.

P1 – ja, je denkt, ik heb betaald voor je rit, dan wil ik ook zitten

P2 – ja ik kan me voorstellen dat zeker als je met de trein moet, kijk ik hoe maar drie haltes, ik vind het niet heel erg, maar het is wel zo 's ochtends vroeg ben ik niet mijn allerbeste versie van mezelf, dan wil ik eigenlijk wel een beetje zitten. Ja dat was het eigenlijk wel! Ik heb verder niet zo heel veel verder heel veel gekke dingen ofzo. Ik had bijvoorbeeld niet één keer vertraging, normaal heb ik echt wel elke week een paar keer vertraging, maar nu dus absoluut niet, of dat ie stil staan of in de tunnel, maar dat had ik natuurlijk allemaal niet.

I – dus eigenlijk is het voor jou vooral heel belangrijk dat de aansluitingen goed zijn, dat je weinig tijdverspilling ervaart?

P2 – ja, absoluut, dat is zo irritant! Als je ergens staat te wachten op de volgende, dat vind ik echt irritant, wachten. Maar dat heb ik dus bijna niet meer.

I – ok, dat is goed om te horen, mooi.

P2 – en de hitte, dat had ik ook, echt heel vervelend

I – ja, vooral als je met winterjas naar binnen loopt

P2 – iedereen heeft van die rode hoofden

I – ok, mooi, dankjewel. P3?

P3 – nou op dag 1 was ik eigenlijk gelijk begonnen toen je langs was geweest. Dag 1 en dag 2 waren eigenlijk gewoon routinereizen. Ik woon in oud-IJsselmonde tegen Ridderkerk aan en ik moet helemaal naar de andere kant van Rotterdam, bij diergaarde Blijdorp. Dus wat ik fijn aan die twee dagen vind, de aansluiting. Wat ik minder vind, het is wel teveel overstappen. Het is dan ook een uithoek waar geen OV rijdt, dus er

gaat gewoon maar een keer een bus per uur, dan ga je naar Kralingse Zoom, en vanaf daar ben je weer in de bewoonde wereld. Dat vond ik minder aan die twee dagen, teveel overstappen, eerst met de bus, dan met de metro, dan met de tram. Eh, nog meer opvallende zaken. Dag 3 was ik vrij, toen ben ik eigenlijk gewoon naar Rotterdam Centrum gegaan, de fiets bij de Kuip gezet, bij de noorderhelling daar op de tram gestapt. Ja goed de aansluiting was daar goed dat je nooit lang hoeft te wachten, zelfs in de nacht valt dat wel mee. Ook geen opvallende zaken.

I – maak je ook vaak in het weekend 's nachts gebruik van het OV?

P3 – eh, nou, zeg maar als ik laat naar de stad ga, maar ik ga niet met een BOB-bus naar huis ofzo, dat was vroeger wel haha

P2 – ik denk ook dat op een bepaalde leeftijd dat gewoon er niet meer in zit

P3 – nee precies! Eh nou dag 4 was ik ook vrij. Ben ik naar Amsterdam geweest met de auto, geen OV gebruikt. En ja wat vond ik fijn, nou ja je hoeft niet over te stappen, wat was minder, het centrum in komen. Ben niet zo van de P&R's daar in Amsterdam, je bent gewoon nog driekwartier met het OV bezig om in het centrum te komen. En dag 5 was afgelopen maandag, toen was ik weer aan het werk, toen moest ik naar Enschede. Dus ik heb maandag mijn auto bij Alexander gezet, daar op de trein gestapt, wat me daar was opgevallen, geen dichte hokjes, je staat echt open op het perron, en een bouwput ja. Nou toen heb ik 7 uur in totaal over gedaan. Wat vond ik fijn, werken in de trein. Minder leuk wel de langere reistijd, maar wat speelde mee met het maken van mijn reiskeuze, het niet kunnen werken in de auto. Ik heb geen zin als ik dan thuis kom van zo'n lange reis dat ik dan nog een hele werkdag weg kan werken zeg maar.

I – zijn er nog anderen die regelmatig werken als ze in de trein zitten, of is het daar te kort voor?

P6 – ja in de metro even

P2 – en dan met je laptop? Want dat is best wel lastig

P6 – ja op schoot dan

P1 – ja ik kan op mijn iPhone mijn mail checken

P6 – ja dat doe ik ook

I – open je dan je werkmail als je al onderweg bent?

P3 – ja

P6 – het scheelt toch weer, dan hoef ik minder lang te werken

I – dat halvuurtje reizen scheelt toch weer, kun je dan eerder weg?

P6 – ja ik heb op mijn kantoor geen start en eindtijden, je moet gewoon zelf weten wanneer je komt en wanneer je weer weggaat, niemand die controleert dat

P2 – als je maar gewoon je werk afmaakt toch?

P6 – ja als ik de ene dag langer doorwerk kan ik de andere dag korter werken

P1 – uhu

I – ok, mooi

P3 – ik had ook nog dat er niet altijd zitplaats was, maar dat is al genoemd. En dat ik eigenlijk op een halte meer een huisje wil om te wachten, de meeste haltes zijn gewoon open. Als ik naar de NS kijk hebben ze nog een soort behuizing er omheen, in plaats van alleen een dak.

P2 – zeker als het zo koud is

P3 – ja! En nieuwe vervoersdiensten, tja heb ik echt geen idee van

I – is ook niet erg, die vraag is meer om een idee te krijgen van of er überhaupt op de hoogte zijn

P3 – ja met vakanties enzo zie je het vaak op de borden staan

P2 – wat je bedoelde je daar ook alweer precies mee?

I – nieuwe diensten zoals bijvoorbeeld felyx scooters die hier rondrijden. Dingen die er eerder niet waren, waar je mee kunt reizen

P2 – oh ja

I – ok, dankjewel, P4?

P4 – ik ben woensdag begonnen, ik ben naar werk, sorry naar school geweest met de metro

van Oosterflank naar Coolhaven. Dat is te ver om te fietsen, dus dan ga ik met de metro. Ik hoefde niet over te stappen, dus dat is wel flexibel. Het is wel vaak heel erg druk, ik vind het heel erg vervelend als ik zo in iemand anders adem sta, dat is het enige nadeel. Daarna ben ik met de metro naar Centraal gegaan, daar heb ik de trein gepakt ben ik even in noord naar de kapper geweest, en dan vanaf de markthal de trein naar Alexander, daar weer met de metro een halte naar huis. Alles sloot heel goed op elkaar aan, de tram en de trein vooral. De volgende dag ging ik naar werk en dat doe ik meestal op de fiets, maar met de kou en het regende, toen ben ik met de metro gegaan. Dat is drie haltes. En eh, vrijdag ben ik ook naar werk geweest, fietsend, en toen had ik een leuke band, dus toen ging ik met de fiets in de metro, dat vond ik best goed gegaan, je hebt van die speciale plekken waar dan wat meer ruimte is. Normaal gesproken nooit eerder gedaan.

I – dit was de eerste keer dat je dat deed? Hoe is dat bevallen

P4 – ja, je kunt gewoon met je fiets in de metro, die wachtte nog op de lift want die ging heel langzaam open. Voor de rest gewoon goed

P2 – en je zat buiten die tijd, in de spits mag het niet. Tussen iets van 5 en 7 ofzo mag het niet

P4 – uhm geen idee, nooit op gelet

P2 – ja ze roepen dat altijd om, ik heb dat wel eens geprobeerd namelijk, haha

P4 – op zaterdag was ik vrij, toen ging ik naar zwembad op de fiets, wat zo'n tien minuutjes fietsen is, anders met de bus of de tram gaan maar dan moet ik wachten, *onverstaanbaar*. Zondag met de auto naar de kerk, dat is vijf minuutjes rijden. Dat kan ook met de bus, dat is negen minuten, maar die gaat maar om het halfuur

I – ga je dan bijvoorbeeld met je familie naar de kerk?

P4 – ja, met mijn gezin. En het maakt uit wat ik aan heb of ik met het OV wil gaan

P2 – herkenbaar!

P4 – en wat voor weer het is, en eh de laatste

pagina, eigenlijk ga ik het liefst met de fiets, trein auto metro op reis, en ik vind het over het algemeen best fijn. Voor mij best goedkoop omdat ik studenten OV heb en een business card van de trein, dus daar betaal ik niet voor. Dat was het ongeveer

I – ok, dankjewel. P5?

P5 – eh ja. Ik ben mijn reisdagboekje begonnen op dezelfde dag dat je langs geweest bent. Dus de eerste dag heb ik aangegeven dan ging ik naar mijn werk. Die dag ben ik begonnen met de auto. Ik ben in de ochtend naar mijn werk met de auto. Ik woon in Beverwaard en ik werk bij de gemeente Keizerswaard. Ik ben met de auto gegaan omdat ik later boodschappen zou gaan halen, dan kijk ik als ik grotere boodschappen moet halen neem ik meestal de auto mee. Ik moest tussendoor voor een afspraak naar de stad, moest ik bij de gemeente bij het stadhuis zijn, dus ik ben vanuit werk nadat ik met jou had afgesproken ben ik de tram gaan pakken rond 13:15. Tram gepakt naar Beurs, bij Beurs uitgestapt, je hebt daar die wegwerkzaamheden en alles waardoor je niet meer bij Stadhuis uit kunt stappen, dan loop ik vanaf Beurs naar Stadhuis. Ik ben daar uiteindelijk gebleven tot ongeveer 17:55, ben ik vanaf het Stadhuis gelopen naar Beurs, heb ik daar de tram gepakt, sorry hoor ik ben een beetje verkouden. En ja ik moest uiteindelijk bij Keizerswaard uitstappen, daar had ik geparkeerd. Daar kun je gratis parkeren, maar ja dat betekent wel voor mij weer dat ik dan in de spits zit, dat kleine stukje, als ik door kon reizen met de tram was dat wel handiger geweest, had ik geen rekening mee gehouden omdat ik die afspraak tussendoor niet zou hebben. Ik heb zelf eigenlijk geen spannende reis, was geen lange wachttijden qua overstappen met de tram en naar mijn bestemming was het wel rustig. Het enige wat ik vervelend vind is dat de trams altijd zo druk zijn rond de spits, rond 17:55. Even kijken, drukte in het verkeer, wat ik eigenlijk merk is dat ik heel erg gebruik maak van de RET app in de ochtend om te kijken hoe laat de tram komt, zodat ik niet te lang hoeft te staan wachten op de tramhalte. Het kan nog wel eens voorkomen dat de tram dan vertraagd is maar in principe valt dat reuze mee. De ochtend breng ik mijn dochtertje naar school, dus in de ochtend loop

ik met haar naar school, en vanaf school loop ik dan naar de tramhalte en dan pak ik de tram. Terug was dat eigenlijk hetzelfde maar dan was ik met de tram, toen was ik met de auto. Mijn dochtertje opgehaald bij de oppas. Dag 2 was dan donderdag, toen ben ik gewoon naar mijn werk geweest, toen ben ik niet met de auto gegaan, met de tram en lopen, eigenlijk meer dezelfde routine als in de ochtend dat ik mijn dochtertje naar school breng, en vanaf daar naar de tramhalte dan pak ik daar de tram 23. Dit keer moest ik niet in de stad werken, dus ik was gewoon bij Keizerswaard uitgestapt. In principe duurt dat niet zo heel lang. In de ochtend is het eigenlijk heel erg rustig, dus dan heb ik altijd zitplaatsen. Mijn reis is ongeveer 10, kwartiertje vanaf mijn huis. Enigste wat ik minder vind ik drukte in de tram, spitsuur als je weer terug naar huis gaat, maar het duurt dan ongeveer tien minuutjes. Dit speelde mee in mijn keuze, eigenlijk, de bestemming, ik kijk meer waar ga ik naartoe, naar de stad, voor mijn werk moet ik best vaak in de stad zijn, dan bepaal ik zo of ik de auto neem of dat ik met de tram ga, meestal niet met de trein of metro. Alleen als ik naar winkelcentrum Zuidplein ga pak ik wel eens de metro.

I – de metro gaat niet naar de plekken waar jij heen wil?

P5 – ik kan ook wel een bus pakken maar ik vind het vervelend om de bus te nemen. Dat vind ik vervelend omdat het over het algemeen zo druk is in de bus, dan pak ik liever de tram, dan zit ik rustiger. Of ik nou langer onderweg ben om de tram te pakken dan de metro, heb ik dan liever dan dat ik moest overstappen en dan de bus moet nemen. Dag 3 ben ik gaan werken, eigenlijk ook hetzelfde, rustige dag, want het was vrijdag, dan loopt het over het algemeen weinig mensen die gebruik maken van OV vind ik eigenlijk, vooral in de ochtend. Terug in principe eigenlijk hetzelfde, ben ik ook weer vanaf mijn werklocatie gegaan. Dag 4 was voor mij weekend, toen was ik vrij, om een uur of een ben ik met de auto gegaan naar Dordrecht, Ik kwam daar ongeveer half 2 aan, om een uur of 4 ben ik naar het stadscentrum gegaan van Dordrecht, in de stad ben ik gaan winkelen, ben ik gaan lopen, want het was niet zo ver. In principe heb ik eigenlijk mijn reis gepland met Google maps als ik dan de

auto neem, om de snelste route te bepalen met de auto, om files te voorkomen en eigenlijk geen vertraging te hebben en in de file te zitten. Ik reis dan dus alleen, niet met mijn kinderen, die waren bij hun vader. Dag 5 maandag, ik heb zondag niet genomen omdat zondag voor mij een rustige dag was, en ik eigenlijk niets heb gedaan. Maandag ben ik in de ochtend mijn dochter weer naar school gaan brengen, vanaf daar weer naar de tram gelopen. Ik moest die dag weer in de stad zijn, dus ik heb dan de tram genomen tot aan Beurs, vanaf Beurs gelopen naar mijn werk, dat is dan achter het Stadhuisplein. Ik ben daarna om 17:15 vertrokken, weer gelopen naar Beurs, en vanaf daar de tram weer gepakt. Dit keer gelijk in een keer door, want ik was niet met de auto. Wat me eigenlijk een beetje van deze reis fijn vond dat ik geen vertraging had, ik vond de kou minder leuk, en de drukte in de tram. De temperatuur merkte ik inderdaad ook, dat vind ik echt vervelend. Ik heb het erg benauwd. Het liefst zit ik bij de deur, maar met de drukte is dat lastig. Daarbij maak ik weer gebruik van de RET app om te bepalen hoe laat de tram komt, zodat ik niet te lang buiten hoeft te staan wachten. Wat ik meeneem is mijn handtas, daar zitten al mijn spulletjes en eten in. Over het algemeen vond ik het gewoon fijn, best een snelle verbinding, dat is het wel zo'n beetje. Ik heb er weinig over te klagen. Ik maak het meeste gebruik van de tram, de auto en lopen, maar ik maak ook wel eens gebruik van de bus of de trein. Fietsen doe ik niet, dat vind ik echt verschrikkelijk, haha. Dus vandaar dat ik niet fiets. Dat was het zo'n beetje. Nieuwe vervoersdiensten, echt geen idee, wijzigingen in mijn reis ook niet altijd. Totale reistijd houd ik niet echt zoveel rekening mee, ik kijk gewoon naar de app hoe laat ik aankom.

P2 – uhu

P5 – ik houd er dus niet echt rekening mee met de tijd, dus zo lang ben ik onderweg.

I – voor de anderen, houden jullie wel rekening met de reistijd?

P2 – soms moet je toch gewoon? Ik vind het wel vervelend dat ik er soms een uur over doe, maar ik heb niet echt een alternatief. Ik kan niet sneller komen waar ik moet zijn.

P5 – het is ook een beetje een gedachtegang dat

ik geen rekening dat ik geen rekening hou met de tijd, anders ga ik me daar alleen maar aan irriteren.

I – dus dingen waar je geen invloed op hebt probeer je gewoon geen rekening mee te houden?

P5 – ja ik wel ja

P3 – nou ik pak altijd wel een tram of trein eerder als ik op tijd in bijvoorbeeld enschede moet zijn, dat je niet afhankelijk bent van vertraging. Dus ik zorg er altijd wel voor dat ik niet op één minuut voor de klok aankom. En ik wist eigenlijk ook niet dat er nog een RET app was.

P2 – de Realtime app

I – ja, daarin kun je inderdaad wat beter zien of trams en metro's op tijd zijn. Dus als je veel met de RET reist en het vervelend vindt om te staan wachten kan die handig zijn

P3 – ja dat is wel handig

P5 – ja je ziet daarin soms staan dat ie een minuut vertraging heeft, of er juist al eerder is, daar kun je rekening mee houden

P2 – straks in de kerstvakantie – eh, die is net geweest, in de zomervakantie, dat heb je altijd aangepaste tijden en dan weet ik het gewoon niet. Nu weet ik heel erg wanneer de metro gaat, maar dan niet meer

I – weet je de vertrektijden van routes die je veel neemt? Of van alle tijden?

P2 – nee, haha, niet alle tijden. Nee ik weet het van de route die ik elke dag neem, die weet ik wel, die gaat om 11 over. En daarop kan ik dan doorrekenen, want hij gaat elke 10 minuten. Dat is niet zo'n probleem. Alleen in de zomer en de winter nooit, rondom kerst

I – dus als er een andere dienstregeling is zoek je dat weer op?

P2 – ja, anders mis ik de bus

I – en weet je ook wanneer er een andere dienstregeling is?

P2 – ja, dat zeggen ze altijd onderin eh,

P1 – ja op dat informatiebord

P2 – ja dat, dan zeggen ze houd er rekening mee dat tussen die en die datum ze inderdaad dan rijden met de vakantieregeling

I – houd je dan rond die tijd de borden goed in de gaten?

P2 – nee meestal vergeet ik het alsnog op maandag. Maar op dinsdag weet ik het wel, haha.

I – ok, dankjullie. P6?

P6 – ja ik heb donderdag tot maandag genomen. Donderdag ging ik werken, ik ging eerst mijn kindje op de creche zetten, en omdat ik het buiten best wel nat was heb ik m in de kinderwagen gezet. Alleen er was iets gebeurd, en ik was een beetje laat die, dag, een klein ongelukje met mijn kind en zijn luier, dus ik was een beetje laat. Ik weet niet, de metro reed gewoon niet, en ik kon nergens vinden wat er aan de hand was. Het maakt me niet uit wat er gebeurd was, ik wilde gewoon weten of er nog een metro kwam

P3 – ja ik weet het al, er was een ongeluk gebeurd, er was een jongen voor de tram gesprongen

P6 – ja dat bleek dus achteraf, daar kan de RET natuurlijk ook weinig aan doen

P5 – ja daar bij Schiedam ofzo

P6 – ja dat zou kunnen, maar ze hadden dat even iets beter kunnen communiceren, van he, er is vertraging, houd er rekening mee. Het regende ook echt super hard, en ik dacht van ja, ik kan sowieso nu niet de fiets pakken, dus ik wacht wel, maar dat heeft me dus veel vertraging opgeleverd, dus ik was een beetje laat. Ik ging toen naar werk, vanaf werk ging ik terug naar Kralingse Zoom, vanaf daar ging ik met de bus naar mijn schoonouders. Wat heel apart is dat daar dus een bushalte wel voor de reis van KZ richting IJsselmonde is, maar niet van IJsselmonde naar KZ, dan moet je dus weer echt kilometer verder lopen ofzo. Hoe dat kan... nouja dat ging wel goed, er was een extra buslijn, dus dat was wel fijn, meer bussen werden ingezet. Vanaf mijn schoonouders naar mijn eigen huis weer terug, heb ik toen de auto genomen. Mijn man kwam mij en mijn zoontje ophalen, en dat

heb ik gedaan omdat er 's avonds geen bussen rijden, en anders moet ik met de tram, die gaat eerst richting het centrum, en dan weer terug naar oost, en dat is gewoon 25 minuten om. Dat is niet zo handig. Met de auto is het maar 10 minuutjes. Dag 2, vrijdag, was ik vrij, dan werk ik nooit. Toen ben ik naar de stad gegaan met een vriendin, met de metro. En in het centrum van Rotterdam zijn we gewoon een stuk gaan lopen, we hadden ook de tram kunnen nemen, maar sinds ik geen studenten OV meer heb, heb ik ontdekt dat er een soort inchecktarief is, dat is echt superhoog. Dus ik betaal bijna net zoveel voor één halte als voor een hele reis. Dus ik ging lopen, want ik was gierig.

P2 – hahaha

P1 – voor korte ritjes moet je inderdaad de tram of metro niet doen, als je voor een of twee haltes gaat. Dan loop ik altijd

P6 – ik vind dat best wel duur

P1 – ja

P6 – nu ik weer moet betalen denk ik dan... ok, dat is best wel duur

P2 – dat vind ik ook

P6 – bizar. Wat ik minder vond op de terugweg is dat het heel erg druk was, ik kon mijn kinderwagen eigenlijk niet kwijt in de metro, ik heb 'm er toch ingeduwd. En toen stond er toch weer iemand op me te ademen. Ik vind het sowieso niet erg fijn met zoveel mensen in de buurt, die zijn vaak heel vies, daar kon ik niet zo goed tegen. Dag 3 was ik naar het Alexandrium, dus ik ging lopen. Dat was gewoon best wel prima, met mijn zoontje en mijn man, kind in de kinderwagen, helemaal prima. Boodschappen gehaald, beetje gewinkeld, en toen waren het ineens best veel spullen, dus dat ging niet helemaal goed. Het was erg koud en nat, dus we hebben de bus terug genomen. Ik betaal dan wel voor een bus voor twee haltes. En toen kon ik mijn kinderwagen niet echt in de bus krijgen. Je kan m heel goed parkeren bij de stoep dat je er makkelijk in kan, maar dat doen ze niet.

P1 – bij zo'n opstapje bedoel je?

P6 – ja dus ik moest soort van vanaf de stoep over een soort deuk via de straat toch in die

bus, dat is wel gelukt maarja. Soort van work out weer. Op zondag ging ik naar mijn schoonouders toe, familielunch, toen zijn we met de auto gegaan, omdat er op zondag eigenlijk geen OV rijdt, tenzij je weer helemaal om wil rijden met de tram. Toen ging ik sporten, daar ben ik naartoe gaan lopen omdat de sportschool bij de tram zit, dus dat heeft geen zin. Ging allemaal wel makkelijk, ik vind het wel jammer dat het huis van mijn schoonouders zo slecht bereikbaar is met het OV

I – en ze wonen wel in de omgeving van rotterdam?

P6 – ja ze wonen in Oud-IJsselmonde, het is daar best druk, naast de afrit van de snelweg, je zou denken, er is daar meer OV.

P3 – volgens mij woon ik dan ook dichtbij je schoonouders, want het is daar echt een drama ja.

P6 – Bij het Oud IJsselmondseplein, de eerste halte met de bus vanaf KZ

P3 – als je de brug af bent, daar gelijk?

P6 – ja, waar dus een halte heen is, maar geen halte terug

P4 – als je dan verder wil moet je bij dezelfde halte de bus door nemen?

P6 – ja, en dan bij de volgende halte, die is echt een kilometer verder, dat is echt afschuwelijk. Echt afschuwelijk.

P2 – bij mijn oude huis was dat ook, dan kon je wel uitstappen, maar niet instappen. Echt heel irritant.

P3 – bij de Roelantweg kun je dan dus opstappen?

P6 – ja maar dan moet je dus via het fietspad en dan met een trap en die is soort van in elkaar gezakt, haha. Niet heel fijn met een kind, dus dan denk ik laat maar. Dag 5 ging ik werken, toen hoefde ik mijn zootje niet te brengen want die bleef logeren, dus ik kon gewoon naar de stad. Terug ging ik weer naar mijn schoonouders om hem op te halen. Terug ging ik weer met de auto omdat het niet echt anders kan, nouja het kan wel, maar het is erg lastig. De metro was weer

echt overvol. Normaal gesproken begin ik heel vroeg op maandag zodat ik niet in de spits zit, als het zo druk is en mensen stinken, daar kan ik niet tegen. Maar ik heb het doorstaan.

I – ok... Dus als ik zo een beetje kijk naar wat iedereen mee heeft gemaakt, dat het met de kou en het slechte weer wat sneller in het OV stapt, in plaats van een stukje wandelen of met de fiets, waar je normaal gesproken wat vaker denkt, nou, kan wel even naar buiten, nu wat sneller naar binnen. Het wachten buiten is ook erg vervuilend. En dat het in het OV nu vaak zo druk en dan ongezellig warm is, dat dat niet als prettig wordt ervaren.

P6 – nou ja, op zich de warmte vind ik niet zo heel erg, meer dat mensen echt tegen je aan staan. Ze kunnen ook nergens heen dus ze moeten je wel aanraken, maar dat vind ik echt heel naar. Je kunt ze ook niet weg blijven duwen

P2 – ze kunnen er zelf ook niks aan doen, zij zitten ook in die metro.

P6 – of mensen met een heel grote rugzak

P3 – ja en dan gewoon lekker ophouden die rugzak

P6 – ja dat is echt vervelend!

I – en verder dus ook dat de aansluitingen goed moeten zijn, dat het heel vervelend is om te wachten tussen je overstappen

P2 – ja

I – snelle overstappen zijn niet zo'n probleem, maar lang wachten is een no go

Meerdere deelnemers knikken

I – ok, dank jullie. Dan gaan we nu verder met de eerste creatieve opdracht. We gaan een collage maken over je favoriete en je minst favoriete vervoersmiddel. Ik heb wat plaatjes en woorden voor jullie als start, maar je kan natuurlijk zelf schrijven en tekenen. Alles wat je nodig hebt om jezelf te uiten. Ik pak de spullen er even bij

Spullen worden gepakt

I – het is helemaal naar je eigen inzicht hoe je de collage maakt

P4 – gaat dit dan over de reisweek?

I – het gaat gewoon over je favoriete en minst favoriete vervoersmiddel in het algemeen, hoe je dat ervaart. Welke associaties heb je daarbij. We hebben hier tot ongeveer vijf over half de tijd voor, dus er is wel enige tijd, maar blijf niet te lang hangen bij één vervoersmiddel

P2 – haha, dit is gewoon kinderlijm

Ondertussen wordt er wat drinken ingeschonken voor de deelnemers

I – we hebben nog ongeveer vijf minuutjes voor deze opdracht

De deelnemers knutselen in stilte verder aan hun collages

P2 – oh, hahahah

I – het hoeft niet perfect te zijn he.... Nog ongeveer één minuut..... Ok. We gaan even kort met elkaar doornemen wat je precies gemaakt heb. We doen ongeveer 1 minuut per persoon, kort uitleggen wat je hebt opgeschreven. P6

P6 – Wat ik fijn vind tijdens de reis of tijdens de wachttijd is koffie. Op grote stations heb je dat altijd. Bij treinstations vaak, of grotere metrostations. Dat maakt het wat prettig. Wat ik ook fijn vind is als ik onderweg kan werken. Dan moet ik wel kunnen zitten dus dat helpt daarbij. Meestal heb je in de metro voldoende plek, en in de trein ook. Verder loop ik graag, omdat het ook een stukje beweging is, altijd goed, houd ik ook bij met een apple watch. En grote dingen vervoeren en grote boodschappen doe ik toch het liefst met de auto, dat geeft toch een stukje vrijheid. Wat ik niet prettig vind, geen prettig vervoersmiddel is de OV fiets. Je kunt er wel mee heen, maar hoe ga je terug als je fiets weg is? Vooral 's avonds is het een groot raadsel. En je kunt je kind er niet mee vervoeren. Drukke vind ik niet heel fijn, ik vind ook vervelend als het OV erg duur is, dat vind ik in Nederland best wel duur. En ehm, wachten op het perron bij slecht weer vind ik niet fijn.

I – ok, dankjewel. P5?

P5 – ik heb geen tijd gehad om het op te schrijven, ik was zo druk bezig met allemaal plaatjes enzo knippen! Maar ik zal de plaatjes wel

uitleggen die ik erbij had. Wat ik zelf heel erg fijn vind is dat je nu alles met apps en telefoon kan bekijken om je reis te bepalen. Dus dat heb ik ook opgeschreven. Als je met de auto gaat, dat je dan ook in ieder geval via google maps kan kijken om je route te bepalen, wat het snelste is om te reizen. Lopen doe ik ook graag, 't is niet dat ik altijd per sé met de tram of met het OV wil reizen. Of met de auto. Daarnaast heb ik eigenlijk de app, dit is die van de RET, die je dan erbij kan pakken om te kijken om te kijken hoe lang het gaat duren voordat de tram komt, hoe lang ben je onderweg. Je kunt ook je reis plannen. Daarnaast heb ik ook op een gegeven moment dat als je in de tram zit je gebruik kan maken van je apps om een spelletje spelen, je mail kan kijken van werk bijvoorbeeld, dat ik mijn agenda bij kan houden, of dat ik kan kijken waar moet ik zijn en hoe laat. Ik ehm was nog niet helemaal klaar, maar wat ik wel vervelend vind van alles is het kostenplaatje wat erbij komt kijken. Of je nou met de auto gaat of met het OV, alles kost geld en alles is duur. Dus vandaar dat dat bij mij het middelpunt is. Wat bij mij vaak bepaalt wat ik ook ga doen, met de auto, lopend of de tram, of OV neem dus, is de weersverwachting, is het koud, regent het, is het mooi weer. Dan bepaalt dat voor mij welk vervoersmiddel ik ga nemen. Ik heb de fiets dan genomen omdat ik echt niet hou van fietsen, vandaar dat die bij de negatieve kant staat. Wat ik vervelend vind van reizen met de auto is eventuele files waar je in terecht kan komen, vooral met de drukte tijdens spitsuur. En het donker. Ik merk dat ik daar, dat toch minder fijn vind om te reizen als het donker is

I – waarom vind je dat vervelend?

P5 – ik weet niet, het is net alsof je overdag reist, dan heb je meer overzicht van buiten en je omgeving, en in het donker is dat toch

P2 – heb je daar nare ervaringen mee of is het gewoon het idee?

P5 – het idee meer. Nare ervaringen niet per se, maar ik merk wel, bijvoorbeeld dat ik overdag mannen die je aanspreken op straat, dan heb ik daar minder naar gevoel bij dan als ze dat 's avonds zouden doen, en dat merk ik wel vaak, vaak als je in de tram zit of staat te wachten, dat mensen je toch gaan lastigvallen. Dat vind ik niet fijn. Als het dan donker is vind ik dat niet prettig.

Ook als het donker is merk ik dat als het niet druk is op een perron, dan krijg ik daar ook en wat naarder gevoel bij dan als het drukker is, dan voel ik me wat veiliger

I – ok, dankjewel, waren dat de belangrijkste dingen. Volgende?

P4 – ik heb als favoriete middel de fiets, trein en auto. Ik doe altijd bijna alles op de fiets, die kunnen dan voor en achterop de fiets, dat vind ik wel makkelijk om zo naar school te brengen. Dat is makkelijker dan met auto, alle andere ouders komen al met de auto, dus dan is t weer veel gedoe. Het is ook gezond, wat beweging, frisse lucht, je bent flexibel, als je denkt, ik ga toch nog die kant op, dan kan dat makkelijk met de fiets. Trein vind ik ook leuk om mee te reizen, het is duurzaam, soms heb je wel eens vertragingen maar als het allemaal goed gaat is het heel relaxt, dan zit je gewoon lekker, dan kun je het beste van je reis genieten, naar buiten kijken of iets op je telefoon doen. De auto neem ik het liefst zo min mogelijk, gewoon echt alleen als ik boodschappen ga doen of ga shoppen en veel moet sjouwen. Maar het liefste dus niet omdat je dan met parkeren zit, bij Alexander kun je er makkelijk in, maar als je er dan weer uit wil moet je in een lange rij wachten, dat vind ik vervelend. Tram en metro vind ik eigenlijk het minst fijn, het is vaak heel druk, en benauwd, geen climate control hebben ze daar lijkt wel. Je hebt soms ook wel beperkte haltes, soms als bij IJsselmonde enzo. En ook de tijden vind ik wat beperkter dan met de trein

I – in welke zin? Dat ze minder vaak gaan?

P4 – nee vooral dat ze korter doorrijden in de avonden

I – ok, dankjewel. P3?

P3 – ja. Ik had zeg maar bij mijn rood, dat was minder leuk toch? Ik heb een elektrische auto gehad, ik heb erbij gezet, moeilijk, veel laden, je bent wel echt afhankelijk van kilometers en dan moet je weer gaan laden, je bent eigenlijk extra tijd kwijt. Bus minder prettig, het wiebelt heel erg, zeker als in het middenstuk staat, dan word je de hele bus door geslingerd. Het weer, maar die kwam ook al terug in mijn dagboekje. Dat ik eigenlijk wel een overdekt hokje wil waar ik kan staan. Ook de fiets op de Erasmusbrug,

dat is echt niet te doen, dus die staat ook bij rood. Die OV-poortjes, dat is echt heel irritant, als je haast hebt, en mensen gaan zo (*heel traag uitbeeldend*) hun portemonnee pakken, hun OV kaart, en jij staat al met alles klaar. Bijvoorbeeld op het centraal station wilde ik naar de burger king, daar kom je dus gewoon niet op als je als je je OV chipkaart niet bij je hebt. Dat vind ik dan best jammer. En ik had ook, ja, zonder halte, onveilig in het donker. Je ziet hier één iemand op het perron staan, zinloos geweld is bijna elke week wel in het journaal.

I – houd je daar rekening mee?

P3 – ik hou er rekening mee, maar ik vind ook dat, ja ik wil niet zeggen alleen de RET maar gewoon alle vervoersmiddelen, OV-middelen daar rekening mee moeten houden. Een stukje veiligheid moeten bieden. Dan de leuke dingen – ik zie dan een soort elektrische step, wat ik vaak hier voor zag was dat je van die sta-dingen hebt

P2 – segways!

P3 – ja dat zou ik echt wel leuk vinden als daar bijvoorbeeld de RET zou zeggen, ga met de tram of de bus, nouja zoals jij moet dan een kilometer naar je volgende halte (*wijst naar P6*), dat je dan bijvoorbeeld zo'n ding erbij kan nemen, die daar in de buurt is. Hoe ze dat willen doen weet ik niet, want je vindt die fietsen ook in elke sloot, maar het gaat om het idee. Hetzelfde als wat jij net aangaf (*wijst naar P6*) lekker relaxt met je koffie, je boekje of je werk in de trein. En de beschikbaarheid van de hoeveelheid apps, ik heb het niet specifiek over google maps of 9292, maar dat er gewoon veel beschikbaar is. P&R heb ik die hartjes bij gezet, dat vind ik heel fijn, vooral bij KZ. Daar kun je gewoon gratis parkeren als je met je OV-kaart reist. Alleen ja het parkeren, je bent wel echt op zoek, of je staat helemaal achteraan en moet nog een heel stuk lopen. En ja die auto met boodschappen, de hoeveelheid met boodschappen is echt niet te doen met het OV.

I – volgende?

P2 – ik had zeker omdat je dan dus dingen kan doen voor jezelf als op je telefoon kijken of een boek lezen, ik lees heel veel in de metro, als ik kan zitten. Ik hou heel erg van fietsen, fietsen is echt mijn lievelings. Ik vind deze top, die zitten

aan een paal, dus dat is duidelijk, maar ik woon in het centrum in de Oude haven, en ooooveral stonden die krengen, echt overal, als een soort overmatig afval dat iedereen overal neer pleurde, dat was echt heel vervelend, die gele fietsen waar ook niet op te fietsen viel, waar dat bedrijf nu van failliet is. Die ene (*aan de paal*) vind ik wel cool maar die andere (*free floating*) niet. Ik vind het duur, het OV, zeker als je bijvoorbeeld je OV vergeet en ik moet een tijdelijke kaart vergeten, dat is dan €3.50. Maar daar mag je dan weer niet mee met de bus omdat dat een andere vervoerder is, dan moet ik daar ook weer aparte kaart voor kopen van €3.50, dan is het €7 heen. Ik weet dat het mijn eigen fout is dat ik mijn OV ben vergeten maar dan ook weer €7 terug, dan denk ik wel echt van ja weet je... daar moet wat anders voor worden verzonnen

I – die eenmalige kaartjes vind je dus veel te duur?

P2 – ja, ook die voor toeristen, die zijn echt véél te duur

P5 – je betaalt dus inmiddels VIER EURO

P2 – echt belachelijk ja! Wat een dure grap. Als je een week in New York gaat rondlopen ben je \$30 bij, nog niet eens €30 dus

P3 – ze kunnen veel leren hoor, van New York en Londen enzo, dan ben je max 7 pond per dag kwijt

P2 – zoveel voor een ritje en dan geen 7-dagen pas ofzo, ik vind het maar raar. En ik die drukte die haat ik echt heel erg, want dan gaat iedereen stinken omdat het erg warm wordt, en de weersomstandigheden, omdat je niet altijd beschut kan staan. Dat was 'm.

I – dankjewel. P1?

P1 – ik had fietsen. Dat heb je zelf in de hand, ook qua reistijd, je kunt je eigen tempo bepalen, ik ben eigenlijk van het fietsen. Ook voor de OV fiets voor de onbereikbare plaatsen is dat heel erg ideaal om die mogelijkheid te hebben. Nieuwe stations zijn fijn, goed verlicht, dat zijn de verbeterde stations. Push up berichten doet de NS dan als er incidenten of meldingen zijn, of zoals de aangepaste dienstregeling van vandaag, dan krijg je push up berichten binnen.

Nieuwe sprinters vind ik altijd fijn om in te zitten, de trein vind ik comfortabel, en de bus vind ik eigenlijk ook wel een fijn vervoersmiddel om mee te reizen. De negatieve kant heb ik dat het OV steeds duurder wordt, inflaties en eigenlijk is met de auto reizen, en zeker als je met meer personen reist, is dan veel goedkoper. Maar de vervoersbedrijven willen ook het OV stimuleren, van meer mensen uit de auto en ga met het OV, maar als het zo duur wordt ga je juist iedereen in de auto jagen

P5 – uhu

P1 – vertraging is niet leuk, regen en drukte dat is ook niet leuk, maar dat is ook al verteld. Over die overdekte plaatsen, qua service zou daar wel meer zitplek op station kunnen komen, of inderdaad wachthokjes

P3 – uhu

P1 – om het wat comfortabeler te maken. Ik ben niet zo'n fan van die 9292OV app, omdat ie vaak hapert, en hij herkent stationsnamen niet. Terwijl bij de NS ik nooit problemen heb met een station die hij niet herkent, maar met 9292 wel.

I – ok? Top, dankjewel. Zoals jullie merken is het redelijk krap met de tijd voor het collage maken, dus voor de volgende opdracht hoef je niet al te pietje precies te zijn. We gaan een vergelijkbare opdracht doen, alleen dan over je ideale van deur-tot-deur reis. Ik heb weer een template en dan gaan we weer op dezelfde manier te werk. We hebben ongeveer een kwartier de tijd om alles te tekenen en plakken, en dan hebben we daarna nog een minuut of tien om te bespreken. Ik pak die vellen er even bij.

Spullen voor de tweede creatieve opdracht worden gepakt

I – yes, dus dan hebben we weer een kwartiertje om weer aan de slag te gaan. Is het duidelijk?

P4 – ja

Iedereen begint weer snel te knutselen

I – nog ongeveer 5 minuutjes... *een aantal deelnemers zit een beetje te wachten* – je mag het zo uitgebreid maken als je wil, je kunt bijvoorbeeld ook dingen opschrijven waarvan je wil dat het kan

P2 – maar, als het gewoon zeg wat dan mag het toch? Of wil je meer details?

I – nouja, als je niet meer details kunt bedenken is het natuurlijk goed. Als je het idee hebt dat dit jouw perfecte ideale reis beschrijft, dan is het goed

P2 – hmm

P4 – ook als je denkt dat het nu niet kan, schrijf het toch op. Want misschien kan het ooit wel

I – iedereen is wel zo'n beetje klaar, denk ik?

P3 – ja we hebben geleerd van de stress denk ik, haha

I – ok. We doen weer hetzelfde als bij de vorige collage, je hebt een a twee minuten om te vertellen wat je gemaakt heb en waarom. P1?

P1 – het beste is dat ik veel mogelijkheden en routes heb waaruit je kan kiezen, dus dan kan je zelf kijken wat snelle routes zijn, met de fiets is ideaal maar kan alleen voor beperkte afstanden. Trein en auto, ja, met de auto kun je kiezen voor bepaalde momenten wat handig is, of er veel file op de weg is of niet, daar kun je een keuze in maken. Qua snelheid kan je dan bepalen of je sneller op je bestemming kan zijn, dus doe je er met de trein langer over en met de auto korter over. Bijvoorbeeld een ritje naar Utrecht, de trein stopt overal, maar met de auto zonder file doe je er maar 40 minuten over ofzo. Dat is weer tijdsbesparing. Over het algemeen vind ik dat er meer comfort in het OV moet komen, en snelle verbinding tussen trams en bussen. Bij de NS heb je dan intercity direct, dan kun je van Rotterdam in een keer naar Schiphol gaan zonder tussenstops. Maar met een tram of bus is dat moeilijker met allemaal haltes waar je doorheen moet, maar als je vanuit hier snel naar Rotterdam Centraal moet gaan, want hier werken wel veel mensen, een soort snelverbinding ofzo, dat is ideaal

I – je zou in de binnenstad iets vergelijkbaars willen hebben voor kortere afstanden?

P1 – ja, precies!

I – ok, mooi, dankjewel.

P2 – ik zou het relaxt vinden als ik alles kon doen

met lopen, icm de metro en tram, dus nooit meer in de bus. En dat als ik een keer overal direct heen kan, perfect, en helemaal als het 24/7 rijdt, dat lijkt me echt top. Overal in een lijn naartoe, zonder overstappen, alles is direct, dat zou echt te gek zijn. En ik vind het heel relaxt om een muzikje te luisteren, dat je altijd op tijd bent, dat ik koffie kan drinken. Ik zou het ook leuk vinden als ik bijv bus of tram energie opwekt, want het is toch beweging, dus dat moet kunnen. Dat was het.

I – ok, dankjewel

P3 – de titel van mijn vel is zorgeloos reizen. Ik sta op, dan wil ik eigenlijk al op mijn telefoon zien, als je zo laat weggaat, is er niks aan de hand, dat je eenmalig je reis instelt als je bijvoorbeeld naar je werk gaat als routine, volgens mij hebben een aantal hier dat. Mooi weer, rustig, niet opgepropt, en moment voor mezelf dat je krant kan lezen of muziek kan luisteren. Regelmatiger de tram, met overstappen. En dat ik uitgerust en kalm op mijn werk aankom, en niet dat je helemaal gestresst van het OV komt omdat je 5 minuten te laat bent. Dus zo.

I – dit is vooral voor als je naar je werk gaat?

P3 – ja.. ik reis 80% naar mijn werk, dus daar heb ik het wel op gebaseerd

I – ok, dat is voor jou ook het belangrijkste dat je daar duidelijkheid in hebt?

P3 – ja.

I – ok, dankjewel, P4

P4 – ik heb het meer op vrije tijd gebaseerd. Ik heb dan gekeken naar verschillende afstanden. Voor korte afstanden is fiets het beste, ik ga niet op ov wachten als ik maar een of twee haltes moet. Voor iets langere afstanden vind ik de trein wel prettig, kun je rustig zitten als je plek hebt, Daar is ook wel een beetje tijd aan gebonden, tussen 11 's ochtends en 9u 's avonds, daarbuiten reis je wat minder prettig met het OV. Het zou wel heel fijn zijn als 24/7 de trein en metro rijden ja, als je uitgaat of dat je laat bent, dat er dat niet meer niks rijdt.

I – vind je de laatste trein of metro halen stressvol?

P4 – ja, als je het dan niet gehaald hebt zit je daar

I – wat doe je dan?

P4 – taxi

I – dan maar gewoon betalen?

P4 – ja.. of je belt je ouders ofzo. Voor nog langere afstanden toch wel de auto, omdat je dan niet zo aan een tijd gebonden bent. Dan ben je ook beschermt van het weer. Dat was het

I – ok, dankjewel

P5 – nou ik heb het eigenlijk gebaseerd op mijn ideale reis. Nou je begint in je ochtend, dan met je nog niet heel fris, en dan hoop ik in de loop van reis vrolijker te worden. Dat ik zelf de keuze kan bepalen voor als het mooi weer is, dat ik dan OV kan nemen of ga lopen. Ik heb het gebaseerd op dagelijks leven, dus als je naar je werk gaat of uitstapjes met de kinderen of gewoon zelf persoonlijk, ja dat het dan goedkoper is, dus ook goedkoper OV, maar ook met de auto. Ik heb de auto hieronder gezet omdat ik dan denk, het is slecht weer, ik wil niet lopen of met het OV, dan makkelijk kan zeggen, ik kies toch voor de auto. Dan wil ik graag meer rust, geen files, makkelijk doorrijden, ook de boodschappen makkelijk kan doen met de auto. En muziek luisteren, in de tram en metro. En het gebruik van apps voor beiden, dat je makkelijk kan bepalen wat je dan kiest. En voor beiden natuurlijk weinig wachttijden, makkelijk onderweg, het draait er vooral om dat alles goedkoper is

I – ok, dankjewel. P6?

P6 – nou mijn ideale reis is eigenlijk de zelfrijdende auto. Zonder file, maar dat is nog niet echt realistisch. Haha, hij zit vastgeplakt aan de tafel. Wat voor mij echt belangrijk is is, punt 1 tijdens de vakantieregeling, als ik dan toch met het OV ga, dat de vakantieregeling niet als een soort afstraffing voelt, dat ik er dan drie keer zo lang over doe. Het is al druk, dus het hoeft niet nog drukker. Wat ik belangrijk vind is dat het doorrijdt, dat het op tijd is, ja, zo min mogelijk vertraging. Ik vind ook wel milieubewust, vind ik ook wel belangrijk, daarvoor wil ik best met het OV gaan. Maar de prijs is wel een beetje hoog. Ja, dat telt wel mee. Het wachten

vind ik wel belangrijk, ik wil graag een prettige wachtervaring, met koffie, croissantje, beetje winkeltjes, dat ik even iets kan doen, of wat dingen kan regelen. Reiservaring is belangrijk, het is schoon, er is ruimte om ook te kunnen werken, er is een aansluitpunt voor laptop of whatever. Ik wil het liefst kunnen zitten, het liefst geen schreeuwende pubers, en voldoende ruimte. Wat voor mij nog idealer is meer haltes, meer lijnen, zodat Rotterdam, het is groot, en druk, het moet gewoon beter bereikbaar zijn met sneldiensten, ook buiten de spits. Ook dat het gewoon langer doorrijdt, dat je 's avonds of 's nachts nog even, niet gelijk de taxi terug hoeft te nemen.

I – vind je het vervelend om 's avonds met de fiets of de auto te gaan?

P6 – in de BOB bus wordt dus altijd gekotst

P2 – haha, dat weet ik nog wel van vroeger, er werd inderdaad altijd gekotst

P6 – ik ben er echt 5 jaar niet mee geweest, en toen zeiden ik en een vriendin, kom dat gaan we doen... kots, gatverdamme. Ik wilde een broodje eten maar ik mocht geen broodje meer eten, misschien was hij ook bang dat ik zou gaan kotsen

I – volgens mij vinden ze het überhaupt niet zo fijn als je gaat eten en drinken in de bus

P6 – ja is waar, maar ik vind het wel echt vervelend, dan heb je die kots doorstaan, en dan wil ik gewoon rustig zitten zonder dat er tegen me geschreeuwd wordt

I – ok, dankjewel. Dat waren dus de belangrijkste opdrachten voor vandaag. Nu ben ik benieuwd of jullie nu nog dingen gehoord hebben waar je 100% achter staat, dat heb ik ook meegemaakt, of dat je nog nieuwe dingen hebt geleerd van andere aanwezigen?

P2 – allemaal best wel herkenbaar ja

P1, P3, P5 – uhu

P2 – iedereen heeft wel een beetje dezelfde punten genoemd, denk ik

I – ik heb inderdaad ook veel overeenkomstige dingen gehoord, maar als anderen aan het

woord zijn wordt dat natuurlijk niet altijd gezegd dat je die herkenning hebt.

P2 – ik heb nooit dat ik me onveilig voel 's avonds, maar dat is ook omdat ik nooit dingen heb meegemaakt daarin, dus dat is voor mij een verrassing, maar ik vind het niet verrassend om te horen want ik heb wel veel vriendinnen die dat hebben. Dus niet verrassend maar het is iets wat ik zelf niet ervaar

P4 – misschien dat er wat meer mensen lopen bij jou omdat je in de stad woont, en als je wat meer afgelegen woont, dan ben je vaak alleen in het donker

P2 – dat zou inderdaad goed kunnen

I – verder nog dingen?

P1 – in het weekend dat die trams en bussen één keer per uur kunnen rijden

P2 – metro is dat nu toch, die rijdt langer door toch?

P1 – maar dat zijn alleen maar bepaalde metro's he?

P6 – maar als je in bepaalde gebieden woont is het vaak heel vol, of je woont net buiten het centrum, 's nachts of in het weekend is het bijna een afstraffing om daar te wonen, of je kan gewoon een halfuur op die bus gaan zitten

wachten. En dan denk ik, in het weekend willen mensen ook dingen doen

P2 – juist dan

P6 – en dan zit je dus nog steeds opgepropt in de bus

P5 – dat het slecht bereikbaar is. Dat is niet verrassend, maar waar ik zelf niet zoveel rekening mee houd. Meer omdat ik nu dan hoor, best slechte verbinding, als je dan daar een uur moet wachten op je bus. Ik herken dat wel, ik heb in Poortugaal gewoond, dus dan had je maar één bus, en op een gegeven moment had je helemaal geen stadsbus meer, en dan moest je echt 20 minuten lopen naar de metro. Dat snap ik dan ook weer, maar omdat ik nu weer wat makkelijker bereikbaar ben, makkelijk de tram kan pakken, verbaast het me toch weer een beetje, vooral omdat het zo'n grote stad is

P6 – mijn man rijdt me altijd, dus als ik niet met hem ga, ik heb een vriendin, ik heb haar al een jaar niet opgezocht omdat ik haar niet kan bereiken in het weekend. Ik ben gewoon bijna twee uur onderweg, terwijl het niet ver is

I – precies, dat klinkt herkenbaar, als je niet langs de snelste lijnen zit. Ok. Dat was het dan een beetje, dankjewel voor alle bijdragen.

De sessie wordt afgesloten

18.3 Transcript sessie 2

I – welkom, top dat jullie er allemaal zijn. Vandaag is eigenlijk het doel van de sessie om te bespreken wat je hebt meegemaakt, en om je ervaringen met elkaar te delen. Dus het gaat eigenlijk vooral om dat je vertelt hoe jij het hebt ervaren, dat hoeft niet hetzelfde te zijn als de anderen, maar als je anderen iets hoort zeggen waarvan je denkt, dat heb ik ook meegemaakt, dan is het ook leuk om met elkaar in discussie te gaan. We zitten hier niet voor niets met z'n allen, haak vooral in op wat anderen zeggen. Dat geeft weer meer interessante inzichten, wat voor meer mensen belangrijk is. We beginnen met het bespreken van de dagboekjes. Dan gaan we nog twee creatieve opdrachten doen. Ik heb eerst even een toestemmingsformulier voor jullie. De sessie wordt opgenomen, zodat ik het later kan terugluisteren en kijken, om achteraf weer terug te halen wat er allemaal gebeurd is. Toestemmingsformulieren worden gelezen en ingevuld

I – ik zal ze zometeen achteraf even ondertekenen, dan kunnen we nu weer door met de sessie. Dankjulliewel. Ok. We beginnen met het bespreken van de dagboekjes. We gaan de cirkel rond, dan heeft iedereen een paar minuten om toe te lichten wat ie allemaal gedaan heeft, wat je is opgevallen, wat je goed vond, wat je slecht vond, wat je verrast heeft. Ga dus ook vooral met elkaar in discussie over wat je tegen bent gekomen. Duidelijk?

De deelnemers knikken instemmend

I – zullen we links beginnen, voor mij links?

P7 – ja wat ik heb meegemaakt... nee ik ga vooral op reis voor werk, en voor sporten. Als ik naar mijn vriendin ga, maar dat is vaak weekenden, dan is dat vaak met het openbaar vervoer. Over het algemeen ga ik naar werk met de auto. Ik werk in Den Haag, ik woon zelf in Rotterdam. Ik werk bij Laan van NOI, bij het ministerie van BiZa. Dan pak ik de auto naar Nootdorp, daar zet ik de auto neer, dan pak ik de RR naar Den Haag. En dat is basically wat ik elke dag doe. Dag 1, eh, ik ga ongeveer naar mijn werk rond 8:20, en dan ben ik binnen 20 minuten bij Nootdorp, en dan komt mijn metro. Ik weet ongeveer inmiddels wel hoe laat de metro's komen, dus dan rijd ik net iets harder of zachter, afhankelijk van de tijd. Met de metro is het ongeveer 10 minuten en dan nog 2 minuten lopen naar werk. Terugweg hetzelfde verhaal, metro naar Nootdorp, vanaf Nootdorp naar huis rijden, eh, tja. Wat ik goed

vind aan de reis is dat het warm is in de auto, je hebt je eigen spulletjes en muziek. Wat ik minder vind is file, heel vaak druk in de metro, zeker 's ochtends, ook al rijden ze vrij frequent, ongeveer 1 of 2 per 10 minuten oid, sneller zelfs, maar goed. Je staat altijd echt best wel krap, vooral 's ochtends. Dat is op zich wel, niet altijd vervelend, maar soms is het wel een ergernis, dan denk je kom op zeg. Voor de rest gebrek aan parkeerplekken als ik 's avonds weer thuiskom, dat is een ergernis, maar dat is meer persoonlijk denk ik. Ik rij min of meer uit gemak. Ik kan ook vanaf mijn huis naar Rotterdam Centraal en dan vanaf daar naar Den Haag, maar ik vind het met de auto net wat makkelijker. Vaak mijd ik wel de files 's ochtends en 's middags of 's avonds, dan rijd ik in een keer door naar Overschie, of Rotterdam eigenlijk, dat scheelt wel. En parkeergelegenheid bij de P&R is ruimschoots, ik heb 'm ook wel eens een keer bij Meijersplein neergezet, maar op een moment werd het daar steeds voller en voller, en op Nootdorp valt dat nog best wel mee. Meestal ga ik rond 8u oid naar de sportschool, dan pak ik de auto. Het is even 5 minuutjes rijden. Dan sporten en dan terug naar huis. Spullen die ik vaak bij me heb zijn mijn laptop, sportkleding, ik reis altijd alleen, ik heb niet niemand iedereen lacht

P7 – ho ho, dat is op een werkdag he!

Nogmaals gelach

P7 – 2e dag is eigenlijk wel hetzelfde, komt op hetzelfde neer. Nootdorp, huis. Ik vond het wel minder dat ik nu moest krabben, en het was heel druk in de metro. Sommige mensen zijn dan erg asociaal, die lopen uitgebreid te ontbijten met croissantjes, overal, dan denk ik kom op zeg. Ik ben ook boodschappen gaan halen, dat was 's avonds toen ik thuis kwam. Mijn vader was mee met boodschappen. Wat speelde mee in de keuze, het weer, het was weer heel erg koud aan het worden, het is dan wel lekker makkelijk als je dan de auto in kan stappen, gemak en tijdwinst. Met het OV zit je gewoon net iets langer dan als ik 't met de auto zelf even opsplits. Derde dag was eh, weekend. In eerste instantie met de auto en de bus. Met de auto naar mijn vriendin. Vervolgens vanaf haar met de bus naar het centrum, ze woont in Schiedam, bus 38. Vanaf haar naar de stad, en op een gegeven moment wezen eten en gezellig doen bij mijn ouders, op een gegeven moment was het wel jammer dat haar oom overleed die dag, toen gingen we 's avonds laat weer helemaal daarheen met het

OV. Ik heb daarna niet zo meer bijgehouden wat er gebeurd was.

I – dat is begrijpelijk

P7 – de kosten van het parkeren waren wel echt minder, het centrum is natuurlijk prijzig. Dat was het eigenlijk. De dag daarna, zondag, was ik nog steeds vrij. Toen ben ik met mijn vriendin mee gegaan, en vanaf haar naar huis gereden, want mijn auto stond nog daar. Ik ga met de auto naar haar vanwege gemak, vanaf Overschie naar waar zij woont is echt 2 minuten rijden, met de bus naar Centraal en dan weer vanaf Centraal naar haar huis duurt het toch iets langer, dat is echt een omweg, dat slaat nergens op. Er was vroeger wel een lijn heen maar nu niet meer. De 5e dag was weer maandag, toen moest ik weer werken. Metro auto lopen, Nootdorp, Laan van NOI voor werk, fitness, ik had mijn sporttas al bij me. Ik gebruik vaak de RET app om te kijken wanneer de metro's rijden. Tomtom ook vaak, ook om te kijken of het druk is op de weg. En het was weer druk in de metro.

Ondertussen werd I gebeld door de beveiliging dat er nog geen spoor te bekennen was van de 7e deelnemer, die niet op was komen dagen

I – volgens mij is dat een duidelijke omschrijving, zijn er nog dingen waar je tegenaan gelopen bent?

P7 – op een gegeven moment is het gewoon neutraal, dan doe je het gewoon

I – is dat vanuit die routine in je reis?

P7 – ja, zeker

P9 – en dan helemaal met je werk

P7 – je stapt gewoon in en uit

P8, P9 – ja idd

P7 – ik vind wel dat die best wel vaak rijdt, dat scheelt wel. Alleen jammer dat het nog steeds heel erg druk is. Soms sta je echt als sardienen in een blikje

I – top, dankjewel. P8?

P8 – ik woon in Rotterdam, best dichtbij het station, maar mijn werk is in Amsterdam, dus daar ga ik heen met de IC direct, en dan overstappen op Schiphol naar RAI. Dat is een beetje de route die ik dagelijks doe. Ik fiets dan meestal naar het station toe. Als ik dan bij RAI ben heb ik daar ook weer een fiets voor naar mijn werk

I – heb je een aparte fiets gekocht voor in Amsterdam?

P8 – nou ik werk bij Swapfiets op het hoofdkantoor, dus ik heb een swapfiets hier en een in Amsterdam, vandaar. Ik zal het even doorlopen, normaal reis ik dus elke dag met de IC direct. Echter de donderdag en vrijdag waren er werkzaamheden, dus toen ging ik

met een omweg, die gaat over Den Haag e.d., die duurt een stuk langer. Het was van tevoren heel goed aangekondigd, daar was ik wel over te spreken. Ze hebben meerdere keren kaartjes uitgedeeld aan alle reizigers in de trein, zodat iedereen op de hoogte was, dat hebben ze netjes gedaan. Ik moest donderdag toch naar werk, dus moest ik de omweg maar maken. De terugweg ben ik langs Utrecht gegaan, ik heb wel vaak zo dat ik als ik toch al onderweg ben, als ik heen en weer reis tussen werk en huis, dat ik kan ik nog wel een extra stukje reizen om langs Utrecht te gaan om samen te eten met vrienden. Als ik dan tussen Schiphol en RAI dan net de aansluiting mis, meestal gaat er een sprinter naartoe, dan kan ik even de metro pakken, of dan pak ik de trein naar Zuid en dan het laatste stukje met de metro afleggen. Dan kan ik er zo een beetje tussendoor fietsen om zo op tijd op werk te komen.

I – dus als je trein al vertraging heeft kijk je even in een reisplanner hoe je dan het beste kunt gaan?

P8 – ja, tenminste, de eerste paar keer. Inmiddels weet ik wel wat ik kan doen, dan doe ik het uit routine en uit mijn hoofd. Even kijken, op de terugweg naar Utrecht, dan moet ik eerst vanaf RAI naar Amstel met de metro, en vanaf daar met de trein naar Utrecht. En 's avonds van Utrecht naar Rotterdam met de trein. Ik heb mijn rugzak met mijn laptop dan bij me.

I – houd je daar rekening mee met het plannen, als het regent dat je dan niet met de fiets gaat?

P8 – nee, dan ga ik gewoon heel hard doorfietsen haha. Het is maar een klein stukje. Tot nu toe ben ik nog niet doorweekt geraakt, haha. Ik sta nu om 7u 's ochtends op, dat vind ik wel vroeg genoeg, en als ik dan een tram moet pakken naar het station toe, dan ben ik én langer onderweg én is het minder flexibel, omdat je niet kan weggaan wanneer je wil. Even kijken, de vrijdag, ik wist dus dat er werkzaamheden waren met het spoor, dus ik heb besloten om die dag niet naar kantoor te gaan en thuis te werken. Althans, ik had ook al gepland om dit weekend naar mijn ouders te gaan in Hengelo, dus ik heb 's ochtends gewoon de trein gepakt naar Hengelo, en ik heb in de trein gewerkt, en nog een stuk bij mijn ouders. Daarna ben ik op weg gegaan, wel na de spits, wel zo fijn. De IC direct is 's ochtends altijd heeel erg druk, dat doe je niet voor je lol, nu hoefde ik niet met die IC direct te gaan, maar je krijgt er wel een afkeer van tegen in de spits reizen. En ik had ook nog

omdat ze bezig waren met werkzaamheden eigenlijk rondom Rotterdam had ik een code gekregen voor eersteklas reizen, dat was heel relaxt. Ik kon dus eersteklas reizen naar Hengelo toe. Daar ben ik met auto opgehaald bij het station. Dat was wel fijn omdat ik nuttig kon bezig zijn in de trein, en dus gewoon mijn tijd goed kon gebruiken. Ik had die reis gepland met 9292, die app, daar plan ik altijd mijn reis mee, hoewel dat niet altijd even goed werk, merk ik, soms dan denk ik, volgens mij zit hier nog wel een optie tussendoor. Maar dan rekent 'ie een marge met overstaptijd, terwijl je de overstap toch nog wel kan halen

I – ga je dan losse stukjes reis opzoeken ofzo?

P8 – precies, ja. Verder was dat dus wel een comfortabele en rustige reis. Ik heb hier nog wel opgeschreven: als je naar Hengelo gaat is het best wel een stuk, en dan kun je kiezen, of net iets sneller zijn met meerdere overstappen, of dat je langer onderweg bent met één overstap, dan kies ik toch voor één overstap dat je toch lekker kunt blijven zitten, ook al ben je wat langer onderweg. De zaterdag heb ik met de fiets en de auto gereisd, met de fiets langs oma, en later in de middag met de auto naar de sauna geweest. Dat is overigens ook niet echt goed te bereiken met het OV, dat is best wel afgelegen. Daar kun je niet echt met het OV naartoe, dat is gewoon gedoe. Of de fiets is altijd wel lekker om even die frisse neus te halen, gelukkig was het droog, met de auto is wel heel flexibel dat je gewoon kan gaan wanneer je wil, je zit met het OV natuurlijk wel wat meer gebonden aan de tijden. Zondag ben ik teruggedaan naar Rotterdam, met de bus vanaf mijn ouders naar het station, dan met de trein naar Rotterdam, overstappen in Utrecht. En ik had mijn fiets nog op het station staan, dus daar ben ik mee naar huis gefietst. Het was redelijk druk, maar niet vervelend. Ik kon niet in mijn eentje zitten zeg maar, ik had nog een rugzak en een plastic tas bij me, net wat meer spullen, als er dan iemand naast je komt zitten zit je wel zo alles in je hokje te proppen

I – maak je ooit gebruik van die bagagerekken bovenin de trein?

P8 – nouja.... Niet heel vaak. Mijn rugzak zat mijn laptop in en een flesje wat die ik onderweg wil hebben, en die plastic tas ben ik dan bang dat er spullen uit vallen. Als ik een grote weekendtas heb gooi ik m er wel bovenin. Meestal niet dus. En ik moest wel lang wachten op het station, en het was daar heel erg koud, maar gelukkig was er ook een verwarmde wachtruimte, best wel luxe, dat zie je niet heel vaak, maar wel heel relaxt.

Uhm, maandag toen ben ik gewoon weer naar het werk gegaan, de trein reed op tijd, de aansluiting gehaald, net zo druk als normaal eigenlijk. Ik blijf vaak bij de IC direct bij de deuren staan of zitten, want als ik in de wagon ga zitten duurt het zo lang voor iedereen eruit is, dan haal ik mijn overstap nooit. Ik blijf het liefst dus daar

I – het halen van die overstap is voor jou dus belangrijker dan het comfort van in de wagon zitten?

P8 – ja, ja. Anders sta je daarna, dan heb je het comfort van in de wagon zitten, maar dan sta ik daarna een kwartier te wachten. Als het dan wat kouder is is dat zeker niet fijn. Dat was het wel zo'n beetje

I – ok, mooi, dankjewel

P9 – ik werk in Breda, dus ik moet elke ochtend daarheen. Dan fiets ik eerst naar de metro bij Melanchtonweg, en dan vanaf daar naar CS, dan pak ik de trein naar Breda. Dan heb ik daar een fiets staan, dan fiets ik naar mijn werk. Gaat eigenlijk altijd goed, ik had me alleen verslapen de eerste dag dat het boekje begon, waardoor ik eigenlijk net te laat bij de metro was, waardoor ik de trein die ik altijd pak, is de internationale trein naar Antwerpen, die rijdt altijd op tijd en die heeft nooit problemen, die had ik gemist, dat was zuur. Ik moest toen rennen, maar ik had het niet gehaald, dus ik had de trein van 8:14 naar Breda. Uiteindelijk maakte het toch niet heel veel uit, ik ben er dan of 8:40 of 8:50, dat maakt niet zo heel veel uit. Ik heb mijn laptop mee, ik neem een boek mee, en ik ontbijt in de trein, omdat ik dan rustig kan zitten. Die trein, die internationale trein heb ik vaak een tweetje voor mezelf, dat is fijn. De metro is wel echt elke ochtend, wat jij zei, echt ontzettend druk, ik krijg daar een beetje van die Japanse taferelen bij, zo van erin duwen. Dat is gewoon niet leuk, je moet jezelf erin werken, dat vindt niemand gezellig. Ik plan het eigenlijk niet meer, ik weet het laat de metro gaat en hoe laat de trein gaat, dus ik stap in de metro en dan ja, ik weet ongeveer hoe laat ze gaan, en als ik eentje mis of eentje eerder heb hoe laat die gaan. Wat ik fijn vind is dat ik de trein wel relaxt vind, 20 tot 25 minuutjes, dan kun je rustig ontbijten, en een boekje lezen. Wat ik ook heel fijn vind is dat de metro, vroeger om het kwartier reed, toen om de 10 minuten, en nu om de 5 minuten. Dat is echt super

I - En dan is het nog steeds zo vol?

P9 – ja. Maar ja, vroeger had ik er niet zoveel last van, want toen had ik nog geen 9 tot 5 baan, toen werkte ik in de horeca. Maar ik

kon me herinneren dat ie toen nooit druk was, maar toen ging ie om het kwartier, dan was je een beetje buiten werk of spijstijden. Wat ik minder vind, metro overvol, trein die ik normaal heb gemist. En ik was dus te laat dus ik moest een andere trein nemen. Terugweg was prima, normaal heb ik meer problemen met de terugweg, van Breda naar Rotterdam dan andersom. De 2e dag, was de vrijdag, ging ik naar werk, dat was niet een hele goeie dag voor mij. Ik had s avonds wat problemen, s ochtends ging alles perfect, maar toen was ik blijven borrelen, en toen dacht ik om half 12, zal ik toch maar een op huis aan gaan, en toen zag ik op de 92ov app dat er nog twee treinen waren, ik dacht, ruim op tijd. Toen reden ze allebei niet toen ik op het station kwam, en dat stond nergens aangegeven op 92, net wat jij zei, dat is niet altijd even goed aangegeven in die app, dus dat was heel zuur. Toen allebei de treinen niet reden moest ik, uiteindelijk reed er één trein richting Dordrecht, ik dacht dan ben ik in elk geval iets in de buurt, toen reed er vanuit daar nog een sprinter naar Rotterdam Centraal, die alleen maar tot Rotterdam Noord zou gaan, maar die reed toch door naar Centraal. Toen kon ik nog de laatste metro pakken naar huis, anders moest ik vrij ver lopen. Dat was om 1:15 ofzo. Er was dus geen informatieverstrekking op de app die gebruikte en ik was aan het borrelen, dus het was gewoon zuur.

I – dat is stressvol, als je niet zeker weet of je thuis gaat komen met je vaste route
P9 – ja, en al helemaal als je ziet dat beide treinen niet meer reiden, waarmee ik ingecalculeerd had dat ik nog een extra trein had kunnen nemen mocht ik er eentje missen
P10 – soms rijden er dan bussen toch?
P9 – er stond ook helemaal niemand om iets aan te vragen. Dus ik ben terug naar dat bord gelopen en heb lang gedacht, nog even 9292 gecheckt, en ik dacht, Dordrecht zit ertussen, misschien dat dat nog kan. Maar dat duurde denk ik een 1:20 ipv 20 minuten. Dat was iets minder fijn. Zaterdag was ik vrij, toen heb ik echt heel weinig gedaan. Ik heb de fiets gepakt om boodschappen te doen en ik moest naar een verjaardag. Ik had dus een cadeautje mee, en mijn vriendin. En ik had google maps gebruikt omdat ik toch zeker wilde weten dat ik goed fietste. Met de fiets kun je overal heen en je bent nergens van afhankelijk, maar wel koud, dat is negatief. Eh, echt heel weinig gedaan, alleen een feestje. Daarna ben ik weer naar huis gefietst. Zondag, toen was het wel een drukke dag, want ik ging de auto ophalen bij mijn vader in Den Haag. Toen

ging ik ook nog shoppen, ik en mijn vriendin. En ja, ik ben eerst met de metro, RR, van Melanchtonweg naar Den Haag gegaan. Toen zijn we eerst door de stad gaan lopen, toen de auto op gaan halen, vervolgens met de auto naar huis gereden omdat ik 'm nodig had voor de volgende dag naar mijn oma te gaan. Toen hadden we een voorstelling hier bij het Nieuwe Luxor, de musical Cats, daar gingen we heen, dat was om 16:30, we waren er net op tijd, gelukkig maar. Toen met de metro weer terug. Die metro komt dus altijd op tijd in het weekend, dan heb je geen problemen met de spits. Het is wel echt dramatisch om door De Haag te rijden met de auto. Ik had die rit gepland met google maps, en de metro met 9292OV. En dan maandag was ik weer aan het werk. Dat ging allemaal soepel, want ik ging met de auto naar werk. Dat doe ik normaal niet, maar ik ging na werk naar oma om daar even te eten. Dat duurt wel lang, langer dan met de trein naar mijn idee, maar het was wel lekker warm. Met de muziek meezingen enzo, wat in de trein niet zo gewenst is. Het is ook duur, het is wel prijzig met de auto. Ik had de tomtom bij me. Ik ging dus naar mijn oma, en toen weer naar huis, auto afgedropt, en toen met de metro naar huis. Dat was 'm.

I – je kunt je oma niet bereiken met het ov?

P9 – ja, kan wel. Maar het is makkelijker, ze woont in Berkel-., dat ligt vlakbij Tilburg. Dat is een extra 35 minuten met de bus vanaf Tilburg, dan ben je nog wel veel langer onderweg. Als het dan al na werk is heb je niet zoveel tijd. Dit kwam goed uit, ik ging toch op bezoek bij mijn vader, dus ik mocht zijn auto gewoon meenemen.

I – ok top, dankjewel

P10 – wil je dat ik het ook zo uitgebreid doe?

I – nou.. het mag wel iets compacter ja
Gelach

P10 – mijn situatie is dus sowieso iets anders, ik heb geen rijbewijs. Daarnaast ben ik net afgestudeerd, toen ben ik in November naar het buitenland gegaan, dat was wat duurder dan verwacht, ik had er niet heel goed voor gespaard. Daarom ben ik nu ook wat vaker bij mijn ouders, gewoon eten enzo is dan net iets goedkoper. Dus de vraag waar je je reis keuze van af laat hangen, tja of fiets of OV. Je maakt dan de afweging tussen auto of.. die keuze die heb ik niet. Als ik dan naar mijn ouders ga, dan is dat is een route die niet heel handig is. Ik moet eerst fietsen naar CS, dan pak ik de RR naar Berkel, vanaf daar de bus en dan nog een stukje lopen. Er is gewoon geen andere manier. Ik werk in West, ik woon zelf in Noord, dus ik kan vaak gewoon fietsen, en dat is het

snelst. Als het echt slecht weer is of als ik heel moe ben dan maak ik daar nog wel eens een uitzondering voor, dan pak ik tram 8, dan doe je er 20 minuten over naar de buurt van mijn werk, en dan ook weer 20 minuten terug. Dat is dan in plaats van 10 a 15 minuten met de fiets. Ik ben wel een doorfietser, dus ik ga wel overal doorheen. Het ligt dus een beetje aan mijn bui. Op de 1e dag, ik werk dus in de horeca, dan heb je vaak een dagdienst of een avonddienst, op basis daarvan plan ik ook mijn dag, ik probeer dus of overdag zoveel mogelijk te doen of 's avonds. De eerste dag ben ik overdag eerst gaan fitnesssen, daar ga ik met de fiets heen, met de fiets terug. Ik had een avonddienst dus toen ben ik eerst even bij mijn ouders gaan eten. Dan moet ik dus de fiets nemen, metro nemen, bus nemen, en hetzelfde riedeltje weer terug. Wat tegenwoordig nieuw is, dat was alleen niet bij deze dag, mijn ouders wonen in B&R, heen kun je dan de bus nemen op normale tijden, en terug 's avonds is die busdienst blijkbaar niet rendabel genoeg dus dan heb je de Stop&Go bus, dus die moet je aanvragen met je app. Die vind ik niet zo heel handig, een normale bus rijdt gewoon een route en dan kom je aan op het punt waar je moet zijn, en deze rijdt op basis van de oproepen die ie krijgt van mensen. De vorige keer moest ik dus eerst helemaal naar Bergschenhoek en daarna pas naar de metro, waardoor ik de aansluiting had gemist. Dat is wel een belangrijk punt bij deze reis, dat die metro bijna nooit aansluit op de bus. Van dat kwartiertje, 20 min die je met de metro naar Berkel gaat sta je vaak ook weer 10 min te wachten en dan nog lopen. Met de auto ben je er echt met een kwartier. Maar ja, ik heb gewoon geen keuze. In de zomer ga ik wel eens gewoon fietsen. Dus die route die ik neem naar Berkel die neem ik al heel lang, dus dat is een route die ik heel goed ken. Daardoor ben ik ook minder bezig met hoe lang ik sta te wachten enzo, mijn ervaring is dat er gewoon geen ideale manier voor te vinden is met die aansluiting, er moet maar iets gebeuren onderweg met de bus en dan vertrekt die metro gewoon, die wacht niet op de bus. De 2e dag, zaterdag, heb ik ook weer veel gereisd met het OV. Mijn zus werd 31 en die woont in Amsterdam, en we zouden daar gaan brunchen. Ik was eerst niet gegaan, maar toen was ik uiteindelijk toch wakker, ik had tot 3:30 s nachts gewerkt en s ochtends dacht ik, laat maar. Maar ik voelde me toch schuldig dus toen ben ik toch gegaan. Ik ben eerst met de fiets naar centraal gegaan, vanaf daar de trein, de IC direct die reed dus niet, ik had verder

wel kunnen achterhalen waarom 'ie niet reed maar ik had toen de andere al gepakt. Die duurde wel lang. En toen ging ik verkeerd, we gingen brunchen bij het Westerpark, en ik had verkeerd gekeken, het was allebei iets met water, dus ik was eerste met de bus en toen met de metro gegaan en toen stond ik op de plek waar ik niet moest zijn. Weer met de metro terug en toen weer de bus genomen. 's Avonds had ik een huisfeestje, toen ben ik door de stad gefietst, eerst naar een vriend toe en daarna weer daarheen, ook naar Amsterdam, mijn zus woont daar dus die route, ja, niet zo spannend, meestal de IC direct, vind ik heel fijn omdat dat meestal gewoon goed gaat. Wat ik meeneem, dit keer een cadeautje, andere keer werkkleding of fitnesskleding. Zondag was ik dus wel redelijk brak, want dat huisfeestje werd vroeg in de ochtend, dus ik heb niet zoveel gedaan, behalve dat ik die dag overdag moest werken, en dat wist ik niet. Behalve dat ik dus brak was, was het ook heel koud, dus ik heb toen de tram gepakt in plaats van de fiets. Tja hoe ik het plan, ik pak meestal 9292, en met het weer erbij bepaalt dan hoe ik reis. Maandag overdag ben ik weer naar mijn werk gefietst, en daarna weer bij mijn ouders gaan eten, dat is allemaal niet heel boeiend, eh ja, dus weer metro bus, dat ging dit keer wel goed. Er was een hele aardige meneer, dat vind ik dan weer leuk van die Stop&Go bus dat het iets meer taxi achtig is. Hij heeft zijn eigen muziek aan staan, hij maakt een praatje met je, dat vind ik leuk. En vandaag (dinsdag) was mijn laatste dag, toen was ik weer naar Amsterdam, ondanks de sneeuw deed de IC direct het gewoon op tijd, hoe ie het moet doen, en toen weer met de metro, dat ging allemaal soepel. Ik denk dat ik over het algemeen best tevreden ben met het OV, buiten dat het soms niet aansluit, maar ik snap heel goed dat het ook niet altijd kan aansluiten, dan moet je de metro en bus constant laten rijden en dat is simpelweg niet mogelijk. Ik wil dus wel voor mijn rijbewijs gaan en als ik die dan heb zou ik zeker vaker voor de auto gaan. Dat was het denk ik wel.

I – ok, top, dankjewel

P10 – oeps, heb ik net zoveel tijd genomen
Gelach

P10 – ja weet ik veel, je moet ook weer wat nieuws zeggen

I – geen probleem hoor, haha

P11 – zal ik dan gaan?

I – ja

P11 – nou ik woon in het centrum bij Blaak dus ik heb heel veel opties qua metro, trein, tram, en de bus. Ik werk in Rotterdam op

Zuid, bij Slinge. Ik ga elke dag met de metro vanuit Beurs naar Slinge toe. Omdat ik bij Blaak woon pak ik de tram vanuit burg. Van Walsumweg naar Beurs toe. Soms loop ik dan met mijn zoontje mee naar Beurs, dus dan pak ik niet de tram maar gelijk de metro op Blaak. Ik loop er wel tegenaan dat het altijd zo druk is in de ochtend, heel irritant. Je kan gewoon niet zitten. Het is niet echt een heel lange route maar ik vind het wel vervelend dat je zo op elkaar zit. Vooral bij Beurs, die overstap. Voorheen werkte ik bij Alexander, dan hoefde ik niet over te stappen, nu moet ik elke dag langs Beurs en ik merk gelijk het verschil. En iedereen komt daar, die massa met dat overstappen, die drukte is er altijd. Vorige week was ik ziek, dus ik ben iets eerder van werk naar huis gegaan, en dan merk je wel echt het verschil dat het minder druk is. Als ik naar werk toe ga rond 9, half 9 is het heel erg druk, dan zie je het verschil. Ik plan het niet met 9292 OV, ik moet gewoon voor 9 uur binnen zijn, ik heb best flexibele werktijden, dus ik weet gewoon als ik een afspraak heb dan probeer ik iets eerder uit huis te gaan. Ik heb mijn werktas altijd bij me, lunch, kleine prulletjes. Geen laptop ofzo, we hebben computers staan. Ik pak de metro omdat het de snelste optie is, volgens mij kan je ook met de bus gaan maar dat zou niet echt logisch zijn voor mij. Wat ik wel heb gezien is dat het heel erg warm was, vorige week, en als je je dan niet zo lekker voelt doe je je jas open en dan ga je helemaal zweten, dan denk je ligt dat nou aan mij? Het was wel heel erg heet heb ik ervaren. Op zich wel lekker maar omdat ik dan ziek was was dat niet echt fijn. Maandag ging ik ook na werk sporten, dan pak ik wel de fiets. Met het OV is het met de tram een hele omweg, dan vind ik het makkelijk om met de fiets te gaan. Ik sport dan soms in Noord of bij Blaak. Dat is ongeveer 10 minuutjes fietsen, dat is niet zo ver. Afspraken zoals dit vandaag, dan gebruik ik wel de app, dan wil ik zeker weten van hoe laat kom ik aan. Naar werk toe, in het weekend doe ik dat niet echt. In het weekend ging ik naar de film, de bioscoop. Dan weet ik wel ongeveer hoe laat ik uit huis moet gaan om op tijd te komen.

I – ben je goed op de hoogte van de tijden bij jou in de buurt?

P11 – ja klopt. Maar ik woon dus bij Blaak, en dan heb je daar of de tram, of de metro, of de bus. Dus ik kan in een oogopslag zien, de tram duurt te lang, dan loop ik naar de metro of de bus. Vandaar, ik heb teveel opties, ik hoef het niet echt te plannen haha. Behalve vandaag, dan pak ik even mijn app erbij om te kijken hoe

lang ik onderweg ben. In het weekend ben ik naar Alexander gegaan, naar mijn zus toe, ik had niet echt een afspraak, dus ik ben maar gewoon ja, ik ging gewoon uit huis, en toen ben ik gaan kijken hoe laat ik daar aankwam, want het maakt niet echt uit. Ik heb ook niet echt een auto, vandaar dat ik vaak met de fiets ga. Maar ik vond het wel best wel koud vorige week, ook omdat ik niet lekker was, dan pak ik liever de tram. Behalve als ik moet gaan sporten, want dat is veel sneller met de fiets. De drukte liep ik echt tegenaan en voor de rest, zo lang zit ik niet in de metro, dus dat is denk ik wat ik meegemaakt heb.

I – yes, dankjewel. P12?

P12 – ik weet het ongeveer uit mijn hoofd, ik zal het kort houden.

I – vertel maar rustig hoor

P12 – ok, is goed. Ik werk bij Oostplein, maar ik woon zelf bij Binnenhof. Ik woonde eerst in Slinge

P11 – ok

P12 – wat ik wel fijn vind want ik neem altijd de metro, net als wat je zegt met die 9292, ik irriteer me eraan, het wijkt echt af van die tijden dat de metro vertrekt of de bus. Donderdag heb ik gewerkt. Dat was een fijne reis, alleen de drukte, geirriteerde mensen, kinderen die lopen te schreeuwen, vind ik heel irritant in de ochtend, heel erg. En mensen die lopen te eten

P7 – uhuu

P9 – uhh oeps

P12 – jaa haha

P8 – is dat dan omdat het heel erg ruikt ofzo

P12 – nou dat smakken, uh dat hoor je zo. Iemand was dan een banaan aan het eten, dat hoor je van ver

Gelach

P7 – het zit het 'm er ook niet in dat je wat eet, maar dat je je omgeving normaal achterlaat. Je hebt wel eens mensen die dan dat zakje zo wegpleuren op de grond, of overal kruimels en dingetjes liggen, ze laten hun blikje liggen ofzo

P9 – nou ik ruim alles netjes op hoor, haha.

Dan irriteer ik me meer aan mensen die bellen in de trein, misschien meer omdat ik zelf ontbijt in de trein

Gelach

P10 – tja uiteindelijk moet iedereen het ook gewoon zelf weten of je daar ontbijt of niet toch. Je bent toch in een openbare ruimte dus je kunt je wel overal aan gaan irriteren maar uiteindelijk heb je daar vooral jezelf mee

P9 – het maakt me ook niet uit als het s middags is, maar om 8u s ochtends, dan denk ik, wie moet jij bellen om 8u s ochtends?!

Gelach

P7 – ja dat denk ik ook, het eten is niet erg, maar meer hoe je ermee omgaat achteraf, je kunt ook gewoon een croissantje eten en niet overal rommel achterlaten

P9 – nou met een croissantje is dat wel lastig, haha!

P10 – als je in elk geval het merendeel maar opruimt, zoals jij zegt. En het is ook vaak dat de meeste mensen zich wel gedragen maar die paar uitzonderingen maken het vervelend

P7 – ik heb het wel een meegemaakt, dan zat er zo'n dame te eten en toen werd er gecontroleerd, van de RET ofzo, weet ik niet meer wie het was, en die keek haar echt streng aan zo van, je mag niet eten in eten in de metro, maar goed, ze had echt alles verpakt, nog net niet met een rietje aan het opzuigen haar broodje, dan denk ik wel, come on, het is maar een simpel iets. Ik snap wel, soms dan stap je de metro in en dan vliegen er her en der blikjes en dat soort dingen, dat is wel..

P9 – mag je niet eten en drinken in de metro?
P7 – volgens mij niet, er staat echt dat het niet mag dacht ik

P12 – alleen fast food niet volgens mij

P11 – ja dat dacht ik ook

P7 – nouja volgens mij mag je in het algemeen niet eten

P12 – oh echt?

I – ok, weer even terug

P12 – ik maak gebruik van de metro om dat het rechtstreeks gaat, ik heb een rijbewijs maar ik durf niet te rijden, dus we hebben wel een auto, mijn vriend maakt daar gebruik van. Waar ik mij ook aan ergerde was dat de metro, via die 9292 app als terugreis, toen zou ie 4 over half zou ie komen, en toen kwam ie niet, toen moest ik ineens 12 minuten wachten, dat vond ik wel heel vervelend. En de drukte weer.

I – welke dingen vind je goed?

P12 – ik hoef maar 10 minuten te lopen vanuit huis, het is een eindstation, dus je kunt altijd gelijk zitten, maar het begint wel druk te worden vanaf Capelse Brug of Alexander. Wat ik ook echt vervelend vind maar dat ligt aan mij, dat ik steeds dezelfde mensen tegen kom! Gelach

P12 – dan denk ik oh ja, die persoon met die drukke kinderen. Dan kijken ze je zo aan. Donderdag heb ik vrij, en vrijdag was het gewoon werk, niks bijzonders. Boodschappen, lopend. Zaterdag, zijn we naar een feestje geweest. We hebben gebruik gemaakt van de auto. We gingen eerst naar mijn ouders, die wonen hier bij de Slinge. Daarna gingen we naar de zaal, daarna weer naar mijn ouders en toen naar huis. Zondag bleef ik thuis, niks

bijzonders, gewoon luieren. Gister zou ik met de metro naar de apotheek gaan, maar ik had de metro gemist. En toen ging ik lopen en dat bleek ineens sneller te zijn, heel gek.

I – kwam je daar toen pas achter?

P12 – ja, eigenlijk wel. Terugreis ging ik ook weer lopen naar huis, toen ik ging ik met de metro naar Alexander, en weer met de metro terug. En toen lopen. Vandaag was wel een hele reis. Ik ging eerst naar werk, toen naar de Slinge, en toen had ik net als wat jij had, die overstap bij Beurs, die was echt heel vervelend met die drukte enzo. Bij Slinge heb ik de bus gepakt naar Zuidwijk en een stukje lopen omdat het sneeuwde. En toen werd ik hier gebracht met de auto

I – heel fijn! Dankjewel voor de toelichting. We gaan nu over tot het leukere deel, we gaan twee creatieve opdrachten doen. De eerste is eigenlijk een collage maken over jouw minst favoriete vervoersmiddel en je meest favoriete vervoersmiddel. Dus je kiest een voor beide kanten. Ik heb een vel gemaakt wat je als basis kunt gebruiken en allerlei plaatjes en woorden. Scharen en prittstiften liggen al hier op tafel, stiften ook. Voel je vrij om je te uiten als je wil, lekker los gaan met het knippen plakken lijmen en tekenen. Ik pak even de vellen erbij
P10 – dus ik kan ook gewoon kiezen voor fietsen?

I – ja, als dat jouw favoriete vervoersmiddel is, het hoeft niet het OV te zijn. Ik ben benieuwd naar waarom dat jouw favoriet is

P10 – misschien dat het voor mij wel de auto zou zijn, maar ja, I don't know

Nog wat toelichting bij de toolkit

P10 – is dit een OV-step?

I – nee, dit is wel een deelstep, maar niet eentje van het OV in Nederland

P9 – heb je deelsteps? Dat lijkt me wel tof

P7 – haha, dit voelt weer als handvaardigheid Er wordt geknutseld en ondertussen wat gekletst

I – nog ongeveer 5 minuutjes... Nog 1 minuut... ik snap dat het kort de tijd is om wat in elkaar te knutselen, maar het is vooral de bedoeling dat je aan de hand van je collage kunt vertellen waarom jouw favoriet je favoriet is, hetzelfde voor je minst favoriete. Zullen we rechts beginnen, kun je wat vertellen?

P12 – mijn favoriet is, tja ik hou wel van fietsen, ik heb een fiets maar die gebruik ik nooit. Maar het allerbest vind ik toch wel de auto, ondanks dat ik nooit rijd. Ik hou heel veel van muziek, dat vind ik wel belangrijk tijdens het reizen om muziek te luisteren.

I – kun je beter muziek luisteren in de auto?

P12 – in de auto heb je geen koptelefoon op,

ik heb het nu meer daar over, die heb ik in het OV op. Maar in de auto gaat ie wel hard. Ik hou ook wel van reizen met de auto ook wel naar de stad maar dan kun je niet parkeren, dus dan gebruik ik de metro meer

I – en je minst favoriete kant?

P12 – de file, en dat je dan moet wachten. En ik houd er niet van om opgejaagd te worden, en dan zie je de klok, en dan weet je shit, ik heb nog 5 minuten, ik moet dan met de metro en dan uit huis maar dat vind ik dan minder met de metro. Met de auto hoef je niet echt stipt te kijken naar de klok. Het is meer flexibel.

I – ok, dankjewel

P11 – mijn minst leuke is de tram. Omdat ik er gewoon geen gevoel bij heb, het is gewoon van A naar B, vaak druk, ik zit dan wel op mijn telefoon. Maar je moet dus wel altijd je ov bij de hand hebben, want als je dan weer te laat bent uitchecken

I – geeft dat je een gehaast gevoel?

P11 – ja, heel erg, alles hoeft niet zo gehaast en opgejaagd. Het is alleen maar omdat het moet, niet omdat ik het leuk vind. Met de trein vind ik het wel leuk, dan heb ik vaak een langere route, dan kan ik me lekker focussen, afzonderen, muziek luisteren, naar buiten kijken naar het landschap. Je kunt van alles doen, je hebt daar genoeg tijd voor, daar geniet ik van.

I – en dan gebruik je de trein dus veel voor langere afstanden?

P11 – ja als ik bijvoorbeeld naar Amsterdam ga, dan ga ik met de trein, maar naar Rotterdam Zuid ofzo ga ik niet met de trein. Met de trein meer naar Utrecht, Nijmegen, Eindhoven, dan kun je lekker de tijd ervoor nemen. Je eet wat, je luistert wat muziek, dan ben je veel relaxter dan met de tram. In de tram zit je op elkaar, in de trein heb je meer ruimte. Je kijkt wat meer naar buiten

I – in de tram vind je dat naar buiten kijken niet zo interessant?

P11 – nouja ik kijk wel naar buiten maar ik ben niet relaxt ofzo, ik zit er omdat het moet, en je reist gewoon

I – ok, duidelijk dankjewel

P10 – die van mij is nog niet helemaal af, eh, maar ik heb dus als favoriet de fiets, dat is flexibel, als je wil kun je gewoon ergens langs. Het bespaart heel veel geld. Een auto lijkt me ook fijn maar ik weet ook hoe duur een auto is. Met fietsen ben je ook even buiten. En de OV fiets in combinatie met de trein maak ik ook vaak gebruik van. De tram heb ik eigenlijk ook als minste, dat voelt altijd zo als een omweg. Hij gaat niet zo snel maar als ie dan druk is dan sta je, en dan wiebelt de tram en dan val

je bijna. Dus de tram vind ik gewoon irritant, omdat het gewoon traag is en je vliegt alle kanten op. Dat was het dan een beetje.

I – top, dankjewel. P9

P9 – mijn minst favoriete is ook de tram. Op de een of andere manier zitten er bij mij ook altijd kinderen in de tram. De tram is echt mijn laatste keus, ik neem m soms wel eens als de metro dan later is en dan zou de tram nog kunnen, maar het is echt mijn aller laatste keus, je kunt beter met de metro gaan. Die is sneller, komt vaker, en dan hoef je minder lang te wachten. Bij de tram heb ik altijd heb gevoel dat ik heel lang sta te wachten. Mijn favoriete zijn de trein en de fiets, tussen haakjes de OV fiets. Trein is gewoon chill, dan kan ik een beetje zitten en muziek luisteren. De OV fiets heb ik erbij gezet omdat ik, toen ik nog geen fiets had in Breda, heel vaak de OV fiets pakte, ik heb op de achterkant van mijn boekje nog een ode geschreven aan de OV fiets omdat ik m zo chill vind, je bent gewoon heel flexibel ermee. De trein in combinatie met de OV fiets is mijn ideale, je kunt echt overal komen met die combinatie

I – dankjewel

P8 – nice. Ik had inderdaad ook de tram. Ik kan me best wel vinden in dat heen en weer schommelen en schudden, dat voel ik ook altijd. Ik vind het ook altijd wat krap voelen, smalle stoeltjes, smalle gangetjes en dingen, in Rotterdam is dat nog minder maar in Amsterdam is dat zeker zo

P10 – ja inderdaad

P8 – maar ook die indeling van de tram is daar weer wat anders

P10 – ja daar moet je ook weer omhoog, dat is het allemaal net niet

P8 - Ik heb ook het idee dat ik met een omweg ga. Of nou ja het idee, het is gewoon zo. Ik woon bij de tramhalte van de Schieweg en als ik naar het station ga maakt ik eigenlijk niet uit of ik ga lopen of met de tram ga, dat kan allebei. Maar goed, soms brengt het me wel van a naar b, dus ja. Waar ik het liefst mee reis is de fiets. Ik ben er gewoon mee opgegroeid, als je de auto niet nodig hebt gebruik ik m ook niet, als het op de fiets kan doen we dat. Het is gewoon goed voor het milieu, het is gratis, meestal is het droog en als het een beetje miezert vind ik het niet heel erg, als ik niet doorweekt raak. Enige nadeel vind ik dat je ook hier 's ochtends, dan ben je echt lang bezig met een plekje zoeken voor je fiets, dat is even vervelend. Het is vaak sneller dan met de auto, als je ergens in de binnenstad moet zijn

P10 – nou zeker ja

P9 – zeker in het centrum ja

P7 – ik heb dus een tram geplakt, ik zocht naar de metro maar die kon ik niet vinden, maar het is dus een metro. Zo voel ik mij dus als ik 's ochtends erin stap. Het is wel mijn minst favoriete maar ik ben er wel enigszins neutraal in. Het moet, dus dan doe ik het. Krap. Mijn favoriet is toch wel de auto. Je bent flexibel, vrij, je hebt airco of verwarming, muziek. In mijn geval is het tja, gratis wil ik niet zeggen, het is een leaseauto dus ik merk het pas in mijn salaris als daar een deel vanaf gaat in bijtelling. Ik gebruik ook vaak de P&R als ik ergens heen moet, ook naar Utrecht ofzo, dan zet ik 'm bij de P&R. Dan ga ik in combinatie met de het OV, dan kun je gratis reizen. Je kunt gewoon jezelf zijn. Ik ging afgelopen jaar naar comiccon in Utrecht, ik zat gewoon als Batman in de auto, dat was awkward geweest

P8 – haha, nou je denkt dat niemand je ziet

P9 – nou als mensen voor je in hun neus zitten te peuteren, dat zie je ook altijd wel hoor hahaha

P7 – haha, nou ik had het masker al wel op

I – maar in je auto voelt het dus wat meer als privé

P10 – ja dat is wel een groot punt, in je auto is het privé, voor de rest moet je voldoen aan een soort norm

P7 – ja als er dan iemand anders naast je ziet en je zit een beetje te lullen of een beetje ruzie te maken

I – ok, dankjewel. Dat was de eerste opdracht, we gaan nu nog een collage maken maar dan over je ideale deur-tot-deur reis. Je mag gewoon opschrijven waarvan je zou willen dat het kan, of daar een knutselwerk van maken. Voel je vrij om te dromen over, wat is nou mijn ideaal, en dat uit te beelden. Ik heb nog allerlei extra plaatjes en woorden

Toolkits worden weer uitgedeeld

I – ik hoop dat het een beetje gelukt is om weer te geven wat je erop kwijt wilde. We nemen het weer even door om met elkaar te delen wat je gemaakt hebt en waarom dat jouw ideale deur-tot-deur- reis is

P7 – ik val wel enigszins in de herhaling maar ik kan niet echt anders. Ik heb mijn situatie gepakt, met de auto, geen file, telkens de max snelheid kunnen rijden, om zodoende op je bestemming te kunnen komen

I – en nog een wereldbol?

P7 – ja ik voel me altijd wel vrij in de auto, je kunt makkelijk een andere weg inslaan

I – dus de auto geeft je het gevoel dat je de hele wereld op zou kunnen gaan, bij wijze van?

P7 – ja, ja klopt. Het is heel praktisch, als het heel druk is dat ik ergens anders heen rijd, met file of iets ontwijken, daar doel ik vooral op. Net

een afslag eerder, ergens anders parkeren of iets

I – duidelijk, dankjewel

P8 – mijn ideale vervoersmiddel heb ik getekend. Volgens mij zijn ze hier in delft testen mee aan het doen, zo'n vacuumbuis?

I – ja, de hyperloop

P8 – nou ik kan echt niet wachten tot dat er is. Het lijkt me geweldig dat je in no-time van a naar b bent. Misschien lichtelijk onmogelijk dat je vanaf je huis met een liftje naar beneden kan, zo pjoeww, en dan aan de andere kant weer met een liftje omhoog

P10 – dan heb je in elk geval geen buitenlucht meer

P8 – haha, ja. Dat is wel het jammere, dat je geen reiservaring meer hebt. Dat zou ik wellicht missen, maar aan de andere kant heb je weer heel veel tijd over om leuke dingen met je leven te doen

P7 – ik moet dan gelijk denken aan futurama, dan staan ze op een gegeven moment met z'n allen met een tube in de file

P9 – ja als iedereen dan met die tube gaat

P8 – maar het lijkt me gewoon heel chill als je overal vanaf je huis direct kan komen, en ook nog heel snel, zonder een grote omweg te maken, onder de grond door. Dat je daardoor hemelsbreed die lijn kan trekken. Dat je onderweg kan relaxen, misschien krijg je aan het begin een koffie, en dan is ie net op en dan ben je er. Dus supersnel, het liefst elektrisch of meer dat het geen fossiele brandstoffen nodig heeft, flexibele vertrektijd, dat je niet hoeft te zeggen, 's avonds op een feestje, sorry ik moet al gaan

P7 – de laatste tube vertrekt!

Gelach

P8 – en je hebt geen last van het weer. En spullen meenemen, dat je één keer je spullen in een vervoersmiddel moet doen en dan weer heen en weer moet met tassen enzo om het over te laden en stukken hoeft te lopen

P9 – bijna net alsof je elk huis aansluit op een waterleiding

P8 – precies, wie weet kun je er ook wel pakketjes mee versturen

P9 – ooeeh! Nou ik heb dus, ik ga met de OV-scooter naar een P&R. Via de app heb ik dan al een zelfrijdende auto voor laten rijden. En je gaat zitten, er is een aparte strook gemaakt voor de OV-auto. en die gaat supersnel, want zelfrijdende auto's, als je dat goed op elkaar afstemt kun je dat snel laten rijden. Heb je ook geen file. Dus je kunt lekker achterover zitten omdat je niks hoeft te doen. Dan ben je sneller op werk, en het moet wel milieubewust, betaalbaar en snel zijn. Dat is wel een

probleem. Maar ja dat

I – wat heb je daarboven nog opgeschreven?

P9 – nou je hoeft dus niet op te letten, je kunt gewoon relaxen

I – je wil dus gewoon comfortabel kunnen reizen zonder ergens over na te hoeven denken,

P9 - instappen en dan bij werk uitstappen, bijvoorbeeld bij een andere P&R, waar je weer een ander scootertje zou kunnen nemen

I – dus naar zo'n algemeen verzamelpunt gaan is voor jou geen probleem

P9 – in dit geval zou het via zo'n P&R veel sneller gaan als je in een auto stapt die sneller is dan een trein, dat zou kunnen werken, zeker als die P&R dicht in de buurt is, dan dat je naar een centraal station moet, waar je nog heen moet met de metro ofzo. Dus ja. Dan moeten er wel wat meer van die verzamelplekken zijn dan bijvoorbeeld eentje in Utrecht

I – duidelijk, dankjewel

P10 – mijn ideale reis is ook dat ik ergens zin in heb. Dat begint dan dat ik goed heb geslapen, dat ik goed kan rusten in de reistijd, vooral geen stress is belangrijk. En dat er ook inderdaad, ik vind het wel fijn om in de trein te zitten en dan naar muziek te luisteren of een boek te lezen als je alleen bent. Maar ik kan er ook echt van genieten als je het met goede bekenden gewoon heel gezellig hebt, of als er nieuwe vriendschappen ontstaan, dat kan je reis ook wel maken. En verder zou ik het liefst zo veel mogelijk buiten zijn, geen honger of dorst hebben onderweg, en hopen dat alles op tijd rijdt. Dan is de reis an sich al heel gezellig en fijn, goed gezelschap en ontspannen

I – dus de omstandigheden maken voor jou wat meer de reis?

P10 – ja precies, mijn ideale reis, de reis kan zelf ook al leuk zijn, als is als ik dit een beetje, ja

I – ok, ja top

P11 – ik heb een dagje weg gekozen. Dat kan natuurlijk niet met de NS maar ideaal is dat je dan in 3 uurtjes ofzo in Londen bent. Dan ga ik vanuit huis met de uber naar het station toe, en dan neem ik iets te eten bij de kiosk, dat je het lekker in de trein kunt doen, ontbijtje ergens, een croissantje kunt halen. Ook van die aparte coupes zeg maar, dat je met je groepje de deur dicht kan doen en lekker kunt kletsen zonder anderen te horen. Het fijnste is als er dan zelf computers uit komen dat je dan kunt netflixen, je ding kan doen, lekker muziek kan luisteren, zo weinig mogelijk uitgeven natuurlijk en de terugweg ook lekker dineren in de trein,

lekker cocktails nemen om het zo gezellig mogelijk te maken

Gelach

P11 – ja. Dus gewoon lekker een dagje weg, ontspannen gezelligheid. Je moet je vooral vrij voelen, geen last hebben van mensen die naar je kijken, lekker de deuren dicht en genieten

I – bij je ideale dagje uit is de reis eigenlijk onderdeel van de je dagje

P11 – ja, dat je al in de trein begint met gezelligheid

I – ok, leuk, dankjewel

P12 – ik had twee opties. Ten eerste, ja, ik achter het stuur, dat ik durf te rijden.

Zelfverzekerd, I'm the boss. De tweede optie is dan vanuit huis is dat iedereen die überhaupt met het OV reist dat dan gratis krijgt, dat je dan in de bus gaat en twee stoelen voor één persoon krijgt, dan ga je lekker relaxen. Je komt uit bij het station. Wij hebben ook zo'n soort golfkarretje, die brengt oudere mensen naar hun locatie en dus dat je gratis kan reizen. En dat je gratis op het terrein mag parkeren, dat is ook een heel ideale situatie, maar ja dan moet ik wel eerst achter het stuur

I – ok, dat was het dan wel zo'n beetje al. Kan iedereen nog even zijn naam op de collages schrijven. Dat was het dan eigenlijk

II A. CONTEXTMAPPING INSIGHT CLUSTERS

18.4 Price

18.4.1. Base fare

Most people find out there is a base fare when they use public transport and travel for only a few stops. They are shocked by the price of the journey, even though they only used the service for a short time. They instead take the bike or walk

> P6: "Sinds ik geen studenten OV meer heb, heb ik ontdekt dat er een soort inchecktarief is, dat is echt superhoog. Dus ik betaal bijna net zoveel voor één halte als voor een hele reis. Dus ik ging lopen, want ik was gierig." P1: "voor korte ritjes moet je inderdaad de tram of metro niet doen, als je voor een of twee haltes gaat. Dan loop ik altijd"

18.4.2. Public transport becomes very expensive when you forget your OV chip card.

The OV chip card is useful, but the dependence on it is not perceived as nice.

> P2: "Ik vind het duur, het OV, zeker als je bijvoorbeeld je OV vergeet en ik moet een tijdelijke kaart vergeten, dat is dan €3.50. Maar daar mag je dan weer niet mee met de bus omdat dat een andere vervoerder is, dan moet ik daar ook weer aparte kaart voor kopen van €3.50, dan is het €7 heen." P5: "je betaalt dus inmiddels VIER EURO!" P2: "Ik weet dat het mijn eigen fout is dat ik mijn OV ben vergeten maar dan ook weer €7 terug, dan denk ik wel echt van ja weet je"

18.4.3. Fare capping per time period

People have experienced what public transport is like in other big cities like London or New York, where a lot of people heavily depend on PT. In most of these cities there is a fare cap per day, per week and/or per month. They are very much in support of this system.

> P2: "Als je een week in New York gaat

rondlopen ben je \$30 kwijt, nog niet eens €30 dus"

> P3: "Ze kunnen veel leren hoor, van New York en Londen enzo, dan ben je max 7 pond per dag kwijt"

18.4.4. Paid for by others

When transport is paid for by others, people usually don't care that much about the actual costs. Employers often give people public transport subscriptions (which they may or may not use in their own time) or lease cars. This heavily influences transport choice.

> P4: "Voor mij best goedkoop omdat ik studenten OV heb en een business card van de trein, dus daar betaal ik niet voor"

> P7: "In mijn geval is het tja, gratis wil ik niet zeggen, het is een leaseauto dus ik merk het pas in mijn salaris als daar een deel vanaf gaat in bijtelling."

18.5 Flexibility/certainty

18.5.1. Go anywhere you want, whenever you choose

Regulate your own speed, time your journey to perfection: by bike and car this is often possible.

> P1: "Ik had fietsen. Dat heb je zelf in de hand, ook qua reistijd, je kunt je eigen tempo bepalen"

> P4: "Voor nog langere afstanden toch wel de auto, omdat je dan niet zo aan een tijd gebonden bent."

> P7: "Het is heel praktisch, als het heel druk is dat ik ergens anders heen rijd, met file of iets ontwijken, daar doel ik vooral op. Net een afslag eerder, ergens anders parkeren of iets"

> P8: "met de auto is wel heel flexibel dat je gewoon kan gaan wanneer je wil, je zit met het OV natuurlijk wel wat meer gebonden aan de tijden."

> P9: "Met de fiets kun je overal heen en je

bent nergens van afhankelijk”

18.5.2. Taking extra care and time when you have a meeting

When people have a meeting they don't want to be late for, they take extra care. They plan the route using an app, or take a vehicle earlier than they normally would, just to be safe. This also applies to the last train at night, many people opt for the second-last train instead of the last one. This gives them a bigger chance of getting home.

> P3: “Ik pak altijd wel een tram of trein eerder als ik op tijd in bijvoorbeeld Enschede moet zijn, dat je niet afhankelijk bent van vertraging. Dus ik zorg er altijd wel voor dat ik niet op één minuut voor de klok aankom.”

> P9: “al helemaal als je ziet dat beide treinen niet meer reiden, waarmee ik ingecalculeerd had dat ik nog een extra trein had kunnen nemen mocht ik er eentje missen”

> P11: “als ik een afspraak heb dan probeer ik iets eerder uit huis te gaan. Afspraken zoals dit vandaag, dan gebruik ik wel de app, dan wil ik zeker weten van hoe laat kom ik aan.”

18.5.3. Mood dependent choice

Some people take usually cycle or walk to some places, but when they are tired or hungover, they sometimes take public transport instead.

> P2: “ik was brak, en toen wilde ik sporten, en toen dacht ik ja, ik heb geen zin om te fietsen, dus toen ging ik met de tram”

> P10: “Ik werk in West, ik woon zelf in Noord, dus ik kan vaak gewoon fietsen, en dat is het snelst. Als ik heel moe ben dan maak ik daar nog wel eens een uitzondering voor, dan pak ik tram 8, dan doe je er 20 minuten over naar de buurt van mijn werk, en dan ook weer 20 minuten terug. Dat is dan in plaats van 10 a 15 minuten met de fiets. Het ligt dus een beetje aan mijn bui.”

18.5.4. Weather dependent choice

Choosing to take public transport instead of biking or walking when the weather is bad (heavy rain, snow, stormy). However, when it makes you a lot slower, some people still just take the outdoors option and try to get to the station or stop quickly.

> P4: “De volgende dag ging ik naar werk en dat doe ik meestal op de fiets, maar met de kou en het regende, toen ben ik met de metro

gegaan. Dat is drie haltes.”

> P5: “Wat bij mij vaak bepaalt wat ik ook ga doen, met de auto, lopend of de tram, of OV neem dus, is de weersverwachting, is het koud, regent het, is het mooi weer.”

> P6: “Het regende ook echt super hard, en ik dacht van ja, ik kan sowieso nu niet de fiets pakken, dus ik wacht wel (op een vertraagde metro)”

> P7: “Wat speelde mee in de keuze, het weer, het was weer heel erg koud aan het worden, het is dan wel lekker makkelijk als je dan de auto in kan stappen”

> P8: “(als het regent) dan ga ik gewoon heel hard doorfietsen haha. Het is maar een klein stukje. Tot nu toe ben ik nog niet doorweekt geraakt, haha. Ik sta nu om 7u 's ochtends op, dat vind ik wel vroeg genoeg, en als ik dan een tram moet pakken naar het station toe, dan ben ik én langer onderweg én is het minder flexibel, omdat je niet kan weggaan wanneer je wil.”

> P10: “Ik werk in West, ik woon zelf in Noord, dus ik kan vaak gewoon fietsen, en dat is het snelst. Als het echt slecht weer is maak ik daar nog wel eens een uitzondering voor, dan pak ik tram 8, dan doe je er 20 minuten over naar de buurt van mijn werk, en dan ook weer 20 minuten terug. Dat is dan in plaats van 10 a 15 minuten met de fiets. Ik ben wel een doorfietser, dus ik ga wel overall doorheen.”

> P12: “Bij Slinge heb ik de bus gepakt naar Zuidwijk en een stukje lopen omdat het sneeuwde.”

18.5.5. Clothing dependent choice

Women didn't like taking PT when they were wearing nice clothes. The car is preferable in that case.

> P4: “Zondag met de auto naar de kerk, dat is vijf minuutjes rijden. Dat kan ook met de bus, (...) het maakt uit wat ik aan heb of ik met het OV wil gaan.” P2: “herkenbaar!”

18.5.6. No public transport at night.. or at least nothing that's acceptable

The feeling of having to catch the last train before the night schedule starts is very stressful. In the city there is the night bus, but at certain age or time in life people just don't think it's worth it anymore. The night bus is often filled with gross, drunk and puking people.

> P2: “ik denk ook dat (de BOB-bus) op een bepaalde leeftijd dat gewoon er niet meer in

zit”

> P8: “flexibele vertrektijd, dat je niet hoeft te zeggen, ’s avonds op een feestje, sorry ik moet al gaan”

18.5.7. Peripheral areas are not that well served, as opposed to central areas

When living in a non-central area of the city, there often are not many choices for public transport stops.

> P5: “. Ik herken dat wel, ik heb in Poortugaal gewoond, dus dan had je maar één bus, en op een gegeven moment had je helemaal geen stadsbus meer, en dan moest je echt 20 minuten lopen naar de metro”

> P6: “maar als je in bepaalde gebieden, net buiten het centrum, ’s nachts of in het weekend is het bijna een afstraffing om daar te wonen, of je kan gewoon een halfuur op die bus gaan zitten wachten.”

> P9: “ik ging met de auto naar werk. Dat doe ik normaal niet, maar ik ging na werk naar oma om daar even te eten. (...) ze woont in Berkel..., dat ligt vlakbij Tilburg. Dat is een extra 35 minuten met de bus vanaf Tilburg, dan ben je nog wel veel langer onderweg. Als het dan al na werk is heb je niet zoveel tijd.”

18.5.8. Large bags or other items are hard to transport in PT, but still better than walking

Bikes, prams, or large (amounts of) bags are hard to transport in PT. The space is not really designated for it, or it is only accepted outside of peak hours. When it is accepted in peak hours, vehicles are often too full to carry all the stuff with you comfortably.

> P6: “Wat ik minder vond op de terugweg is dat het heel erg druk was, ik kon mijn kinderwagen eigenlijk niet kwijt in de metro, ik heb ’m er toch ingeduwd.”

> P6: “Boodschappen gehaald, beetje gewinkeld, en toen waren het ineens best veel spullen, dus dat ging niet helemaal goed. We hebben de bus terug genomen. Ik betaal dan wel voor een bus voor twee haltes.”

> P8: “Het was redelijk druk, maar niet vervelend. Ik kon niet in mijn eentje zitten zeg maar, ik had nog een rugzak en een plastic tas bij me, net wat meer spullen, als er dan iemand naast je komt zitten zit je wel zo alles in je hokje te proppen. (Ik gebruik die bagagerekken) niet heel vaak. Mijn rugzak zat mijn laptop in en een flesje wat die ik onderweg wil hebben, en die plastic tas ben ik dan bang dat er spullen uit vallen. Als ik een grote weekendtas heb gooi ik m er wel bovenin. Meestal niet dus.”

> P8: “En spullen meenemen, dat je één keer

je spullen in een vervoersmiddel moet doen en dan weer heen en weer moet met tassen enzo om het over te laden en stukken hoeft te lopen”

18.5.9. Excitement for electric steps

Many of the participants expressed their excitement for e-steps. They saw it as a fun yet flexible way that would be great in addition to faster transport modes in a multimodal journey.

> P3: “Dan de leuke dingen – ik zie dan een soort elektrische step, ja dat zou ik echt wel leuk vinden als daar bijvoorbeeld de RET zou zeggen, ga met de tram of de bus dat je dan bijvoorbeeld zo’n ding erbij kan nemen, die daar in de buurt is. Hoe ze dat willen doen weet ik niet, want je vindt die fietsen ook in elke sloot, maar het gaat om het idee.”

18.5.10. Using a car in the city is a struggle

Driving in the city centre is very busy and unenjoyable. When parking in the city centre, it is usually very expensive. Parking at P&Rs is cheap, but it is extremely busy there. You have to be very early to have a decent spot, or you have to park far away, or there might not be any space left. Therefore many people with cars opt for travelling to a P&R and taking the train from there. It is often free to park at a P&R when you continue your travel with public transport.

> P4: “Dat is makkelijker dan met auto, alle andere ouders komen al met de auto, dus dan is t weer veel gedoe.”

> P7: “Ik gebruik ook vaak de P&R als ik ergens heen moet, ook naar Utrecht ofzo, dan zet ik ’m bij de P&R. Dan ga ik in combinatie met de het OV, dan kun je gratis reizen.”

> P9: “Het is wel echt dramatisch om door Den Haag te rijden met de auto.”

> P12: “Ik hou ook wel van reizen met de auto ook wel naar de stad maar dan kun je niet parkeren, dus dan gebruik ik de metro meer”

18.5.11. Bike parking at stations can be a struggle as well

> P8: “Enige nadeel vind ik dat je ook hier ’s ochtends (op Rotterdam Centraal), dan ben je echt lang bezig met een plekje zoeken voor je fiets, dat is even vervelend”

18.6 Speed

18.6.1. High speed travel in the city

The amount of stops in between where you get on and where you get off annoys people.

One participant suggested a system like the variation in sprinters, intercities, and the IC direct, but then for metros: have some metros that only stop at the stations that are very crowded to speed up the travels.

> P1: “Bij de NS heb je dan intercity direct, dan kun je van Rotterdam in een keer naar Schiphol gaan zonder tussenstops. Maar met een tram of bus is dat moeilijker met allemaal haltes waar je doorheen moet, maar als je vanuit hier snel naar Rotterdam Centraal moet gaan, want hier werken wel veel mensen, een soort snelverbinding ofzo, dat is ideaal”

> P8: “mijn ideale vervoersmiddel heb ik getekend. Volgens mij zijn ze hier in delft testen mee aan het doen, zo’n vacuumbuis? Het lijkt me geweldig dat je in no-time van a naar b bent. Misschien lichtelijk onmogelijk dat je vanaf je huis met een liftje naar beneden kan, zo pjoeww, en dan aan de andere kant weer met een liftje omhoog”

18.6.2. Transfers: good connections please, and less waiting

One of the most hated parts of using public transport: having to transfer to another transport mode. When the connections are good, and people don’t have to wait long for their next vehicle, they don’t mind transfers that much. But when they have to wait long for their connection, or when they miss it (especially when it’s not their own fault), they get very annoyed or frustrated. Sometimes people accept a longer journey when it means they have to transfer less

> P2: “Als je ergens staat te wachten op de volgende, dat vind ik echt irritant, wachten”

> P8: “als je naar Hengelo gaat is het best wel een stuk, en dan kun je kiezen, of net iets sneller zijn met meerdere overstappen, of dat je langer onderweg bent met één overstap, dan kies ik toch voor één overstap dat je toch lekker kunt blijven zitten, ook al ben je wat langer onderweg.”

> P9: “De Stop&Go bus, dus die moet je aanvragen met je app. Die vind ik niet zo heel handig, een normale bus rijdt gewoon een route en dan kom je aan op het punt waar je moet zijn, en deze rijdt op basis van de oproepen die ie krijgt van mensen. De vorige keer moest ik dus eerst helemaal naar Bergschenhoek en daarna pas naar de metro, waardoor ik de aansluiting had gemist. Dat is wel een belangrijk punt bij deze reis, dat die metro bijna nooit aansluit op de bus. Van dat kwartiertje, 20 min die je met de metro naar Berkel gaat sta je vaak ook weer 10 min te

wachten”

18.6.3. Public transport detours are highly annoying

Especially apparent with trams, maybe because people can actually relate to the route, as opposed to metro routes that are underground.

> P6: “Mijn man kwam mij en mijn zoontje ophalen, en dat heb ik gedaan omdat er ’s avonds geen bussen rijden, en anders moet ik met de tram, die gaat eerst richting het centrum, en dan weer terug naar oost, en dat is gewoon 25 minuten om. Dat is niet zo handig. Met de auto is het maar 10 minuutjes.”

> P7: “Ik ga met de auto naar haar vanwege gemak, vanaf Overschie naar waar zij woont is echt 2 minuten rijden, met de bus naar Centraal en dan weer vanaf Centraal naar haar huis duurt het toch iets langer, dat is echt een omweg, dat slaat nergens op. Er was vroeger wel een lijn heen maar nu niet meer.”

> P8: “Ik heb ook het idee dat ik met een omweg ga. Of nou ja het idee, het is gewoon zo. Ik woon bij de tramhalte van de Schieweg en als ik naar het station ga maakt ik eigenlijk niet uit of ik ga lopen of met de tram ga, dat kan allebei”

> P11: “Met het OV is het met de tram een hele omweg, dan vind ik het makkelijk om met de fiets te gaan.”

18.6.4. Speedier travels lead to more free time

> P8: “maar aan de andere kant heb je weer heel veel tijd over om leuke dingen met je leven te doen”

18.7 Comfort

18.7.1. Too many people during peak hours

In peak hours, especially in the morning, people struggle with the crowds. People are less accepting of the crowds in the morning because they feel they still need to wake up or get started. The afternoon peak hour is experienced to be less busy than the morning one, and people are more accepting of the business.

> P5: “Het enige wat ik vervelend vind is dat de trams altijd zo druk zijn rond de spijtstijd”

> P7: “Wat ik minder vind is file, heel vaak druk in de metro, zeker ’s ochtends, ook al rijden ze vrij frequent, ongeveer 1 of 2 per 10 minuten

oid, sneller zelfs, maar goed. Je staat altijd echt best wel krap, vooral 's ochtends”

> P8: “De IC direct is 's ochtends altijd heeeel erg druk, dat doe je niet voor je lol (...) je krijgt er wel een afkeer van tegen in de spits reizen”

> P9: “De metro is wel echt elke ochtend, wat jij zei, echt ontzettend druk, ik krijg daar een beetje van die Japanse taferelen bij, zo van erin duwen”

> P11: “Voorheen werkte ik bij Alexander, dan hoefde ik niet over te stappen, nu moet ik elke dag langs Beurs en ik merk gelijk het verschil. En iedereen komt daar, die massa met dat overstappen, die drukte is er altijd.”

18.7.2. Nuisance experienced because of other travellers

Hearing their music, conversations or phone calls: unwanted, especially when sitting in the silence wagon.

> P1: “in zo'n stiltecoupé dat eh, mensen met oortjes gaan zitten of met zo'n hoofdtelefoon en dat hoor je dan galmen ja dan is t niet echt een stiltecoupe meer”

> P7: “Sommige mensen zijn dan erg asociaal, die lopen uitgebreid te ontbijten met croissantjes. Het zit het 'm er ook niet in dat je wat eet, maar dat je je omgeving normaal achterlaat. Je hebt wel eens mensen die dan dat zakje zo wegpleuren op de grond, of overal kruimels en dingetjes liggen, ze laten hun blikje liggen ofzo”

> P10: “uiteindelijk moet iedereen het ook gewoon zelf weten of je daar ontbijt of niet toch. Je bent toch in een openbare ruimte dus je kunt je wel overal aan gaan irriteren maar uiteindelijk heb je daar vooral jezelf mee. En het is ook vaak dat de meeste mensen zich wel gedragen maar die paar uitzonderingen maken het vervelend”

> P12: “En mensen die lopen te eten. Dat smakken, uh dat hoor je zo. Iemand was dan een banaan aan het eten, dat hoor je van ver”

18.7.3. In-vehicle climate

When it is cold outside, the heating in some vehicles (trams, metros) is on. With everyone wearing winter clothes, people experience this as being uncomfortably warm. Sometimes (e.g. in older sprinter vehicles) there is a lack of air conditioning, so the air is not nice. Sitting next to the door can help, but there is not always space in those seats.

> P2: “ik heb temperatuur er ook in staan, omdat de RET zet heel vaak de verwarming heel warm, terwijl het is nu superkoud buiten, dus als je binnenkomt in je winterjas, is het

heel warm”

> P5: “De temperatuur merkte ik inderdaad ook, dat vind ik echt vervelend. Ik heb het erg benauwd. Het liefst zit ik bij de deur, maar met de drukte is dat lastig.”

> P11: “Wat ik wel heb gezien is dat het heel erg warm was, vorige week, en als je je dan niet zo lekker voelt doe je je jas open en dan ga je helemaal zweten, dan denk je ligt dat nou aan mij? Het was wel heel erg heet heb ik ervaren.”

18.7.4. You've paid for a seat, so you want one

You have paid for public transport, so you want a seat! When the trip is fairly short (<4 stops?) people are less worried about this.

> P1: “Ja, je denkt, ik heb betaald voor je rit, dan wil ik ook zitten”

> P2: “Ja ik kan me voorstellen dat zeker als je met de trein moet, kijk ik hoef maar drie haltes, ik vind het niet heel erg”

> P2: “En ik zou het ook relaxt vinden als er altijd zitplek is, dat lijkt me echt top”

> P12: “(Ik vind het fijn dat) het is een eindstation, dus je kunt altijd gelijk zitten”

18.7.5. Less acceptance of lower service levels in the morning

In the morning, especially when going to work, people are still a bit in 'zombie mode', thus they are less accepting of the service of public transport not living up to their expectations.

> P2: “s Ochtends vroeg ben ik niet mijn allerbeste versie van mezelf, dan wil ik eigenlijk wel een beetje zitten”

> P5: “Nou je begint in je ochtend, dan met je nog niet heel fris, en dan hoop ik in de loop van reis vrolijker te worden.”

18.7.6. Transferring in the cold

When it's very cold, people are especially disliking of waiting at outdoor stops. At smaller stations or BTM stops there usually is little shelter against the weather.

> P3: “En dat ik eigenlijk op een halte meer een huisje wil om te wachten, de meeste haltes zijn gewoon open. Als ik naar de NS kijk hebben ze nog een soort behuizing er omheen, in plaats van alleen een dak”

> P8: “En ik moest wel lang wachten op het station, en het was daar heel erg koud, maar gelukkig was er ook een verwarmde wachtruimte, best wel luxe, dat zie je niet heel vaak, maar wel heel relaxt”

18.7.7. Trams and buses are uncomfortable

When travelling by tram and/or bus, people don't like it when they are shaken during their trip. They feel it's a part of travelling with that transport mode, but they don't like it. Especially when it's busy and you don't have a seat, you're constantly afraid of falling over. Trams are experienced as quite small, people don't feel they have enough personal space to sit.

> P3: "Bus minder prettig, het wiebelt heel erg, zeker als in het middenstuk staat, dan word je de hele bus door geslingerd."

> P8: "Ik kan me best wel vinden in dat heen en weer schommelen en schudden (van de tram), dat voel ik ook altijd. Ik vind het ook altijd wat krap voelen, smalle stoeltjes, smalle gangetjes en dingen, in Rotterdam is dat nog minder maar in Amsterdam is dat zeker zo"

> P12: "(het zou ideaal zijn) dat je dan in de bus gaat en twee stoelen voor één persoon krijgt, dan ga je lekker relaxen"

18.7.8. Having to hurry for public transport

> P11: "Maar je moet dus wel altijd je ov bij de hand hebben, want als je dan weer te laat bent uitchecken. Alles hoeft niet zo gehaast en opgejaagd. Het is alleen maar omdat het moet, niet omdat ik het leuk vind. In de tram zit je op elkaar"

> P12: "En ik houd er niet van om opgejaagd te worden, en dan zie je de klok, en dan weet je shit, ik heb nog 5 minuten, ik moet dan met de metro en dan uit huis"

18.7.9. Food, beverages and other stores at PT stops are highly appreciated

Grabbing a cup of coffee on your way to work just makes the trip that much better.

> P2: "ik zou het relaxt vinden als ik alles kon doen met lopen, icm de metro en tram. En ik vind het heel relaxt dat ik koffie kan drinken"

> P6: "Wat ik fijn vind tijdens de reis of tijdens de wachttijd is koffie. Op grote stations heb je dat altijd. Bij treinstations vaak, of grotere metrostations. (...) Ik wil graag een prettige wachtervaring, met koffie, croissantje, beetje winkeltjes, dat ik even iets kan doen. Dat maakt het wat prettig."

18.8 Demands of the task

18.8.1. Working while on your way

People use their laptop to work, mostly in

the train. In BTM transport working with a laptop is not really doable, so they use their phone to check their work mail or schedule. With work hours becoming more flexible, and work in general becoming more 'quality over quantity' oriented, people like to use their time in transport to handle work stuff. That saves precious time!

> P1: "ja ik kan op mijn iPhone mijn mail checken"

> P2: "en dan met je laptop (in de metro)? Want dat is best wel lastig"

> P3: "Wat vond ik fijn, werken in de trein. Minder leuk wel de langere reistijd, maar wat speelde mee met het maken van mijn reiskeuze, het niet kunnen werken in de auto. Ik heb geen zin als ik dan thuis kom van zo'n lange reis dat ik dan nog een hele werkdag weg kan werken"

> P5: "dat als je in de tram zit (...) je mail kan kijken van werk bijvoorbeeld, dat ik mijn agenda bij kan houden, of dat ik kan kijken waar moet ik zijn en hoe laat."

> P6: "het scheelt toch weer, dan hoef ik minder lang te werken. Ik heb op mijn kantoor geen start en eindtijden, je moet gewoon zelf weten wanneer je komt en wanneer je weer weggaat, niemand die controleert dat. Als ik de ene dag langer doorwerk kan ik de andere dag korter werken"

> P8: "dus ik heb 's ochtends gewoon de trein gepakt naar Hengelo, en ik heb in de trein gewerkt. Dat was wel fijn omdat ik nuttig kon bezig zijn in de trein, en dus gewoon mijn tijd goed kon gebruiken"

18.8.2. Relaxing in public transport

You can just sit and listen to music, read a book, eat something: taking public transport (especially the train) allows you to use the time to relax. You do not have to worry about getting to your destination, the train or other vehicle will take care of it for you. Especially when you travel in off-peak hours.

> P1: "Meestal is het wel zorgeloos, je stapt in, je wordt gebracht naar een bestemming, je hoeft niet zoals in de auto zelf je aandacht erbij te houden"

> P2: "Omdat je dan dus dingen kan doen voor jezelf als op je telefoon kijken of een boek lezen, ik lees heel veel in de metro, als ik kan zitten"

> P4: "Voor iets langere afstanden vind ik de trein wel prettig, kun je rustig zitten als je plek hebt. Daar is ook wel een beetje tijd aan gebonden, tussen 11 's ochtends en 9u 's avonds"

> P5: "dat als je in de tram zit je gebruik kan

maken van je apps om een spelletje spelen.”
> P9: “ik neem een boek mee, en ik ontbijt in de trein, omdat ik dan rustig kan zitten.”
> P11: “Met de trein vind ik het wel leuk, dan heb ik vaak een langere route, dan kan ik me lekker focussen, afzonderen, muziek luisteren, naar buiten kijken naar het landschap. Je kunt van alles doen, je hebt daar genoeg tijd voor, daar geniet ik van.”

18.9 Safety

18.9.1. Experiencing unsafe feelings on stations and in vehicles at night

Especially when travelling from or to a stop that is more remote, women (and sometimes men) don't like travelling with public transport at night. Waiting at an empty stop makes some of them uneasy. Men that start talking to them make them feel uncomfortable as well (where they wouldn't have such a problem with it at night). It is also the transport provider's responsibility to provide safety in these situations.

> P2: “Ik heb nooit dat ik me onveilig voel 's avonds, maar dat is ook omdat ik nooit dingen heb meegemaakt daarin (...) maar ik vind het niet verrassend om te horen want ik heb wel veel vriendinnen die dat hebben.”

> P4: “misschien dat er wat meer mensen lopen bij jou omdat je in de stad woont, en als je wat meer afgelegen woont, dan ben je vaak alleen in het donker”

> P3: “ik had ook, ja, zonder halte, onveilig in het donker. Je ziet hier één iemand op het perron staan, zinloos geweld is bijna elke week wel in het journaal. Ik hou er rekening mee, maar ik vind ook dat, ja ik wil niet zeggen alleen de RET maar gewoon alle vervoersmiddelen, OV-middelen daar rekening mee moeten houden”

18.9.2. A dislike for travelling in the dark

> P5: “En het donker. Ik merk dat ik daar, dat toch minder fijn vind om te reizen als het donker is. Als je overdag reist, dan heb je meer overzicht van buiten en je omgeving.”

18.10 Environmental impact

People that use PT enjoy the thought that their transport choices are a bit more sustainable, but it's doubtful that they let this influence their transport choice.

> P4: “Trein vind ik ook leuk om mee te reizen, het is duurzaam”

> P6: “Ik vind ook wel milieubewust, vind ik ook wel belangrijk, daarvoor wil ik best met het OV gaan.”

> P8: “het liefst elektrisch of meer dat het geen fossiele brandstoffen nodig heeft”

18.11 Activity level

18.11.1. Walking is great

... when the weather is nice. Knowing that you are doing something that's good for you makes you feel better already.

> P6: “Verder loop ik graag, omdat het ook een stukje beweging is, altijd goed, houd ik ook bij met een apple watch.”

18.11.2. Biking is great

... when the weather is nice. Knowing that you are doing something that's good for you makes you feel better already.

> P4: “Ik doe altijd bijna alles op de fiets. Het is ook gezond, wat beweging, frisse lucht”

> P8: “de fiets is altijd wel lekker om even die frisse neus te halen, gelukkig was het droog”

> P8: “Waar ik het liefst mee reis is de fiets. Ik ben er gewoon mee opgegroeid, als je de auto niet nodig hebt gebruik ik m ook niet, als het op de fiets kan doen we dat. Het is gewoon goed voor het milieu, het is gratis, meestal is het droog en als het een beetje miezert vind ik het niet heel erg, als ik niet doorweekt raak.”

18.12 Planning, travel information

18.12.1. Using a 'Real time app' to determine when to be at the stop or station

Several transport apps provide travellers with real time information regarding their vehicles. People use this to minimize the time they spend waiting.

> P5: “Ik maak heel erg gebruik van de RET app in de ochtend om te kijken hoe laat de tram komt, zodat ik niet te lang hoeft te staan wachten op de tramhalte. Het kan nog wel eens voorkomen dat de tram dan vertraagd is maar in principe valt dat reuze mee.”

> P7: “Ik gebruik vaak de RET app om te kijken wanneer de metro's rijden.”

18.12.2. Travel information must be reliable

Most people have become very reliant on technology for their information regarding travels. For public transport planning people often use 9292OV, even though they are not

very happy with the app.

> P1: "Ik ben niet zo'n fan van die 9292OV app, omdat ie vaak hapert, en hij herkent stationsnamen niet. Terwijl bij de NS ik nooit problemen heb met een station die hij niet herkent, maar met 9292 wel."

> P8: "Ik had die reis gepland met 9292, die app, daar plan ik altijd mijn reis mee, hoewel dat niet altijd even goed werk, merk ik, soms dan denk ik, volgens mij zit hier nog wel een optie tussendoor. Maar dan rekent 'ie een marge met overstaptijd, terwijl je de overstap toch nog wel kan halen"

> P12: "wat je zegt met die 9292, ik irriteer me eraan, het wijkt echt af van die tijden dat de metro vertrekt of de bus."

> P12: "Gister zou ik met de metro naar de apotheek gaan, maar ik had de metro gemist. En toen ging ik lopen en dat bleek ineens sneller te zijn, heel gek."

18.12.3. Planning car & bike routes

Often Google Maps is used to know how to drive or ride, to ensure that you don't make mistakes.

> P5: "Wat ik zelf heel erg fijn vind is dat je nu alles met apps en telefoon kan bekijken om je reis te bepalen. Dus dat heb ik ook opgeschreven. Als je met de auto gaat, dat je dan ook in ieder geval via google maps kan kijken om je route te bepalen, wat het snelste is om te reizen."

> P9: "En ik had google maps gebruikt omdat ik toch zeker wilde weten dat ik goed fietste."

18.12.4. Expecting information regarding changed vehicles

When a vehicle is delayed or doesn't come at all, people want to know why, and when or if it still comes.

> P6: "Ik weet niet, de metro reed gewoon niet, en ik kon nergens vinden wat er aan de hand was. Het maakt me niet uit wat er gebeurd was, ik wilde gewoon weten of er nog een metro kwam. Ze hadden dat even iets beter kunnen communiceren, van he, er is vertraging, houd er rekening mee."

> P9: "toen was ik blijven borrelen, en toen dacht ik om half 12, zal ik toch maar een op huis aan gaan, en toen zag ik op de 92ov app dat er nog twee treinen waren, ik dacht, ruim op tijd. Toen reden ze allebei niet toen ik op het station kwam, en dat stond nergens aangegeven op 92, dat is niet altijd even goed aangegeven in die app, dus dat was heel zuur. Er stond ook helemaal niemand om iets aan te vragen."

> P12: "Waar ik mij ook aan ergerde was dat de metro, via die 9292 app als terugreis, toen zou ie 4 over half zou ie komen, en toen kwam ie niet, toen moest ik ineens 12 minuten wachten, dat vond ik wel heel vervelend"

18.12.5. Not planning a journey, even though it's not a routine trip

Sometimes planning a journey is not necessary. This can be because of the abundance of public transport options close to you, or because you have a meeting where it just doesn't really matter to be there on time.

> P11: "Maar ik woon dus bij Blaak, en dan heb je daar of de tram, of de metro, of de bus. Dus ik kan in een oogopslag zien, de tram duurt te lang, dan loop ik naar de metro of de bus. Vandaar, ik heb teveel opties, ik hoef het niet echt te plannen haha."

> P11: "In het weekend ben ik naar Alexander gegaan, naar mijn zus toe, ik had niet echt een afspraak, dus ik ben maar gewoon ja, ik ging gewoon uit huis, en toen ben ik gaan kijken hoe laat ik daar aankwam, want het maakt niet echt uit."

18.13 Travel routines

18.13.1. Memorising the timetable

For their routine routes, people often know at what time their vehicle leaves.

> P2: "Ik weet het van de route die ik elke dag neem, die weet ik wel, die gaat om 11 over. En daarop kan ik dan doorrekenen, want hij gaat elke 10 minuten"

> P7: "Ik weet ongeveer inmiddels wel hoe laat de metro's komen, dus dan rijd ik net iets harder of zachter, afhankelijk van de tijd."

> P8: "Als ik dan tussen Schiphol en RAI dan net de aansluiting mis, meestal gaat er een sprinter naartoe, dan kan ik even de metro pakken, of dan pak ik de trein naar Zuid en dan het laatste stukje met de metro afleggen. Dan kan ik er zo een beetje tussendoor fietsen om zo op tijd op werk te komen. Inmiddels weet ik wel wat ik kan doen, dan doe ik het uit routine en uit mijn hoofd."

> P9: "Ik plan het eigenlijk niet meer, ik weet het laat de metro gaat en hoe laat de trein gaat, dus ik stap in de metro en dan ja, ik weet ongeveer hoe laat ze gaan, en als ik eentje mis of eentje eerder heb hoe laat die gaan"

> P11: "Ik plan het niet met 9292 OV, ik moet gewoon voor 9 uur binnen zijn"

18.13.2. Changing of the timetable

Most transport providers use a different time table during holiday periods in the summer or winter. People are not always aware of when this new timetable becomes active, and what the new timetable means for them.

> P2: “in de zomervakantie, dat heb je altijd aangepaste tijden en dan weet ik het gewoon niet. Nu weet ik heel erg wanneer de metro gaat, maar dan niet meer. Dan zeggen ze houd er rekening mee dat tussen die en die datum ze inderdaad dan rijden met de vakantieregeling. Meestal vergeet ik het alsnog op maandag. Maar op dinsdag weet ik het wel, haha”

18.13.3. Unexpected changes in the travel environment

When in a routine, people don't really look for new information anymore. Therefore they sometimes find out about these changes when it's too late.

> P2: “Alexander is een bouwput, dat is echt een mega zoi. Ik was even gedesoriënteerd, maar je kan wel alles vinden. Normaal loop je helemaal naar links, dus dat doe je dan in je automatisme, en toen kon er daar niet uit, dus toen moest ik terug. Maakt verder niks uit, maar dat was ff, ok”

> P7: “Echter de donderdag en vrijdag waren er werkzaamheden, dus toen ging ik met een omweg, die gaat over Den Haag e.d., die duurt een stuk langer. Het was van tevoren heel goed aangekondigd, daar was ik wel over te spreken. Ze hebben meerdere keren kaartjes uitgedeeld aan alle reizigers in de trein, zodat iedereen op de hoogte was, dat hebben ze netjes gedaan.”

18.13.4. Accepting a long or uncomfortable journey when you don't have a choice

Taking public transport can be a real hassle, but sometimes people feel they just don't have a choice. To cope with the hassle they get themselves to just accept it and create a neutral attitude towards an otherwise unenjoyable trip.

> P2: “soms moet je toch gewoon? Ik vind het wel vervelend dat ik er soms een uur over doe, maar ik heb niet echt een alternatief. Ik kan niet sneller komen waar ik moet zijn.”

> P4: “het is ook een beetje een gedachtegang dat ik geen rekening dat ik geen rekening hou met de tijd, anders ga ik me daar alleen maar

aan irriteren.”

> P7: “op een gegeven moment is het gewoon neutraal, dan doe je het gewoon. Je stapt gewoon in en uit (...) Het is wel mijn minst favoriete maar ik ben er wel enigszins neutraal in. Het moet, dus dan doe ik het.”

> P9: “Dus die route die ik neem naar Berkel die neem ik al heel lang, dus dat is een route die ik heel goed ken. Daardoor ben ik ook minder bezig met hoe lang ik sta te wachten enzo, mijn ervaring is dat er gewoon geen ideale manier voor te vinden is met die aansluiting”

18.13.5. Walking to BTM stops; walk, bike or BTM to train stations

> P8: “Ik fiets dan meestal naar het station toe.”

18.14 Transport motives

18.14.1. Groceries, shopping, carrying stuff

Big groceries or shopping trips are done with the car, for people that have one.

People that don't have a car take the train for shopping trips. Having to transfer multiple bags is perceived as a downside of using public transport when carrying much stuff. It is too much of a hassle to take all your bags from one vehicle out on the platform, walk with them, get them into your new vehicle etc. There is not much space in public transport vehicles for extra bags. In trains there are the luggage racks, but bags without zips or other closing mechanisms are not put up there because people are afraid stuff will fall out.

> P4: “vrijdag ben ik ook naar werk geweest, fietsend, en toen had ik een lekke band, dus toen ging ik met de fiets in de metro, dat vond ik best goed gegaan, je hebt van die speciale plekken waar dan wat meer ruimte is”

> P6: “Dat mensen echt tegen je aan staan. Ze kunnen ook nergens heen dus ze moeten je wel aanraken, maar dat vind ik echt heel naar. Je kunt ze ook niet weg blijven duwen. Of mensen met een heel grote rugzak”. P3: “ja en dan gewoon lekker ophouden die rugzak”. P6: “ja dat is echt vervelend!”

> P5: “Ik ben met de auto gegaan omdat ik later boodschappen zou gaan halen, dan kijk ik als ik grotere boodschappen moet halen neem ik meestal de auto mee”