Free-floating Bikesharing in Mobility as a Service

Graduation Project

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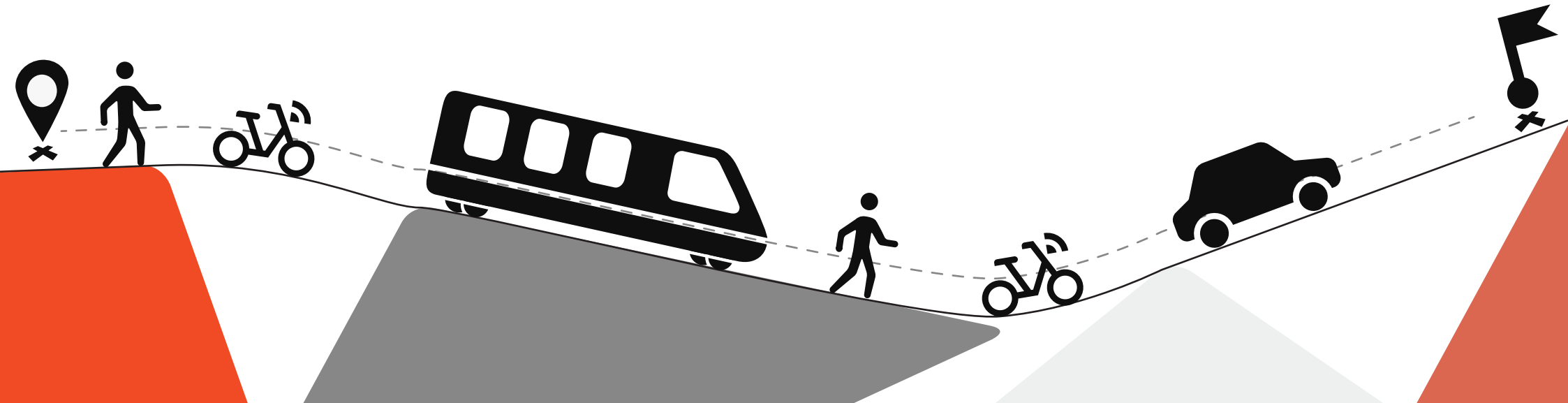

Preface

Welcome to reading my graduation project. It has been an honor working for Mobike the last months. During my graduation project Mobike offered the sweet spot between business and research. I was able to offer Mobike an analysis of what their way forward should be, while also developing a concept of what the future of mobility in the Netherlands should look like.

During my project I enjoyed the expertise of my graduation team. Especially I would like to thank the following people:

Ronald Haverman
Deborah Nas (Chair)
Pinar Cankurtaran (Mentor)
Sven Boor

Executive summary

The aim of this graduation project is to determine how Mobike can be successful in the Netherlands in the short-term and how Mobike can be successful in the long-term. To answer these questions, in this project research has been conducted on the users of Mobike. Next to that the environment of Mobike has been analyzed, after which a vision has been created about how free-floating bikesharing fits in the mobility of the future.

With the analysis of the environment of Mobike and the user research, the short-term changes for Mobike have been determined: Improving the product on both physical and service level to ensure that Mobike will appeal better to the Dutch users, and increasing the number of cities in which Mobike will be available. Doing so will help Mobike to achieve critical mass. This critical mass is needed to grow fast and thus become successful in the short-term. Improving the product and service also ensures that Mobike can develop a strong brand image and that it is known for their reliable, always available means of urban transport.

To become successful in the future, Mobike is in need of a better grasp of how mobility in the Netherlands will look like in the future and how free-floating bikesharing initiatives like Mobike fit into that future. Together with stakeholders of this future, a vision has been designed of how the customer journey of bikesharing will look like in the future. It also became clear that Mobility as a Service (MaaS) will be part of that future. To ensure that Mobike can benefit most of this MaaS development Mobike has to change its product, service, and business model. Although MaaS will be part of the future, by still offering free-floating means of urban transport through their own application, Mobike can ensure that it thrives best in the market of the future.

Both the findings of how to be successful in the short-term and how to be successful in the long-term have been put in a Roadmap. By following the roadmap, Mobike ensures that it can successfully participate in the Dutch mobility of the future now and in the future.

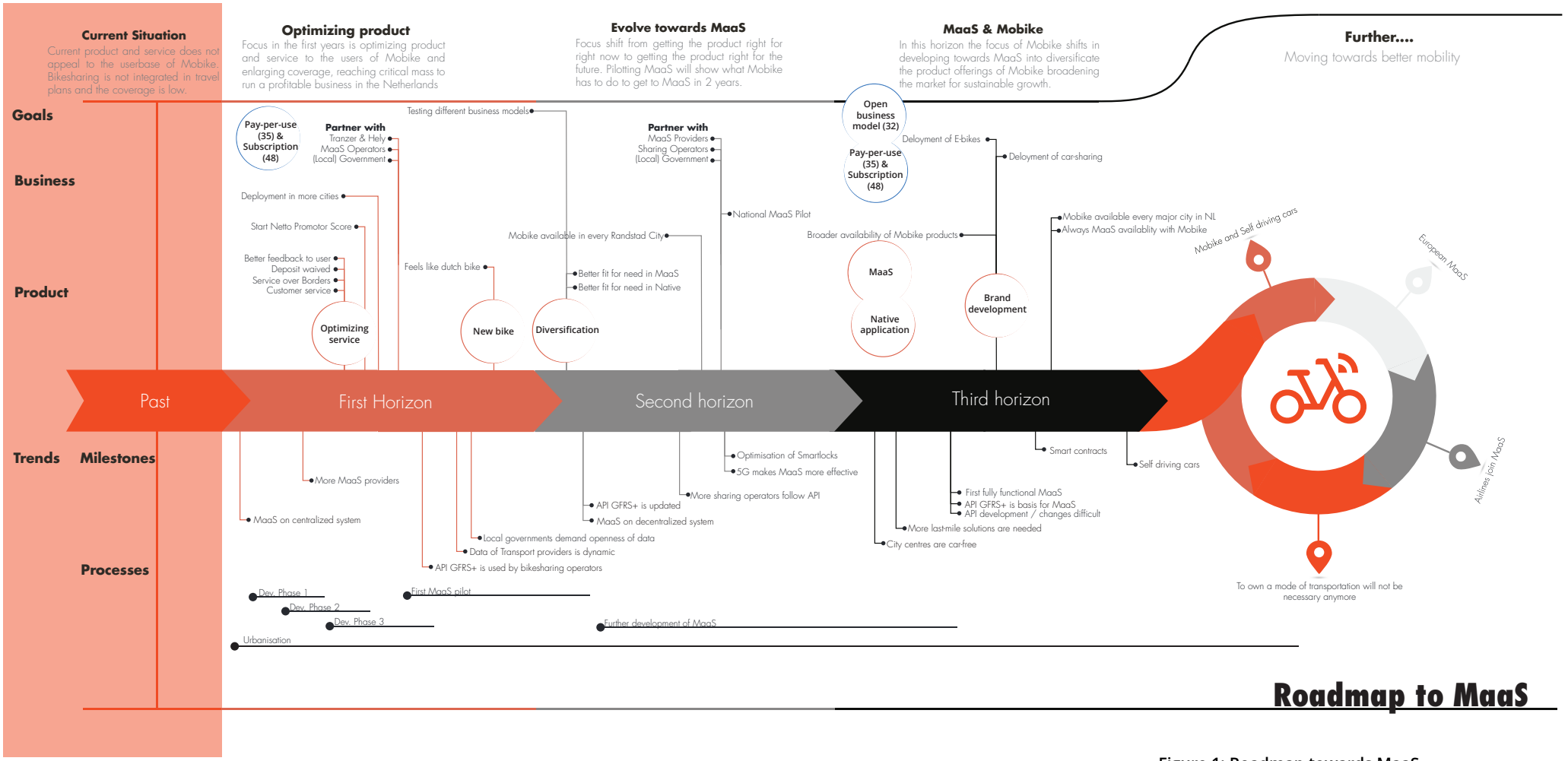

Figure 1: Roadmap towards MaaS

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1. THE PROJECT

In this section the setup of the graduation project is discussed. The following chapter will give an introduction to this project, clarify the problem definition and explains the scientific relevance of this project.

GRADUATION PROJECT

Introduction

In the last decades, the way consumers look at "stuff" has changed. Instead of owning property, consumers increasingly prefer to pay for the temporary use of objects. This development brings about new types of business models and different approaches for businesses to operate in this new "Sharing" economy. (Bardhi et. al 2012) Mobility solutions also follow this trend (Jittrapirom et al., 2017). Mobility as a Service (MaaS) concepts combine different modes of transportation to offer a tailored mobility package, similar to a monthly mobile phone contract and include other complementary services, such as trip planning, reservation, and payments, through a single interface (Hietanen, 2014; Jittrapirom et al., 2017).

Mobike is one of the biggest bike-sharing companies in the world. Mobike started in China, but since 2016, Mobike's iconic bike with orange wheels can be found in more and more cities across the globe. In 2017 they entered the Dutch market by starting to deploy bikes in Rotterdam, and since March 2018 Mobike deploys bikes in Delft. Its rapid growth made Mobike grow from the small startup is was at the beginning of 2016 into the big multinational it currently is. Mobike assigns itself the following mission:

"Imagine a world where you can pick up and leave a bike at your convenience. Enter Mobike: a bike sharing service to fulfill urban short trips - anytime, to any legal parking destination - by combining innovation and today's IoT (Internet of Things) technology. Mobike is green, reduces congestion, and continually strives to improve the quality of city life.

Mobike provides an affordable means of shared transportation for convenient short urban trips while reducing congestion, and our city's carbon footprint. These combined - Mobike improves the quality of city life."

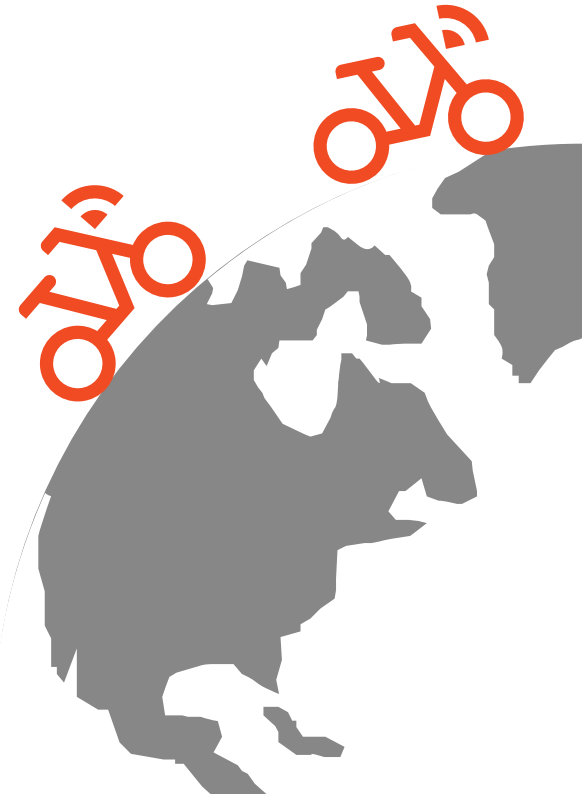
> *"The aim of this project is to find answers to the questions; what are the first steps Mobike must take to be successful in the Netherlands in the short term, and how can Mobike be successful in a MaaS future?"*

Mobike sees itself as being part of the future in which users switch from ownership to more the sharing community. Mobike recognizes that the Netherlands is the front-runner in the biking community; that is why Mobike wants to be successful in the Netherlands.

Problem definition

The Netherlands already has a significant history with bikes. Bikes play a significant role in the daily life of Dutch people since it is a standard way of transportation. In 2012, for instance, 26% of commuting was done by bike (Mobiliteitsbalans 2012), in other countries where Mobike operates these numbers are drastically lower. In the US transit by bike makes for only 1% of the total number of transits (DiDonato 2002). This percentage is only 2% in the UK (Mobiliteitsbalans 2012) and 12% in China's cities (Cherry 2007). Since the Netherlands already has an established biking culture, it is clear that Mobike needs a different approach to the market.

Mobike acknowledges that the Dutch market is in need of a different approach than the one they use for other countries. In addition to the physical



differences between Dutch people and the users of the cities that Mobike currently operates in (Dined 2017), the reasons why Dutch people would use a Mobike are different as well. (Shaheen et. al 2010, Midgley 2009). Here in lies also the knowledge gap of Mobike. Who are the customers of Mobike? Why would Dutch people still use a Mobike? Moreover, what is essential for Mobike the be successful in the Netherlands?

The Dutch transport ecosystem is changing as well. With more and more MaaS initiatives emerging, it becomes evident that Mobike will be involved in this ecosystem as well. Although MaaS is widely discussed, there is still no concept in which all stakeholders come together and move forward.

So how Mobike can be successful in the Netherlands is not clear. Getting that insight is the goal of this project for Mobike.

The Result / Final design

The final result of this project will be a roadmap for Mobike to be successful in the Netherlands. Although Mobike is in need of knowledge how to be successful now as well as into the future; the most emphasis in this report is put on the question how Mobike can be successful now. Mobike argues that without this knowledge it cannot grow towards a future, since there is no sustainable business to grow upon.

The process

Creating a roadmap towards a future sounds quite vague. To make it more concrete a systematic approach has been used. This approach is devided into three phases:

Phase one: Research

In this phase, the context of bikesharing is researched: a literature review of how bikesharing looks like, what the sharing economy is, how MaaS has developed over time and how platforms should be designed is presented.

Next to this, research tackling the research questions proposed by Mobike is conducted. Mobike is in need of knowledge of who their customers are, what their characteristics are and what they want from Mobike. Therefore during the research phase, exploratory research is conducted to find out exactly this.

The research will show Mobike where they should focus on, on the short-term to be successful in the Netherlands now. It will explain what Mobike should change to their product and service combination to appeal better to the users of Mobike and to become competitive on the short term. The research will also show a glimpse of how the future of mobility in the Netherlands will look like.

Phase two: Analysis

In the analysis phase, Mobike and its environment are analyzed using various tools and methods. With these tools and methods, the competitors of Mobike are determined, the stakeholders are explained, the users and their customer journey are touched upon as well as trends that will come into play in the future, what a regular Dutch bike looks like and which cities are potentially interesting for Mobike to deploy in.

Phase three: Design

To stay competitive and on top of the opportunities that arise, Mobike should be aware of how the bikesharing culture in the Netherlands will look like in a few years from now. Therefore in the ideation phase, a future vision will be created to show how the future will look like for bikesharing in the Netherlands and thus what Mobike should take into account. By conducting several creative sessions with different stakeholders that will come to play in the future, a future vision can be created.

The flow of the report

There are three main parts in the report; Research, Analysis and Design phase. In every graduation project there are four different stages; Discover, Define, Develop and Deliver. Figure two shows how the three different phases that are used in this project are divided over the four different stages of the graduation project. The report, is structured in the following way:

Introduction

Who is Mobike?
(...-...)

Research

Literature review
Exploratory Research
(...-...)

Analysis

Analysis of users
(...-...)

Design

Design process
(...-...)

Roadmap & Final design

Next steps for Mobike
(...-...)

Enjoy Reading!

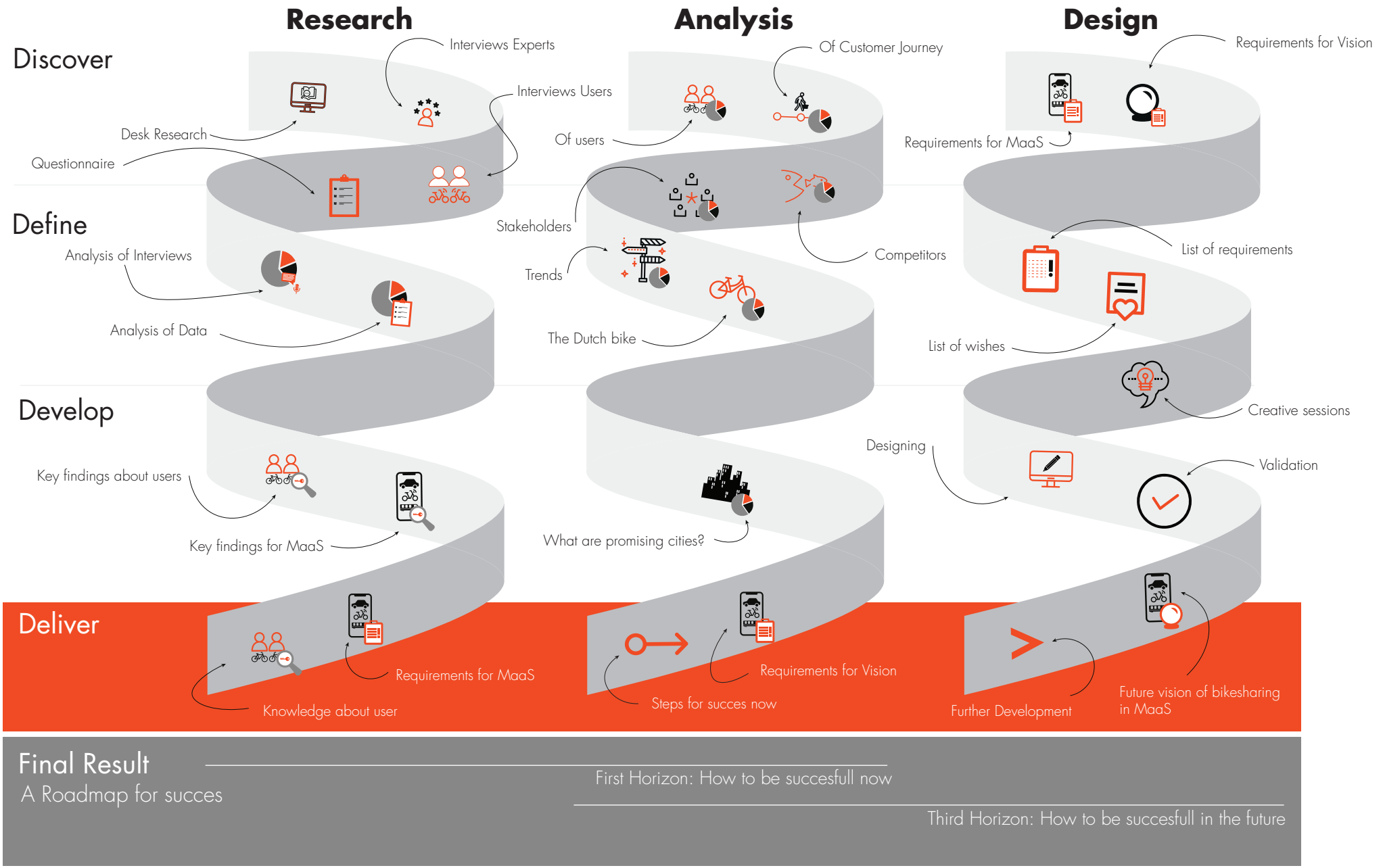


Figure 2: The graduation process

2. WHO IS MOBIKE?

In this chapter Mobike is shortly explained. Who is Mobike what do they offer to their users. This chapter is ended with an business model canvas which is a summery of the desk research that is presented here. Knowing who Mobike is, puts the research in perspective.

Introduction

Mobike is a Chinese scale-up founded in 2016. In the last two years, Mobike grew from the small start-up it once was to the multinational it currently is. Since their first launch in China, they have moved their bikes all over the world (figure 3).

Different parent companies have owned Mobike, currently, it is owned by Meituan-Dianping. This parent company focuses on Online retail. It holds several services. Meituan-Dianping is a daughter company of Tencent, one of China's biggest technology companies.

Mobike's mission:

"Mobike provides an affordable means of shared transportation for convenient short urban trips while reducing congestion and our city's carbon footprint that improves the quality of city life."

The organization

The headquarters of Mobike is based in China. In China, all products and services are managed, decision making is done, and future developments are started here. Currently, around 1000 people are working for Mobike, within every country an operational manager with a crew to keep the bikes up and running, a general manager, a strategist that knows the countries market and a marketer.

European business is mostly managed out of the UK where there is an office with a marketing team, HR team, and some technical development. The Netherlands is led by Jan van der Ven, with an operational manager Rick Smeedings and with Ronald Haverman on strategy and marketing. Besides strategy and marketing, Ronald also manages two students doing their graduation project for Mobike. In Figure 4 an organizational structure can be found.

To give a quick overview of how Mobike works, in the following chapter the product and service of Mobike is explained and how they do business.

Figure 3 Countries Mobike is active in (retrieved 21th of June)

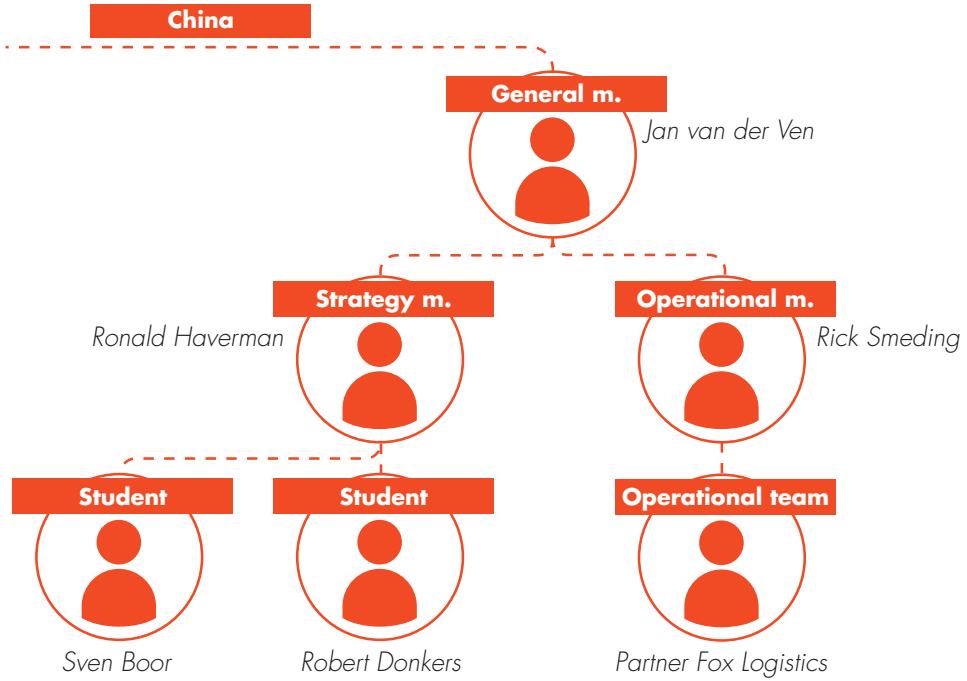


Figure 4 Organogram Mobike NL

The Product

As explained in the mission of Mobike, Mobike offers a cheap means of shared urban transportation. Mobike has several mobility solutions. They do both bikesharing and carsharing. In the Netherlands, they limit their efforts in bikesharing initiatives.

Mobike's product service combination exists of two parts. On the one hand, Mobike has bikes. These bicycles are randomly distributed throughout cities that Mobike operates in. On the other hand, Mobike has an application for Android and IOS so users can look-up bikes, reserve a bike (to a maximum of 15 minutes), pay and unlock bikes.

Unlocking goes by scanning the QR code on the bike, and the electronically controlled mechanical lock will pop open.

After biking to the desired destination, users must lock the bike like any regular bike. The lock will sense that the bike is being locked, give feedback to the user by a sound and the trip will automatically be ended.

Mobike has several types of bikes operational. In the Netherlands, they use version 3.0 (see Figure 5). This version 3.0 is a larger bicycle, which could accommodate both small and tall people. Although this bike is already bigger than the first version, the cultural differences make that the bikes are not as big as regular Dutch bikes. Chinese people prefer the option to put both feet on the ground when not riding; this is different in the Netherlands, where people put one foot on the ground and one foot on the pedals, giving the opportunity to have bigger bikes.

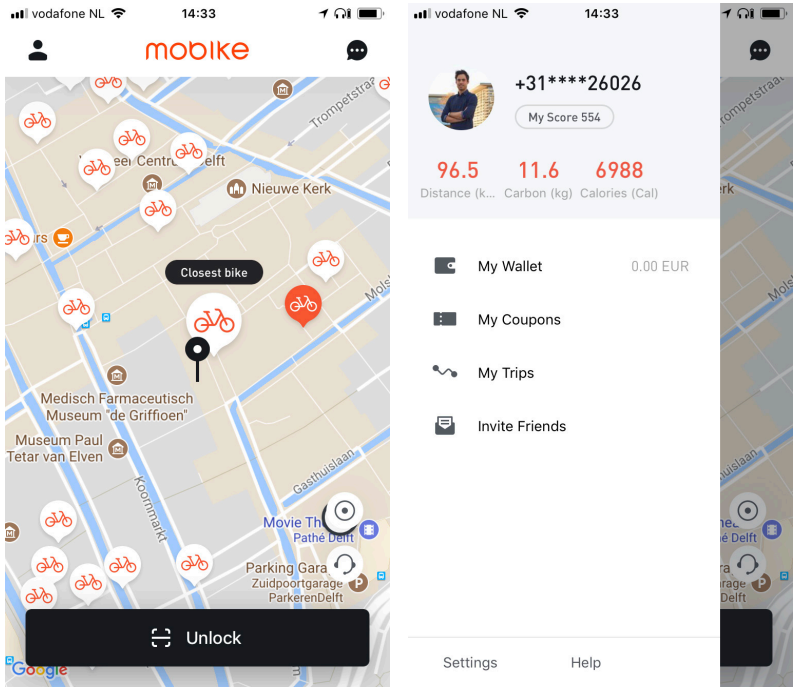


Figure 5 Pictures of the digital interface

Figure 6 Picture of Mobike Version 3.0 in Delft

Photo of Mobike's social media when launching in Rotterdam

The Price

Mobike uses different prices per country. Different cultures and different currencies make them non-comparable. The amount is determined with data and adjusted to the buying power of citizens.

When users log-in for the first time in the application, users have to pay a deposit of five euro before they can use the bikes This deposit will be refunded when users stop using the Mobike and apply for the refund.

Mobike offers two choices for paying for the use of their bikes. Users can either pay per use which costs 1,- euro per 20 minutes of use. There is also the option of buying a subscription. Which currently costs around 10 euro per 30 days.

Important is that Mobike uses a credit system, and the subscription is paid by via that credit system. Whenever users want to extend their subscription, they have to top-up their balance. Either via Ideal or credit card.

Since Mobike is still a scale-up the right amount of money that people want to pay using the Mobike, is yet to be determined. Mobike does this through data-driven decision making. The optimal price is determined by combining the rate of growth with that of the price. The downside of this is that the price fluctuates a lot and gives a negative experience when the price is too high. Users also emphasize this fluctuation as not favorable in Interviews.

Price strategy Mobike

	Subscription	Pay-per-use
Deposit	€5,-	
Costs	€9,90 per Month	€1,- per 20 min

Table 1 Customer Journey of Mobike

The Promotion

Mobike owns several accounts on social media. Next to that, since the product/ service is relatively new, it is also widely discussed in media.

Partnerships with other companies also help to reach new users, either by being part of their communication to the company's user base (e.a. Newsletter of VodafoneZiggo to their customers) or via communication of company to their employees.

The Place

Mobike uses a free-floating distribution. Free-floating means that users can grab any Mobike they see and park wherever they want to. Mobike distributes the bikes during the initial launch on spots where Mobike expects many users will travel through. Mobike does not use predetermined parking spots like other companies but defines certain places where parking is promoted (Figure 5).

Mobike offers the opportunity for local governments to allocate certain spots where users are not allowed to park their bikes (Figure 7), which is enforced by Mobike through a point system. It is also communicated back to the user when they do not follow the rules set by Mobike.

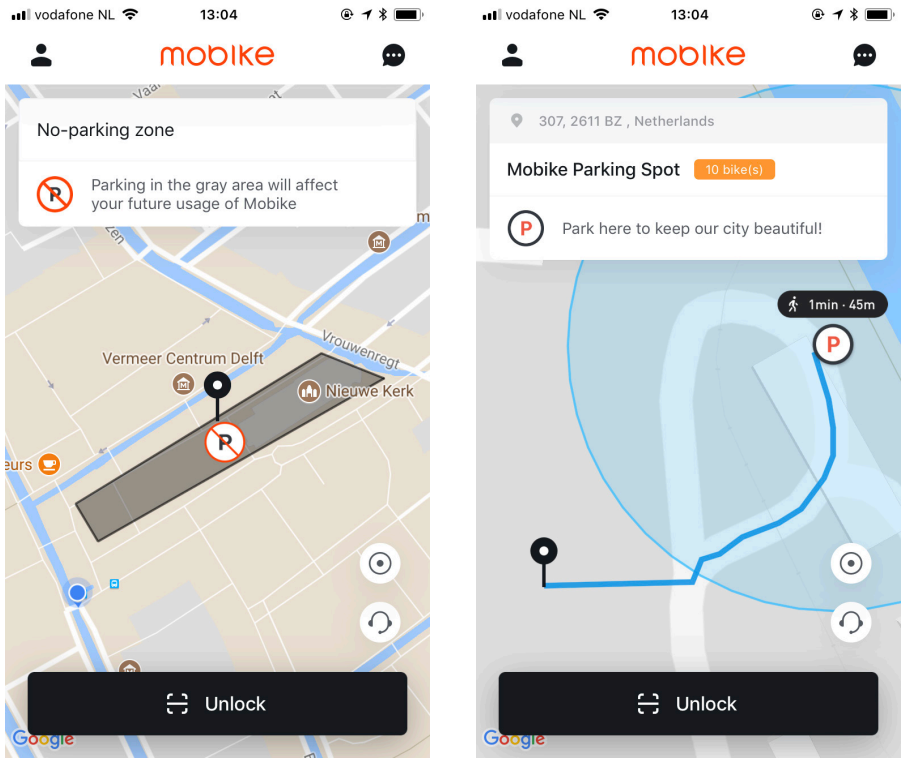


Figure 7 feedback on where users cannot park or preferred locations to park their Mobike

Photo of Mobike's social media when launching in Rotterdam

The business model canvas

To give a quick wrap-up of how Mobike operates. A business model canvas is presented. In a business model canvas, the way the value proposition from the company is delivered to the user is explained. The value propositions being:

Offering an always available means of transportation

Mobike uses its bikes and application to channel this value proposition to its customer; building its customer relationship on a digital environment.

Mobike put an effort in the relationships with municipalities and policymakers since they have seen what the lack of this relationship can do for your concept when executed poorly.

Being a startup, Mobike uses an agile approach to the market in which optimization of operational costs is a primary activity. In this phase of Mobikes as a scale-up, it is still dependable on the initial investments. Doing as long as possible with this amount of money is essential to becoming successful.

By starting local partnerships, Mobike can outsource some of the operational activities like deployment, repairs, and redistribution.

All of the above cost money, Mobike earns this money back by users paying per trip or using a subscription model.

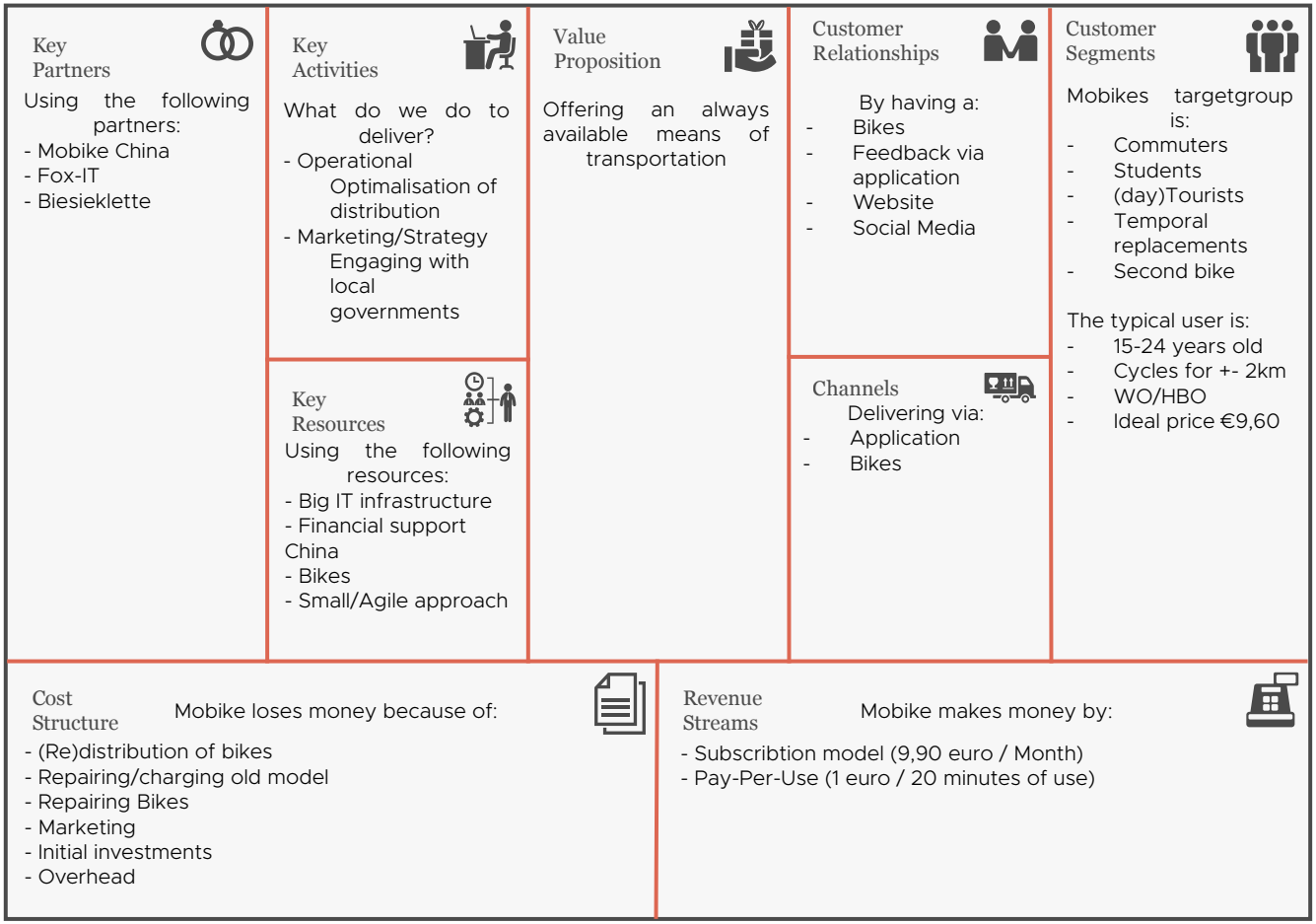


Figure 8 business model canvas of Mobike

3. RESEARCH PHASE

The goal of this graduation project is to make Mobike successful in the Netherlands. For the short-term, this means determining factors that make Mobike a success now, or factors that inhibit success now. For the long-term, this means developing a future vision of mobility in the Netherlands in five years to where Mobike should move towards.

The goal of the research is to firstly determine with desk research which factors are essential for Mobike to be successful on the short-term and the long-term, and secondly to determine barriers that users see that inhibit the current success of Mobike.

Outline Research Phase

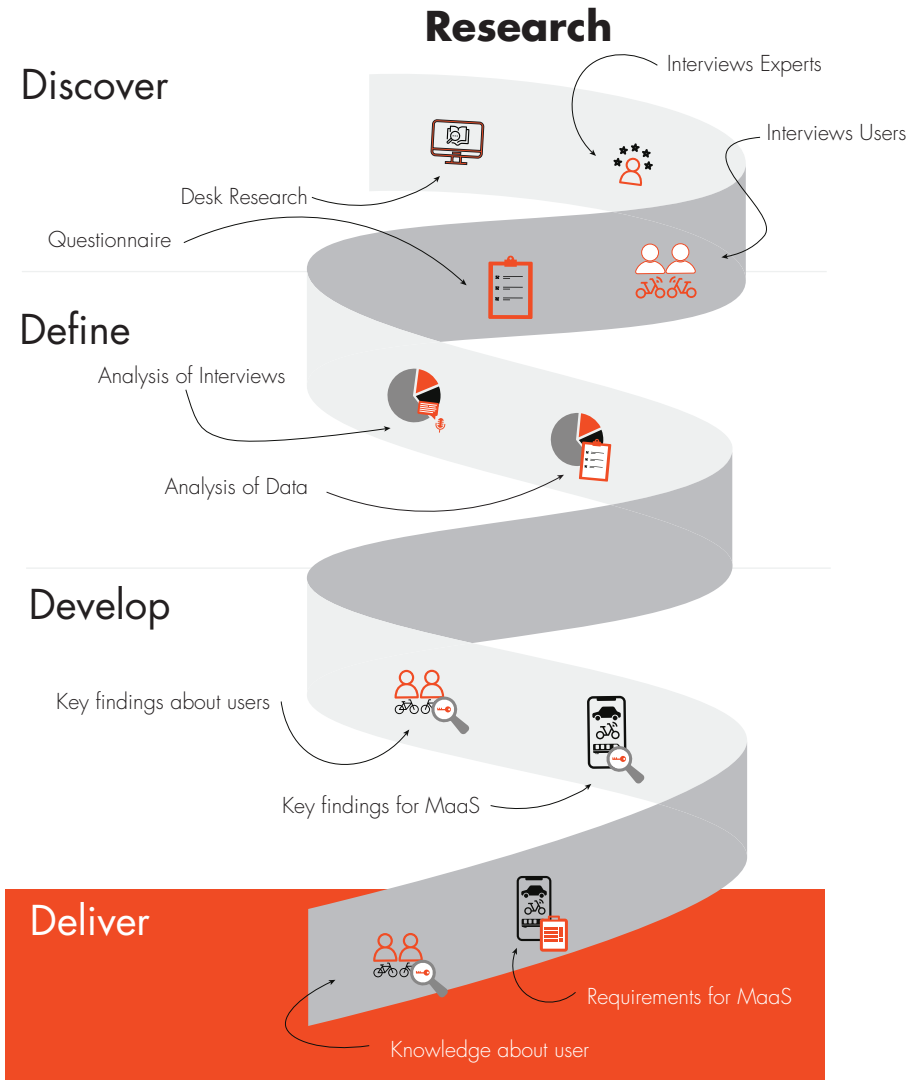


Figure 9: structure of research phase

3.1 LITERATURE REVIEW

In this chapter the context of the graduation project will be explained. The three different subjects that will be explained are: The sharing economy, bikesharing in general and the platform approach of MaaS.

THE SHARING ECONOMY

A quick scan through the market space and it becomes evident that buying goods is not the only way to allow consumers to use and consume goods. Examples are for instance; Netflix, Spotify, and Uber. Technological advancement like Web 2.0 makes it possible to look at the ownership of goods differently (Oakleaf, 2009). Botsman and Rogers call this the “sharing economy”. (Botsman & Rogers, 2010). Allen defines the sharing economy as a critical mass of people willing to share their goods with peers, trust between strangers, and a belief in the value of sharing with others (Allen, 2016).

The technological development like file-sharing, open source software, peer-to-peer financing and online collaboration makes it possible to share physical and non-physical goods and services through various information systems on the internet (Oakleaf, 2009). This new way of “sharing” goods and services enables consumers to look different to the uses of goods and services which is also underlined by Allen who compared two case -studies of the sharing economy with this technological development (Allen, 2016). Both researchers observe the change but do not give clarity on why consumers shift.

Like Oskar and Sharon discussed in their book; various changes are visible in the way consumers value, look and use goods and services. In the past consumers sought products to identify themselves (Belk, 1988), now consumers seek products that help to become a more skilled, mobile, and autonomous person. Adding to that products must improve the individual, improve the world and be sustainable. (Oskar & Sharon, 2017).

Consumers look differently to the goods and services they use. However, what is driving this change? Oskar and Sharon explained that it has to do with the turmoil and instability consumers see in the world. This turmoil and instability caused a need for readiness, preparedness and a need for mobility. It also caused consumers to value post-material values, being more interested in relationships, satisfaction with life and their health. This rising interest is something that is not only observed on product level but also on the brand level, where social media is seen as the most important tool to leverage these new values to your brand (Yannopoulou, Moufahim, & Bian, 2005). With these changed needs consumers have, consumers look for products to satisfy these new needs (Oskar & Sharon, 2017).

The turmoil and fast-changing world, the technological advancement of Web 2.0 and the changing needs and values of consumers gave the opportunity for a sharing economy to become what it is today (Belk, 2013).

Figure 10: Pictures of different sharing initiatives:

1. Airbnb (Room sharing)
2. Blabla car (Car sharing)
3. Peerby (Stuff sharing)

Sharing vs. Access based products

Where both Botsmand and Rogers, and Allen define the sharing economy as a whole, Eckhardt splits the sharing economy into two models; sharing and access-based. He identified the most significant difference between these two is the object-self relationship and the rules that govern and regulate this relationship (Eckhardt, 2012).

Sharing

Sharing products is not a new phenomenon. In the past, sharing products was done between trustees, web 2.0 made it possible to share products safely between strangers (Oakleaf, 2009). A critical distinction between sharing and other models is that sharing is only done on a peer-to-peer basis. Although there is sometimes a third party involved regulating the exchange, sharing is done on an equal level. Sharing is done either consumer to consumer (C2C) or business to business (B2B) but never done business to consumer (B2C) (Cohen & Kietzmann, 2014).
Belk defines sharing as not defining the ownership of a thing as "mine" or "yours" but as "ours" (Belk, 2007). He also acknowledges that it does not have to be an object, but could also be intangible like power, time or knowledge.

Belk states that for sharing to be possible (Belk, 2013):

"There must be a feeling of ownership."
Since otherwise there is nothing to share, ownership is still a big part of sharing.

Moreover, according to Belk, the following inhibits sharing:

* Materialism, perceiving the sharable-good as important
* The perception that resources are scarce

Access-based consumption

In sharing Belk states, there is still a feeling of ownership. This feeling of ownership is what Eckhardt sees differently in access-based consumption. Although there is still an owner to a good, Eckhardt defines access-based consumption as transactions that may be market-mediated in which a transfer of ownership takes place (Eckhardt, 2012).

Although access-based consumption does not sound like a new emerging trend (rental companies are not new), like sharing, access-based consumption is enabled by web 2.0 (Eckhardt, 2012).

Eckhardt defines access through web 2.0 by the following statements:

* Consumers do not experience perceived ownership and avoid identification with the accessed object of consumption
* The predominant object-self relationship is that of use value
* A deterrence of brand community

The different relationships and their products

Where Eckhardt only observes the different relationships, Oskar and Sharon split these different relationships further down into different product and service types.

Oskar and Sharon define four different types of products. These four are essential for designers to understand since these explain not only the different relationships but also defines attributes which makes a specific relationship successful or not. The product types they define are:

* Perfect stuff | Stuff we identify ourselves with: Like your vinyl collection
* Flexible stuff | Stuff you need but do not hold any love for: Like your lawnmower
* Pleasurable engagement | Stuff that makes us feel good: Like clothes made without child labor.
* Familiar stuff | Stuff that you share history with: Like your childhood music

With these product types, Oskar and Sharon share attributes that define types of products.

Only "Flexible stuff" and "Pleasurable engagement" are product types that are fit for sharing or access-based business opportunities (Oskar & Sharon, 2017). Personal ownership defines perfect stuff and familiar stuff. Oskar and Sharon still see that people need the products in these categories to define them although as earlier suggested by Oakleaf, consumers are moving away from this

type of consumerism (Oakleaf, 2009).

Flexible stuff

Consumers seek products that combine mobility and versatility with physical products. Products that do not "weight them down" as Oskar and Sharon describe them. The attributes that connect with this type of product are:

* Versatile
* Mobile
* Innovative
* Non-ownership

These attributes are the same that West and Mace use, to explaining the success of the introduction of Apple's iPhone. (West & Mace, 2010). A product that very fast adopted the new sharing economy types of relationships (Oskar & Sharon, 2017)

Pleasurable engagement

Pleasurable engagement is described as products that are desirable and stylish but also "guilt free." This feeling of "guilt free" is underlined by the following attributes:

* Low environmental impact
* Company with a purpose
* Guilt-free
* Luxury

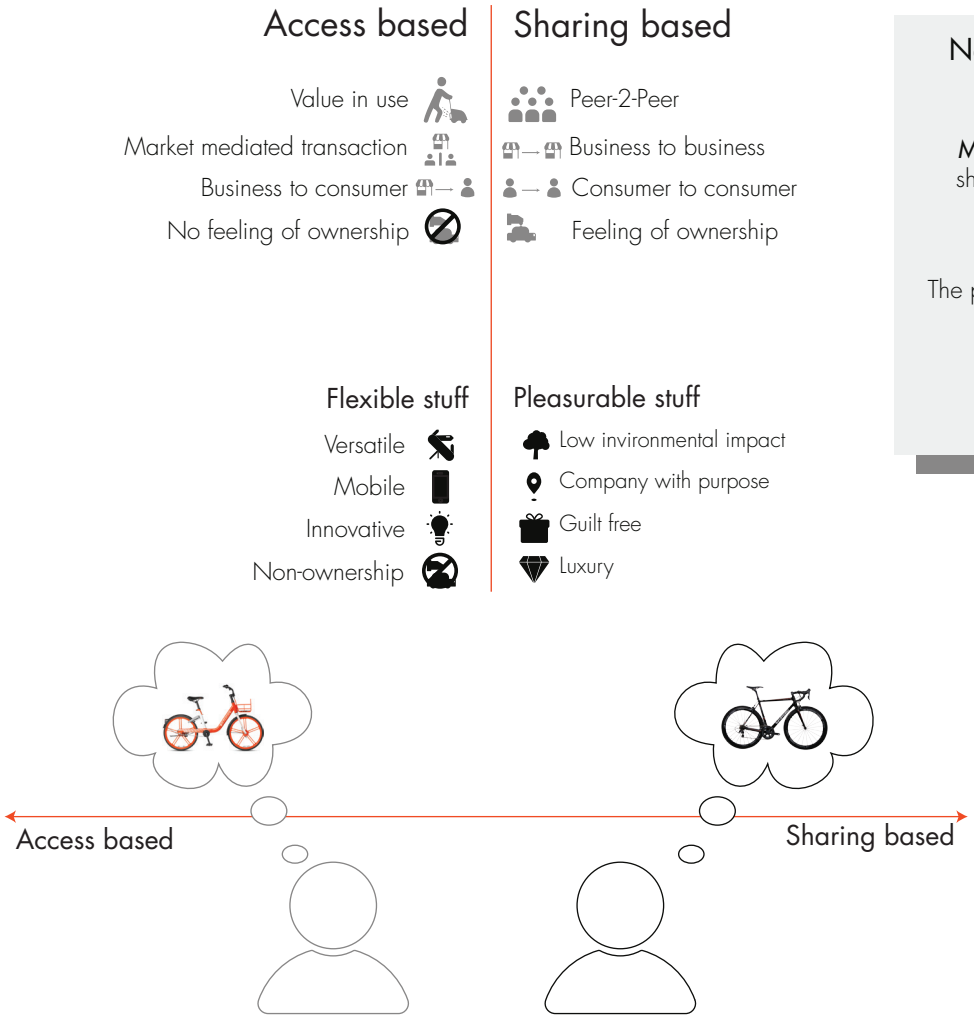
A new generation of Internet-empowered entrepreneurs who share values brought a new generation of products and services to the market, embracing the attributes above (Oskar & Sharon, 2017).

Developing new services for the sharing economy
Applying the above theories to new product development, it becomes clear what the focus should be on developing new product service combinations for the sharing economy.

When developing a "sharing" based product, the focus should be on the development of a way in which the peer-to-peer exchange of goods/values can be achieved. Since there is always a feeling of ownership, flexible stuff is less valuable in such efforts.

A right combination of the type of sharing and product types would be flexible stuff with access-based consumption. These share the same principles. A product service combination of these two should feel versatile, mobile, innovative and there is no shift of ownership involved. This lack of shift of ownership is also valuable for a business to consumer approach

Sharing economy



Negative influences on sharing

Materialism: Perceiving the sharable good as important

The perception that resources are **scarce**

Figure 11: summery sharing economy & product categories

THE DEVELOPMENT OF BIKESHARING

Embracing the concerns that consumers have these days; "Internet-empowered entrepreneurs" like Oskar and Sharon mentioned, also brought new business models to the use of bikes. Bikesharing is the offspring of this. Bikesharing; the shared use of a bicycle fleet, offers environmental-, social-, and transportation-related benefits (Shaheen, Guzman, & Zhang, 2010). To quickly introduce the latest advancement and developments in bikesharing, this chapter will lay out the history of bikesharing with a scope on Europe.

What is bikesharing?

Bikesharing has been there for many years. Although the rise of the sharing economy made it more popular in media, bikesharing initiatives have been there since 1965 (Shaheen et al., 2010). Shaheen divides the bikesharing initiatives into four phases:

Phase one

The first bikesharing initiative was the "white bikes" from Amsterdam. These were bikes painted white deposited all around in the city of Amsterdam. These bikes where stolen often or vandalized, which made them not such a success as hoped for. Although not a success in Amsterdam, a French offspring of this initiative in La Rochelle proved to be successful and still operates (Shaheen et al., 2010).

Phase two

With learnings from the first initiatives, in the second wave of bikesharing initiatives the bikes were unlocked by a coin deposit, which was returned to the user after returning the bike. The bikes where:

* Distinguishable bicycles (unique design or color)
* Designated docking stations
* Small deposits to unlock a bike
* Although it is still running in Copenhagen and was more successful than the first wave, bikes were often not returned or used for extensive periods.

Phase three

In the third phase, innovation on usability and information on availability improved the success rate of bikesharing platforms. Also, improvements are made in the billing of the use. Users now pay mostly for the time they used the bike instead for paying a fixed price.

Now

Currently, the fourth wave of bikesharing is in progress. Where the third wave enabled information sharing between the bikesharing platform and the user, the fourth wave added new extensions to that.
According to Shaheen, the fourth generation bikesharing platforms can be distinguished by the following attributes:

* Bicycles
* Docking stations (or not)
* Kiosks- user interface
* Bicycle distribution system
* Distinct bicycles
* Programs may include electric bicycles
* Specific docking stations that are more efficient
* An improved locking mechanism (e.g. "smart-locks")
* Touchscreen kiosks-user interface
* Bicycle redistribution system
* Linked to public transit smart-card.

Role of bikesharing

Something has to be said about the function of bikesharing in urban areas. Bikesharing not only hold a function for users but also can be of public service (Midgley, 2009; Savelberg et al., 2012; Van Boggelen et al., 2007). Adding to that is that the reasons for success or measure stick to determine success differ per initiative and country.

In general, bikesharing systems are implemented in urban areas to increase mobility choices, improve air quality and reduce congestion. Also, bikesharing is seen as a solution for what industry calls "the last mile problem" the lack of transport possibilities between other modes of transport, e.g., the way people commute to train stations or from the train station to their workplace (Liu, Jia, & Cheng, 2012). This general view is used as argumentation for every initiative, a small difference of significant impact can be noted between these initiatives (Midgley, 2009). Where in some countries bikesharing is seen as an introduction to cycling, countries in which cycling is already an important way of transit, it is seen as an extension of an owned bike (Savelberg et al., 2012; Van Boggelen et al., 2007).

This difference also puts expectations by stakeholders in a different light. In the countries where bikes already play a prominent role in

commuting, especially local governments do not directly see the added benefit of bikesharing platforms. In the case of the Netherlands, where some cities are so much overcrowded by bikes, there are not enough parking spaces for them (Borgman, 2010; Ditewig, van Lijden, van Wely, & de Graaff, n.d.; Ligtermoet, 2006), cities are not eager for more bikes.

That cities are not eager for more bikes, is also the problematic truth for bikesharing initiatives. Where entrepreneurs may initiate them, the success is much depended on the willingness and support of the local governments (Boggelen, 2000; Liu et al., 2012). Not only the local government is essential for success if they oppose the idea of bikesharing is one thing, but they could also even prevent the implementation of bikesharing initiatives throughout the city (Newmark, 2017).

Although the literature is quite clear about why bikesharing is beneficial for local governments, why still some block bikesharing initiatives, is not clear. Also, current research only shows the benefits for local governments and users, but, do not show benefits for other stakeholders.

Figure 12: Pictures of different bikesharing initiatives:

1. Wittefietsenplan (freefloating)
2. Melbourne bicycle share (Dockingstation)
3. Citybike (Dockingstation)
4. Paris Velo (Dockingstation)
5. OFO (Freefloating)
6. Velo-antwerpen (Dockingstation)
7. Donkey republic (Hybrid)
8. Gobike (Electic bike, dockingstation)
9. Mobike (Freefloating)

MOBILITY AS A SERVICE

With the trend of urbanization going on, the expectations society have for transport are changing. Also, the issues related to transport, emission, noise and congestion, urban mobility are becoming more and more a challenge for the future (Karlsson, Sochor, & Strömberg, 2016). Several interventions are implemented to sway individuals to use different types of transport or to encourage individuals to shift their travel behavior; these interventions only focus on one of the problems instead of solving them all. Most recently the concept Mobility as a Service (MaaS) is proposed as a collective solution, solving the problems mentioned above and delivering the best user experience (Hietanen, 2016). Mobility as a Service defined by Hietanen:

"A mobility distribution model in which a customer's major transportation needs are met over one interface and are offered by a service provider."

User research done by Hietanen, show the benefits to both users and local governments. The service that they provided in their pilot made participants feel they had more transportation alternatives available to them. Adding to that, they found out that, which also fits the trend that Oskar and Sharon found, purchasing a car or a public transport pass, can make people feel 'locked in' to choose that mode no matter the trip conditions.
Other findings that are notable from this research are:

* Lack of financial support is a significant barrier
* There are regulatory issues which form a fundamental barrier.
* Users embrace the idea of MaaS.

Successful integration of MaaS requires careful consideration of service design and attributes. It requires innovative and dedicated service providers committed to the challenge; it is evident that broader political and regulatory context must also be addressed.

MaaS as platform

At the base of MaaS is the platform that enables the interaction between the user and the different service providers and structures information and value streams from one participant to the other. More and more start-ups and corporates are moving towards a platform approach (Morvan, Hintermann, & Vazirani, 2016).

However, what defines a platform? Cicero defines platforms by combining two different views. A platform is (Cicero, 2016):

Platforms are a way in which companies and users can directly exchange information and value without the hassle of direct interaction but through preset interaction options that are bound by the rules and guidelines that are set in the software interface of the platform.

A platform is highly regulated and limited by the rules that the designers define, so in order to deliver a functional platform, they need to find the balance between what designers ought the user experience to be and the user feedback that they get (Cicero, 2016).

It is notable that until now platforms occur in a centralized way. Currently, more and more platforms rise are decentralized. The differences are noted in table 1.

	Centralized systems	Decentralized systems
Long tail layer	Users (peers in a marketplace)	Users (peers in a marketplace)
Platform layer	Web/App Platforms	Dapps
Infrastructure layer	As a Service / "cloud" infrastructures	Public blockchains / Distributed infrastructures
Resources layer	Owned and centralized	Distributed and leveraged

Table 2 crucial differences in centralized and Decentralized systems across the layers (Cicero, 2016)

Decentralized systems open up possibilities for platforms that include organizations with sensitive information.

According to Accenture, there are two base principles and five factors that influence the success rate of platforms profoundly (Morvan et al., 2016):

1. Create a dynamic platform ecosystem that enables the business to achieve critical mass
2. Foster a supportive enabling environment

Five factors:
* Digital user size and savviness
* Digital talent and entrepreneurship
* Technology readiness
* Open innovation culture
* Adaptive policy and regulation

For the platform, information from every service provider is needed. Getting everyone around a table and share is difficult. Even when setting the security issues aside, sharing information between different service providers is difficult (Benkler, 2018; Callegati, Giallorenzo, Melis, & Prandini, 2016; Hietanen, 2016). Why it is beneficial for all stakeholders to join a concept like MaaS, is researched and proven many times, but why different stakeholders hold barriers towards sharing, is not yet clear (Jittrapirom et al., 2017).

Cicero emphasizes the importance to leave original linear business/product design behind when designing a platform. To structure new platform design, Cicero offers a Platform Design Toolkit (Cicero, 2017). Combining this toolkit with the success factors suggested by Morvan could lead to a successful MaaS platform.

Maas as service

From a consumer point of view, MaaS has much potential in delivering a better user experience to traveling than current solutions do (Jittrapirom et al., 2017). Not only appealing to the sustainability wish of potential users, MaaS makes it possible to provide seamless door-to-door mobility for users. However, when does this become appealing to users?

According to research by Jittrapirom, a critical mass needs to be reached before the concept becomes profitable for entrepreneurs but also before becoming appealing to users. Getting this critical mass, can only be done if more transport providers join the platform. This trend results in the never-ending loop in which transport providers will only join if there is enough revenue and users will only use it if there are transport providers on the platform (Jittrapirom et al., 2017).

Conclusion

The literature review has two primary functions. It gives a clear overview of what is already known about the subjects that will be discussed in this graduation project, and the literature gives things that have to be taken into account when developing a new MaaS platform. The latter is most important for the graduation project. Important takeaways for the development of a new MaaS platform are:

The experience/interaction
The user experience must be better than current solutions

The customer journey must create the feeling of:
* Versatile
* Mobile
* Innovative
* Non-ownership

The platform must have:
* Business models that allow multiple sides (producers and consumers) to interact, by providing an infrastructure that connects them
* A governance structure, that determines who can participate, what roles they might play, how they might interact and how disputes get resolved.

Literature also shows what is essential for MaaS to be successful. The most crucial factor in this is reaching a critical mass. MaaS will only appeal to users if enough mobility providers join the MaaS platform.

3.2 EXPLORATORY RESEARCH

In this chapter the exploratory research that was conducted for Mobike is explained. The exploratory research answers who the users are, why they use Mobike and which barriers they see.

ESSENTIAL FACTORS FOR THE SUCCESS OF MOBIKE

Barriers that users see that inhibit the current success of Mobike

Introduction

The sharing economy is already widely in discussion for more than a decade. The drivers of why consumers move towards these new initiatives have already been investigated and explained (Belk, 2007). How typical product categories shift in this movement has also been researched already. Different types of sharing, different business models for sharing mobility, the use of bikesharing initiatives in different countries, case studies of carsharing and the various governmental perspectives of bikesharing have been researched over and over.

Still, one question keeps on the mind. The question is not why people would move to use the bikesharing initiatives, but the question is why people are not moving towards using bike sharing initiatives. The focus of this exploratory study will be to discover who the users of bikesharing are, what barriers they see for using bikesharing more broadly, how these barriers relate back to how people think about bikesharing and what they are willing to pay for such services.
This gap of knowledge is not only a gap in the literature but also for bikesharing companies themselves like Mobike.

Research questions

The starting point of this research is the knowledge gap of Mobike. Mobike asked whether answers could be found on the following research questions:

Why would Dutch Mobike users use a Mobike?

Also, what is the essential factor for Mobike being successful in the Netherlands?

Added to that, Mobike is interested in all the extra knowledge that can be gained about the product and service of Mobike and what users think of this product and service.

The questions are reformulated to fit the research better. In this research the following research questions are answered:

What are important factors that make fourth-generation bikesharing initiatives a success in the Netherlands?

What are the barriers that stop Dutch citizens from using a fourth-generation bike sharing initiative?

With sub-research questions being:

What are the different types of users that use Mobike?
What can we say about the relationship of barriers to the different type of users?

What can we say about the purchase intentions of bikesharing initiatives based on these barriers?

Also, Mobike is interested in:

What are other interesting findings to help Mobike to be more successful?

What defines purchase intention?

In the research questions, we speak about purchase intentions, according to Tsiotsue this is linked to satisfaction and loyalty (Tsiotsou, 2006). What is loyalty and how can we measure it? Cambridge gives the following definition to loyalty:

"Your feelings of support or duty towards someone or something."

Product loyalty is usually measured if a product has a stable place among others in the market space. Product loyalty gives an insight in what users think about your product and relates back to satisfaction. Usually, this is done by asking many questions trying to explain a black box, net promoter score

(NPS) has a different approach which currently is widely accepted as a better approach to explain loyalty then earlier attempts (Reichheld, 2003).

One question is asked to measure net promoter score:

"How likely is it that you would recommend this product to your friends and family."

With an answer possible on a 0-10 scale, the ratio is determined between promoters and detractors. The percentage of detractors, with a response between 0-6 is subtracted from the percentage of promoters, with an answer 9 or 10, this gives the Net Promoter Score. Companies that rate high on loyalty have an NPS score of 75 to 80 percent (Reichheld, 2003).

With the loyalty, we can define the satisfaction of a product. This satisfaction of a product can then be used in the model of Tsiotsue to determine purchase intentions.

What is perceived product quality?

To apply the model of Tsiotue to determine purchase intention, not only the satisfaction needs to be measured, but also the perceived product quality. Perceived quality is a global assessment characterized by a high level of abstraction and refers to a specific consumption setting (Zeithaml, Berry, & Parasuraman, 1988). Combining this perceived quality with the NPS rating which explains both loyalty and the product satisfaction (Yang & Peterson, 2004) the purchase intention can be explained (Tsiotsou, 2006).

Method

In this research, different research questions are formulated. Several different approaches are used to find answers to these different research questions. With different methods, data can be combined to create a broader understanding and create more profound insights to answer the research questions. In this study data of interviews with experts, interviews with users of Mobike and a questionnaire about bikesharing, in general, are combined.

Interviews with experts

In this study interviews with experts have been conducted. The goal of these interviews is to create a better understanding of the context of bikesharing. The experts are experienced in the field of mobility and can pinpoint specific factors that are important for mobility solutions like bikesharing initiatives to be successful. The interviews are open interviews; this is exploratory research; open interviews give the best opportunity to experts to express what they think is essential.

Interviews with users of Mobike

Where experts can say something about bikesharing in general, users have a better understanding of the product and service of Mobike and are better enabled to pinpoint the flaws in this product service combination better. For this research, a test group has been formed and given free subscriptions for a month of Mobike. These users experience the Mobike product for a month. Semi-structured interviews at the end of this month give insights into what this experience was like, and what forms barriers to continue using the Mobike product.

Questionnaire

Although the interviews with both the Mobike users and the experts already creates an understanding of which factors are essential for the success of bikesharing initiatives and which barriers users see in the use of the Mobike product. It does not explain to which extent the barriers influence the loyalty to bikesharing in general and to what extent these barriers affect the purchase intentions. A questionnaire has been used to create this better understanding. Not targeted to Mobike users, since this would not result in enough respondents, but aimed at bikesharing in general. The barriers found in the interviews will be used in the questionnaire to determine how these barriers relate to the different user groups, how they relate to the loyalty, the purchase intention and the price that they are willing to pay for such services.

In this questionnaire, the satisfaction of users using bikesharing initiatives is measured using NPS, and the likability of non-users of bikes sharing efforts to start using bike sharing initiatives is measured. The importance is tested of various features that the qualitative research has shown are essential for users when considering using bike sharing initiatives or are important factors influencing the satisfaction of users of bikesharing initiatives, using a Likert scale.

The Likert scale has been developed using the theory of Vagias (Vagias, 2006). In this Likert scale, the importance of individual features are measured, the barriers that are found in the

Payment	Types of use	Application	Bikes	Barriers
		Use	**Qualities of bike**	**Coverage over cities**
With subscription the bike feels more like my own bike	Bike for Commuting	Better info which bike is big, and which is small is needed in the application	Bike is too small	Mobike should deploy in more cities
I would not spend more than 10,- per month for Mobike	Bike as student bike	Login via Facebook/google is needed	It does not feel like a Dutch bike	If more cities join I will consider a subscription
I hate to pay in advance	Bike as (day)Tourist	Users cannot report bikes that are parked on private property	The bike is not designed for Dutch people	The concept works, it is nice to have a bike in every city
Mobike is cheaper then competitors like Swapfiets, or owning a own bike.	Using bike as temporal replacement	What are the boundaries of how a bike can be used, within which boundaries it can be parked	Too small Wheels, which results in a too small bike	
		Making a reservation takes too long / too many steps in the application	The current bikes are not good enough to cycle for more than 10 minutes	
Subscriptions is way cheaper for me than pay per use		Users receive no feedback of what happens with reported issue, whether somebody received it and whether it is handled or not.	Riding the current bike, feels like sporting, while this is not what is wanted	
Social pressure when using subscription, makes that I take care better for the bike		Mentioning "CO2 reduction" is not useful since I always cycle and it feels "in my space"	The current Mobike bikes are too heavy compared to other bikes, this is not what is wanted when e.g. going over a bridge	**Availability of bikes within city**
			Airless tires gives a feeling of certainty, you are always sure that the tires are good	On out-of-route places the availability fluctuate too much to depend upon
		Credit system	There is always something wrong with the bike, e.g. seat post, pedals, brakes, lights, etc	There are not enough bikes
		Nontransparent why a credit system is needed		Availability must be better to rely upon a bike always being there when you need one
		Credit means you can be punished, it creates the feeling of being spied upon		
		Feedback on credit score, or why it is altered is missing		

Table 3: Results interview users.

interviews are these features.

To avoid biases that are created by the order in which the features are presented, they are shown in a randomized order.
For the growth of bikesharing, it is interesting to see what people are willing to pay for the services that are offered to them. By asking what they are willing paying per month, means in pricing can be calculated. Linking this to users who already use bikesharing initiatives and relating this to users who do not use bikesharing initiatives is interesting since this can help to form pricing strategies when launching in new cities.

Linking price to different factors can determine which factors also alter the willingness to pay for various factors, which elements are users willing to pay for and which factors does ultimately influence the price elasticity.

Results

The interview guides of the user interviews can be found in Appendix C. In this part, the results of these interviews are explained, and the results of the questionnaire are presented.

For this research, there are twelve interviews conducted in total. Three of those were open interviews with experts, and nine of those are semi-structured interviews with users of Mobike. The experts are all active in the field of bikesharing, either by doing the research themselves or by having initiatives in the area of MaaS.

Interviews with experts

There are three different experts from the same field but with a different focus that are interviewed:

* Mick Walvisch | Founder of Tripkey, a MaaS initiative in the Netherlands
* Frank Witlox | Professor at University of Antwerp, researching user acceptance of MaaS
* Emma Schalkers | intern at Sunidee, an expert in bikesharing

There are already some MaaS initiatives active, either for research purposes or because of business. Tripkey is such a market-ready MaaS solution. In Antwerp, Frank researched MaaS. Both the research and the market ready MaaS initiatives give insights of success factors for a successful MaaS initiative.

Many people use MaaS for the first time. This finding is something that Frank has noticed during his research but is also underlined by what Mick experiences in practice.

Although Mick sees his platform as a MaaS platform, Emma opposes this. She underlines the fact that there is still no concept in the market that includes more modes of transport.

Frank noticed during his research that it is difficult to work together with more prominent mobility providers; this has to do with the openness of data and openness of the company itself. For a successful MaaS concept, this is important. Emma calls this interoperability.

Although there is a lot of opportunity for MaaS, there will always be a need for private owned modes of transportation as Frank points out. For instance, for bringing children to school, using an own car is preferred, as Frank received as feedback in his interviews.

Emma, Frank, and Mick are doubting whether an online platform or application is the way forward. Mick argues that currently an OV-Card, like the one used in his products, which is slightly altered, is better than an Online solution. Of course, in the back-end, there is an Online service, but the main functionality should come back to an offline product. Poor connectivity underground and the fact that tourists (one of the user groups) are not always connected are his reasoning for that. For Frank and Emma, the main reason for their skepticism towards an Online solution is based on the force fit between technology and function. They do not know if an Online MaaS product is the way to go.

According to Frank, critical mass will be reached earlier when bigger companies are joining a MaaS platform then when individuals join. Therefore it is easier to implement a MaaS platform in a business to business market instead of a business to consumer market. This strategy is also how Mick runs his business.

Mick does not believe there should be one MaaS solution that fits all situations. With different cities in the Netherlands, it is difficult to present one solution that provides all. Therefore he argues that every town or area should be approached differently. By connecting local entrepreneurs

to his platform and communicating with local governments, he discovers the different needs in every city and can tailor his product better to their needs.

That local support is essential is stressed by all experts. Policymakers on the city level, are critical to the success of bikesharing initiatives. That is also what makes some cities more interesting than others. For policymakers, there are several options regarding bikesharing. They could offer an open market without rules, regulate the market, limit the market or forbid any initiatives. Emma sees most in the regulated market or limited market (defined by governments).

Interviews with users

The nine Interviews with the users are more structured than the open interviews with the experts. The findings are shown in table 3 on the previous page.

Questionnaire

The dataset that has been acquired from the survey can be found in Appendix D

NPS

Results regarding the NPS of Bikesharing

NPS

(df=2; 105)

	B	*P*
Availability	1,581	0,211
Quality	1,278	0,284
Deposit	0,683	0,606
Costs of use	5,241	0,002
Coverage	6,714	0,152
News	2,575	0,042
Education	0,700	0,499
Gender	3,206	0,076

Table 4: Results NPS vs factors

A simple linear regression was calculated to predict NPS based on News. A significant regression equation was found (F(1,105) = 8,47, P < 0,004), with an R2 of 0,074. Users' predicted NPS is equal to 6,056 + 0,477 when both were rated on a scale of 0 to 10.

Price

An analysis of variance showed that the effect of Non-users/Users on Price was significant, F (1, 176) = 4.116, p = 0,044

An analysis of variance showed that the effect of Availability on Price was significant, F (2, 105) = 4.392, p=0,015.

An analysis of variance showed that the effect of Age-category of non-users on Price was significant, F (1, 68) = 4.990, p=0,029.

Simple linear regression was calculated to predict Price based on whether participants ever used bikesharing initiatives. A significant regression equation was found (F(1,176) = 4,12, P < 0,044), with an R2 of 0,023. Users' predicted price is equal to 7,786 + 1,791 when the price is measured in euro.

Simple linear regression was calculated to predict Price based on whether participants ever used bikesharing initiatives and what age category they were in. A significant regression equation was found (F(1,68) = 4,99, P < 0,028), with an R2 of 0,068. Users' predicted price is equal to 15,100 - 3,200 when the price is measured in euro.

Simple linear regression was calculated to predict Price based on whether participants want to use a bikesharing initiative if they are not using bikesharing initiatives already. A significant regression equation was found (F(1,68) = 8,721, P < 0,004), with an R2 of 0,11. Users' predicted price is equal to 4,345 + 0,675 when the price is measured in euro

Other significant findings

An analysis of variance showed that the effect of Availability on Coverage was significant, F (4, 65) = 3,998, p = 0,006

Simple linear regression was calculated to predict Coverage based on whether participants ever used bikesharing initiatives and what they rated on Availability. A significant regression equation was found (F(4,65) = 4,00, P < 0,001), with an R2 of 0,14. Users' predicted price is equal to 3,373 +0,288 when the availability of bikes within the city is measured on a scale of 1-5.

Discussion

In this study, a lot of interesting findings are found. Combining the different types of research that have been done, we can answer the research questions. The research questions were:

* What are important factors that make fourth-generation bikesharing initiatives a success in the Netherlands?

* What are the barriers that stop Dutch citizens from using a fourth-generation bike sharing initiative?

* What are the different types of users that use Mobike?
* What can we say about the relationship of barriers to the different types of users?
* What can we say about the purchase intentions of bikesharing initiatives based on these barriers?

* What are other interesting findings to help Mobike to be more successful?

Important factors for success

Combining both the findings of the interviews from experts and the interviews with users, the first research question can be answered. Experts show two significant factors when it comes to the success of bikesharing. On the one hand, a high standard of quality of the bike is essential for users, and on the other hand, excellent cooperation with (local) governments is crucial when deploying a new bikesharing initiative.

According to the experts, whether a bikesharing initiative becomes a success or not, it heavily depends on policymakers. Mick stated: his success is mainly because of the way he deals with (local) governments. When they are on board with the concept, they can help with the successful integration of the initiative throughout cities providing inside knowledge of the market and their users.

Also, the experts state that when considering the success of bikesharing in the society on the policy level, the success depends heavily on the interoperability of the initiatives. When considering bikesharing in combination with MaaS, the best experience is realized when all possible solutions are offered on one platform instead of scattered over multiple platforms. The experts explain that the only way of providing the best experience in one platform is by standardizing data flows between the platform and the bikesharing initiatives.

The experts also determine the quality of the bike as an essential factor to take into account when considering the success of bikesharing initiatives. According to Emma, the success of bikesharing efforts throughout history is much linked to the perceived product quality. To what extent does the product fulfill the need and what is the experience with that product are vital for the success.

Although these are not all the factors that are important for making new bikesharing initiatives successful, according to the experts these are the most important.

Barriers that inhibit the use

From the interviews with both the users and the experts the drivers can be identified which makes bikesharing successful on user level. However, first, when we are talking about the users of Mobike, who are those users and why are they using a Mobike?

From the interviews with users of Mobike, four user groups are identified with the following characteristics:

* Mobike for commuting
* HBO or WO educated
* 25-64 years old
* Mean in pricing (F(1,71) = 7,82 When p=0,048
* Mobike as student bike
* WO educated
* 15-24 years old
* Mean in pricing (F(1,107) = 9,57 When p=0,048
* Mobike for (day)tourists
* Mobike as a temporal replacement (for a broken or missing mean of transportation)

Next to determining the users, from the user interviews, the barriers that are used in the questionnaire are identified as well. When looking for a bikesharing initiative, users look at the following factors:

* Cost of use
* Quality of the bike
* Coverage over cities
* Availability within the municipality
* Whether there is a deposit asked or not

Tried is to determine whether the priorities of these factors are different for the different usergroups. The data gave no answer to that question, leaving the second sub-question unanswered other than that users look at all these factors when considering

a bikesharing initiative.

Although the data from the questionnaire did not specify which factor is more important than other, from the interviews with the experts and the users, the quality of the bike and the coverage were mentioned over and over again.

That users look for quality when considering bikesharing in their transportation options, is underlined by Emma Schalkers. She explained that bikesharing initiatives that offer bikes that are not comfortable and offer a low level of experience are outperformed by initiatives that provide a superior bike, even when the price is higher. When going back to the interviews with the users, the current bike of Mobike is considered low of quality. In the interviews the following factors were mentioned as an explanation for this perception of low quality:

* The bike weighs a lot compared to "normal" Dutch bikes
* The brakes are always working, or are not working at all
* It takes too much energy to get the bike working compared to others
* The wheels are too small, which gives a different experience than "normal" Dutch bikes
* The bike is not designed for Dutch people
* There is always something wrong with the bike, either it is the brakes, the seat post or pedals.

The most heard quote during the interviews was:

"It does not feel like a Dutch bike."

This difference in feeling shows that the bike does not fulfill the expectations of Dutch people regarding a bikesharing initiative.

The user interviews gave a good insight into the immediate changes that are needed by Mobike in their product to be successful in the Dutch market.

Also, coverage is identified as a critical factor. With coverage, the cities where Mobike is available are meant. Users are complaining that since Mobike is only available in Delft and Rotterdam, they feel limited in the use of the concept. This perceived feeling of limitation shows that there is a need for Mobike to expand to more cities in the Netherlands.

The users of Mobike have been identified, and the factors that inhibit the use as well. How these factors relate to each other cannot be determined from the data; what the data of the questionnaire did explain, is how pricing and the availability of news on bikesharing alter the purchase intention.

The data show, that when the costs of the use of a bikesharing initiative are high, the purchase intention lowers. When the pricing is high, it reduces the NPS of the service, combined with the same perception of quality, using the model of Tsiotue this lowers the purchase intention. This effect shows that having the right price for a specific target group is very important. Especially since the expectations of pricing is different between different user groups, for example, the commuters and students, looking for a price respectively €7,82 and €9,57. A different type of user is appealed to with different pricing.

Another finding, altering the purchase intention of bikesharing initiatives, the data showed a significant correlation between the NPS and whether participants thought that the media changed their opinion about bikesharing. Although this does not specify whether the news is positive or negative, what it shows, is that more media attention helps to raise the NPS of bikesharing in general. Thus, can be concluded that assisting media, adding to efforts in marketing will help the NPS to increase. That news can help bikesharing initiatives to be more successful is also underlined by Boggelen. His research suggested that the spread of positive news towards bikesharing efforts would increase the popularity of these same bikesharing initiatives.

Other findings

Mobike is very much interested in what additional results there are concerning their integration in the Dutch market. Not only with the product but also in the service and future developments.

When considering the possible future of MaaS, it becomes clear that the success of the concept of MaaS depends heavily on the price that is asked for the added service of MaaS. As Frank explains, if users can book single trips cheaper than a MaaS solution offers, they will not consider MaaS as a viable option.

Whether this MaaS solution should be offline or online is not yet clear. Both Frank and Mick think that developing MaaS as a Online platform is too much a force fit between what is technical possible and what is needed. They argue for further

research into this topic.

During the interviews also improvements that should be made in the service of Mobike are discussed. The clusters are presented here:

* Better distinction between the different types of bikes should be communicated better through the application
* Login options that other platforms have, e.g., login via facebook or google are missing
* The boundaries until where a bike can be used and parked are not clear
* There are too many steps to make a reservation
* There is no feedback on what happens with reported issues
* Why a credit system is in place is not clear and it is identified in the interviews as unfavorable.

It would be wise for Mobike to look into this feedback from the users to appeal better to what the user wants.

The researcher Frank Witlox gives a last insight: although he is a great believer in the MaaS concept, he states: “the current mode of transport is mainly based on the car. Replacing this is difficult”. Frank goes even that far saying that there will always be trips where going by car is the preferred option of transportation.

Limitations

For all used research methods there are limitations to consider. These limitations make the results less applicable to larger groups of people or make the data less specific for Mobike.

The questionnaire was not supported by Mobike. Using the Mobike application to reach users of Mobike was not allowed by Mobike, and thus, the survey was set up more general than just for Mobike. To limit the participant group to only Mobike users would result in a too small number of respondents. This was suggested by other researchers in the same field. With a survey specific for Mobike users, through channels of Mobike, extra data could have been found about the user groups; adding more characteristics to the user groups and being able to create a better understanding of the users of Mobike. Ultimately this would have better answered the underlying questions of Mobike and would have served them better.

In the qualitative research, the user interviewees were part of a preformed testers group. The interviewees did not have to pay for the services. This lack of financial dependency makes the answers they have given challenging to transpose to a larger group of people that do pay for the services.

The quantitative research only had respondents in the higher educated classes, which makes it hard to explain the results over the whole society since this neglects a significantly large group of people in the Dutch society.

Some extra questions on the background of the participants of the questionnaire would have helped on finding more significant findings, although this was not within the scope of this research.

Although nine interviews generally equal almost 80 percent of the available information, this is not the full 100 percent of what users could tell about Mobike. Some information could not have been come up yet; more interviews could fill in the gaps here.

KEY FINDINGS RESEARCH PHASE

The goal of the research phase is:

To firstly determine with desk research which factors are essential for Mobike to be successful on the short-term or the long-term, and secondly to identify barriers that users see that inhibit the current success of Mobike.

The literature review showed some background on what bikesharing is and how it has evolved. The literature review also gave insights on what to take into account when developing a MaaS of the future:

The experience/interaction

* The user experience must be better than current solutions
* The customer journey must create the feeling of:
* Versatile
* Mobile
* Innovative
* Non-ownership

The platform must have:

* Business models that allow multiple sides (producers and consumers) to interact, by providing an infrastructure that connects them
* A governance structure, that determines who can participate, what roles they might play, how they might interact and how disputes get resolved.
* Reaching critical mass is essential when developing a successful platform.

Regarding the barriers, the second goal of this research, the research shows what should happen in the short-term and give some insights for the long-term:

Product

A new bike design that appeals better to the Dutch users of Mobike. A bike design that:

"Feels like a Dutch bike."

With a higher feeling of quality, prevent issues like:

* Weighty bikes
* Too lose brakes
* Too tight brakes
* Energy inefficient bikes
* Not properly mounted pedals
* Non-durable parts

Service

* Increase coverage over cities, enabling users to user Mobike in more cities in the Netherlands
* Eliminate barriers that inhibit use, like deposit
* Inform users better what is allowed and what not
* Inform users better what happens with the reported issues
* Inform users better about different types of bikes

Other

* In MaaS, every participant must earn a fair share, for MaaS to work.
* Free flow of information is needed between participants; this interoperability is essential to make MaaS successful
* Increasing marketing efforts in appearing in news items increase the NPS, and thus the purchase intention of users of bikesharing
* Mobike should understand that different user groups are willing to pay a different amount of money for product and service and should use that knowledge when deploying in new cities.

Next steps

From the research, it has become clear that Mobike has to change on the short-term and gave some remarks for the long-term. What is not clear yet is how the environment where Mobike is participating in looks like, therefore in the next chapter an analysis of this is given

4. ANALYSIS PHASE

In the research phase, the users and the use of Mobike has been researched. In the analysis phase; Mobike and its environment have been analyzed: what are the characteristics of the users, who are the stakeholders, who are the competitors, what are Dutch bikes like and which cities are attractive for Mobike to deploy in.

The goal of the analysis phase is to combine the earlier research with analysis of Mobike and its environment to determine how Mobike must change to be successful in the short-term and what Mobike should take into account when creating a future vision of Mobility in the Netherlands in five years.

Outline Analysis Phase

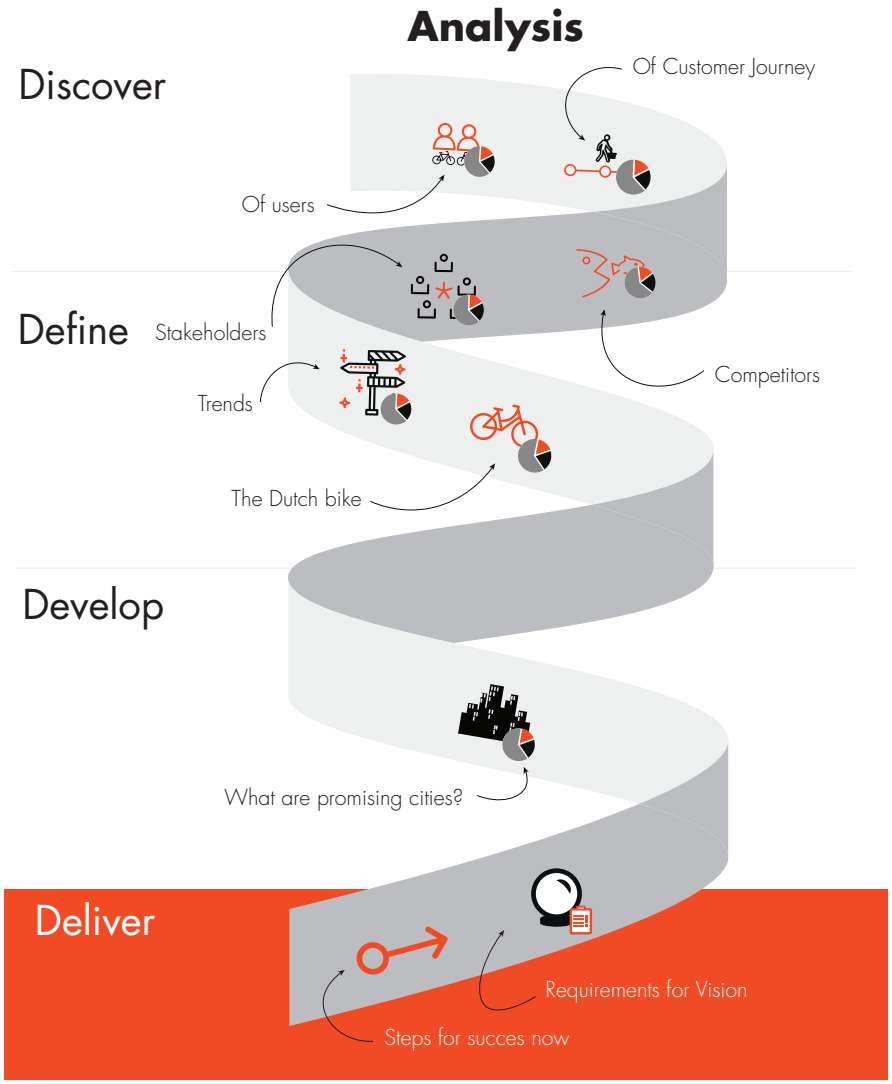


Figure 13: structure of analysis phase

THE USERS OF MOBIKE

The study that is presented in the previous chapter gave some insights in who the users are, what they look like and which barriers they encounter when using Mobikes. The study, together with insights from Mobike about which trips people make in Delft and where, results in this analyis of the users of Mobike.

Since Mobike does not have a lot of employees on the ground where they operate, Mobike is not able to do this analysis themselves. Who the users are, is difficult for them to determine. Knowing their users, knowing why they use the Mobike and knowing where they use the Mobikes is important for Mobike since this helps focussing the business now and helps future business planning.

The commuter

The commuter uses the Mobike as a daily way of transport. He or she does this by using a Mobike either in a bigger commuting scheme or as the single mode of transportation to its work.
Characteristics of the commuter are:

* HBO or WO educated
* 25-64 years old
* Working
* Cycles +- 2 km
* Mean in Pricing (F(1, 71) = €7,82 When p=0,048

The (day)Tourist

A rather small group of users are tourists. They already know Mobike from their place of origin and are eager to use it on their holidays as well. They are confronted with the fact that if they have already paid for the services in their place of origin, this does not automatically mean you can use a Mobike in Delft and Rotterdam as well. This lack of unity forms an extra barrier before they start using the Mobike in Rotterdam or Delft as well.

The temporal replacement

A surprisingly big group of users consist of users that do not use a Mobike on a regular basis. These users use Mobike when their bike is broken. They do not pay by subscription but instead pay by pay-per-use. Since the reason of use is not the lack of an own bike, but because their privately owned bike is broken, this is short-term use. Depending on this kind of users is difficult.

The student

Like the commuter, the student uses a Mobike as a daily mode of transportation.
Students include both Dutch and international students. These students either live just outside the city center or live inside the city center. So the trips that they make are rather short.
Characteristics of the commuter are:

* WO educated
* 15-24 years old
* Cycles +- 2 km
* Mean in Pricing F(1, 107) = €9,57 When p=0,048

The Userbase

The current user base consists mostly of the Students. Especially in Delft where the bikes are used best in the Netherlands. That the userbase is primarily students, is also visible in figure 14 & 15 where it is clearly shown that the significant part of the Mobike traffic in Delft is focused around the campus of the University of Technology of Delft.

What is notable is the different pricing that is needed to appeal to different user groups. The user group of students appeals best on the price of €9,60, while commuters best appeal on the price of €7,81. That the right pricing is essential, became evident during interviews where:

"If the price is too low, I expect the company to do something shady with my data."

This suspicion was mentioned several times in the interviews, and that users compare the pricing of the Mobike with other competitors came up during these interviews as well. Price is therefore seen as an essential driver of why users use Mobike instead of competitors.

Other factors users use as a measurement stick are:

* Quality of the Bike
* Coverage | (availability of service in different cities)
* Availability | (availability of service when in the city)
* Deposit

In the research, no regression was found what the impact of these factors was on their purchase intention of Bikesharing initiatives and what the effect of these factors was on their ideal pricing.

What is notable is that there is a correlation found between what people think about Mobike and what they read/see in the media. If they read much news, they feel about bikesharing more favorable compared to others. Something that can help usage-rates of Mobike in the short-term.

(F(1,105) = 8,47, P < 0,004), with an R2 of 0,074. Users' predicted NPS is equal to 6,056 + 0,477 when both where rated on a scale of 0 to 10.

Nonusers

As users are essential when optimizing the service, for a startup like Mobike it is crucial to keep broadening the user base. Mobike does this by launching in different cities en thus growing in a geographical sense. Mobike should also expand its user base in different segments of the market.

As mentioned earlier the userbase of Mobike currently exists mostly of Students and highly educated working class people. The amount of users outside these descriptives is quite low. It is expected that potential users with a lower educational background are less appealed to. How these groups can be better appealed to is not clear yet. Although some general remarks can be made when broadening the market:

* Mean in price of non-users F(1, 176) = €7,79
* There is a regression found in comparing the factors Availability and Coverage. This same regression is not found in users, so this means that it can be assumed that non-users see this more as an issue then users do.

The potential of the market is quite high. Even in the more upper segments, the questionnaire showed that 40,4% had no earlier experiences with bikesharing initiatives. From that 40,4%, 19,6% give the likeliness of going to use a bikesharing initiative a 6 or higher (on a scale of 0-10). The potential could be even more significant since in the research method the lower educated potential was not represented enough to give a meaningful answer to the above statistics.

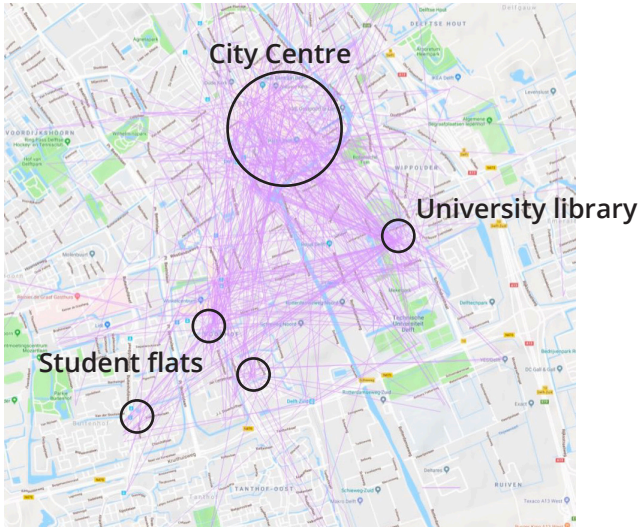


Figure 14: Sunday 10 Juni 2018 - Focus on Library (only building open) (Boor, 2018)

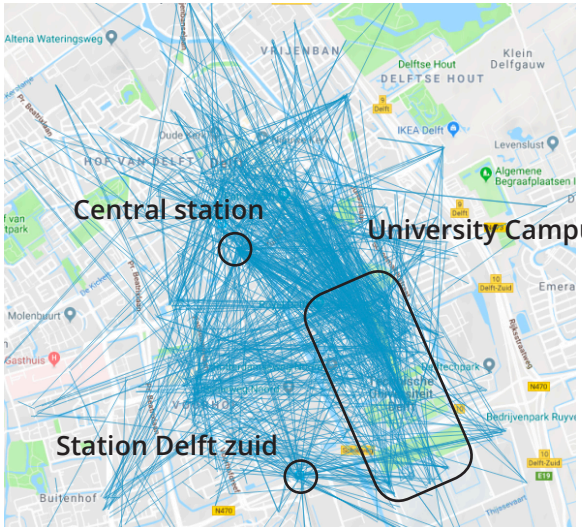


Figure 15: Monday 11 Juni 2018 - Focus on campus spread (Boor, 2018)

How users experience the service

To explain the user experience better. A customer journey is made. In this customer journey, the complaints and emotions that were pointed out in the interviews are visualized in figure 16. From this visual it becomes clear in which stage of the use of the Mobike, people experience their problems.

Although the reasons why users use the Mobike can differ, the journey they all make is the same. With the interviewees from the earlier research, a customer journey can be formed. This customer journey explains better where in the use of the product the problems they encounter occur. It shows better what users look for, whether it influences the user experience negatively or positively and which emotions they connect to that.

Conclusion

Mobike can do more to both broaden the market as well as appealing more to users. There are four big user groups, Mobike does not offer differentiated propositions to these groups. By providing differentiated plans, Mobike will appeal to more users from all groups.

By using the definitions of the groups, Mobike can focus their effort more on what is needed at that point of time, for instance focusing during academic semesters on students, and during summer break on commuters. Alternatively, when the student market is saturated, Mobike should focus on another user group, broadening the market of Mobike.

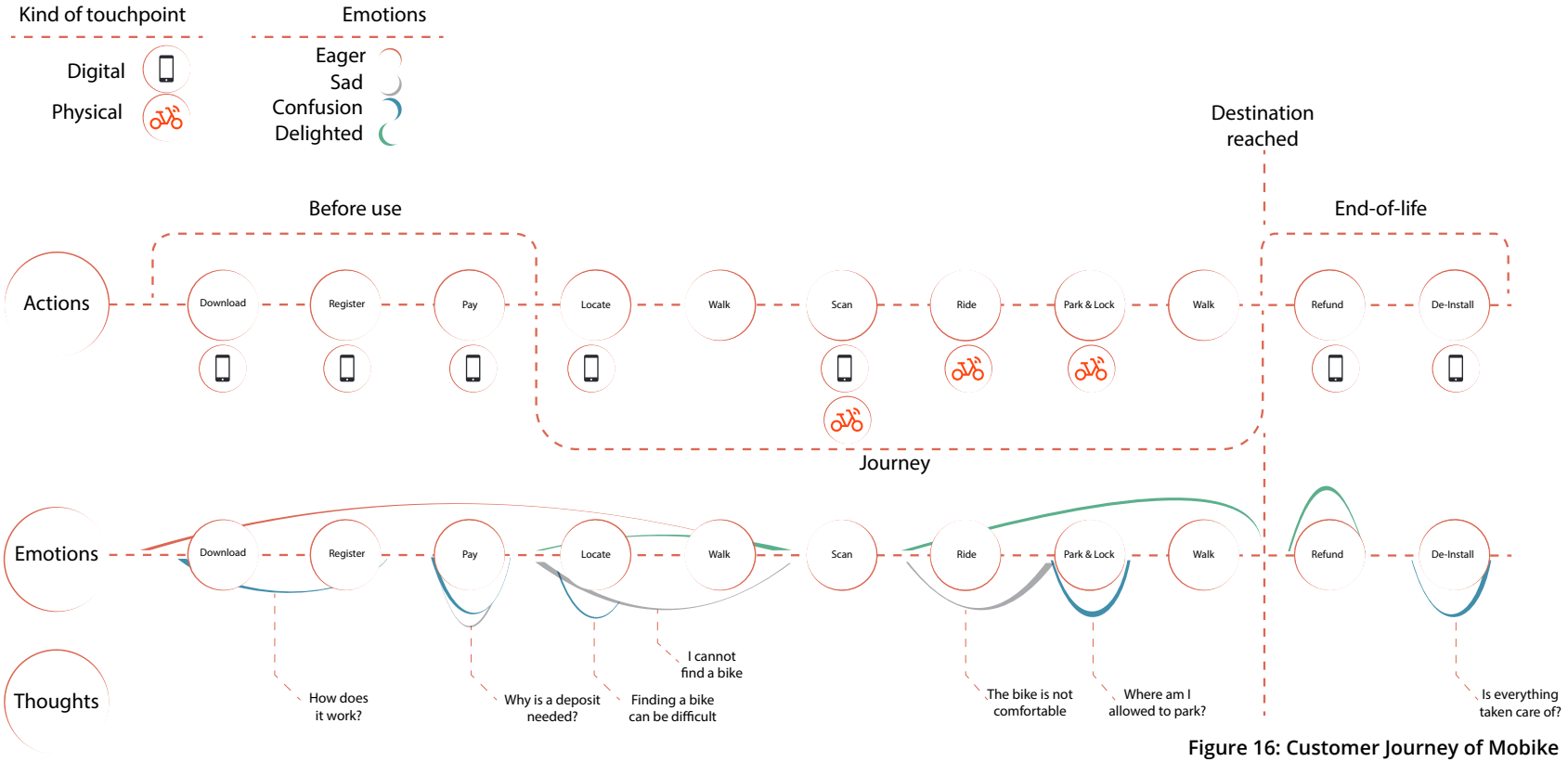


Figure 16: Customer Journey of Mobike

The current user base of Mobike consists mostly of students. Especially in Delft where when looking at the travel behavior of the bikes, most of the trips happen between the train stations, city center and students flats towards the university campus.

Broadening the market not only has to do with a lower price, because a too low cost makes the user suspicious in how user data is handled and could potentially harm the brand image of Mobike.

Nonusers see a barrier in availability, Mobike should focus their marketing effort in taking away this bias since users do not observe the same barrier. Appealing more to non-users also broadens the market for Mobike.

Efforts must be taken to help the current trend of news influencing the usage of Mobike. Assisting the media in creating a positive image of Mobike will help in the usage-rate in the short-term.

Based on the NPS measured in the research we can state that the overall user experience of Mobike is rate quite good. With a total NPS of 9,6%* for bikesharing in general, bikesharing does a proper job in delivering the experience people expect from bikesharing initiatives. The interviews tell a different story. From quantitative research it can be concluded that in general Mobike does an ok job. Some remarks about the customer journey:

* People are generally eager to use the product
* It is not clear for people how the product works
* Why a deposit is needed is not clear
* What to do when no bike can be found is not clear
* The ride of the bike is not pleasurable
* Where you are allowed to park and where not, is not clear
* “It gets you where you need to go, but just that.”

*(A positive number for NPS is valued as good, a number above 50% is rated excellent)

COMPETITORS

Several companies in the Netherlands offer the same services as Mobike. Although sometimes active in other markets or other geographical places in the Netherlands. When expanding, Mobike should take into account these companies as well. In table 5 information of direct competitors in the field of bikesharing are presented. Because different modes of transportation are also competitors, these are also taken into account in the second part of table 5 Since this is an analysis of the Dutch market, only providers active in the Dutch market are taken into account.

Movements of competitors

The world of bikesharing is changing rapidly. Some competitors enter the market; some leave. This fast-changing market shows the difficulty companies have in introducing bikesharing in the Netherlands. Some competitors move forward by trying to co-operate with competitors, but no co-operation is already established.

The most significant move that can be observed is outside the scope of bikesharing but more in the biking ecosystem of the Netherlands in general. Swapfiets, a bike rental company based on a monthly subscription of €12,50 and €15,00 depending on if you are a student or not. Launched in Delft in 2015, has grown over 1600% in 2017, to over 44.000 bikes on the Netherlands. The rapid growth of Swapfiets shows that the Dutch market is not as saturated or as stable as thought earlier but still is open for new developments. It also shows that when the proposition is good enough, people consider these new concepts.

Conclusion

Mobike, being active only in two cities, falls in the midrange of the companies active in the Netherlands. There are three different pricing strategies that competitors use to conquer the Dutch market:

* Pay-per-day
* Pay-per-minute
* Pay-per-km

Some companies offer combinations of pricing strategies. Mobike also provides the possibility to pay-per-minute or via a subscription. The last one is different from others since with Mobike, for a single price you can use Mobike for the whole month as much as you like.

Although in size Mobike is internationally prominent, in the Netherlands they are quite small. To be more competitive with the more significant competitors, Mobike should expand to more cities; increasing its coverage.

The current price is determined with data. Although this is a solid base on which price can be determined, Mobike should also look to their competitors better. Comparing the current pricing strategy of Mobike to the direct competitors, the current rental rate for pay-per-use is rather low.

Mobike could look to the service model of Swapfiets. They are currently the “hottest” item in the world of bikesharing, sharing economy and biking in general in the Netherlands. Their proposition is good enough to grow 1600% in 2017 to 44.000 bikes in over ten cities in the Netherlands, so both the service as well as the bike appeal to the user. Swapfiets has shown aspiration in being active outside the Netherlands as well, moving to Belgium and soon in Germany as well.

Figure 17: Swapfiets

Figure 18: OV-fiets

Company	Type of system	Cities	Pricing options	Price
BimBim bikes	Local rentals	All	Pay-per-day	8-50 euro
Cykl	Docking station	Wageningen	Pay-per-minute	50 cent/20 min
Donkey Republic	Docking station	Rotterdam, Amsterdam, Noordwijk, Hilversum, Beverwijk, Ijmuiden	Pay-per-day	12eur/day
Haagsche stadsfiets	Docking station	The Hage	Pay-per-day	10eur/day
Flickbike	Hybrid	Rotterdam, Amstelveen, Aalsmeer, Almere, Lelystad	Pay-per-minute	1eur/30 min
Hello-Bike	Docking station	Amsterdam, leiden	Pay-per-use / pay-per-day	1eur/1hour 6eur/ day
Next-Bike	Docking station	Dordrecht	Pay-per-minute	1,50eur/30 min
Urbee	Docking station	Amsterdam, leiden	Pay-per-minute / pay-per-day	2eur/hour 15eur/ day
OV-Fiets	Docking station	All	Pay-per-day	3,85/day
O-Bike	Free floating	Rotterdam	Pay-per-minute	25cents/15min
Tram		Deflt, Rotterdam, Amsterdam, The Hage & Wassenaar	Pay-per-km	0,90+0,156*km
Bus		All	Pay-per-km	0,95 + 0,15*km
Taxi		All	Pay-per-km	3,02+2,22*km
Uber			Pay-per-km	3+1,9*km
Swapfiets	Lease	Most big cities	Pay-per-Month	€12,50 / €15,00

Table 5 competitor analysis

STAKEHOLDERS OF BIKESHARING

In the implementation of bikesharing in the Netherlands, there are many parties involved. This part explains the ones that Mobike focuses most on.

First, something Mobike has learned from earlier attempts by competitors of Mobike; why the concepts of bikesharing failed in Amsterdam.

In the attempt of Obike in Amsterdam and Rotterdam, they choose for an aggressive strategy, in which they directly deployed respectively 2000 and 4000 bikes. They did this without consent with local governments. Like Bogelen already explained in 2000, the success of bikesharing initiatives is partly depended on the support by local governments (Bogelen, 2000). The introduction of Obike in Amsterdam did not deliver the effect that Amsterdam wanted to see, and started to prohibit bikesharing initiatives of doing business in Amsterdam without the consent of the local government, which could only be obtained when the strategy was aligned with the policy of Amsterdam. Therefore Local governments are a significant stakeholder in the successful deployment of new bikes in new cities.

Some key learnings were taken from that failing approach, and that can optimize Mobikes approach to the market.

Value Exchange

To keep all stakeholders happy, Mobike has to provide information to their stakeholders. Most significant stakeholders being, users, non-users, and local governments. Keeping:

* Local governments up-to-date with why Mobike is successful and offer information for better policy
* Users informed about movements of Mobike
* Non-users informed what Mobike is, how they could use it and why it is beneficial to them

Information has to be provided to the partners of Mobike. Mobike does not do all operations by themselves. Thus partners need to be kept up-to-date with the latest movements of Mobike.

Since operations are run by Partners, they have physical contact with users and non-users. Mobike only keeps in touch with their users via social media.

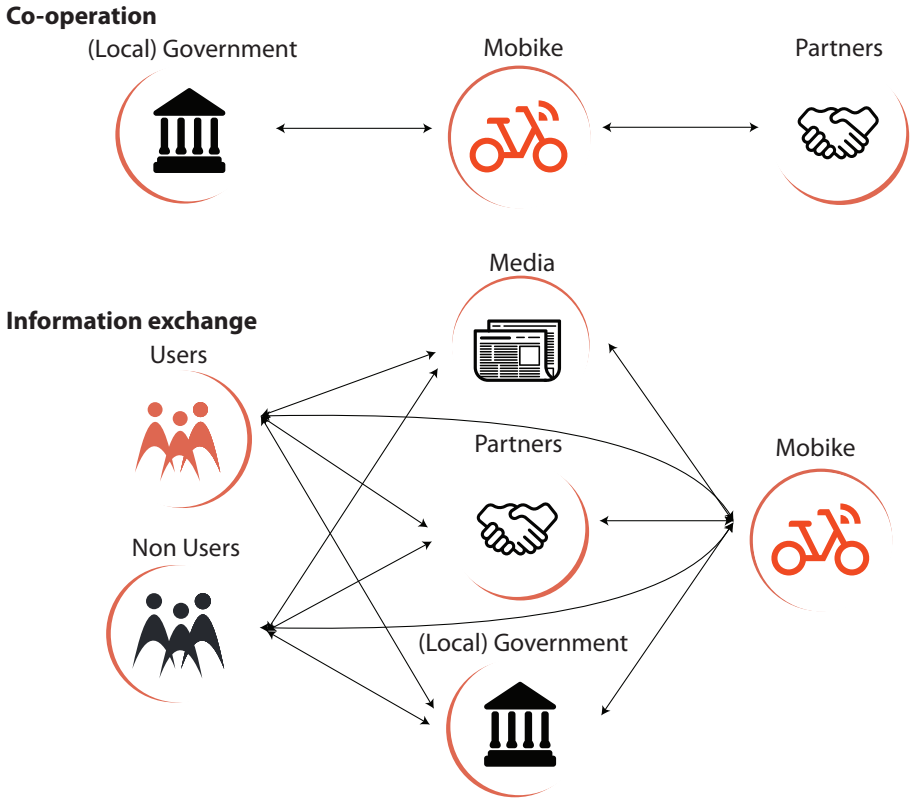


Figure 19: Stakeholders of bikesharing and with who they have a relationship

TREND ANALYSIS

Using a DEPEST the main trends in the field of transportation are portraited here. In Appendix E the full analysis can be found, here the four most significant opportunities for Mobike are presented.

MaaS startups

Several MaaS initiatives arise in the Dutch Market. Smaller startups initiate some like Tranzer. Others are started by more prominent players in the market like NS did with Hely. These MaaS initiatives are looking for more operators to join their platform so they can offer their customers the best options in planning their trip.

For Mobike there is the opportunity here to broaden their market by making their bikes available on these MaaS platforms. By being a front-runner in these initiatives, they have the advantage over their competitors by being first and vastly integrates into the transportation opportunities of users by being shown during the planning of their trips.

Standardization of Dataflow

GFRS+ will be used as a standard format in which information is shared between operator and provider in MaaS. This trend that followed from the Openbike process will influence the interoperability options for Mobike in the future. Changing the standard will become difficult when the standard is in place. Failing to co-develop and implement GFRS+ will result in Mobike not being connected to a variety of providers without extra development cost on both the provider and the operator side.

Mobike could broaden its market by making their service available in more cities. Primarily focusing on cities where roads are overcrowded during transit hours, Mobike could help the trend and move more people towards public transport by making this option viable and competitive compared to the use of cars.

Urbanization of the Randstad

Although this is already happening for quite some time, it is still a significant trend that is happening right now. A city like Rotterdam needs to increase the number of houses in its regions with 40.000 in the coming years. (Rottier, n.d.)

Rotterdam sees the treat that current mobility solutions cannot bear the number of commuters. Rotterdam sees opportunities in MaaS, making sure that people are offered the best option available to ensure people move from using the car to using public transport.

Mobike could offer part of a solution to these problems. By making their bikes available in the overcrowded sections of the city, Mobike could lower pressure on traditional ways of transportation and broaden its market.

Openness of data

Policy makers are looking for data to optimize their decision making. They need data to show which routes are most used and which mode of transport is used most. Also, cities want to manage new mobility solutions since they do not want their cities to be overcrowded.

Not only policymakers need data, but also initiatives of MaaS need openness of data. Since this is a goal of the Dutch government, transparency of data between different mobility-operators is also one of their first milestones.

For Mobike, showing data is difficult. It could be used by competitors to see what strategy Mobike uses to select new cities, where to deploy inside these cities and which pricing strategy they use. Still, if Mobike wants to appeal to the Dutch market, and get policymakers on their side, the openness of data is indeed a topic to address.

ANALYSIS OF THE ORDINARY DUTCH BIKE

From the research, we know that the current bike that Mobike offers to Dutch users is not meeting the expectations of Dutch users. This discrepancy was not only discussed by experts who stated that the quality of the bike is critical for the success of Mobike, but also the testing group was heavily complaining about the bike. Some insights from the research concerning the bike:

* "The brakes are either working too much or not working at all."
* "The pedals get loose and hit the chassis"
* "The size of the bike is too small"
* "It takes too much energy to get the bike going"
* "The bicycle weighs too much"
* "There is always something wrong"
* "The wheels are too small"
* "The seat post is often broken"

These issues show both a lack of quality in the bike design and a lack of durability. The users are complaining, that often the bike is broken, "there is always something wrong, either the seat post is broken, or the brakes are not good." Users suspect Mobike of using cheap parts or having the bike wrongly assembled.

From this, we can conclude that the current bike is not sufficient for the Dutch market. That a good bicycle is essential is also visible when looking at a competitor of Mobike. Swapfiets currently use a bike that Dutch users are already familiar with. Using this bike is one of the essential elements that helped Swapfiets to grow 1600% in 2017, according to themselves.

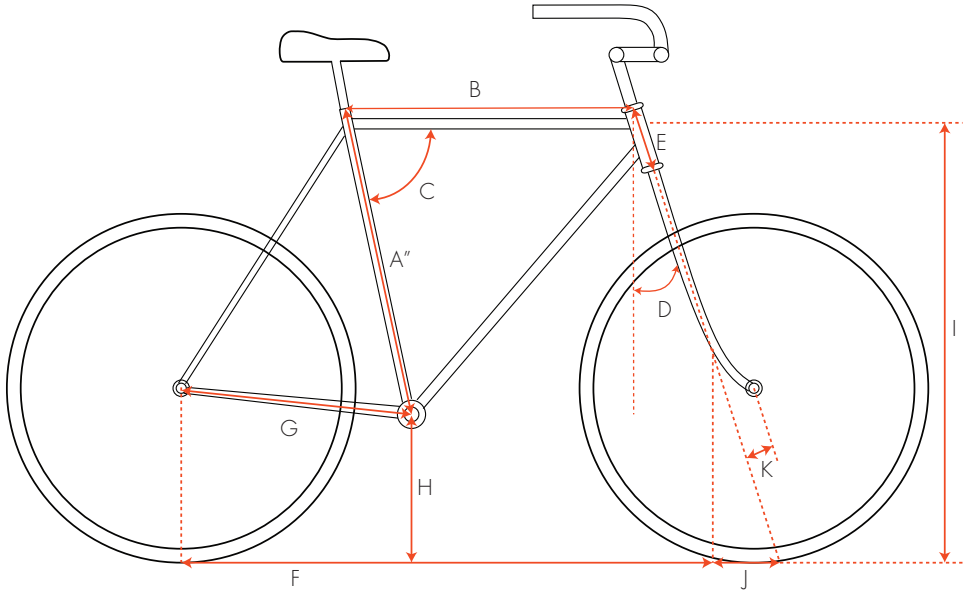


Figure 20: Bike and its parameters

Characteristics of a bike for a comfortable ride

That raises the question of; what distinguishes a bicycle that Dutch users are familiar with? From research, we know that Dutch bikers value comfort in biking (Christiaans 1998). How this level of comfort can be achieved, bike designers use the following parameters to design a bike for a comfortable ride:

* The distance between the pedals and the saddle (A" plus the height of the saddle) must be variable between 700mm and 970mm
* The distance between the seat and the handles (B) must be between 690mm and 830mm
* The angle C, for a city bike, must be 67 degrees

Also, something must be said about the angle of D. The bigger this angle is, the more stable a bike is during the ride, but it also makes the bike less maneuverable. Therefore racing bikes have a very sharp angle while a Dutch city bike has a significantly bigger angle making it more stable during the ride. Ordinary city bikes have an angle D of around 27 degrees.

Regarding comfort, there are no relationships found between specific parameter sizes and the level of comfort other than personal preferences. For Mobike this means that they should focus on

Figure 21: Ordinary Dutch bike (Men)

Figure 22: Ordinary Dutch bike (Women)

the measurements that are given above in their new bike.

Although there is no evidence found in research for the level of comfort and wheel size, it was mentioned several times that the wheels are too small. Mobike should use the wheel sizes that are used on European bikes. Bigger wheels also have the benefit of having a lower rolling resistance (defiets, 2018).

Interviews during user research, showed that the use of solid tires gave a feeling of reassuring. Users never have to worry about a punctured tire. Mobike should continue using this solid tires.

Energy efficiency

As said in the interviews, the current bike takes too much energy to get going, compared to earlier experiences of users with bikes. Research of K. Schleinitz, showed that a normal biking speed on a regular bike is 16,1 km/h on average.

Relating speed back to watts is difficult since this is so much dependent on circumstantial differences, on a regular bike 16,1 km/h, this would be around 60 watts (Schleinitz, K, 2018) in a testing environment. The amount of watts that are needed to achieve 16,1 km/h is much dependent on the overall efficiency of the bike. According to a news article of the Vogelvrijefietser, a poorly assembled bike will have a low energy efficiency, requiring up to 134 watts for a speed of 18 km/h.

So Mobike should try to increase the efficiency of the bike. Some general remarks can be made about

the parameters of bikes and the effectiveness of energy, but it is much dependent on the assembly and precision in the tuning of the bike. The fact that users complain about brakes continuously working, even when not using, does not help in making the bike energy efficient.

That the brakes have a big impact on the energy efficiency of the bike became clear during disassembly. Where earlier the wheels immediately stopped spinning when a users stopped pedaling, with the brakes removed the wheels kept spinning significant longer. Efforts to better tune the brakes where not successful. The current brake cannot be tuned properly, it is either too lose or too tight. Therefore another brake must be chosen for this bike design to work properly.

We know from research that the crank length for the most optimal energy efficiency is one-fifth of a users crotch hight. On ordinary bikes, this is at 170 mm.

Replacements parts for ordinary Dutch bicycles show that they use for the gears (so also regular tire/wheel sizes), a gearing of 2 to 2,5.

The above characteristics mostly relate to the optimization of energy to comfort, but eventually, when disregarding the above features, the number of watts that are needed cannot exceed 60 watts for a speed of 16,1 km/h. So this is taken as a requirement in the new design.

Design for assembly

Complaints like “the brakes are always working” or “there is always something wrong” do not relate back to characteristics of the bike, but rather to the way it is assembled and tuned. To overcome issues like these, having a higher standard in quality control after assembly would already help. This higher standard of quality control means that when checking the bike after assembly, if issues occur like; the brakes are continuously working, the bike cannot be deployed, neglecting this will result in bikes being used that do not work correctly and thus giving a negative experience to the users.

Conclusion

The current Mobike bike does not meet the standards. Dutch bike users expect. To better meet these standards Mobike should take into account the following criteria:

* The distance between the pedals and the saddle (A” plus the hight of the saddle) must be variable between 700mm and 970mm
* The distance between the seat and the handles (B) must be between 690mm and 830mm
* Angle C must be 67 degrees
* Angle D must be around 30 degrees
* Tires can stay solid, but with the dimensions of 650mm in total wheel size.
* a gearing of 2 to 2,5
* 170mm crank size
* An energy efficiency that results in 60 watts for a speed of 16,1 km/h

Energy efficiency is related to not only the characteristics of the bike but also the fine-tuning after assembly. This fine-tuning must be done more carefully and with a higher quality standard. Problems like; brakes that are continuously working, add to the low energy efficiency that the current bike design has an issue that cannot be resolved by other characteristics of the bike but rather by being assembled better.

These characteristics are found on ordinary city bikes like figure 21 and 22. Bikesharing bikes endure a life of always being outside and have a higher usage rate than normal bikes do. Therefore it is it logical that some of these standards, like the energy efficiency, cannot be met. An excellent working bike uses 60 watts for a speed of 16,1 km/h. A bike that is poorly assembled and thus gives a feeling of discomfort needs 134 watts for a velocity of 18 km/h. Mobike should consider these outer boundaries and designs its bike that it is closer to the 60 watts than the 134 watts.

ANALYSIS OF DUTCH CITIES

As mentioned in the research, for Mobike to reach critical mass, it must deploy in more cities. Currently, Mobike is only active in Delft and Rotterdam, users within these cities complain of Mobike being only available in these two cities and would like to see Mobike expand to more cities. Analyzing the users of Mobike and the trips that they make show characteristics of cities that are important for deployment.

Mobike and deployment

Mobike has the capabilities to deploy fast, although the current design does not meet all the standards users would like to see, to keep growing and to keep in front of competition, Mobike should expand to more cities. The current warehouse that is used for last assembly and repairs is in Rotterdam. It makes sense to grow from this southern position towards more cities, focusing first on the Randstad, optimizing the use of current warehouse and resources in that warehouse like employees, tools, and vans.

City characteristics

From the research and analysis of the use of Mobike we know that Mobike should focus on:

* Cities with students (currently the most prominent user group and earlyadapters in Delft)
* Cities where everything can be reached with a +- 3 km trip
* Cities with problems in public transport connectivity
* Cities with semi-small city centers
* Cities with good access for vans
* Cities in Randstad

In the Randstad the following cities have a student population (WO):

* Rotterdam
* Delft
* The Hage
* Amsterdam
* Amstelveen
* Utrecht
* Leiden

Although, Amsterdam and Amstelveen are connected to each other, there are regulatory restraints. These restraints make it difficult to create a sustaining business in these cities and therefore Amsterdam and Amstelveen are outside the scope of Mobike until current conditions change.

Mobike should commit in deployment in the other cities. Although both Rotterdam and Utrecht have larger city centers compared to Delft, Leiden, and The Hage, due to the current bike design, which limits the use of Mobike to 3 km according to the research, these cities are currently less attractive.

Leiden and The Hage could be supplied from the current warehouse in Rotterdam, providing for cities outside the Randstad would need another warehouse to be used and thus asks for a more significant commitment from Mobike.

Cities outside Randstad

Although not directly interesting for Mobike, there are many cities in the Netherlands that have the characteristics that are needed for fast integration and thus interesting for Mobike. Interesting cities are:

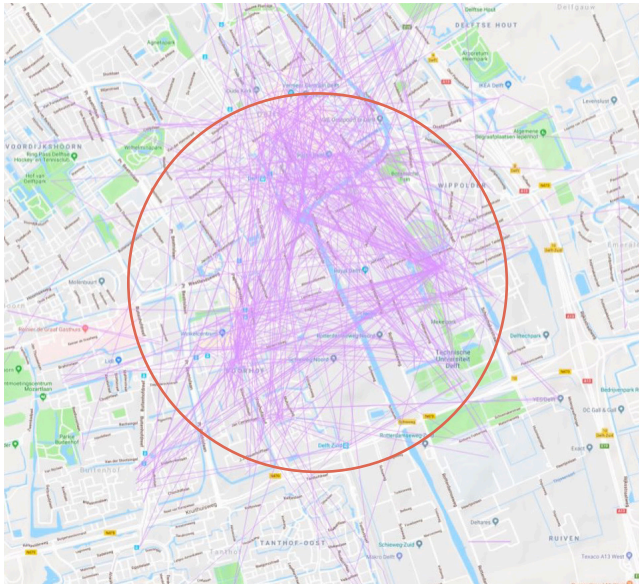


Figure 23: Map of delft with trips, ring represents 3km, circling the campus, city center and student flats

* Breda | 21.000 students
* Den Bosch | 16.000 students
* Eindhoven | 21.000 students
* Enschede | 22.000 students
* Groningen | 50.000 students
* Leeuwarden | 20.000 students
* Maastricht| 11.000 students
* Nijmegen | 18.000 students
* Tilburg | 26.000 students
* Wageningen | 6.000 students

Also in these cities, after Randstad, can be deployed. The use of cities with students ensures fast integration and higher usage rates. After successful integration in these cities with students, also in the cities that fit the other characteristics but lack students, Mobikes can be deployed.

Conclusion

Mobike should deploy in cities with the characteristics:

* Cities with students (currently the most prominent user group and early adapters in Delft)
* Cities where everything can be reached with a +- 3 km trip
* Cities with problems in public transport connectivity
* Cities with semi-small city centers
* Cities with good access for vans

With optimizing the use of current resources, that would be first:

* Leiden
* The Hage
* Utrecht

Moreover, later outside the Randstad Mobike should focus on Breda, Den Bosch, Eindhoven, Enschede, Groningen, Leeuwarden, Maastricht, Nijmegen, Tilburg, and Wageningen. After deployment in cities with a student population, and thus ensuring fast integration and establishing a brand identity with Dutch citizens, cities without student population can be targeted.

KEY FINDINGS ANALYSIS PHASE

From the research phase, we know who the users are, what they do and do not like about the product of Mobike and what they are willing to pay for these types of services. In the analysis phase, this knowledge of users is used together with a broader analysis of the external influences of Mobike to determine what Mobike should change now, and what is essential for a future vision.

What Mobike should do now

Competitor analysis shows that Mobike is currently quite cheap compared to other Mobility solutions. The study also shows that when the concept is right, people do innovate on bikes and are willing to try new ideas; like with Swapfiets. Getting the concept right is key for success.

From the research combined with the customer journey, it has become clear that the current product does not meet the standards of quality Dutch users have. Therefore a new bike is needed that uses the following list of demands for a new bike:

* The distance between the pedals and the saddle (A" plus the hight of the saddle) must be variable between 700mm and 970mm
* The distance between the seat and the handles (B) must be between 690mm and 830mm
* Angle C must be 67 degrees
* Angle D must be around 30 degrees
* Tires can stay solid, but with the dimensions of 650mm in total wheel size.
* A gearing of 2 to 2,5
* 170mm crank size
* An energy efficiency that results in 60 watts for a speed of 16,1 km/h

Not only the product does not meet the expectations of users, but also the service does not fit what users would like to see. The following must be changed in the service:

* No deposit needed
* Feedback about boundaries in use is needed

Also, Dutch users would like to see Mobike expand their services to more cities. This expansion will help in to leverage the concept of "a bike in every city" to the users. The analysis shows that students are eager to the idea behind Mobike, therefor Mobike should rapidly deploy in the following cities:

* Leiden
* The Hage
* Utrecht

For cities to adopt the concept, it is critical that all stakeholders are eager to embrace the concept, which for instance means good co-operation between municipalities and Mobike. Mobike should make an effort to keep the relationship in a friendly way.

What is essential for a future vision

The analysis not only showed what Mobike should do in the short-term to be successful. It also showed what Mobike should take into account to develop a future vision.

Trend research showed that in the future, Municipalities must rely on new mobility solutions to ensure good mobility in cities. This trend has to do with the urbanization that has been going on and will continue in the future.

Municipalities are in need of data to help them formulating policy and optimizing mobility. They are looking for that data in mobility operators since they are more and more digital and own that type of data. Municipalities are going to demand that data from operators in the future. Since an excellent relationship between cities and Mobike is so much crucial for Mobike to be successful, Mobike should enable policymakers to use the data they need. These data will be shared following a standardized method; this not only creates easiness to apply the data but will also generate equality among data sharers.

One of the new mobility solutions governments look at on both national and municipal level is Mobility as a Service (MaaS). They are looking for fast integration of MaaS and are trying to speed up this process. Mobike should follow this trend and take MaaS into account when developing a future vision.

5. DESIGN PHASE

The analysis and research phase already show what Mobike should do on the short-term to be successful. This short-term vision can be formulated in the roadmap as a first horizon. What is missing for sustainable success is a future vision of Mobility of the Netherlands in five years. This future vision is needed for Mobike to understand how Mobike can serve the user of the future and to create the roadmap towards this future.

The goal of the design phase is to create a future vision of how bikesharing looks like in the Netherlands in five years.

Outline Design Phase

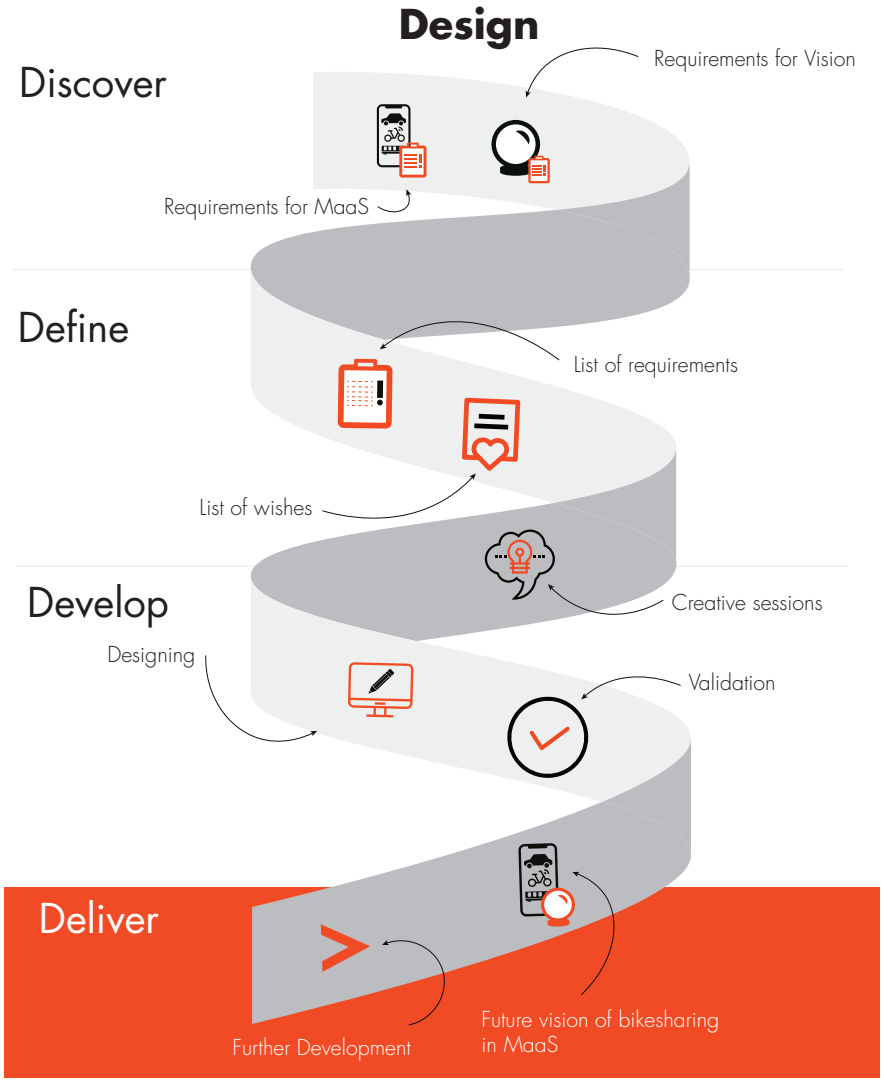


Figure 24: structure of design phase

THE DESIGN PROCESS

Problem definition

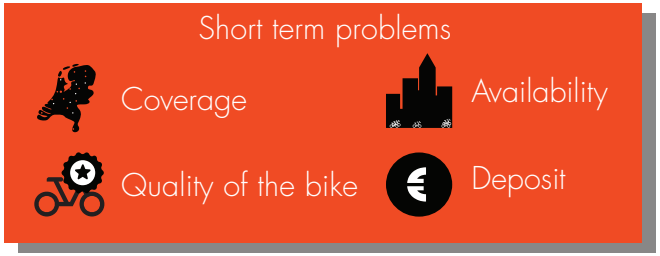
From the research and analysis, we know that Mobike has several issues that inhibit success in the Dutch market. These issues can be divided into a short-term problem and a long-term problem.

Short term

For the short-term we know that users are not pleased with the current product; this inhibits the growth of usage. Adding to that problem is the lack of cities in which Mobike can be used. This lack of coverage stops Mobike of reaching a critical mass. Improving their product on both functional level and experience will strengthen their position on the Dutch market and by adding more cities to the list of where Mobike is available will help to reach a critical mass.

Long-term

For the long-term, it has become evident that MaaS and openness of data will be part of the future. In this future, Mobike will be part of a larger transportation solution. By being the front-runner in this development, they can control best how this future will look like for Mobike. Although we know that MaaS will be a part of the future, what Mobike is missing is a vision of how Mobike's future will look like.



What will be designed?

So the problems that are there on the short term are already known, how the future looks like for Mobike not. Therefore in the ideation phase, the future vision of Mobike will be created: How does the future of Mobility in the Netherlands look like in five years and Mobike can fit in. Mobike can use this to develop a roadmap.

By creating a vision with the stakeholders and participants of the future, Mobike assures that what Mobike will be working towards, fits seamlessly in the Mobility of the future.

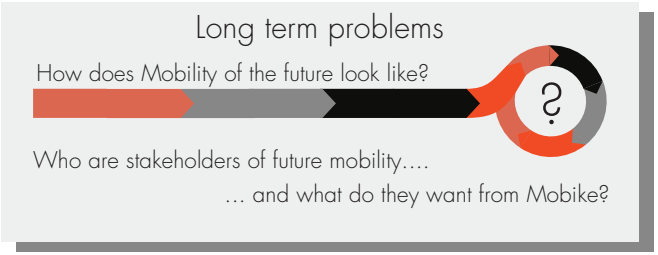
How to come to the design?

The design process will be cut into three phases. These phases ensure that all stakeholders are committed to the concept and that the concept is validated and thus ready to be used as a future reference.

Phase one: Discover & Define

Before the designing can take place, the boundaries of the final result must be defined. Therefore, in discussions with the participants of the creative sessions together with insights of the earlier research and analysis phase a program of requirements and wishes is formulated. These can be used to give direction to the final design and validate whether the design fits the future best.

Figure 25: short & longterm problems



Phase two: Develop

Now the boundaries of the solutions space are clear, and the need of the users has been defined, creative sessions are needed to create ideas that fit the solution space. In these creative sessions, all stakeholders can add their ideas together, how they think the future of Mobility will look like from their perspective.

From the creative sessions, a concept can be produced that incorporates all the ideas from the creative sessions into one compelling product. This design must then be validated with the participants of the creative sessions again, potential future markets and the users. From this validation, a final design and recommendations can be formed.

Phase three: Deliver

The final design is a future vision of how bikesharing fits in the Mobility of the future. The validated design forms the basis of this future vision. Together with an explanation of who the participants are in this future and what their function is, it will become clear how the future looks like and how the concept can be realized.

WHAT IS A FUTURE VISION

The future vision will be put in a three horizons model. This model will help to create a step-by-step approach for Mobike towards the future vision.

What is the three horizons model?

The three horizons model is used as a future planning model and to map out future opportunities for building a roadmap to that future vision, as can be seen in figure 26.

The first horizon is used to make current business more mature, showing the changes needed to be successful on the short-term. The third horizon is the future vision what future business will look like. The second horizon is being used as a transition phase between the first horizon and the future vision, showing the evolution between the current situation and the future vision.

The model helps to integrate futures business into organizational and strategic planning, which is also the reason why this tool fits the purpose of Mobike best at this time. The model helps to structure the solutions for the short-term problems in a first horizon, and ensures that they contribute to the third horizon.

How is the three horizons model applied?

How the first horizon looks like has been shaped in the research and analysis phase. The insights gained there, show the necessary change for Mobike on the short-term.

The last horizon will be formed in the design phase. In this phase, the future context of Mobike will be created here.

The future context will be designed in creative sessions with:

* Bikesharing initiatives
* (Local) governments
* MaaS initiatives

With these parties, a future vision will be formed. The concepts will be tested in the validation phase with both the participants of these sessions but more important the future users.

What will be the result?

In the ideation phase, there will be many ideas about how the future will look like. To structure these ideas, the future will be molded into:

* A future customer journey of bikesharing compliant to the question: “How does MaaS look like for bikesharing.”

Figure 26: three horizons model

What is a customer journey

A customer journey is a step-by-step analysis of how a customer will use a product. It starts with a need of a user, and how does the product fulfill this need step-by-step.

The future customer journey will help to structure the development on both the technical, business and commercial level. Using the customer journey as a future vision will help to understand what is needed from all parties to come to this future vision. Using a customer journey, more sessions can be held to deepen the concept on:

* Technical level
* Commercial level

Figure 27 shows the canvas that is being used in the creative sessions of the customer journey. This has helped to structure the sessions.

The output of these sessions will come together in a future vision in which a final customer journey of future bikesharing is defined, and a set of agreements on both technical and commercial level is given. This result is the basis for the third horizon.

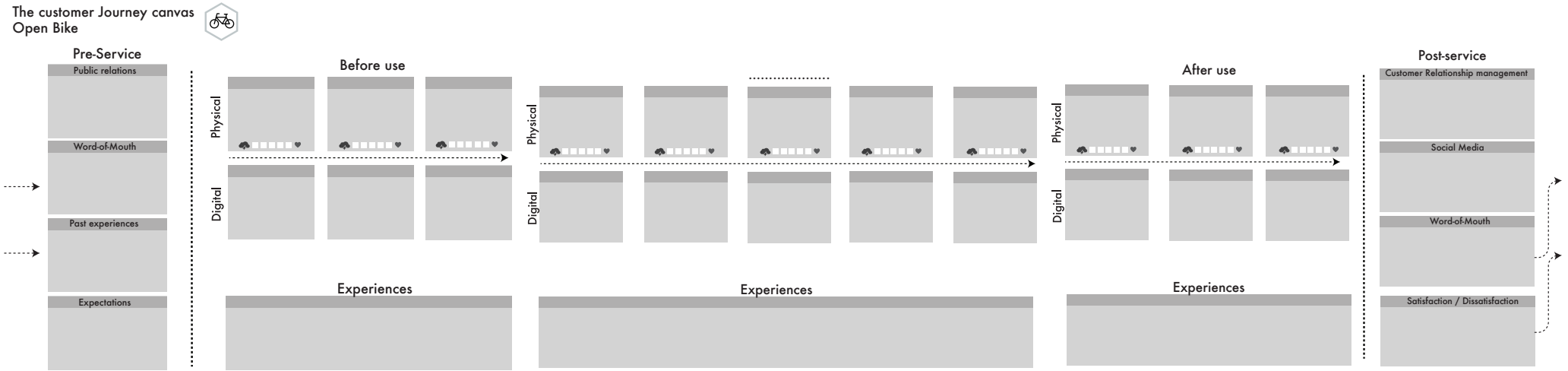


Figure 27: Customer journey canvas for creative sessions

PROGRAM OF DEMANDS & WISHES

Whether all stakeholders will commit to the concept depends on the fit between the stakeholders and the concept. Therefore a list of demands and wishes is created. Literature is combined with discussions with bikesharing operators and municipalities & ministries to develop the list of requirements and desires.

Bikesharing operators

During discussions with the different bikesharing operators involved in the ideation process, it became clear that they have some demands and wishes concerning the future vision of bikesharing. Taking those into account ensures that they support the result and are willing to commit to the concept.

Municipalities & ministries

(Local) Governments are very much interested in the result. As discussed earlier, they are in need of more information for policymaking. By being involved in the process, they have an influence which data will be shared among the operators and operators, and they hope they can use that same data for policy.

Adding to that, they see MaaS as a solution to the mobility problems they have in their cities. They understand that the concept will build towards MaaS and are therefore interested in helping the concept further, including their interest helps speeding up processes for further deployment of bikesharing and MaaS.

Literature

Literature gave some insights into what a new MaaS platform should look like and how a new platform should be designed. Including these findings will help with the validity of the concept.

Criteria for ideation	Bikesharing operators	Municipalities & Ministries	Literature
The vision / service / product			
The customer journey must include free floating, docking and hybrid bikesharing initiatives	●	●	
The customer journey must include only bikes	●		
The customer journey must entail a full traveling experience by bike	●	●	
The customer journey must be separated in both a digital and physical level	●		●
The customer journey must create a dynamic platform ecosystem that enables business to achieve critical mass	●		●
The customer journey must create a supportive enabling environment	●	●	●
The price of the service must not exceed the price of the individual operator	●		●
The platform			
There must be a clear separation of provider, operator and possible integrator	●	●	●
It must be ready for MaaS		●	
It must be open for new entrants	●	●	●
It must be open data		●	●
Providers must still be able to cherry pick in operators		●	●
The data must be shared in a decentralized manner	●		●
The user experience			
The user experience must be better than current solutions	●		●
The customer journey must create the feeling of: Versatile, Mobile, Innovative an non-ownership			●
The governance model			●
Business models that allow multiple sides (producers and consumers) to interact, by providing an infrastructure that connects them	●		●
A governance structure, that determines who can participate, what roles they might play, how they might interact and how disputes get resolved.	●	●	●
There must be an mutual understanding which data is shared and which data is not	●	●	●

Table 6: program of demands

Set of wishes

Besides a program of demands, the stakeholders provided some wishes they would like to be taken into account when designing the future vision of bikesharing. Including these wishes will help with the validation of the concept.

Readiness for MaaS

To be ready for MaaS it would be nice if the concept that is developed by the stakeholders involved is not limited to bikesharing initiatives only but leaves the opportunity to incorporate MaaS when ready. This readiness for integration would not only improve user experience but also make the concept more future proof.

Free-flow of information

The concept can be defined by a very long list of agreements creating limitations. For the future development and the best impact on trends, the concept would work best if the information is shared freely without hassle. Although this is not directly influential in the user experience, it is a significant influence on development time.

Limitation in the visual representation

A wish from the ministry not to make the concept too leading in the visual representation of the concept. That could limit creativity by future creative sessions since participants could think that the visuals that are being made are already set in stone and functionality that is represented in the visuals are not open for discussion anymore.

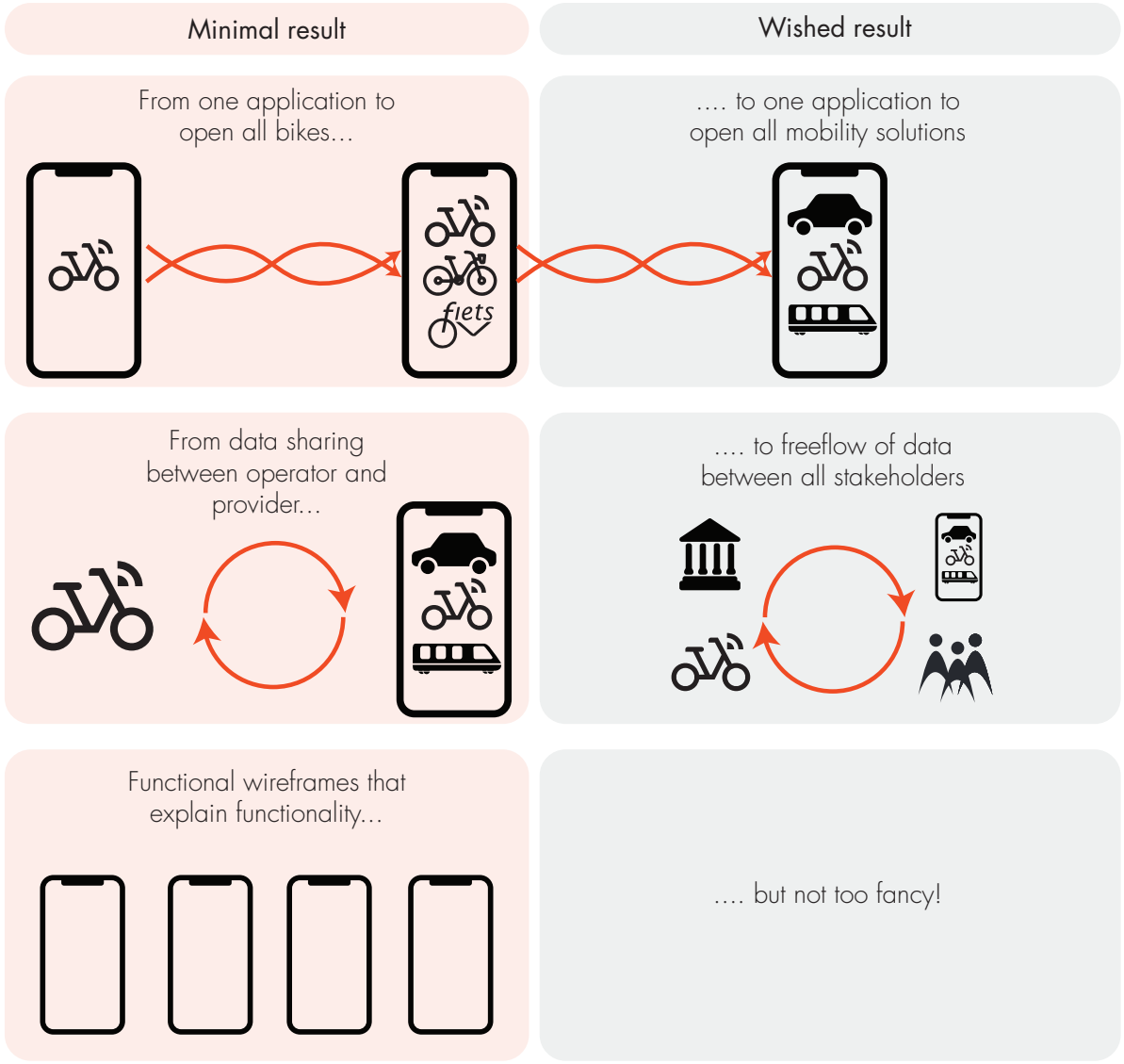


Figure 28: Wishes

CREATIVE SESSIONS

Until now, this project has been a lot of research, interviews and analysis. During the design phase, the focus is put on the creation of a new future vision. With the design process that was earlier described, this future vision is created. By conducting several creative sessions with different stakeholders a lot of ideas arise of how the future should look like. Combining these ideas will result in a future vision of Mobility.

Setup of these sessions

After a brief warm-up, the sessions were started by firstly determining what the focus was of these sessions. Because not all the participant were used to thinking in customer journeys, after a short introduction, the brainstorm started by determining what the starting point of the customer journey should be and what the end-point. By scoping the creative sessions in this way, helped to include all participants, even when they were not sure whether the end-result would help them.

Together will all the participants, the ideal customer journey was walked through. Using post-its to determine with each step, what the user experiences is in both the physical and digital level. This will help to determine what is needed from a MaaS initiative and what is needed from a mobility provider in MaaS.

Figure 29: Creative session bikesharing

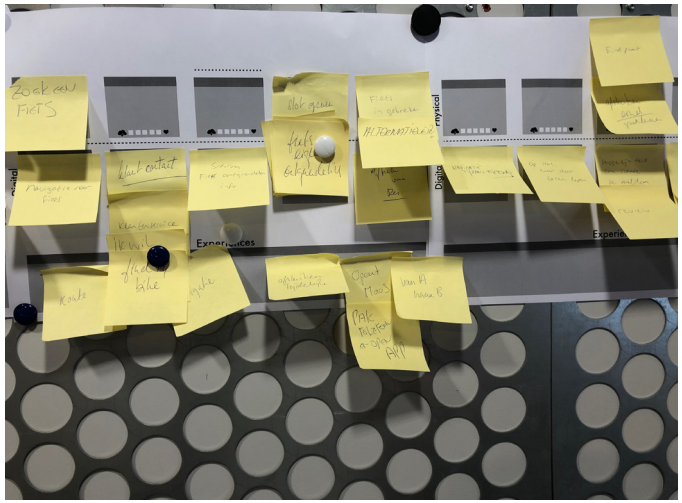


Figure 30: Creative session bikesharing

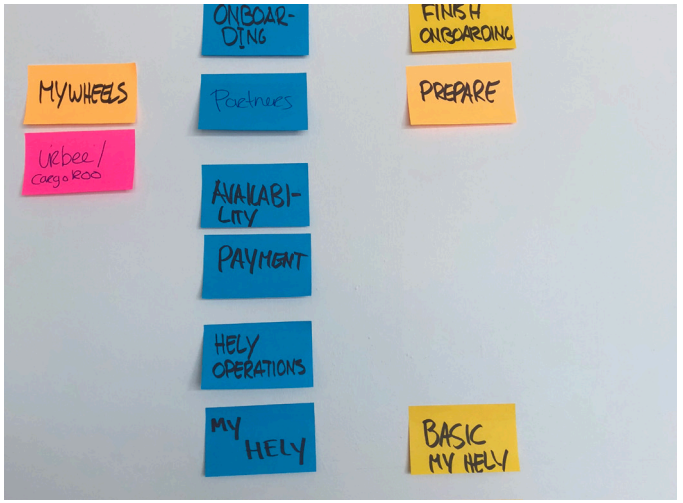


Figure 31: Creative session Hely

Session bikesharing

In this sessions the ideal customer journey from the point of view of the user is determined. Together with bikesharing operators, ministry of transport and water management and the five biggest municipalities in the Netherlands, ideas are generated what should be included in this customer journey and what not. From this session it became clear that MaaS will be a big part of the future of mobility. In this session the following roles are defined in this mobility of the future.

The ministry of transport and water management sees the following roles for (bike) sharing initiatives in MaaS:

Operators

The operators are the different sharing initiatives.

These initiatives offer a standardized API to the providers, which makes it possible for the provider to provide the operator's products to the user.

Providers

The provider is the digital link between the user and the bikes. It entails an application in which the different operators are shown to the user.

Integrators.

Integrators are the possible link between the operators and providers. Integrators are partners in MaaS which ensures good cooperation between providers and operators. Helping the integration of the API's into MaaS.

From every type of operator, there will be a separate standardizes API

There will be several providers in the market space

Creative sessions with local governments, the ministry of infrastructure and water management, and bikesharing initiatives created the customer journey as can be seen in figure 32. This customer journey is focused on bikesharing in MaaS.

Customer journey

With the participants of this session a ideal customer journey is created. The starting point is a user which is in need of a bike, and the initial thought of this session is that with one platform, the user can find all bikes that are available and unlock it through one interface. Who is owner of this interface is left aside.

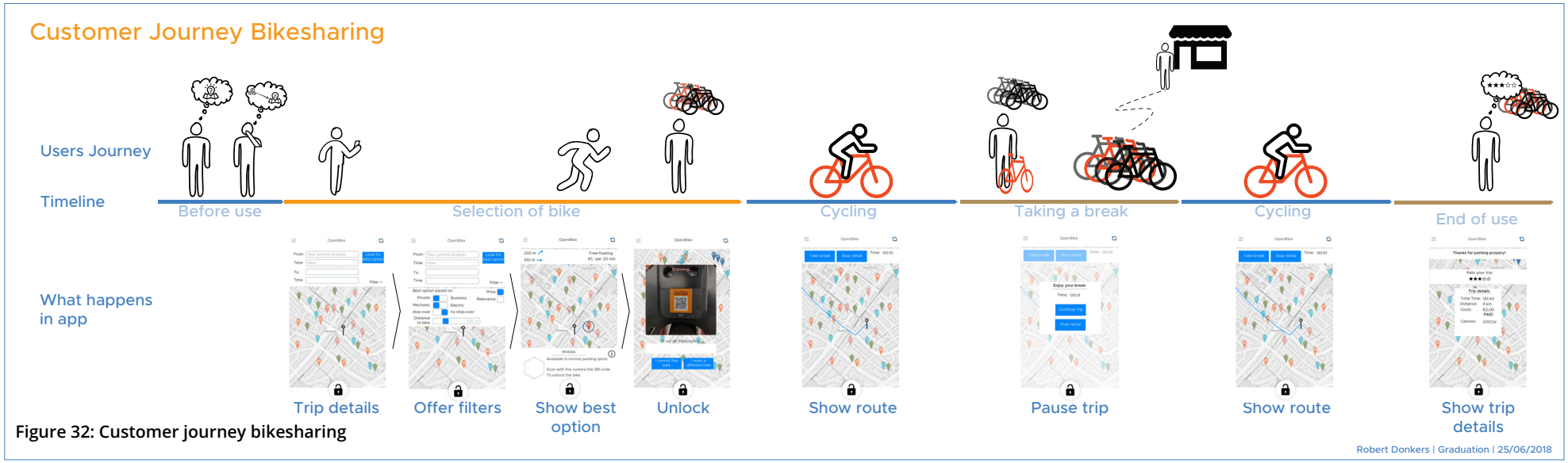


Figure 32: Customer journey bikesharing

Session Tranzer (MaaS initiative)

With Tranzer, the ideal customer journey was discussed and tried to combine it with a MaaS concept. Things that came out of this session are:

* They do not see the role of integrators. They do not incorporate all operators they want to cherry-pick what they want
* There are a lot of “nice to have” in the customer journey
* There are several different ways of incorporating the customer journey of bikesharing into the customer journey of Tranzer

Tranzer explains that their core business is connecting API’s to their service. An integrator; the middleman to help the integration of the API’s into MaaS does that same job. To cut down costs, Tranzer would deal directly with operators, not with integrators.

In figure 33 the translation of the customer journey from the bikesharing initiatives is translated into the customer journey of Tranzer.

Session Hely (MaaS initiative)

Hely sees MaaS differently then Tranzer does. Although they can incorporate the same customer journey, they are different in the operators they want to pick for the MaaS platform.

They do not work with free-floating operators
Their roadmap to the introduction:

* Big cities
* Between big cities
* Suburbs
* Smaller towns/province
* They want to cherry-pick

They see the need for a customer journey in which the customer can speak with a representative.
Since Hely does not own a brand-style yet and does not have an application ready, there is no visual representation of Hely, other than the visuals for the customer journey of the bikesharing initiatives.

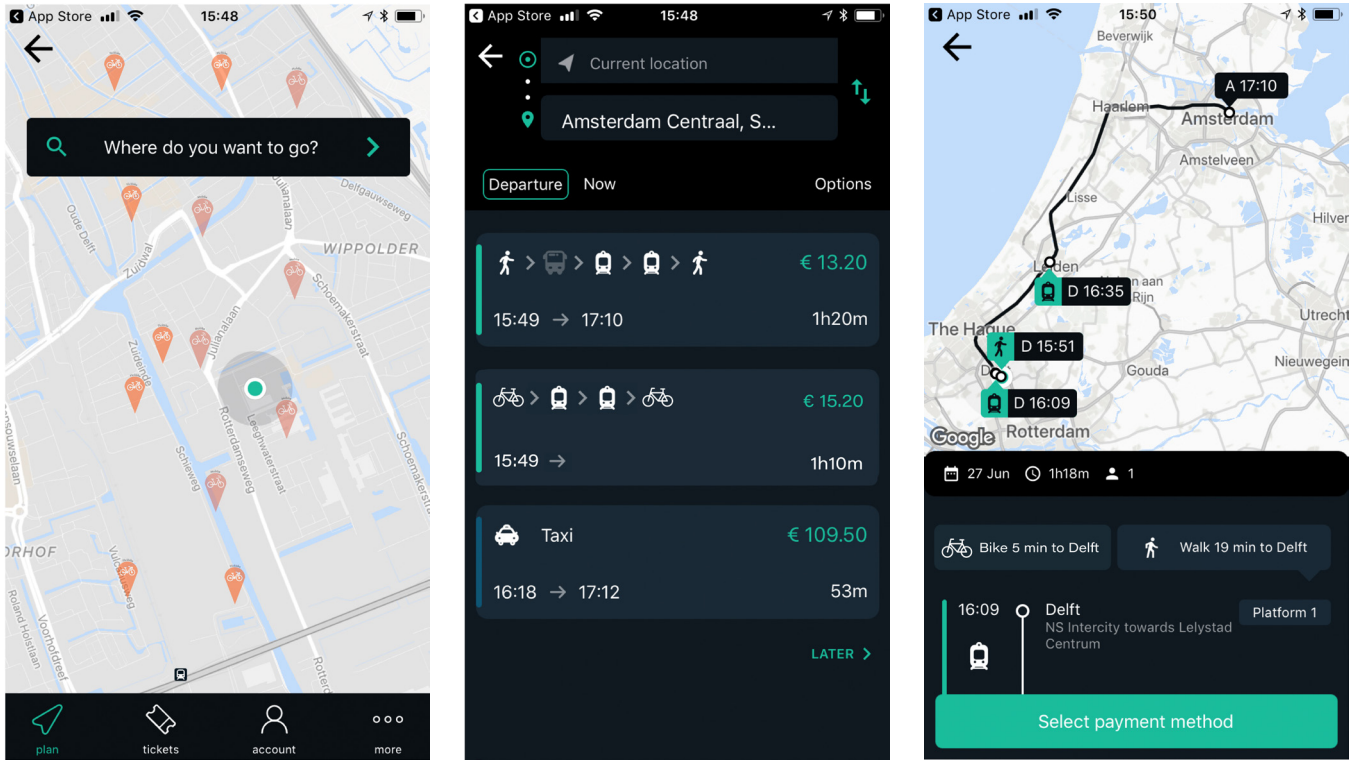


Figure 33: Bikesharing and Tranzer

Feedback GoAbout (MaaS initiative)

GoAbout gave the following feedback:

* There are a lot “nice to have” in the customer journey
* Do not give too many options to the user, especially in the filter option you cannot take into account all the reasons why users want a different bike.

BAAS (BIKE AS A SERVICE)

From the customer journey that is created with the bikesharing initiatives and (local) governments, together with the feedback of the MaaS initiatives the next wireframes are created.

What do these wireframes explain?

These wireframes represent the main features that are envisioned to come back in a future bikesharing or MaaS platform. A provider could implement the decentralized API that follows this concept.

Why are the wireframes important?

The wireframes are essential for the further development of the standardized API. By using these wireframes in the sessions, the implication of the functionality that is either proposed by the user, provider, and operator on the API can be discussed.

In the next sessions focussed on the technical development and the governance model the wireframes help to start discussions about:

Who is responsible for the delivery of which functionality?

How can this functionality be made possible?

Is this functionality needed?

The wireframes are thus in no way a finalized product but are needed to present a vision where can be worked towards to. In appendix F; all the other wireframes can be found.

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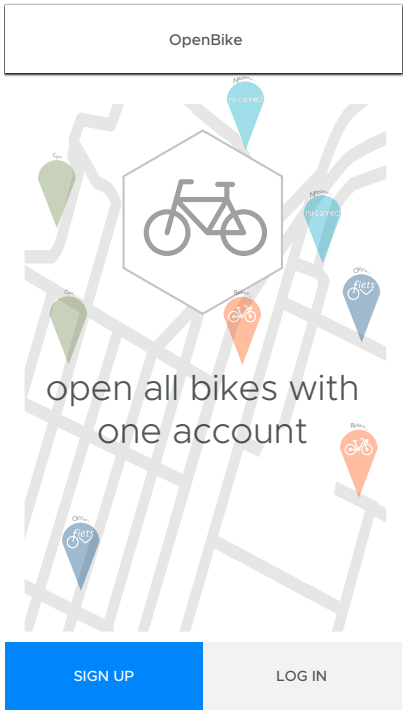
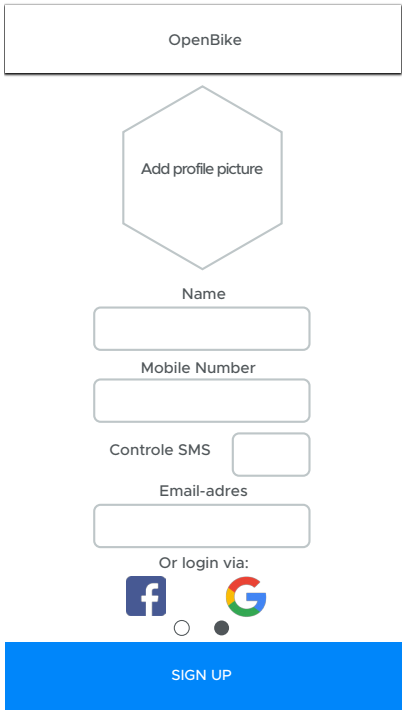


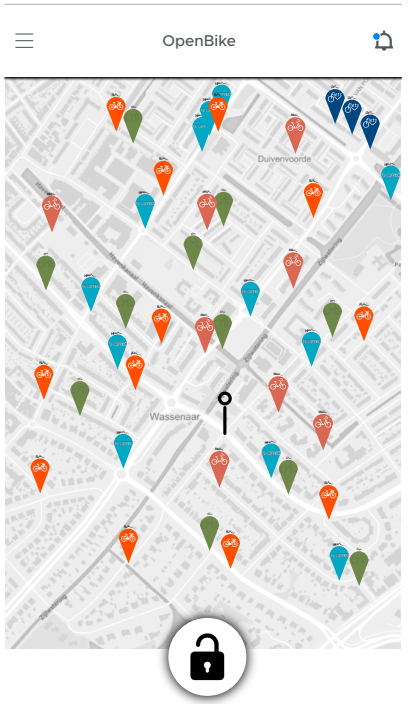
Start screen, option to:
* Login
* Create new account

0.2



Simple sign-on / on-boarding.. Identification with SMS and / or email-address

1.

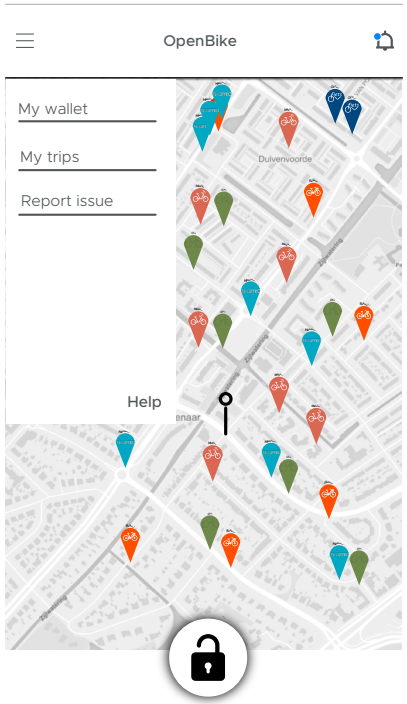


All available bikes visible

Menu button to add payment method, etc

Unlock button to start reservation / unlocking service

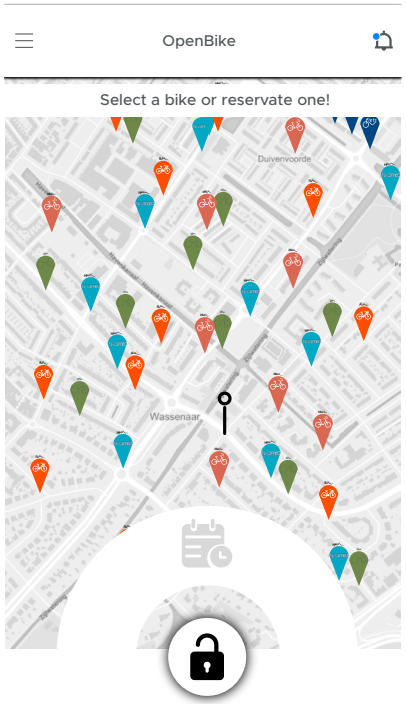
2.



In the wallet payment methods can be added.

Since it is a decentralized platform, payment goes directly to the chosen bikesharing operator.

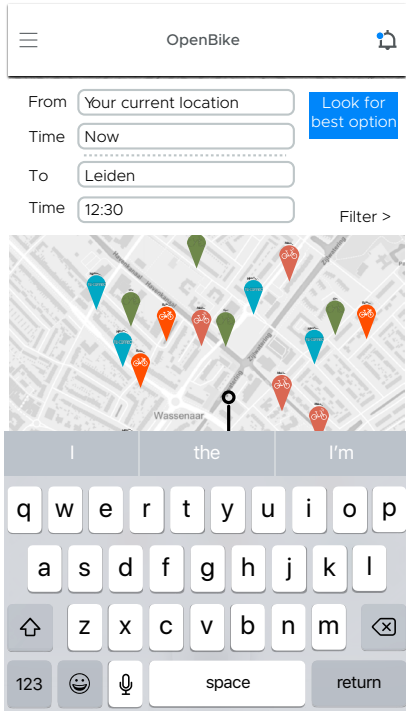
3.



Either select bike to unlock or reserve one

By selecting a bike in this stage, users can go directly to unlock and start biking.

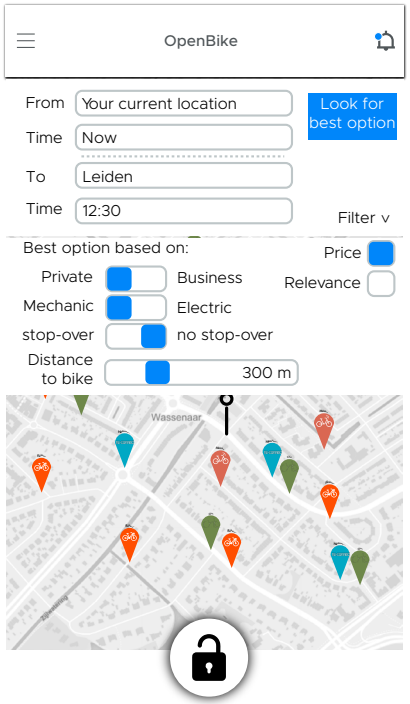
4.



When go to reservation, info is needed to create travel plan:

* Starting time
* Time of estimated arrival
* Starting location
* Location of destination

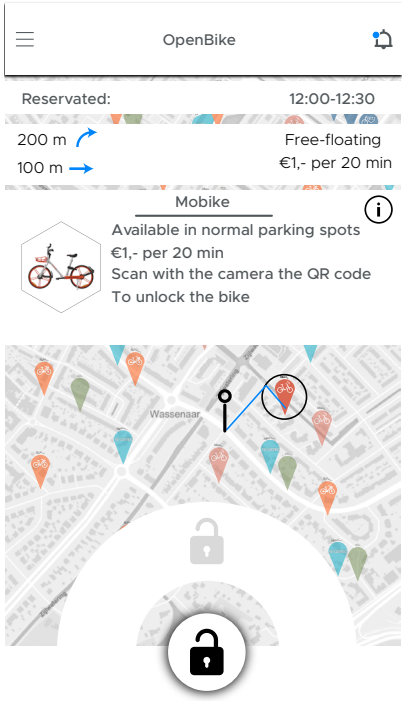
5.



Filters possible in what users are looking for. To create the best selection for the user.

Options are based on what operators mark as their benefit above a normal bike. E.g. user want to see only bikes with electrical support.

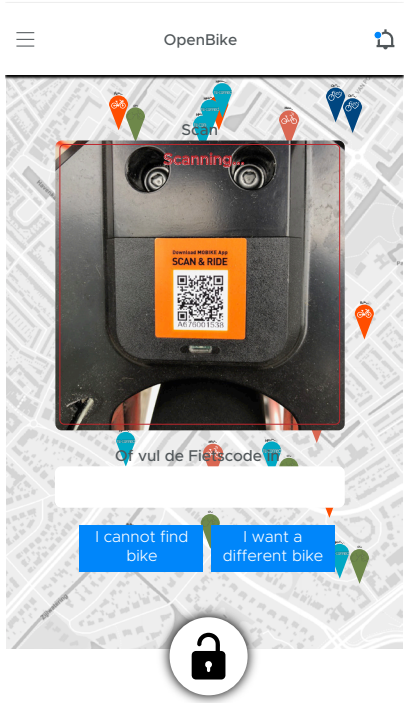
6.



Best selected bike is reserved for user, info is given about:

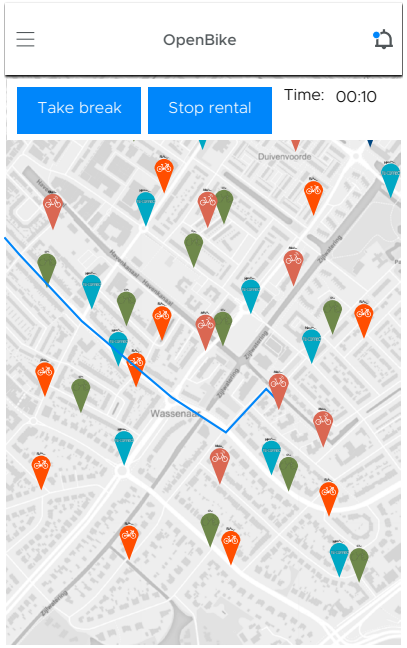
* Where is the bike
* How does it look like
* How to unlock
* Price
* Kind of system

7.



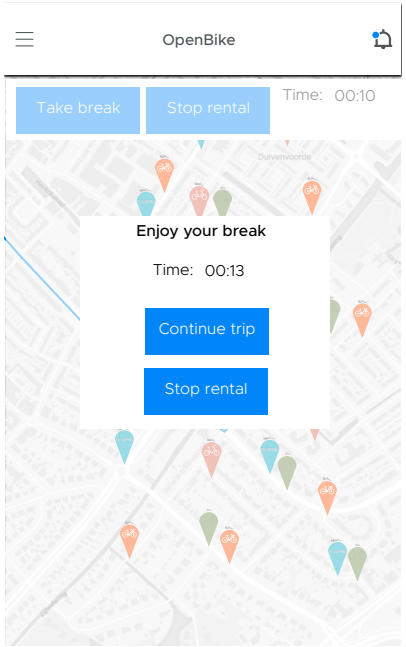
When arrived at bike, screen shows how to unlock the bike, and what to do when a bike cannot be found or the user want a different bike. Why the user want a different bike is asked after that (appendix F)

8.



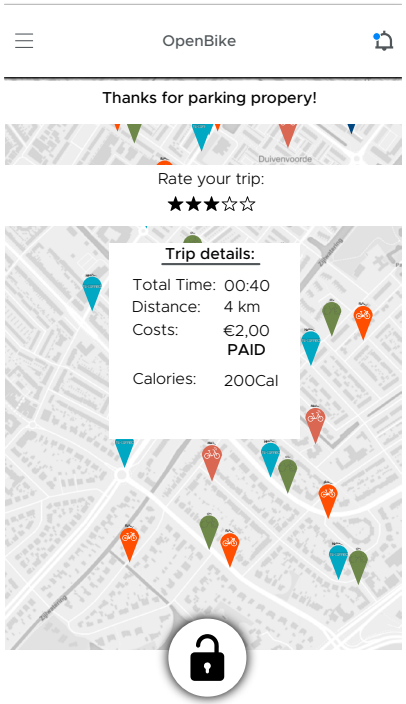
When bike is unlocked the route is shown. The user always has the option to take a break or stop the rental.

9.



When taking a break, the user must have the option to either continue trip or stop the rental period.

10.



At the end of the journey, the user select stop rental, parks the bike accordingly and gets feedback:

* If bike is parked properly
* If the service is paid
* How much is paid
* Time traveled
* Distance traveled

Governance model

As was said in the literature, a concept platform can only exist if there is also a governance model that explain the different relationships that are happening on the platform. With the wireframes of BaaS, a first attempt is made to create this governance model.

The essential takeaways of this governance model are that alongside the concept, a governance model is already in development. In this governance model the agreements, between the different roles in MaaS are discussed and who is responsible for what and how are disputes solved. The results of this first governance model session can be found in appendix G.

Technical development

With the wireframes, the first iteration is made to determine how the functionalities that are presented in the concept should translate back to an API that the operators are going to offer to the providers. In this session GBSF, a standard API that is already used in the USA for bikesharing partly covers the translation of the functionalities in an API. But not all features that are in the wireframes can be put with this API, therefore some fields need to be added to this GBSF making it GBSF+.

Conclusion BaaS

aaS is a visual representation of the envisioned service to help further develop the standardized API. It is not a finished product yet. These wireframes are essential because they make the choices done by operators, providers, and users explicit. Making the decisions graphic helps discussions between the operator, provider, and user.

In next sessions, which are either focused on the technical development or the governance model, the implications of the features that are presented in the concept can be discussed, and the impacts on both subjects help further develop the standardized API. This API will be used to connect the operators to the providers.

The BaaS concept, governance model, and the API will continue to develop until there is a standard created that will help smooth the agreements and technical development that are needed to implement the operators into the platform of the providers.

VALIDATION OF BAAS

Introduction

Designing is an iterative process, this means that a design cannot be right the first time. Therefore designs are continuously validated by different parties. In this design process, there is validation needed of the concept by a lot of various parties.

During the creative process users where not included. The stakeholders were urged to think about what would be best for the users, but this does not overcome the fact that users sometimes think differently. Therefore the concept must be validated by users: Does the concept communicate well, which functionalities are missing and are users willing to use the concept given that the price is right?

Also, the concept must be validated by the parties that were involved in the creation of the concept. In the sessions; the basis, the values, and principles that should come back in the concept are discussed and defined. From these creative sessions, the foundation for the interpretation is laid out. The concept is an interpretation of this and not a direct outcome of the sessions. Therefore the concept must be validated whether the concept still delivers the results that the stakeholders are looking for.

Method

So the concept will be validated with the stakeholders and the users. First, BaaS should be approved by all the parties involved in the creation. Since user testing with a concept that does not justify the wishes and demands of the stakeholders of the concept does not make sense, this has to be done first.

Second, users must test the concept. This testing is done using click-able wireframes that are presented earlier and can be found back in appendix F.

Results

During a meeting with all the stakeholders that were present during the creative sessions, the concept was presented with the customer journey and the wireframes. It became clear that the concept included all the functionalities that were discussed in the creative session and that the concept was a good representation of what the stakeholders want to deliver in a future vision. Underlined was that the presented concept was a future vision and not something that can be realized in the short-term, but more in the matter of a few years.

The concept was tested with users as well. During this exercise, it became clear that the concept was not yet optimal for users. There are a lot of forks possible on the way users go through the application, and not all functionalities are that clear for users. Although with some explanation all the participants were able to find their way through the app.

* The visuals do not yet meet the expectations of the users for a market-ready application.
* There are too many forks possible on the journey through the application
* The difference between reservation and reservation in the future is not clear
* The filters do not meet the expected filter options that users want to see Where to go to when there are problems is not clear

Conclusion & Discussion

From the validation, there can be concluded that although the stakeholders are supportive of the concept and see the concept as a future vision, the users do not agree with that statement.

The users want to see a better visual design which communicates the functionalities better than the current wireframes do. This level of communication was not the functionality that was desired in the concept by the stakeholders. One of the wishes was to make this concept not to concrete in visual design since this could take away creativity in future sessions, this also limits the communicational level in the design.

The users are in need of more steering in the concept, with an open journey that currently is included in the concept, the users do not find their way towards a successful journey. All the functionalities that are proposed by the stakeholders mainly based on the possibilities that the operators should offer instead of what providers choose to deliver.

The filter option is something that already came up in the feedback by GoAbout. Something providers need to take into account when developing a future MaaS concept. Questioned should be whether the API from the operators should offer such functionality since users do not desire this.

Who is responsible for what and who is in control of the customer helpdesk is something that is also discussed in the governance model, but does not come back in functionality in the wireframes.

CONCLUSION DESIGN PHASE

The goal of the design phase was to develop a basis for the third horizon of Mobike.

Together with eleven bikesharing initiatives active in the Netherlands (and abroad), the ministry of infrastructure and water management, and the five biggest municipalities in the Netherlands, a future customer journey is developed on how bikesharing should look like in a few years. This customer journey shows the functionalities that should be delivered by a future platform, with wireframes; this is tested and validated with users, and all stakeholders involved leading to some remarks for future development.

The customer journey is presented to future MaaS providers to come to a mutual understanding and see if they support such a process. Concluded can be that this is the case and that the eleven bikesharing initiatives acknowledge this customer journey as a future vision of what should be possible in the future. So for Mobike, this is also a future vision of how bikesharing should look like, and Mobike should work towards such a future vision.

Important to note is that with this standard it is still possible for providers to cherry pick the operators they want. For instance, some providers do not want to offer filter options in the selection of the bikes. With the standardized API, they can either skip this field in the API or omit the operator that tries to enforce this feature.

Recommendations for further development

BaaS is a first iteration towards a working product. The customer journey is vision where stakeholders can work towards. During validation and discussions with future MaaS providers some remarks were made to take into account for further development.

Providers

* Not all the functionalities that operators will provide, will be used by providers
* The role of integrator is not acknowledged by providers, since they do the same job as the core business of providers, thus they will not be used.
* Limit the amount of “nice to haves” to speed up development and lower development costs
* Keep the platform open to give room for interpretation and development by providers
* A non-virtual customer support needed
* Do not give the user to much filter options to avoid wrong interpretation

Users

* Visual communication is key to translate difficult functionalities
* Limit the amount of forks possible in one customer journey
* That the customer journey is delivered by several stakeholders is communicates well, what to do when users encounter problems is not clear

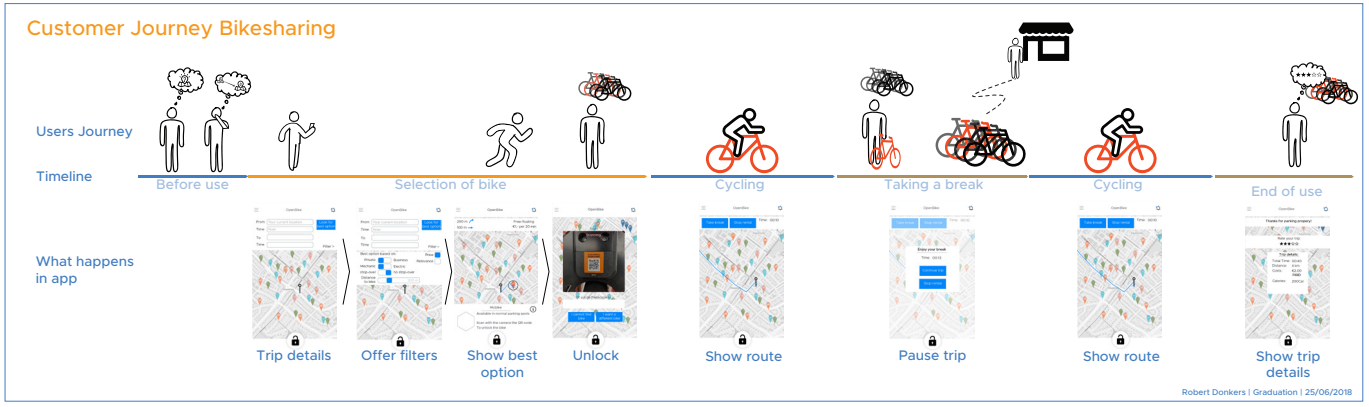


Figure 34: Customer journey bikesharing

6. ROADMAP TO SUCCESS

The goal of this project was to determine how Mobike can be successful in the Netherlands on the short and the long-term. In the previous parts of this report, essential factors of what Mobike must do to be succesfull now and a future vision of bikesharing in the Netherlands have been formulated. In this last chapter, both are combined into a compelling story of how Mobike can acchieve both goals.

In this last chapter, the goal is to show Mobike a way forward for success on the short, and long term. Emphasis will be put on what the first steps are for Mobike towards this success. This will be concluded with a Roadmap in which all changes come together.

Outline Roadmap

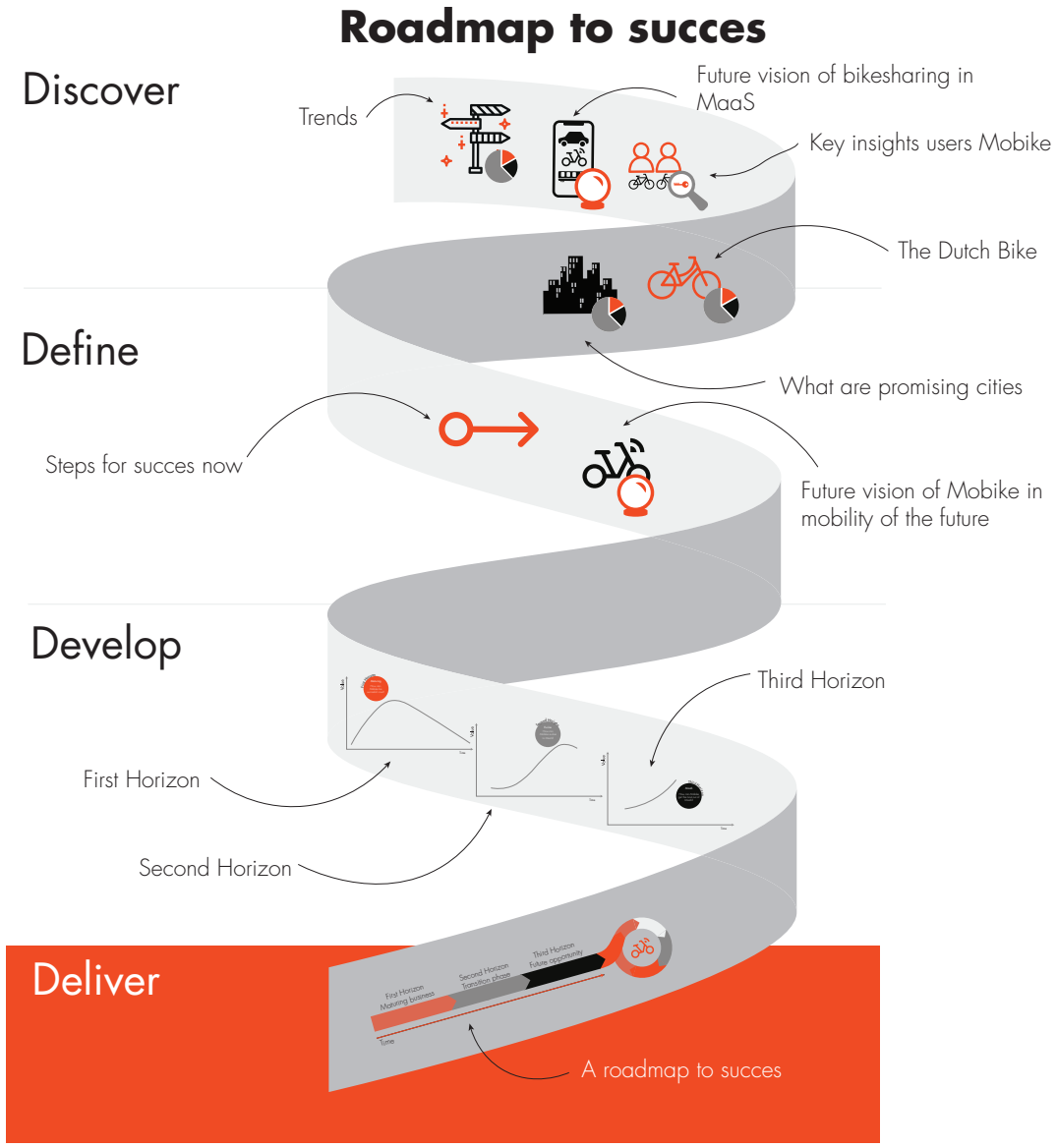


Figure 35: structure of roadmap

MOBIKE & THE DEVELOPMENT OF MAAS

Introduction

From the research, analysis and designing phase we now know what Mobike must do on the short-term and what the future of mobility in the Netherlands looks like. In this chapter, a Roadmap towards this future will be presented. Through this roadmap, it will become apparent for Mobike which steps it must take to be successful in the Netherlands on the short-term and the long-term. These steps will be linked to developments of the market and changes Mobike must make in its business.

Current situation

Nowadays Mobike is a fast-growing company offering a variety of Mobility solutions. In the Netherlands they focus on bikesharing, offering bikes on a Free-floating basis that can be opened using an application for smartphones. The digital environment enables people to get a bike and pay-as-they-go for it. Research showed that the bikes Mobike currently uses do not meet the quality standards Dutch citizens are used to. Next, to that, Mobike is only available in Rotterdam and Delft, the concept: "A bike in every city," is not achieved. These problems in product and coverage inhibit sustainable growth for Mobike.

The current strategy of Mobike is to optimize the current usage of Mobike. By optimizing the price on data gathered on existing users of Mobike, Mobike is not trying to get more people to use the Mobike but trying current users to bike more. This way of doing business does not solve the current problems and also does not add to sustainable growth.

Future

Mobike aims to be the go-to mobility provider in the future. Having grown from a small startup it was in 2016 to the multi-billion business it currently is, Mobike has the aspiration to be a dominant player in the future market of Mobility. The mission of Mobike is:

"Mobike provides an affordable means of shared transportation for convenient short urban trips while reducing congestion, and our city's carbon footprint. These combined - Mobike improves the quality of city life."

As stated in their mission Mobike does not limit themselves to only the deployment of bikes in the Netherlands, but they aspire a broader product portfolio. Something they are already trying to achieve in China.

Mobike wants to be a world player. They do this by trying to fit a bike to the needs of a country and optimizing their service to what fits that country best. By doing this, they seek to expand their business from China to outside of China.

Time pacing

The history of Mobike has been analyzed, to determine what timing strategy Mobike is currently using. The history of Mobike is a brief one. Mobike, founded in 2016 is a young company. They have grown very fast in China, also entering the foreign market in 2017. Considering the growth and the quickness that Mobike has deployed around the world, we can say that Mobike can quickly change and move. In the time that they are active, they have developed three different bikes, a smart bike and did many developments in the service.

Considering the time pacing of the future, Mobike has been able to deliver a new bike every six months thus a physical time pacing of six months. The incremental changes in the service can be done on a daily basis, optimizing their price to the week and doing weekly or two weekly updates to the application.

Compared to competitors the speed Mobike can change is average. Although there is the difference that Mobike designs their bike themselves, competitors usually use a bike that already exists

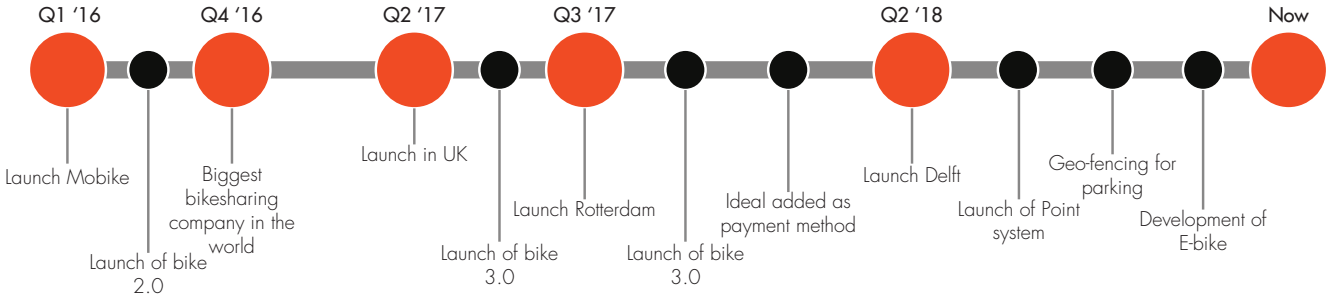


Figure 36: Time pacing development of Mobike

and adds features to them to fit the bikesharing or rental better. For instance, Swapfiets does not design their bike, but uses a prefab bike and alters it a bit to brand it Swapfiets. For both strategies is something to say, but in perspective of time pacing this, both approaches do not differ that much.

With the digital interface, Mobike though can change its proposition fast and quickly roll out new digital features. Swapfiets does not have a digital interface, and not many of the competitors do. So Mobike has the advantage here.

Three horizons

To clearly explain the next steps for Mobike the three horizons model is being used. Every horizon has its purpose and focus:

The first horizon will focus on the maturing of Mobike.

How can Mobike be successful now?

From research and analysis, we know that Mobike needs to expand their current product to more cities. This expansion will increase the market and ensures that Mobike can achieve critical mass. Getting a critical mass is essential to ensure growth and thus establishing a profitable business.

Next, Mobike should introduce a new bike. A bike that fits the needs of users better, enabling trips further, longer and more comfortable. Making the product not only better for current users, but also compelling to new markets and users, now not using the Mobike for these very reasons. Since

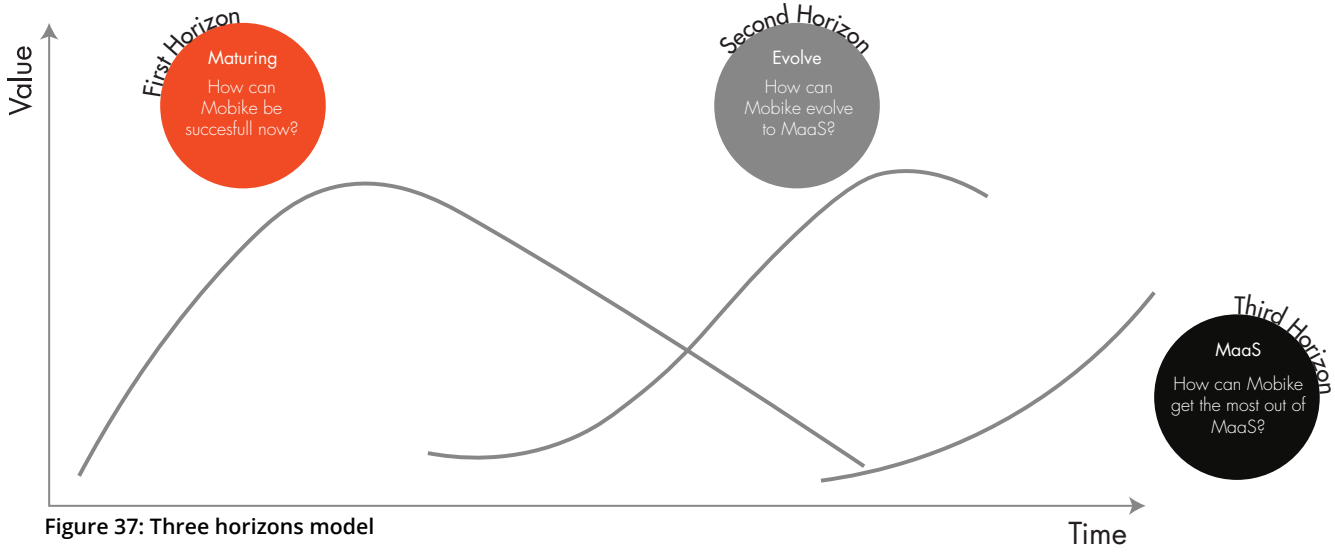


Figure 37: Three horizons model

these steps are so much necessary for Mobike to take; next to the Roadmap, what the new bike should be like is explained as well as which cities are essential for Mobike to start to deploy.

Although these developments are essential for the success of Mobike now, this does not explain how Mobike can be successful in the future.

Molding the future in the third horizon, it becomes clear what Mobike has to do to stay successful in the future. From earlier analysis and research we know that MaaS will be a big part of the future, enabling users to plan their total trip up front from door to door. This MaaS, also includes last and first mile solutions, one of the use cases of Mobike. Therefore the goal of the third horizon for Mobike is the integration of Mobike in MaaS solutions:

How can Mobike get the most out of MaaS?

DEVELOPMENTS AND TRENDS

Going back to the DEPEST conducted in the Analysis phase (appendix E), some trends and developments will happen in the future which are worth mentioning since they will alter the context in which Mobike will be operating. These trends also put the future vision in perspective.

Below the four most important trends can be found. These trends are a red line through the roadmap. These development are of most impact on Mobike, and the market Mobike operates in. Next, to these four most important trends, some other trends from the DEPEST that are used in the roadmap are shortly mentioned as well. These influence the technical development or market differently but directly for Mobike and are thus essential to state as well.

Four major trends in roadmap

GFRS+ as a standard

GFRS+ will be used as a standard format in which information is shared between operator and provider in MaaS. This trend that followed from the Openbike process, will influence the interoperability options for Mobike in the future. When the standard is being used, changing the standard become difficult. Failing to codevelop and implement GFRS+ will result in Mobike not being connected to a variety of providers without extra development cost on both the provider and the operator side.

Urbanization

More and more opportunities arise because of the urbanization of the Randstad. In the Netherlands more and more people are moving towards the city. This make the stress on current mobility solutions to rise and thus gives room to new opportunities. Mobike should keep track of this development and could optimize their coverage on micro level, deploying bikes in the areas where there is lower connectivity by traditional mobility solutions.

Openness of data

A trend that started with municipalities and local governments in the Randstad (G5), but more and more (smaller) municipalities will demand openness of data when operating in their domain. When Mobike does not comply these new rules, Mobike limits its own growth by ruling out these municipalities.

Launch of MaaS providers

More MaaS providers will launch their businesses. An example being Hely. Although this will start as small businesses it is good for Mobike to keep track of their developments and when fruitful join the providers in their offering by making the Mobike products available to them. Also by using them for pilots helps the providers in optimizing their businesses and helps Mobike assessing whether MaaS will be a fruitful part of the future for Mobike and what needs to change for Mobike to better optimize their offerings through MaaS.

Time pacing of Trends

There are two different types of trends. Some are developments in technology which make its appearance in this market at some point in time. The technology is not specifically developed for this market, but finds its application in this market. The other type of trends are developments that are happening in this market. These developments occur continuously and effect Mobike in every horizon.

On the next page, the trends that fall into the first category are presented. There are trends which are purely technical and will affect the market with technological advancement. The market trends are trends that are happening inside the market and are not dependable on technology but find their roots more in economic, societal, demographic or political trends.

Again, only the most critical developments for Mobike are presented here, in appendix E all the other trends can be found. Often they touch with Mobike in a sense, but they do not help towards the development of MaaS and thus are out of scope for now. An example: People are more eager to privacy, this is important for Mobike because Mobike must make sure that in the brand development they have to communicate to the users that do not misuse the data they gather, but since it is not a development that works towards MaaS this development is out-of-scope.

Technical Trends

Centralized vs. Decentralized MaaS

Currently, there is not yet a MaaS provider that works decentralized. Payments, customer sign-on and data handling will be done centralized by the provider. Mobike should accept that not working through a decentralized system means giving some power and processes out of hand. Failing to do so, will result in delaying integration processes or missing out on the MaaS opportunity at this point.

Development of Smart-locks

Currently, not all bikesharing operators offer smart-locks, which makes integration into a digital service difficult. Moreover, the different smart-locks that are presently available use different connectivity options to open, which makes it difficult for MaaS providers to provide a single customer journey towards opening the locks. Smart-locks will develop over time to both a deeper integration in the bikesharing culture and to better locks that can be unlocked through the same technology.

5G connectivity

A technology that is going to be an enabling factor for many Internet of things (IoT) applications is the introduction of 5G. With 5G connectivity will become cheaper and more products will be able to communicate through the internet with this. So its influence on the market is more a concern for Mobike. More competitors will enter the market, with the same functionality as Mobike currently has, having a mode of transportation with its connectivity.

Dynamic data

A technological advancement that will make the planning of trips better and more accurate is the implementation of dynamic data. By logging and sharing the geographical location, time and available seats of a particular mode of transport on a predetermined interval make it possible for MaaS providers to offer a better journey to the user.

Automation of MaaS by smart-contracts

Smart contracts, a part of blockchain will come around. With growing MaaS providers and more and more (local) operators make their way in MaaS the need for a structured way in which agreements between providers and operators are dealt with is needed. Earlier, this could have been done by a separate integrator. Since this increases steps in the value chain and thus adding some to the combined margins in the whole chain, this role is first to be taken away. Smart contracts will fill this job. These digital contracts in which a service is only delivered when both parties comply with the terms of the agreement will help structure the conversation between operator and provider. Providers have to deal with the API and smart contract without having to customize an agreement; this also smooths out liability issues since the intelligent contract not only holds the terms of the deal but also enforces them by checking if the conditions are met and then executes the action that is agreed upon.

Market Trends

Openbike

Openbike develops a standard for data sharing among participants of MaaS which will determine what is needed of Mobike to join the MaaS opportunities. (Local) governments are involved in the development, the data that they are going to demand from operators is partly determined in this process.

MaaS outside the Netherlands

MaaS is not only being developed in the Netherlands but also in other countries. Mobike could leverage their knowledge and developments that they have been through in the Netherlands to these countries as well.

Rising amount of Tourists

The total amount of tourists in the Netherlands are rising. More and more people from inside or outside Europe see the Netherlands as a go-to country for a holiday which adds stress to current mobility solutions and increases the opportunity for other mobility solutions to step in.

Higher spending

What we can say in general is that since the economic crisis in 2008 people can spend more and more every year. Economic growth flows back to the citizen, and they are eager to pay more.

City centers become car-free

Old city centers cannot handle the cars anymore and become car-free zones.

FUTURE VISION OF MOBIKE

Introduction

How does the future look like for Mobike? From the design phase we know that in the future, Mobike will be part of a bigger mobility picture. In this future, Mobike offers several different types of transport for urban travel. Mobike can engage with a broad audience by their multi-channel approach to different kinds of users.

Mobike targets both users that are using the native application of Mobike for occasional use and reaches a broad user group by partnering with MaaS providers, offering Mobikes through their platforms, doing so Mobike has been able to grow into the biggest sharing operator in the Netherlands.

The business of the future

By offering products through both Mobike's native application and MaaS providers, Mobike must optimize both best to the users of both channels. This optimization gives the opportunity to use different business models for both. Pilots and discussions with providers and operators should have shown Mobike which business model fits best MaaS.

Diversification of portfolio

Mobike does not limit itself to bikes only. With all new types of transport on the horizon, once Mobike has established a good coverage in the Netherlands with their bikes, and have developed a brand identity which users are eager to use, Mobike should not only limit itself to bikes only but should also move to other urban mobility solutions like E-bikes, Cars, steps, etc.

With the trend of city centers becoming more and more car-free, Mobike can seize this opportunity to engage with the market that opens up through this trend. Together with the urbanization, Mobike can have a significant impact on the Mobility of the future.

In the next pages, the steps Mobike must take towards this future will be explained and will be concluded with a Roadmap.

Partners for MaaS

Mobike will not be the only operator active in the Dutch market. Combining several operators in one application Mobike will be able to offer a first-and-last mile solution in combination with other mobility solutions.

Partner with Operators

Mobike has to partner with operators, making sure that users can neatly flow from one mobility solution to the other. Optimizing the product and service to the MaaS user.

Partner with Providers

MaaS providers are wel connected with their customers. Mobike must make sure that there is a free flow of data both ways. In this way Mobike is able to further develop their products

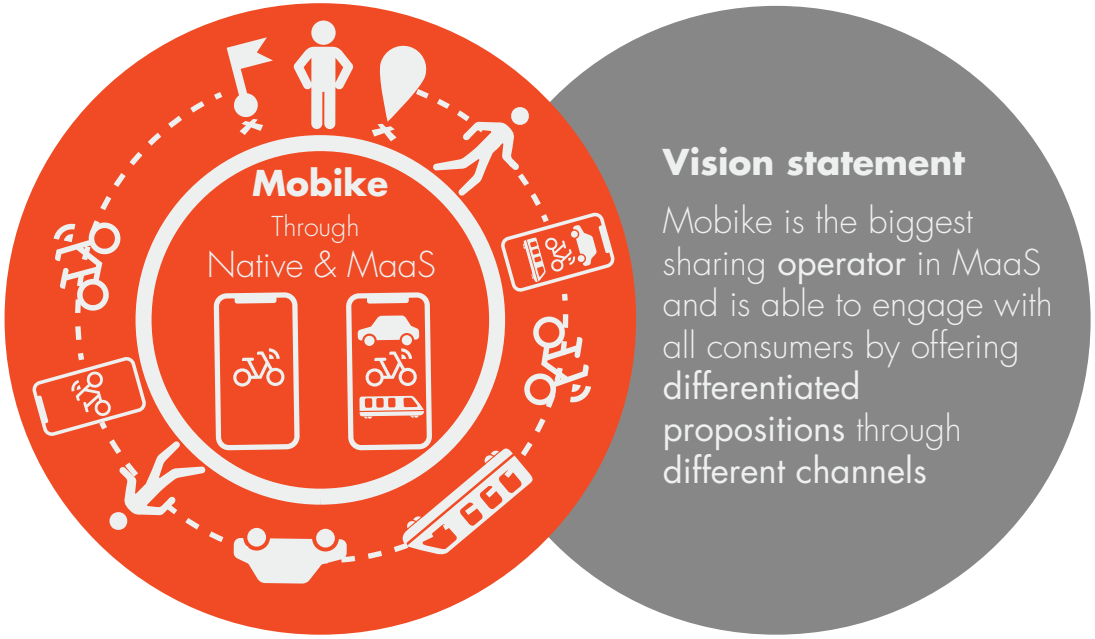


Figure 38: Vision Mobike

FIRST HORIZON | MATURING

Introduction

As the analysis of Mobike shows, the product and service of Mobike are not optimized for the Dutch market. The Dutch people expect a different product and service than that Mobike offers. Thus, Mobike's first objective is improving the product and service for the Dutch market.

The Dutch market is developing quite rapidly in perspective of bikes and bikesharing. Many things are happening with competitors. A competitor, Swapfiets, grew 1600% in 2017, they will continue to grow. Mobike should see this as a confirmation that there is a need in the market for a different approach to bikesharing/Ownership and biking in general.

Adding to the speed of the market developments are the changes that are happening in the jurisdiction and the approach of the government towards bikesharing.

Optimizing product

Research has shown that the bike that Mobike offers do not meet the expectations of Dutch users of bikes. Therefor Mobike should develop a bike that is more following the standard Dutch bicycle, something that has added to the success of Swapfiets.

Current Dutch bikes are developed through trial and error. The analysis of Dutch bikes, and in combination with earlier research, determined what characteristics of bicycles make a ride comfortable:

* The distance between the pedals and the saddle (A" plus the height of the saddle) must be variable between 700mm and 970mm
* The distance between the seat and the handles (B) must be between 690mm and 830mm
* Angle C must be 67 degrees
* Angle D must be around 30 degrees
* Tires can stay solid, but with the dimensions of 650mm in total wheel size.
* A Gearing ratio of 2 to 2,5
* 170mm crank size
* An energy efficiency that results in 60 watts for a speed of 16,1 km/h

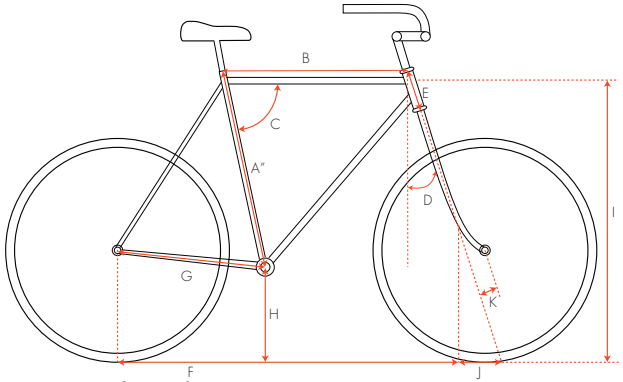


Figure 39: Bike and its parameters

Optimizing service

Currently, the Dutch people experience barriers to use the application. The service does not fulfill the job users expect correctly. Some essential elements that have to change:

* No deposit
* Feedback in application
* Better customer service

A new bike for Mobike

From research and analysis we know that the current bike does not meet the requirements of Dutch users. Users do like the branding, they can recognize the bikes good. And there are no complaints about the lock either.

Normal bikes would not be durable enough for Mobike. Competitors like Swapfiets and OV-Fiets also have that very same problem. Still they are able to offer a bike to users following the demands listed on this very page. Using the very bike Swapfiets is using, and branding it Mobike, would result in a bike that is more desirable for Dutch users (figure 40)

Figure 40: Converting a Dutch bike to Mobike

Users do not see the use of a deposit system and see this as an extra barrier when signing up for the service. Although the current deposit of €5,- is already considered quite low by users, Mobike could take away this barrier altogether by removing the deposit, as they did in China already.

Users are eager to help with to the success of Mobike. When the bike is considered broken and reported, or users see a bike that cannot be used for whatever reason they report it. How to report a bicycle is not transparent and on top of that what happens with your feedback is not communicated as well. Sometimes users see that nothing is being done with the bike they report, or it is taking too long.

For users, it can be unclear what the boundaries are of what is allowed and what not. Feedback on how you have used your bike or how you parked it must be better communicated.

Mobike should optimize their product better by measuring the Net Promoter Score more regularly and use smaller sprints to optimize the product and service of Mobike.

Optimizing coverage

For the integration of Mobike in the Netherlands, it is essential to keep growing. Currently with deployment only in Delft and Rotterdam reaching a critical mass is difficult.

Reaching critical mass is essential, not only on city level but also on national level. With the deployment of Mobike in more cities, users can depend more on Mobike when visiting a city. Being dependable is vital with "flexible stuff" like a Mobike bike as was discussed in the literature study.

For reaching critical mass, Mobike should focus on the deployment of Dutch cities with the following characteristics:

* Cities where everything is reachable within a +- 3 km trip
* Cities with students (fast integration)
* Cities with problems in public transport connectivity
* Cities with semi-small city centers
* Cities with good access for vans

By deploying in cities following the above characteristics is based on the current product service offering of Mobike. With better bikes, longer trips are possible, combined with a better service other larger city centers can be targeted. With partnerships with local workshop operators, Mobike can focus on cities with city centers that are difficult to reach by car or van.

Cities that are interesting for Mobike to deploy in on the short-term are:

* Leiden
* The Hage
* Utrecht

Creating a better understanding of the user

Mobike should develop a better understanding of the user. This graduation project gives some insights into what users think now. However, in the future, Mobike should build their products better

Net Promotor Score (NPS)

Net Promotor Score or in short NPS, is a score that is measured by users to determine the loyalty of users. Linked to actions done by a company, it can explain whether these actions are perceived as positive or negative by users. NPS is thus a good tool to help to optimize a service better to the needs of users. A single question is asked:

Would you recommend this product to your friends and family?

And letting users rate from 0-10. By determining the ratio between users that vote 0 to 6 and users that vote 9 or 10 and doing that regularly, something can be said about developments of the product or service and appreciation of users.

NPS measurements are usually done on a regular basis (e.g. daily, weekly, monthly) by either sending users an email, or via an pop-up in the application.

The users of Mobike

Currently, the userbase consists of four different types of users. Students are the largest group. Also, a large group of people use Mobike since their own bike is broken. Most of the userbase is WO or HBO educated, between 15 and 24. They are willing to pay around ten euros a month to be able to use the Mobike whenever they need. They would like to see the bike changed, see Mobike in more cities and be able to depend on Mobike to always be available. Mobike should continue research to what the users want and who they are.

The Commuter

Temporal replacement

(Day) Tourist

Student

by doing the research themselves. For this; the Net Promoter Score (NPS) is an excellent tool to measure the loyalty of users through a digital environment.
Mobike should measure NPS through their application on a weekly basis and link the trend line from this regular measurements to the changes Mobike did that week. In this way, Mobike can test whether specific alterations in the product and service are perceived as positive or negative.

Reaching the desired user group

Mobike must use the defined user groups and optimize their implementation strategy on these groups. Students are the best group to target when deploying in a new city. They are eager to pay more for the service, which is favorable for Mobike when implementing in a new city. After a basis in the student-culture is achieved, Mobike should lower their pricing and move the bikes more outside the city center to target a broader audience. Commuters are essential for Mobike to reach a critical mass; since commuters can use Mobike not only in the city where they work but also in the city that they live.

Although tourists are part of the user group of Mobike, currently it is not possible for tourists with a Mobike subscription outside of the Netherlands, to use a Mobike in the Netherlands. Enabling tourists to do so, lowers the barrier for tourists to use Mobike on their holiday trip, and thus increasing the usage rate for Mobike.

MaaS in the first horizon

Currently, there is already a lot happening with MaaS. Still, MaaS for Mobike is not yet very much discussed in the first horizon.

Compared to competitors Mobike has the strength and size to be the front-runner in the development of MaaS in the Netherlands. Mobike should start piloting with MaaS providers in this stage to become this front-runner. This piloting can be done low key and should deliver answers to the following questions:

* Is there a need for MaaS?
* What percentage of users come from MaaS versus native application?
* What needs to be changed in the service of Mobike to deliver MaaS better?

Doing pilots in the first phase show better what should be developed in the second horizon to serve MaaS best in the third horizon. Together with more pilots, in the second horizon, the learnings of these initial pilots should help to change Mobike for MaaS.

Conclusion first horizon

The focus of the first horizon is improving the product and service of Mobike. They can do that by designing a new bike, a bike that communicates the values of a Dutch bike better. Also by improving the service, so it will have fewer barriers for users to start using a Mobike and it communicates better to the users about the way they use the Mobike.

By doing NPS measurements regularly via the Mobike application, Mobike should create a better understanding of the movements of Mobike and the

loyalty of the users. By doing these measurements, Mobike creates a better understanding of what the consequences are of the alterations they make in the application.

Mobike should extend there coverage to more and more cities in the Randstad but also in other cities in the Netherlands. Deployment should be focused on cities with a high student population, cities with problems with public transport and cities where trips of +- 3km are the norm. These characteristics can change by improved product and service to make more cities.

Getting the usage rate up is essential to become successful. The user base needs to increase, and current users need to use the bikes more often. Making a better distinction between which types of users there are, and by focusing on specific groups with tailored propositions will help increase usage. Also by making a better distinction where to deploy in a city, can help to increase usage in the usergroup that is focussed on.

Technological and market trends are influencing; the market Mobike is in. Developments in API standardization, centralized ways of working, open data requirements and new MaaS providers that are on the horizon are changing the market Mobike is in heavily. Committing to these trends, helping these trends co-develop will help Mobike to be ready first in the opportunities MaaS will generate.

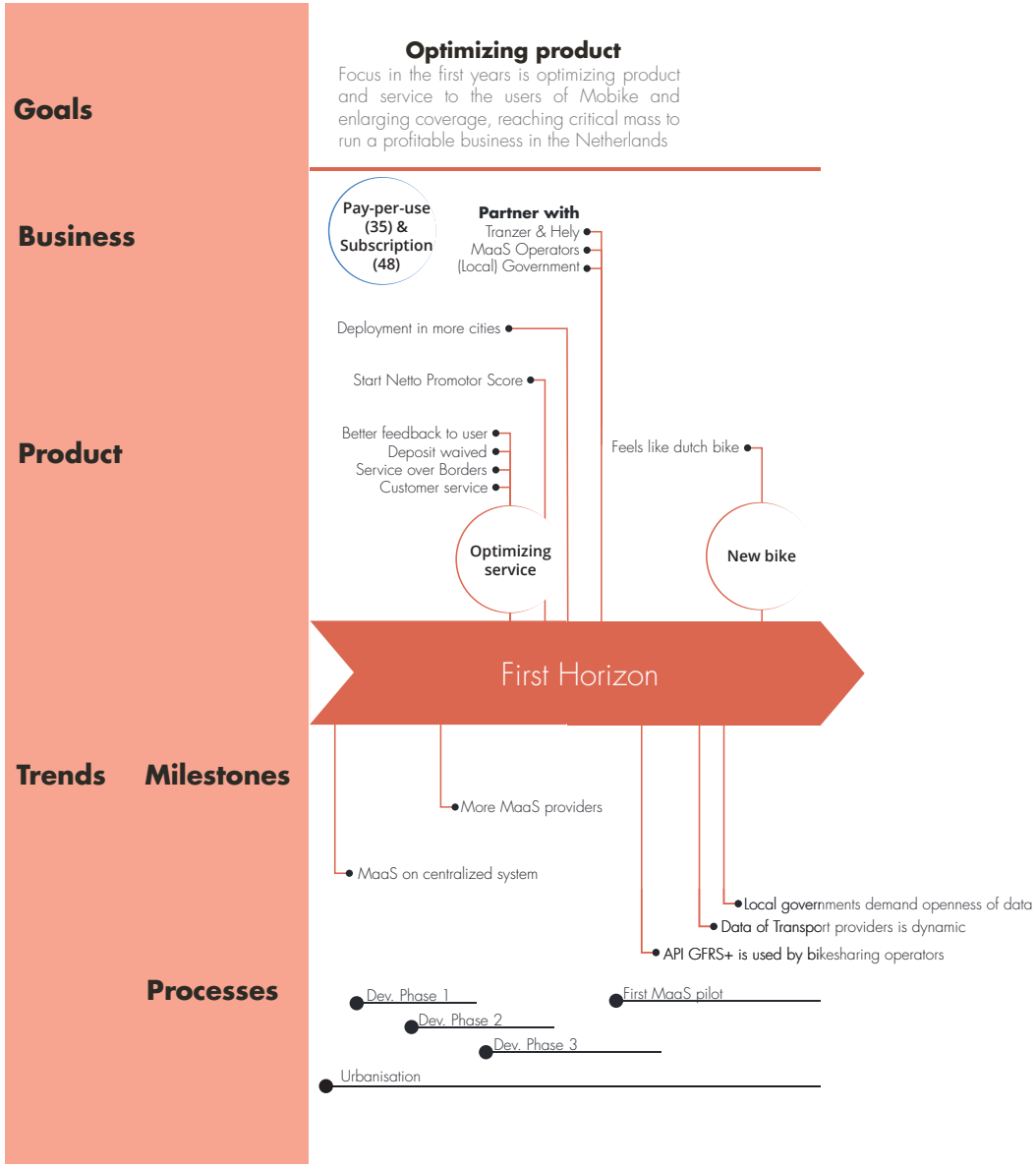


Figure 41: Roadmap first horizon

SECOND HORIZON | EVOLVE

Introduction

The first horizon ended with the first wave of MaaS pilots including Mobike bikes. The second horizon for Mobike is the transitional phase in which Mobike should be optimized to MaaS. There are some developments in technology and the market which Mobike has to take into account. Also, Mobike should open outwards co-develop MaaS with other operators and MaaS providers.

Diversification

Usually, diversification is a reference to the product portfolio of a company. This reference to the product portfolio is not the case for Mobike, diversification means here the diversification of business models. As discussed earlier, MaaS is only a part of the future; it is not the only future for Mobike. Next to MaaS Mobike's native application should have a place in the market as well. Mobike could use a different business model for MaaS than the native app. Diversification in this sense is thus the diversification in the propositions to the user and the business models that are used for MaaS and Native.

Changes to the product

In the first horizon, there is only one proposition to the user. Although the way they pay can differ a bit, they either pay-per-use or pay for a subscription in which the user can use the bike unlimited, the product and service they then use is the same. In the second horizon, MaaS is further implemented. This implementation of MaaS has implications for the product and service that Mobike offers as well.

From the pilots in the first horizon, it must become clear how Mobike should alter their product and service combination to fit MaaS better. From the NPS measurements, the native application must be changed to suit the market better as well.

In the second horizon, these alterations must be developed and implemented and further tested. Some examples in service are for example:

* In MaaS a longer possible reservation time is needed
* In MaaS another type of customer support is required
* In MaaS it must be possible to book a bike for a specific time.

Whether users want the above examples or others must be discovered in the second horizon, so that in the third horizon the different product and service combinations that are developed fit the need of a MaaS or a Native application user best.

Business model development

Since not all players in MaaS are not yet visible or present at the table thus, it is not clear which business model fits MaaS best. What we do know is the following:

* The price of MaaS cannot exceed the amount of the Native application
* All players involved must earn money

From the first pilots is has to become clear which parties are involved in MaaS. These parties should start a conversation with each other to determine how everybody involved can make a fair share. As

Business model selection

There are several ways of selecting a business model. For Mobike it would be wise to look which business model fits its business best by looking at comparable services and determine how they do business. According to Grassman there are just a limited amount of business models that work (Grassman et all. 2013). His research team combined those into 55 usual patterns. Using his method, Mobike could determine which business models could work for them. Initially there are two business models that spring forward and could potentially be applicable to the situation of Mobike.

Open business model (32)

This business model could fit MaaS best. In this business model, cooperation is essential for the success of the business model. Together with all parties involved, collaboration is a central source of value creation.

Pay-per-use / Subscription (35 / 48)

These two business models fit the native application, in the future, these two will still be in play. Mobike should evaluate these business models in the future to ensure that they still fit the situation best.

was earlier discussed by experts, the success of MaaS heavily depends on the pricing model, both on the back-end as well as what price the traveler has to pay.

The business model of MaaS affects both business models that Mobike will have. The business model that accompanies the native application of Mobike will also have to be optimized to deliver the best service to all types of users.

The research in this project does not clarify which type of user is more eager to use MaaS than the other. Research is needed to which Mobike users will stay with the native application and which will switch to the MaaS initiative. This research will help in optimizing the business model of the native app to that of its biggest user group. The optimization will just like the optimization of the product in the first horizon be done based on short sprints since this fits best the agile and data-driven way of doing business by Mobike.

MaaS in the second horizon

That the service and offerings of Mobike must change for a successful MaaS integration has become clear. When the first wave of MaaS pilots has shown what the potential is of MaaS, further pilots are needed to optimize the different offerings better. These pilots should be more nationwide. Since in the first horizon only pilots are possible with limited coverage, in the second horizon where deployment of Mobikes in more cities has been achieved, pilots can be done on a more national level.

MaaS pilots

As discussed, in the second horizon Mobike should do pilots to determine what should change in the way Mobike does business to deliver the best experience in MaaS.

As is discussed in the trend analysis in appendix E the government is planning to do several pilots concerning MaaS. To best serve the future of MaaS; Mobike should try to join these efforts. This will also have the added benefit that the government can facilitate in the development.

The goal of these pilots is to gain knowledge about:

* Which different type of users choose for MaaS?
* Which users choose for the Native application?
* Which characteristics of MaaS are essential for success?
* Which business model fits Mobike best in MaaS

Mobike should not focus on only one pilot. There are significant differences between MaaS providers in the characteristics of the service itself: The MaaS providers differ in, how the service is delivered, coverage, pricing strategy and operators included in the service. Thus, Mobike should do multiple pilots with different providers to determine what the best fit would be for Mobike.

Partners in MaaS

Working together in MaaS is essential for the success of MaaS. This was urged in earlier research and also underlined by experts from practice.

From the research we know that it is essential to include the big mobility providers in MaaS to be successful. Thus, it is key for Mobike to join efforts with the large mobility providers in the Netherlands, like NS, Arriva and Connection.

Development of service

The service of the native application does not need much development in this stage. In the second horizon, the focus of the development should be on the implementation of MaaS. For this, Mobike has to change. In the MaaS future, both the provider and the operator have the responsibility to bring to deliver specific features of MaaS. Currently, Mobike does not tick all the boxes of what is expected of an operator in a MaaS future. Mobike should focus its development in the second horizon on these boxes. Examples are:

* Who is responsible for a functional bike?
* What to do with user data?

Timespan

Evolving towards MaaS takes some time. Pilots need time to show their results, and those results must be implemented. Also, MaaS is a new concept, during this growth phase, there is room for new iterations, while in the third horizon the product must be finished and working properly. During a year, the seasonal effects can be measured and used to optimize the product throughout the year. Therefore one year to evolve to MaaS is not enough. The second horizon ends with the successful implementation of what is needed for a successful MaaS in the third horizon.

Conclusion second horizon

The focus of the second horizon is evolving from the optimized product and service on the first horizon to the MaaS future vision in the third horizon. In the second horizon, Mobike should focus on testing the open standard and evolve to MaaS, together with optimizing the native application to both benefit best on the market they appeal to best. For Mobike this also means taking into account the move to 5G, openness of data and the different business models that would fit Mobike better in the future.

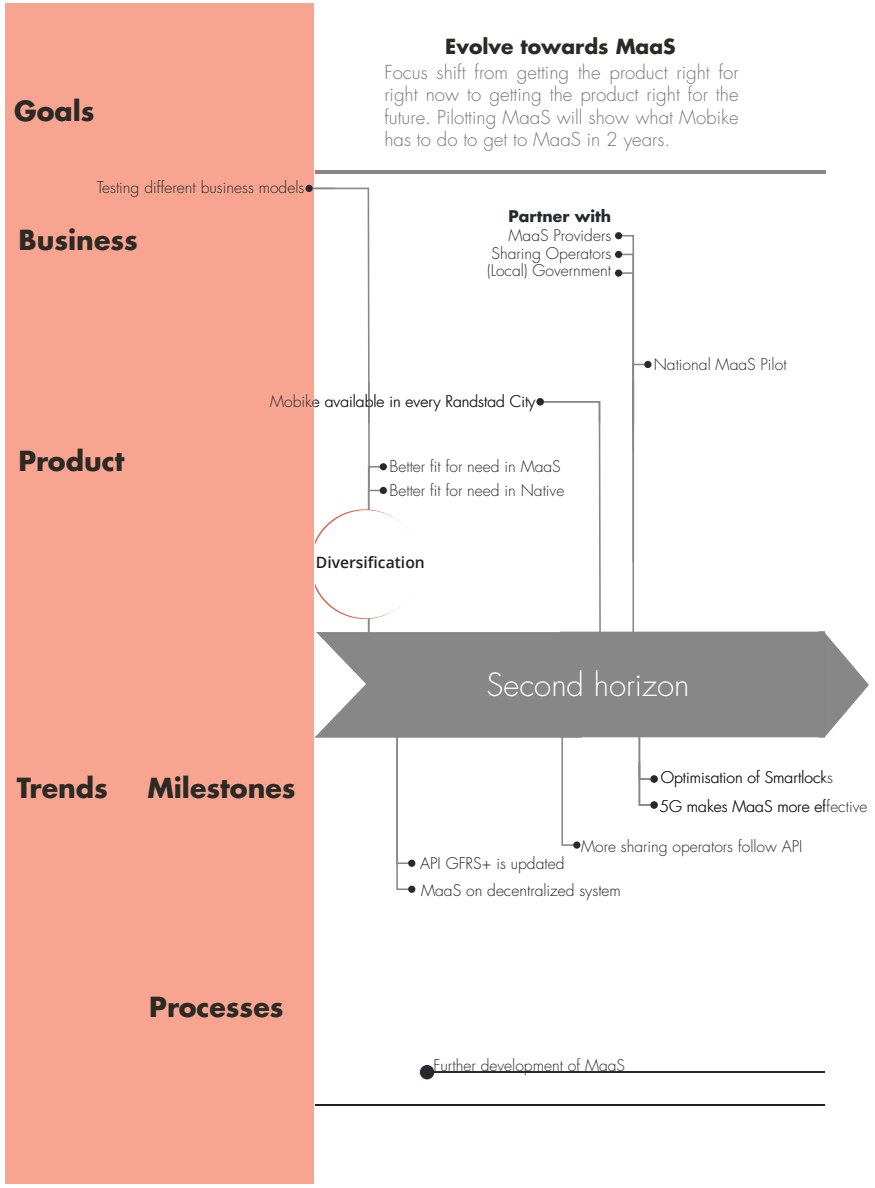


Figure 42: Roadmap second horizon

THIRD HORIZON | MOBIKE & MAAS

Introduction

While the first horizon ended with the end of the first pilots, the second horizon ends with the nationwide MaaS pilots. The learnings from these pilots give clarity how Mobike could benefit best from both the MaaS future and the future of the Native application. In the second horizon, Mobike has optimized its service and products to fit MaaS and the native application best. The native app focuses on a different part of the market and thus will work side-by-side with MaaS.

Although the majority of the development should have happened in the second horizon, in the third horizon short sprints are still needed to optimize both the services. The market is always changing, some developments outside are happening, and Mobike should react to those. Also, Mobike can expand its product portfolio to broaden the market and gain sustainable growth of the business.

Coverage of Mobike

In the previous horizons, Mobike has tuned their product and service offering to fit best to the needs of their users. Therefore increasing coverage and keeping user-rates up is not a big issue for Mobike. With the bicycle of Mobike, that is produced in large quantities in China and are meeting the requirements and wishes of Dutch users, Mobike can quickly expand its business throughout the Netherlands. With the improved service behind the MaaS application and the native app, Mobike appeals to a broad audience and thus has no problem in sustaining a high usage rate and success in bikesharing. In the third horizon, Mobike is active in all major cities in the Netherlands and continues to grow to all corners of the country.

Development of the brand Mobike

Where Mobike started in the first horizon with an unknown product to the mass, in the third horizon, their improved product and service offering, their increased coverage and their successful integration in MaaS offering their products through multiple platforms creating a multi-channel approach, ensures that Mobike becomes wellknown for their reliable, high quality and always available product offering. These values get connected to the brand of Mobike creating a strong brand in the market of mobility.

In this stage, it is essential for Mobike to keep that brand identity. With the continuous testing with surveys to the users, measuring the NPS, they give their users a voice in the further development of Mobike. Having continuous development is imperative to sustain growth. Having continuity in the brand identity is essential to gain trust with the users. Thus, it makes sense for Mobike to continuous test whether users still see the brand of Mobike as reliable, with their high-quality products that are always available and ensures that the developments they do fit that profile.

Mobility in the future

As has been discussed by many researchers, future mobility, especially in (old) European cities will look much different than now. Since urbanization is still happening, the stress on city centers is always rising and thus increases the burden on current first and last mile solutions. Something that goes hand in hand with this development is the increase in stress on the roads of cities; this results in not only more cars that must go through a city, but also increases the need of parking spaces.

As literature shows, city centers in Europe, especially old city centers, are not built for cars. They have narrow roads meant for walking, horses, and carriages, not for vehicles, and not for the parking of cars. Discussions that are currently already happening, and will continue in the future are about the need for car-free zones in cities. The implementation of these vehicle-free zones increases the demand for new first and last mile solutions again and thus also increases the market for Mobike. In the future, the need for mobility solutions with a higher usage rate and a smaller physical footprint will rise.

MaaS in the future

For the majority of the people living in the Randstad the way of commuting will be through MaaS. In city centers, cars are prohibited, and thus people do not own a car anymore or need to travel some distance to their car. Also, MaaS has made commuting more manageable and without stress. MaaS makes sure people get on time at their job and are equipped with the best solution that fits their need every time. A MaaS platform that always provides users with the best solution; all the mobility-operators, combined with other external factors give an offering that users need at a specific time and place. When it is raining, they get a different offering then when the sun shines, and the weather is clear.

Native application

Although MaaS is part of the future and will be there in the third horizon, Mobike cannot depend alone on MaaS. MaaS will serve a significant portion of the market, but there will always be a need for consumers to deal with Mobike directly. Therefor MaaS and the Mobike native application will exist side by side. In the native app, users can rent a bike via pay-per-use or when users choose to use Mobike on a regular basis can pay for a monthly subscription. Although this is not tested, it is thought that the Mobike native app will either deal with users that occasionally use a Mobike or users that always use Mobike. Everything in between that spectrum; MaaS will handle.

What does this mean for Mobike?

Mobike has been active in the Netherlands for some time now. Mobike has increased its coverage to all major cities in the Netherlands. In this future people know Mobike for their superior bike that is reliable, and always available. People trust on Mobike to be there when they are in need of an urban means of transportation.

As earlier mentioned Mobike must keep developing to sustain growth. The increase in the need for different and multiple mobility options for the first and last mile of peoples travels provides the opportunity for Mobike to leverage the values that they offer with their bicycles to other mobility solutions. The current Mobike mission states; “modes of shared transportation in urban trips” Mobike does not limit itself to bikes only.

Until now, the activity of Mobike in the Netherlands focusses on optimizing their offering in bikesharing for the Dutch market and increasing its coverage. Mobike already experiments with car sharing and electric bikes in China. Making their offering in the Netherlands more diverse by implement car sharing, electric bikes, electric steps and other mobility solutions they leverage the values users see in the brand Mobike to different products, ensuring sustainable growth into the future.

Like Mobike is a front-runner in the development of free-floating bike sharing, Mobike should keep in front of the development of other shared mobility solutions. Mobike should not limit itself to current trends in car-sharing, electric bikes, and electric steps, but should continuously be on the lookout for other mobility solutions. Quickly adapt to trends and keep innovating with new products and services an example of which being self-driving cars. Mobike should always try whether they can digitalize human factors in products to make them shareable, scalable and available everywhere. By taking the human element out of taxi driving, Mobike could enter the market for taxies without having to deal with drivers.

From NL to China

The rise of MaaS is not something that is limited to the Netherlands. MaaS is in development in other countries both inside and outside of Europe as well. In the third horizon, Mobike achieved the assignment they gave themselves when entering the Dutch market. Mobike is a success in the Netherlands, and the strategy they developed here is applicable in more and more countries. Currently, Mobike is also present in many of the countries where MaaS is in development and thus can leverage the learnings of the implementation of MaaS in the Netherlands to these countries.

Conclusions third Horizon

The future of Mobility looks difficult for the overcrowded cities in the Netherlands. How Mobike can add in this future of Mobility is clear now. In the third horizon, Mobike offers their product service combination through both MaaS and their native application. MaaS will serve the most prominent part of the market while the native application accommodates the single users or the everyday users.

In the previous horizons, Mobike has been expanding to most of the large cities in the Netherlands. In the third horizon, Mobike will stretch to smaller municipalities as well; creating a nationwide coverage of bicycles.

Mobike is known in the Netherlands for its always available superior products. Values like a high standard of quality and reliability get connected to the brand of Mobike. Mobike should leverage those values to a broader product portfolio to gain sustainable growth. Thus in the third horizon, Mobike should introduce other means of transportation that can be shared and help to relieve the burden on current mobility solutions. Examples of mobility solutions that can be shared are:

* Shared cars (or self driving cars)
* Electric bikes
* Electric steps

In the future, Mobike must keep scouting for

mobility solutions that can be shared, branded Mobike and can broaden the product portfolio of Mobike.

The developments in MaaS that Mobike has gone through in the Netherlands are happening outside of the Netherlands as well. The learnings they have from the Netherlands apply to these places as well. Because Mobike was early committed to MaaS, Mobike can quickly adapt when other countries move to MaaS as well.

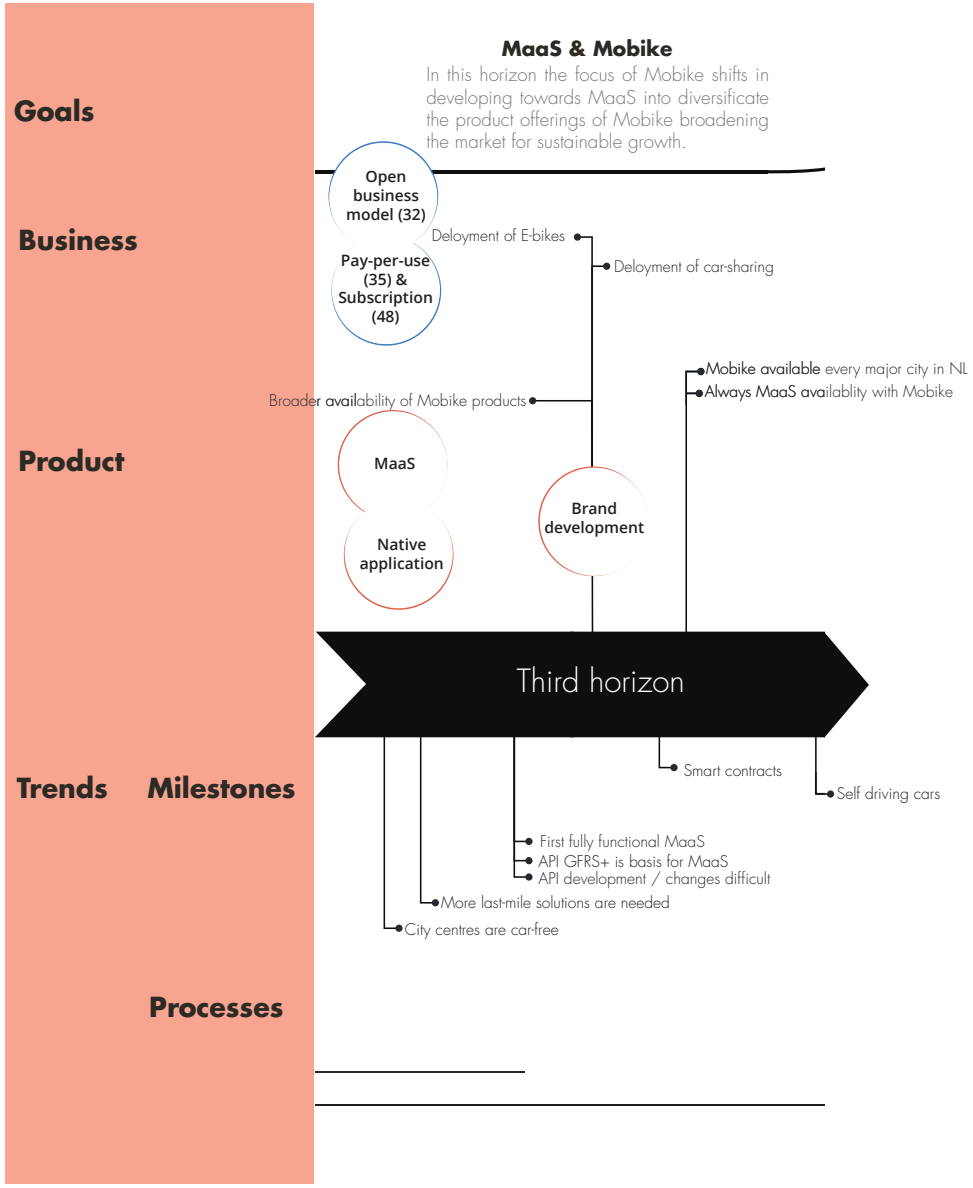


Figure 43: Roadmap third horizon

A ROADMAP TO MAAS

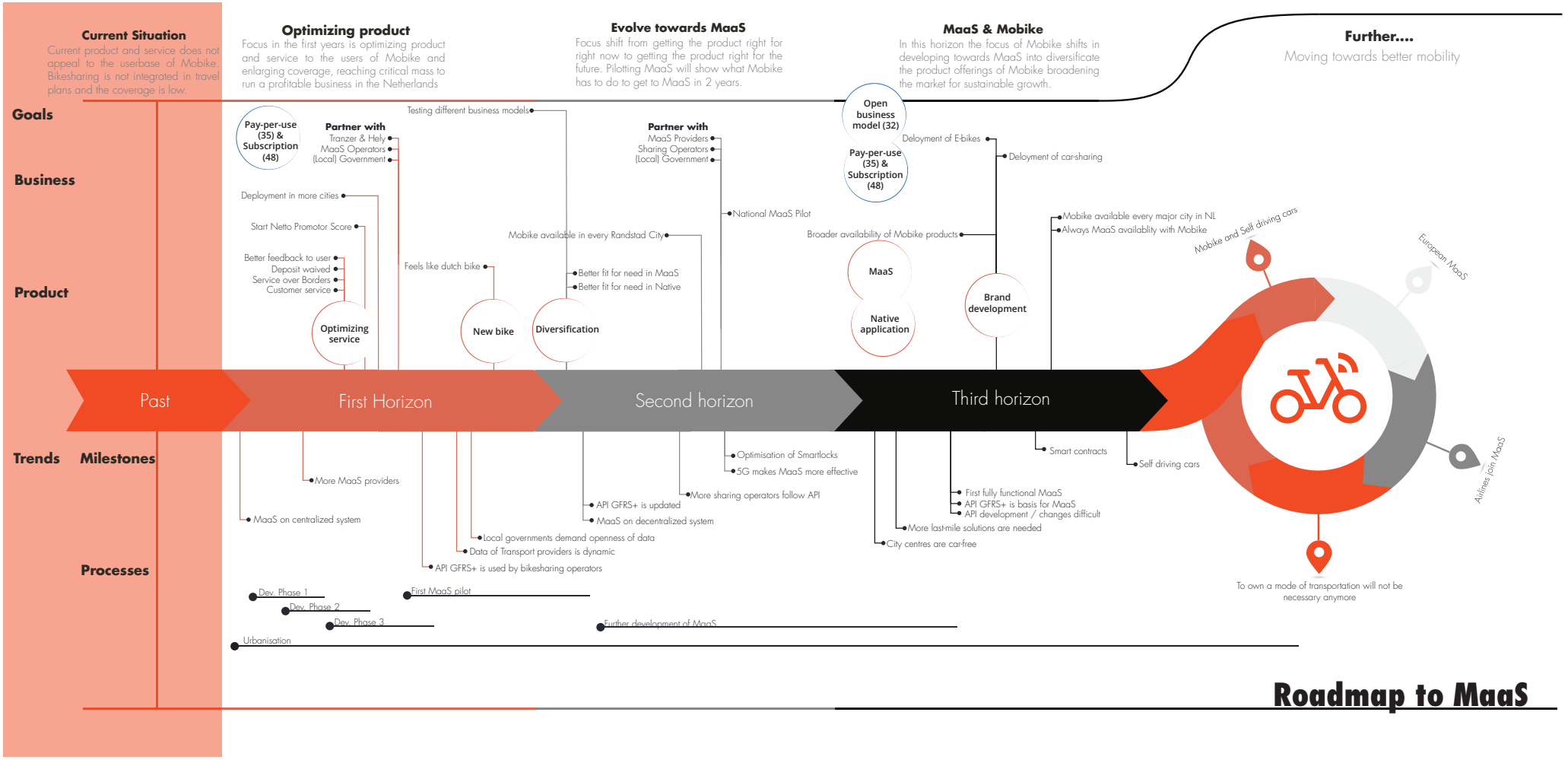


Figure 44: Roadmap towards MaaS

REFLECTION

REFLECTION ON GRADUATION

The graduation project has been fun, but it has not been easy. I enjoyed a lot of the freedom in the process, and I felt supported by Ronald. He helped me through the process when I was stuck or gave alternatives when some parts of the process were difficult. Also, he included me in most of his meetings and gave me support when needed.

The research

The master, Strategic Product Design has a large focus on research. During my master, I quite liked these subjects. In the weeks before my graduation started, Mobike introduced their research questions to me. What they were looking for and whether I could include that in my graduation. I felt enthusiastic to do this job for them. Mobike was in need of a better understanding of the Dutch user. Why would Dutch users use mobikes, why would the not use a Mobike or what could sway them to start using Mobikes?

When I started my graduation project. I wanted to create a quantitative understanding of the users of Mobike. During my master, the techniques that I learned and the type of projects that I did, helped me in figuring out a way of finding the best results. Like in every project, for the research I used the Delft method of, Discovery, Defining, Developing and Delivering. Next, to that, I also followed the way of doing research that I have done in my other master courses as well. Starting with a literature review, doing qualitative research to create hypotheses and doing a quantitative analysis to validate the hypotheses. I felt my setup was solid.

The first steps went quite good. The literature showed some aspects that were already documentated. And Mobike helped me in creating a testers group. This testers group was given a free month of use of the mobikes, so I could interview them afterward for the insights I needed for the hypotheses. During this time, I discussed with Mobike several times the possibilities to do a survey specific for Mobike users. By sending this questionnaire to the users via the application of Mobike, I hoped that I would get enough respondents to give a quantitative analysis of the Mobike users.

I created semi-structured interview guides and started with the interviews. With this, something else entered the playing field. A manager of Mobike was eager for the results but did not agree with my research approach. He wanted me to do more qualitative observations and try to approach Mobike users while they were using the Mobikes. This is something that the founders of Mobike did in China, and he wanted to be able to say the same about the Netherlands. Although this did not fit my approach directly, I figured it would not harm in trying. So while doing the interviews, I also did the observations. The interviews gave some valuable insights but the observations did not go well. By that time, Mobike was not used a lot, and thus the observations did not give enough output to be used. Added to that, the people that were interviewed during their use of Mobike were almost always in a hurry and therefore not very happy to help.

So the interviews worked out pretty good, the observations did not. It was time to focus on the quantitative approach: Sending a survey to the users of Mobike. Although this was discussed quite some time and was included in my proposal, Mobike decided to oppose the idea of sending a survey directly to the users. Therefore, I had to find a different way. Together with Ronald, we decided to send the questionnaire through our channels, and not focus too much on Dutch Mobike users since we would not get enough of them. (Another student did try, and ended with 200 respondents of which 30 where either Obike or Mobike users). Around 200 people responded of which 180 were usable. This is quite a lot. But since there were four different user groups and various educational levels and differences in gender, the data did not show enough differences in results to be significant. Also, the quantitative study was not focussed on free-floating bikesharing which made the testing of the barriers found in the interviews on this group of people questionable.

Since there was not enough data to work with, validating the hypotheses was hard. For the sake of the graduation process, I had to accept the fact that the quantitative study did not give the results I was hoping for. Despite this, further into the graduation project I never had the feeling I missed some information relevant to this project. The interviews, the observations I did, the discussions with people during events or even with other competitors never gave me the sense I lacked knowledge. I wrote my research part, now in one piece instead of two (earlier I split the quantitative and qualitative part into two sections) and continued my graduation project.

Learnings here are:

* I gained a lot of knowledge from the

interviews with Experts and Users

* I should have made a better effort in targetting Mobike users
* I should have accepted earlier that my quantitative part did not give the results I wanted
* I should make a better effort in making the questionnaire.
* I gained a lot of knowledge from the literature review
* I should not have depended that much on the company for the research

Design phase

The designing phase went well and I am quite proud of the results. The combination of the analysis phase with the research phase has shown what different stakeholders are looking for in the future vision. Also since Mobike showed aspiration for the MaaS future and the Bikesharing to become real, designing a way forward for both developments is also what is right for Mobike. This also gives Mobike a step ahead compared to competitors. Several parties are discussing the future of MaaS and bikesharing in the Netherlands. Bikesharing initiatives, the five biggest municipalities of the Netherlands together with the Ministry of Infrastructure and Water Management is looking for a way forward in which information is shared more freely, and bikesharing initiatives can unlock each other's bikes. They see this as a way forward towards a MaaS integration in cities. In these sessions, I was the only designer. Therefore they asked me to formulate the customer journey; hosting a meeting to determine which customer journey we work towards.

That was the challenge I gave myself. Although this is not directly the same as a future vision for MaaS; combined with the trends from the analysis phase and insights about the users of Mobike this could be perfect a future vision for Mobike in MaaS. In the standard bikesharing group (with also the local governments and ministry) there are no future MaaS providers included. Therefore, for my graduation project, I proposed to do some kind of the same session with a few different MaaS providers as well. To validate the ideas from the bikesharing operators to practice and to take these learnings back to the discussions with the bikesharing operators.

The sessions I did went quite well. We started with scoping down the customer journey session. And we started ideation. Going through the customer journey step by step and using post-its to write down any demands and wishes that were needed. This already showed the differences between operators and what they see as a future for bikesharing and MaaS. This also revealed that the three biggest operators included have a same future vision, and the smaller parties are finding it challenging to move forward. The result was an elaborate customer journey with a lot of features, some handy some not.

With this customer journey, I went to different MaaS providers, we discussed these ideas, and put the customer journey of this sessions next to the customer journey of these initiatives. They gave their feedback, and I could go designing.

I directly designed in wireframes in Sketch. This made the designing quite speedy and without hiccups. Since in sketch you can instantly test your interface, all the features that were put in the wireframes were tested right away. That way of working fits me, I can directly work to the deliverable and continuously doing small iterations.

What I found difficult was that I was doing only one or two itterations towards the end-result. Also I was doing this with a lot of other stakeholders, of which some wanted different things. During the designing of the BaaS concept I already knew some parts in the design are not needed for the ideal end-result. Because the binding between these stakeholders is so fragile and leaving them would result in a discussion which was not needed at that time I choose to keep them in. I figured, since we are not developping an platform our selves, but only the API, as long as the parts that are essential are in it, it does not matter if there are some arbitrary fields in as well. Providers can just choose not to implement them.

The result was for me good enough to visualize a future vision. How Mobike can fit in MaaS, can be in charge of the development of MaaS and can, therefore, be of influence on the outcome of this development. By doing sessions with all stakeholders, I was able to develop a first iteration of how bikesharing could fit in MaaS. By validating it again to both the users and the stakeholders, I delivered a future vision that was supported by all parties and gave some further insights for the further development. Since Mobike is just a part of this process, these are not directly insights for Mobike, but for the whole development.

Learnings here are:

* I like organizing creative sessions
* I like discussions with companies, trying to fit two products together
* I could have done a better effort in incorporating users into the creative phase
* I should have made a better distinction between what is needed now, and what is needed for a future vision

The Company

Working with Mobike was not easy. I have learned a lot from this experience. Working with a Chinese company that is abroad and not very active in the Netherlands is difficult. Sometimes I missed the direct contact when you share an office. For instance, that would have made it easier to validate and discuss recommendations in the report. I would have loved to discuss the recommendations about the bike with the product team or the suggestions about the application with the software development team. But that was difficult since I am not in direct contact with the company and the company did not allow me to contact them directly. So although I am pleased with the result of this project, I think the findings could have been more sharp, better formulated and fitted better for Mobike. Now, I feel more like an outside consultant that delivers his recommendation. In retrospect I think I could have done a better effort in connecting with the company, being bolder and trying to get in contact more with the different product teams.

Learnings here are:

* When a company is abroad, a lot more effort should be made to connect with the company
* I could have had a better result when I had been more in contact with different product teams

Chinese culture

During the project, I learned a lot from working with a Chinese company. How Chinese people look at products like Mobike and bicycles is so much different than in the Netherlands. Chinese people look at products as consumables as a numbers game. You win by being first and by being plenty, this is different in the Netherlands where (especially in Mobility which is also regulated) we work with the Dutch “polder model.” Sometimes this clashes when Mobike does not want to comply with new requests from the Dutch (local)governments but does not understand that for the Netherlands, the best way forward is by cooperation. Also because Mobike is a Chinese company, the decisions that are made in China can be radical. Chinese companies are top-down and very hierarchical. So whenever the top of the company wants to go left, the whole company goes left. This is also what clashes between what a graduate student wants and does and what the company would like to see. I have to go through a whole graduation process, while the company would like to see me doing whatever they order me to do. Saying no to that is difficult.

Learnings here are:

* The Chinese hierarchical way of working does not fit my way of working very good
* Do not get caught up in the clash between the Chinese way of working and the Dutch way of working.
* Cultural differences come back in every fiber of a company and its product

Conclusion

I learned quite a lot about myself and the way I work. This graduation project has been anything but a chronological order of events, things happened very iterative. During writing of the horizons, I needed extra information of how Dutch bikes look like and how they perform. So I had to do an extra analysis for this. Just an example how even in the last phase, there is information added.

In my opinion, this graduation project went quite well. Considering the difficulties that were encountered with the company, I have been able to execute the initial assignment quite well. I think the major improvement of this graduation project have been to include Mobike more. I felt deepness misses in how Mobike should execute all recommendations.

PROCESS AND TIMING

In general the time I thought this graduation would take became true. I would start my graduation in the beginning of February. Due to the fact that I broke my ankle, I was not able to start in February but I started 7 weeks later in May. I simply moved my graduation 7 weeks back

Initially I thought I would take twenty-two weeks for my graduation project. I took some weeks extra for the research. Also since the process did not go as I would like it to go. I expected to get more data from Mobike, but during the research setup it became clear that that was not going to happen, so I had to find a different way of acquiring the data i needed. This took some extra time, as well as the data analysis.

The designing phase went quite well. I was able to execute the process as I set out to do, and was able to use a process that Mobike was already in, to get the ideas and vision I needed. Although this concept is not directly connected to Mobike, Mobike can still use it as a vision to grow towards.

Also the writing went quite well. Due to the fact that my research did not get as I hoped it would. The initial research text was not good enough. Writing has been a very iterative process. Also since I have been doing so many different things, it was difficult to keep connecting the dots in the report. Ultimately it took quite some time, and feedback from people around me to get the order right.

Due to my ankle, and the fact that after my greenlight I had to undergo some surgery I took some more weeks after greenlicht to get everything in order. This also added a week and a half to the whole process.

Stress during project

The graduation process was quite relaxed. Sometimes, when there was trouble with Mobike, I noticed some stress. Normally I would sport to get rid of it, but since I could not sport with a broken ankle, I had to find different ways.

Especially in the week before handing in the greenlight report and in the weeks between greenlight and the final report, I was quite stressed. Confronted again with things that went wrong in the process, I became more aware of which parts I could have done better and/or which parts I would have done different in retrospect.

All together, this project was not a very stressful one, but I learned a lot about myself and my way of working and dealing with stress. I can be chaotic and quickly overlook mistakes (especially in my English writing) this does not help in communicating what I want. With a process like a graduation project this is difficult. In earlier projects this did not show very much, since there is always someone reading it again.

So, I had to read my text over and over again to get out my mistakes in English. Doing so I had to be aware continuously that I do not lose the bigger picture: what is the story I want to tell here. This gave quite some stress.

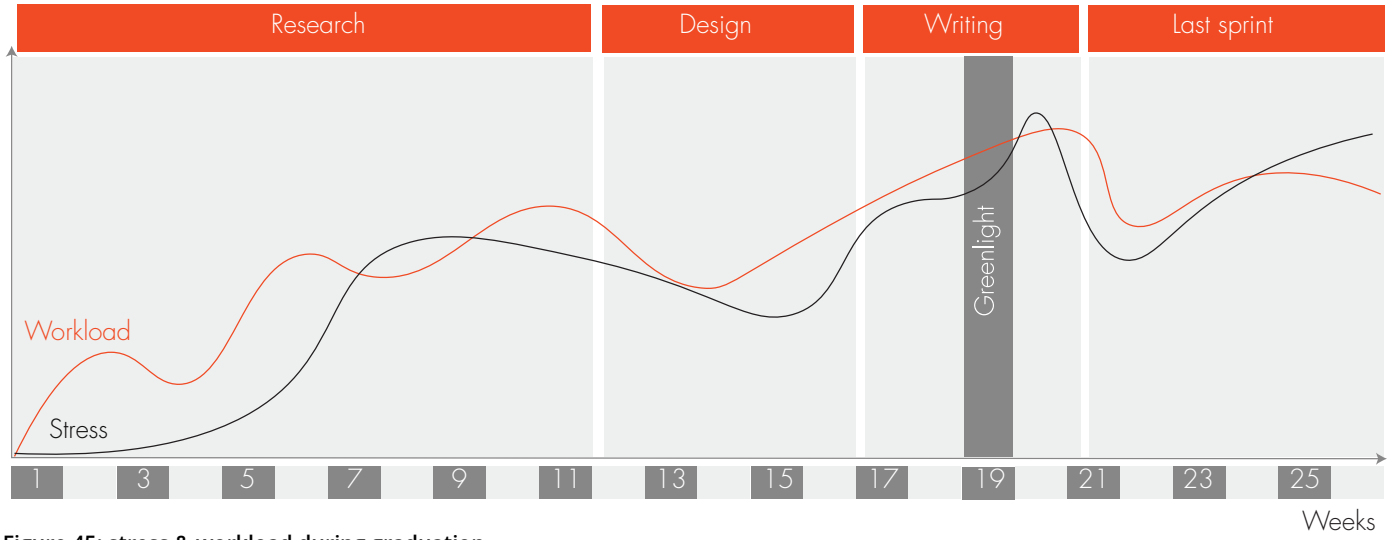


Figure 45: stress & workload during graduation

APPENDIX A

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APPENDIX B

Interviews users

Interview Guide Users – Testersgroep

Naam: Souheil Leeftijd: 30 Opleiding: MBO Systeembeheerder

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Korea en Taiwan, city-bike dockingstations

Wat vond je van de Mobike fietsen

Werkt opzich goed, concept is goed, reserveren is fijn, wel binnen kwartier, eerste zeven dagen gratis proeven. Veel goedkoper dan OV-Fiets. Wel zwaar fietsen

Wat vond je van de Mobike App?

Beetje buggy in het begi. Drie keer niet inloggen dan word je geblokkeerd. Via Wechat werkte niet echt. Nu met email address en ww. Waarom niet ook facebook en google.
Wel duidelijk tussen niet en wel parkeren. Ander logo misschien de P verwijst naar parkeren misschien p met streep.
Goede service, met sms als je probleem is opgelost

Overweeg je om Mobike te blijven gebruiken?

Ja, zelf wel fiets maar gebruik die minder vaak dan Mobike. Want eigen fiets duur. Mobike geen zorgen.

Hoe zou je ervoor willen betalen (en hoeveel?)

Subscription,
Availability is nog niet optimal (coverage)
Prijs is goedkoop vergeleken OV-Fiets

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Rotterdam en in delft, maar betere bereikbaarheid.
Onduidelijkheid in puntensysteem

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Verbetering van fiets, premium met naaf. Premium fietsen aanleveren. Prima product, hopelijk ook uitbreiden naar Utrecht.

Interview Guide Users – Testersgroep

Naam: Bart Leeftijd: 22 Opleiding: WO – Bachelor

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Ja, OV fiets, en een fiets in Parijs. Gebruikte al Mobike voor de testergroep voor 1,5 maand

Wat vond je van de Mobike fietsen

Heel zwaar, en trappen te licht.
Het mandje is wel echt fijn, het licht. De airless tires. Die rijden niet fijn, maar het steld je wel gerust dat ze nooit lek zijn en dat je je nooit zorgen hoeft te maken of ze stuk gaan. Heel fijn dat het zadel (rijdend) te verstellen is, alleen wel een gevoelig mechanisme, hij lockte niet altijd en bleef dus op de laagste stand staan

Wat vond je van de Mobike App?

Twee grote nadelen, de feedback van je score. Er is een lijstje, waar je score word bijgehouden. En een lijstje waar je plus en minpunten voor krijgt, maar Bart had laatst een daling in punten maar heeft geen idee waarom. “Safe riding” je wil graag weten wat je fout hebt gedaan, je kan alleen de info krijgen als je een officiele mail schrijven als je het niet eens bent, voelt zo officieel in hoger beroep gaan. Ook voor mobike zelf zou je de feedback moeten geven, om je gebruiker op te voeden.

Heel fijn dat de app je fiets invoert als je een melding geeft. Als er geen fiets beschikbaar is, en moet lopen naar een mobike, stonden er twee fietsen op private property. Je kan geen melding maken van een fiets die op een private property staat. Dat is het meest frustrerende.

Overweeg je om Mobike te blijven gebruiken?

Heel lastige overweging. Geloof in het concept, maar het product moet beter. De kwaliteit van de fiets moet beter. Swap fiets is een goede referentie, lekker hollandse fiets. Als je hard wil fietsen is een mobike meteen een cardio training.

Ik pas prima op de fiets, maar hij fiets niet fijn, versnellingen zouden fijn zijn. Zodra de mobike versnellingen zou hebben, merk je wel meteen dat het een zware fiets is. Het concept trekt mij wel heel erg.

Mobike naar station en station naar eindbestemming. En ging terug naar tram, geen zorgen over fiets dus.

Ik sport vlak bij delfse hout, mijn dag liep zo dat logistiek ik met de mobike naar sport gegaan en ik zou met de auto worden opgehaald, ik wist niet in hoeverre mobike dit niet optimal vind. “wat ik nu ga doen is niet fijn voor Mobike” wat gebeurt er dan met mijn punten.

Hoe zou je ervoor willen betalen (en hoeveel?)

Koppelen aan credit card is super onaantrekkelijk om te doen. Positieve verrassing, dat ideal er was. Fijn dat je on-the-spot kon betalen met Ideal.

Per maand is aantrekkelijker dan per rit, want ik gebruik hem als dagelijkse fiets. 7,50 is nog prima, maximal 10 euro per maand.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Ik zou zeggen, als je bij/met betaling langer zou kunnen reserveren, dan heb je een luxe voor mensen die meer te besteden hebben, een kwartier is soms net iets te kort. Maar ik vind niet dat het langer moet zijn, anders botst het met het concept, maar als je het kan afkopen is het misschien wel te rechtvaardigen

Andere steden unlocken zou een enorme pre zijn, dat maakt OV-Fiets zo aantrekkelijk. Mobike werkt nu echt alleen in delft.

Bij een mobike ervaar je niet de locale service, fietsen worden verplaatst door medewerkers en ik geef reparaties door, maar omdat je geen goede feedback krijgt

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Laten zien dat er lokaal iets word gedaan met meldingen.

Er moet een straf komen voor het meenemen van de Mobike op private property.

Ik voel mij echt gespionneerd dat je precies alles kan zien van je rit. Zeker nu je locatie meer word bijgehouden. Net te veel pricacy gevoelig.

Hij piept te veel, voor onduidelijke redenen

Interview Guide Users – Testersgroep

Naam: Dennis Walta Leeftijd: 40 Opleiding: WO – Communicatie adviseur bij TU

Had je eerder ervaring met Mobike of andere deelfiets concepten?

OV Fiets, geen eerdere ervaring. Deelfiets in antwerpen.

Wat vond je van de Mobike fietsen

Alles klopt, behalve de fiets. Het gemak is fijn, slot werkt goed. De fietsen lope naan (rem) voldoen niet aan de nederlandse standaard, zoals de oude OV fiets.
Qualiteit niet goed, niet comfort, maar gebreken aan de fiets.

Wat vond je van de Mobike App?

App gewoon goed, alles klopte, behalve de fiets.

Overweeg je om Mobike te blijven gebruiken?

Ja, het gemak is heel fijn. Woon in Utrecht, maar werk in delft. Als fiets in de binnenstad. Kleine stukjes.

Hoe zou je ervoor willen betalen (en hoeveel?)

20 minuten is prima
Per rit.
4 a 5 keer per week.
Niet duur, 7,50 of 1 euro niet duur.
Fiets promoten vanuit mobiliteit zouden ze wel willen doen

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Kwaliteit, maar alleen in delft gebruiken. Want Utrecht andere fiets.
Het systeem is goed, maar de kwaliteit van de fietsen.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Kwaliteit, mag/moet hufterproof. Handrem is het probleem. Niet het trappen (hoewel collega's het doen).

Interview Guide Users – Testersgroep

Naam: Hugo Leeftijd: 27 Opleiding: WO – Bachelor

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Frankrijk, Felip en in antwerpen. Was fijn daar want ik had geen fiets. Heel makkelijk om rond te rijden. En de OV fiets, was heel chill in Amsterdam ik had geen fiets end an opens wel en geen tram/ov

Wat vond je van de Mobike fietsen

Vergelijkbaar met de Felip. Maar een nederlandse fiets niet zo goed. Te kleine wielen. Te kleine fiets, geen versnellingen. Kwaliteit was prima, maar de fietsen zijn niet ontworpen voor nederlanders. Geen kapotte fietsen gehad.

Het viel mij op dat hij er altijd nog stond als ik terug kwam. Soms wel eens de Mobike gebruikt als ik geen fiets met licht had. Beetje lui eigenlijk, geen zin in repareren, pak de mobike.

Wat vond je van de Mobike App?

Goed en simple, je kon wat extra info zien over calorieen enzo maar daar heb je niks aan. Wel interessant was de routes die gefietst zijn, maar dat was wel lastig op te zoeken. Ook CO2 besparing niet heel nuttig, ik gebruik normaal ook een fiets

Punten systeem niet heel duidelijk. Hoe verdien je ze en hoe verlies je ze? Heel raar. Door rood fietsen? Hoe houd je dat bij, en klopt dat nog wel met de cultuur.

Ik ben een betere fietser dan de wet.

Overweeg je om Mobike te blijven gebruiken?

Nee, ik he been eigen fiets. Ik zou hem wel blijven gebruiken in een stad waar ik niet woon. De voornaamste reden is dan da teen mobike goedkoper is dan een OV fiets. Hoewel een OV fiets wel chiller is.

Hoe zou je ervoor willen betalen (en hoeveel?)

Hoe ik hem zou gebruiken, incidentieel, per keer. Als ik hem geregeld gebruik dan een abbo. Ik vergelijk mijn eigen gebruik met wat dan het goedkoopste is. Vooral als hij beschikbaar word in meer steden dan overweeg ik een abbonoment.

50 cent voor incidentieel gebruik is dat prima, maar de maandprijs is veeel beter als je vaak gebruikt. Die heb je er erg snel uit.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

De fiets moet beter gaan fietsen. En ik vind de betaal manier niet heel prettig. Ik vind het lastig om ergens crediet op te zetten, net als met de OV kaart. Ik betaal graag als ik het gebruik. Een aanbetaling zou ook niet welkom zijn, maar op rekening, of credit card, dat kan je gewoon afschrijven wanneer je dat wilt.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Ik heb niet te maken gehad met reparaties enzo, maar vooral ze moeten op veel plaatsen beschikbaar zijn, en of dat moet met dedicadet plekken of juist door ze meer te verspreiden weet ik niet. Je weet op een gegevend moment ook gewoon waar ze staan.

Interview Guide Users – Testersgroep

Naam: Joost Leeftijd:24 Opleiding:WO – Ontwerper

Had je eerder ervaring met Mobike of andere deelfiets concepten?

In Londen een aantal dagen, met fietsen op stations.

Wat vond je van de Mobike fietsen

Niet super veel gebruikt, keer of 10. Was best wel sceptisch. Daarom ook wel leuk in testersgroep. Het werkt met oneindig aantal fietsen. Werkt best goed, zeker tussen TU en binnenstad, gevoel van zekerheid maakt het zeker handig. Bij eigen woning (delfse hout) fluctueerde het nogal. Fietsen zelf hebben klein verzet, je trapt je kapot. Mandje is handig. Afvragen waarom geen NFC.
Voorrem loopt aan, waardoor piepgeluid.
Geen superhippe fietsen

Wat vond je van de Mobike App?

Scannen werkt prima. 1 keer een fiets gepakt die kapot was. Geen melding gemaakt, maar wel een andere fiets gepakt. Geen motivatie om een melding te maken → puntensysteem.
15 minuten reserveren is kort. Ook wel vanwege even lopen naar fiets.
Punten systeem heel negatief.
Mist een mogelijkheid om fietsen aan te vragen, om feedback te geven op locatie waar fietsen gedropt worden, reguleert zichzelf waarschijnlijn eenmalig.

Overweeg je om Mobike te blijven gebruiken?

Nu weer een gerepareerde fiets. Zeker binnen delft. Als andere steden aangesloten ook overwegen mobike te gebruiken.

Hoe zou je ervoor willen betalen (en hoeveel?)

Helft van swapfiets. Per rit, per maand is makkelijker. Als gebruiken dan toch regelmatiger.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Het trappen van de fiets.
Voor extra betalen een tweede fiets. Aantal keer in dit dilemma gezeten.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Interview Guide Users – Testersgroep

Naam: Lodewijk Leeftijd: 22 Opleiding: WO Bachelor Industrieel ontwerpen

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Ja, Ov fiets. Minimaal 2 x max 3

Wat vond je van de Mobike fietsen

Het werkt het concept van deelfietsen, maar gebruikte het wel als 2e fiets. Studenten fiets was beter dan langer dan 10 minuten fietsen. De angst om geen fiets te hebben was niet fijn. Fiets zelf was prima, maar geen goede fiets, versnelling te laag, zadelpen moet langer en wielen te klein
Ook na testers groep blijft gebruiken, tot test periode is afgelopen

Wat vond je van de Mobike App?

Reserveren was fijn, maar duurt te lang. Fiets scannen en reserveer zou fijne functie zijn. Heel simple app. Punten is onduidelijk. Interface van fietsen is prima. Ontgrendelen gaat snel. Simple prima, werkt gewoon goed.
Raporteren duurt te lang

Overweeg je om Mobike te blijven gebruiken?

Hangt heel erg van de prijs af, als je prijs 5 euro blijft chill. Als meer steden ontsloten worden wel.

Hoe zou je ervoor willen betalen (en hoeveel?)

Optimaal zou zijn 5 euro per maand, ik hoef het niet te gebruiken, maar het is wel heel handig. Prijs per dag zou ook fijn zijn.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Betere fietsen, als het fijn zou zijn om langer dan 10 minuten te fietsen. De banden, lampen echt prima. Versnelling zwaarder of banden groter
Hangt ook echt van je doel af, het is wel echt degelijk, je komt altijd aan. Als je een kapotte fiets pakt is wel heel matig, zeker als je haast hebt.

In delft werkt het goed, want binnenstad is klein, reserveren is dan niet nodig. Als ik ergens naartoe ga waar niet standaard fietsen staan, dan maak ik mij zorgen date r misschien geen fiets meer is.

Lastig dat je maar 15 minuten mag reserveren. Vooral bij de winkel bijvoorbeeld. En de manier van reserveren is omslagtig.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou bliiven gebruiken?

Amsterdam, Utrecht, leiden. Wat je normaal zou trammen of wandelen is een mobike een goede alternatief.

Interview Guide Users – Testersgroep

Naam: Lucas Leeftijd: 26 Opleiding: WO

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Ja alleen met OV fiets. Die vond ik vroeger lelijk, die nieuwe is wel mooi. Hetzelfde heb ik met de mobike fietsen. Die moeten nog een beetje integreren in de omgeving, zodat het er natuurlijk uitziet

Wat vond je van de Mobike fietsen

Ik moest erg wennen aan de fietsen, ze zijn te klein, het voelt eerder als sporten dan echt fietsen voor de functie van transport. De grotere is al wel beter, maar voelt nogsteeds zwaar aan. In nederland is dat natuurlijk niet zo'n probleem maar in het buitenland wel. In antwerpen zijn dit soort initiatieven volgens mij wel succesvol en in brussel niet, door het gewicht van de fiets.

Wat vond je van de Mobike App?

Zijn die oranje stipjes nou grote fietsen en de witte kleine? als je dat weet, dan gaat het best prima maar dat komt niet echt intuitief over.

Overweeg je om Mobike te blijven gebruiken?

Mobike was een mooie backup fiets, of als extra fiets om "uit te lenen". Ik had een grote fiets voor mijn huis staan. Volgens mij heb ik die altijd gebruikt. Maar nu doet mijn eigen fiets het weer, dus liever niet. Misschien als backup

Hoe zou je ervoor willen betalen (en hoeveel?)

Ik vond 0,50 cent per rit wel veel, het abonnoment is dan wel fijn. De ervaring is zo anders tussen abonnoment en betalen per rit. Bij een abonnoment voelt de fiets meer van mij, en voel ik ook de sociale druk om hem goed te behandelen en hem goed weg te zetten enzo. ik durf hem niet zo goed voor iemands pui te zetten, of een plek in te nemen in het fietsenrek.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Als de fiets in meerdere steden beschikbaar zou zijn. Op dit moment is de beschikbaarheid te laag
Daarnaast zou ik het fijn vinden als ik meerdere fietsen zou kunnen unlocken

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

beschikbaarheid verhogen, en meerdere fietsen unlocken mogelijk maken. Dan kan ik gemakkelijker iemand anders een fiets aanbieden in mijn eigen woonplaats (rotterdam) of als ik bij vrienden in Delft ben.

Interview Guide Users – Testersgroep

Naam: Mark Leeftijd: 23 Opleiding: WO – Bachelor

Had je eerder ervaring met Mobike of andere deelfiets concepten?

In China, met een studiereis. Enthousiast/ half positief erover. OV fiets 2 jaar gebruikt. In china 1 of twee keer mobike gebruikt.

Wat vond je van de Mobike fietsen

Bijna elke dag gebruikt, behalve als hij sochtends niet voor mijn deur staan, dang a ik lopen. Eerst wel lachen en hip. Unlocken via scannen. Maar je komt er wel achter date het er te weinig zijn.

Wat vond je van de Mobike App?

De App werkt nog niet optimaal. Hij laad heel vaak niet met waar fietsen zijn. Verder werkt hij wel lekker snel. Ik was wel benieuwd hoe dat raten gaat gebeuren. Waarom krijg je plus of min punten. Niet transparent waar komt de score vandaan. 1 keer opgegeven dat een fiets vast stond aan een andere fiets. Daar heb ik nooit iets van terug gehoord. Aanmelden gaat wel heel makkelijk. Een paar keer gereserveerd van te voren, dat was wel fijn. Dat er een dedicated fietsenstalling is bij het station is ook heel fijn.

Overweeg je om Mobike te blijven gebruiken?

Ik overweeg het niet, maar eerder wel. Wel fijn dat je kan fietsen in meerdere fietsen, je hebt overall een fiets. Vaak fiets ik alleen korte afstanden en dan is het prima. Het is vrij goedkoop

Hoe zou je ervoor willen betalen (en hoeveel?)

Niet meer dan 7,50, anders echt beter een swapfiets nemen. En dan betalen met subscription en niet per rit.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

Meer fietsen beschikbaar, soms wel echt lastig dater geen fiets is. De fiets is te klein, helemaal naar Wassenaar met een mobike vanuit delft is wel echt lastig. Het voelt als een aziatische fiets ipv een nederlandse fiets. Donkey republic doet dat dan beter. Mandje is wel chill, kwaliteit is wel echt fijn. Grappig dat hij piepjes geeft. Fijn dat je geen sleutel nodig hebt, moet je je huissleutel niet vergeten. Wel even wennen dat je telefoon opgeladen moet zijn, en andersom als hij leeg is is het irritant.

De lampen zijn erg fijn. Soms moeilijk in parkeer rekken neerzetten. Door mandje. En wel raar dat het zadel wel omhoog kan en het stuur niet

Je kan niet heel snel fietsen, dat is ook wel lastig.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

Meer keus, ik zou het niet gebruiken bij deze fiets. Ik zou het ook niet blijven gebruiken als de availability niet beter word. Ook de score is niet fijn. Het moet duidelijk goedkoper zijn dan alternatieven. OV fiets en een tweede hands fiets is dan een betere optie. Beter geschikt voor langere afstanden. De App werkt wel oke, er zitten nog wel bugs in. Dan laad hij de lokatie van de fietsen niet.

Het is best wel leuk, je hebt overall een fiets staan. Ook als je in een andere stad (Rotterdam) bent heb je een fiets. Grappig om te gebruiken “nieuwigheidjes” Je weet nog niet echt hoe het werkt. Je ziet veel aziaten erop fietsen, dat is wel grappig om te zien. Leuk te proberen, zeker na de ervaringen van de chaos in china.

Niet extreem intrusive, wel fijn de regels waar wel en waar niet parkeren. Toen de parkeerplaats kwam. Wel raar dat je je fiets wel kan parkeren terwijl het daar niet mag.

Je weet snel of er wel of geen fietsen zijn als je een staat inloopt, ze vallen lekker op.

Het is wel gewoon echt leuk.

Interview Guide Users – Testersgroep

Naam: Nirav Leeftijd: 26 Opleiding: WO – Bachelor

Had je eerder ervaring met Mobike of andere deelfiets concepten?

Not before, first time use of these services

Wat vond je van de Mobike fietsen

Love the service , its eassy, unlocking grab it and biking lock it again and you are done. When you go to the albert heijn, like touchless paying. Very easy to use. It has almost everything what a bike should have. Nicely designed, the design. It not always performed like he wanted the do, it is to slow. During biking, it takes like 5 more minutes always. Its like a gym bike. Bigger pedals/wheels would be better. No gears are fine. But bigger rings would be better.
What happens sometimes, normally there always bikes at my place. But today, there were no bikes. Then I go walk towards to the place I have to go and start looking bikes along the route. But sometimes you find horrible bikes then. It has a weird noise the lock was stuck.

Wat vond je van de Mobike App?

The application is really easy. It's like, just scanning and go. The minimal interaction is really nice, unlocking and go. Especially the locking. It shows how I perform that is nice. Everything in the app was clear for me, there is nothing I think that was difficult.

Once I reported a bike as broken. I was grabbing one bike, and I took it and I start ride it. It was jammed, I parked it and I reported it broken. It is really easy to report it broken.

Overweeg je om Mobike te blijven gebruiken?

No, right now I am continuing, because my bike is broken. But it is to slow. I have to bike every day, currently I am using mobike for that. But currently it is to slow.
Most people I speak to think it is to slow/heavy/small wheels/difficult to ride.

Hoe zou je ervoor willen betalen (en hoeveel?)

I haven't paid anything until now. Currently I am not paying.
I'd rather pay the montly subscription.

Wat zijn punten die ervoor zorgen dat je wel door zou gaan met het gebruiken van Mobike?

I was in need for a bike, then it is good to use the mobike.
It is not my bike, I don't feel responsible for the bike. Easy no hassle.
Mobike should change the bike (quality wise).
Mobike stand for you phone would be nice.
The bell is not easy to use.
More bikes would be nice, not at one place, but more scattered. More regular inspection where the bikes are and move them more around.
The service about repairing it, there was a problem with the bike, and I parked it. And the next day I see the same bike there. For a few days it was still there. Nobody was coming to repair it, although I reported it broken. So, an update would be nice.

Wat moet Mobike aanpassen aan de service en aan het product waardoor je het wel zou blijven gebruiken?

When I am biking with my friends they go faster. It is almost like sporting. That's the main reason why I am not continuing with mobike.
Add a function in which, you can share the data with other apps on runkeeper oid.
Intergration with music as well. A more integrated service.
It keeps tracking your GPS it is draining the battery a lot when using a Mobike. Why that is used is not clear. It feels like being monitored.
Gears would be nice
If it would have gears, I would easily pay more for it. Like 10 euros a month.
I really like the concept of sharing economy, everybody is using the bike. That is really nice. It gives freedom of not owning stuff. The bike is nicely designed. Cleanly etc. right now it feels good using it.
The bike is heavy.

APPENDIX C

Interviews Experts

Frank Witlox

At 27/03/18 an interview with Frank Witlox was conducted. The focus of this interview was for Frank to explain the research he is conducting testing a MaaS concept.

Last year, Frank and his team, conducted a research in Gent with the focus of testing the replaceability of different types of transport by a MaaS concept. By giving 100-150 persons a budget to commute by anything except cars, they gathered data of the satisfaction, gathered data about why people would shift and - maybe more important – why people would not shift.

During the pilot, a lot of users experienced a certain mode of transport for the first time.

The majority of the sample group was highly educated, which makes the data less generalizable. The biggest transport provider did not join the test, which made it difficult to replace the car in some of the cases.

Frank points out, that when a MaaS concept askes for a higher price than the individual service providers do (so adding a margin to the price), does not work in favour of the MaaS concept. Adding to that, Frank sees the implementation of a MaaS concept in the B2B market as more achievable then in a B2C or C2C market.

For a lot of people, a car is still the preferred mode of transport. Especially in specific cases like bringing children to school.

Frank points out that he is not sure if an app is the best way to move forward in MaaS concepts. He sees an app as a force fit between technology and what is needed, instead as the ideal solution.

Mick Walvisch

At 21/03/2018 an interview with the founder of Tripkey (Mick Walvisch) was conducted. The goal of this interview was to create an understanding how new emerging MaaS platforms think of the Dutch commuting market and its potential for MaaS. In short, Tripkey is an MaaS concept based on the already existing OV-Chip card targeted on tourists and expats.

Mick sees TripKey as the first true MaaS initiative in the Netherlands. With options like paying afterwards, the fast integration with current ecosystems by using an already existing card, he sees TripKey as a complete MaaS concept.

For tourists an app would not provide the same experience, since roaming is mostly expensive (although this is changing), a physical card would be a better solution for MaaS. Especially with bad connectivity underground.

Because every city is different, he wants to optimize every new city by adding local entrepreneurs to it and communicate with local governments to discover the needs of every city.

By building a community he wants to evoke a direct conversation with his userbase and optimize the experience.

Emma Schalkers

An interview was conducted with Emma Schalkers, intern at Sunidee. She gave some insights in how Sunidee looks towards bikesharing.

To start of she gave a short wrap-up of the current state of bikesharing. Sunidee defines three different approaches: Free-floating, docking stations and a hybrid version of these two. Especially the last one they see is very interesting.

For the success of bikesharing initiatives, users look for quality. In both the service and the bikes.
There are already some MaaS initiatives on the market. But none that delivers multiple modes of transport.

For the success of MaaS especially interoperability is important. The exchange of information between different participants of the MaaS platform.

Policy makers on city level, are important in the success of bikesharing initiatives. That is also wat makes some cities more interesting than others. For policy makers there are several options regarding bikesharing. They could, offer an open market without rules, regulate the market, limit the market or forbit any initiatives. Emma sees most in the regulated market or limit market (limited by governments).

APPENDIX D
Questionnaire

Enquete deelfietsen

In Nederland komen er steeds meer deelfiets initiatieven op. Misschien heb je ze al eens opgemerkt bij jouw in de stad of dorp. Misschien heb je al eens een deelfiets gebruikt. Deelfiets initiatieven die populair zijn in Nederland zijn bijvoorbeeld: Mobike, Obike, Donkey republic, OV-Fiets, GoBike en Next bikes. Bij de Technische Universiteit Delft zijn wij erg geïnteresseerd in wat jij vind van dit soort initiatieven!

* Required

1. **Heb je wel eens gebruik gemaakt van deelfietsen?** *
   Mark only one oval.

   - ◯ Ja *Skip to question 2.*
   - ◯ Nee *Skip to question 3.*

2. **Zou je deelfietsen aanraden aan je vrienden, familie of collega's?** *
   Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Ik zou deze fietsen niet aanraden	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Ik zou deze fietsen zeker aanraden

Skip to question 4.

3. **Zou je gebruik willen maken van deelfietsen?** *
   Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Ik wil deze fietsen niet gebruiken	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Ik wil deze fietsen gebruiken

Skip to question 4.

Vervolgvragen

4. **Hoe erg denk je dat de volgende dingen meespelen in je beslissing of je een deelfiets gaat gebruiken of niet?** *
   Mark only one oval per row.

	Niet een prioriteit	Weinig een prioriteit	Neutraal	Een beetje prioriteit	Echt een priority
aanbetaling die ik moet doen	◯	◯	◯	◯	◯
Beschikbaarheid van de fietsen	◯	◯	◯	◯	◯
Kosten per trip	◯	◯	◯	◯	◯
Kwaliteit van de fiets	◯	◯	◯	◯	◯
Steden waar de fietsen beschikbaar zijn	◯	◯	◯	◯	◯

5. **Hoe erg schat je de kans dat nieuws berichten je mening over deelfietsen hebben beïnvloed?** *
   Mark only one oval.

	1	2	3	4	5	
Niet	◯	◯	◯	◯	◯	Wel

6. **Hoe zou je voor een deelfiets willen betalen?** *
   Mark only one oval.

   - ◯ Elke keer dat ik een fiets gebruik
   - ◯ Per maand afrekenen / een abonnement
   - ◯ Per dag
   - ◯ Maakt mij niet uit
   - ◯ Other: _____

7. **Hoeveel zou je per maand maximaal willen betalen voor een deelfiets?** *

   _____

Skip to question 8.

Einde

Dankje voor het invullen, wij zouden je willen vragen de volgende vragen nog even te beantwoorden.

8. **Wat is je geslacht?** *
   Mark only one oval.

   - ◯ Vrouw
   - ◯ Man

9. **Wat is je leeftijds categorie?** *
Mark only one oval.

- 0-14
- 15-24
- 25-64
- 65 en ouder?

10. **Wat is het hoogste niveau van onderwijs dat je hebt genoten?** *
Mark only one oval.

- Mbo
- Hbo
- Wo
- Other: _____

APPENDIX E

Trend analysis

DEMOGRAPHICAL TRENDS

Urbanization

Currently the urbanization is still happening, together with a total population growth, a city like Rotterdam needs to increase the amount of houses in its regions with 40.000 in the coming years. (Rottier, n.d.) Rotterdam sees the tread that current mobility solutions cannot bear the rising commuters and sees that traditional solutions are not enough. Rotterdam sees big opportunities of MaaS, making sure that people are offered the best option available to ensure people move from using the car to using public transport.

Urbanization & Migration

Urbanization increases pressure in cities, the pressure on mobility in the country is decreasing. Since public transport is regulated on the business opportunities, the accessibility of villages that are decreasing in population is decreasing as well.

Migration from outside of NL

Also there is an increase visible in migration towards the Netherlands. Like is discussed in sessions with for instance the local government of Rotterdam, they see that areas where these people migrate to, the way personal transport is organized is different than what other areas. People with a migration background tent to use the bike less, less public transport and move more by car.

Ethnic diversity

Dutch cities become more ethnic diverse. In these ethnic diverse cities, the way people look at live, how they fill in their lives and how they look at transportation is totally different. The Netherlands should take this difference more into account in the way they make policy.

Aging population

A problem that is still happening is the aging population. People get older and older due to better healthcare and better knowledge about health. This results in an increasing population with difficulty getting around.

Economic trends

Higher spending

What we can say in general is that since the economic crisis in 2008 people can spend more and more every year. Economic growth flows back to citizen and they are eager to spend more.

Sharing economy

People tend to look for alternatives instead of ownership. Ownership gives the feeling of being weighted down, it prohibits the feeling of flexibility. Therefor people do not want own stuff anymore, an added benefit is that people do not spend big amounts of money at one time, but it is spread over a longer amount of time, e.q not buying a car but leasing one.

Focus on sustainable growth

Where big corporation used to focus on fast growth, after the economic crisis of 2008, companies focus more on sustainable growth instead of rapid growth. This is also enforced by the political environment.

Rise of China

China is taking over more and more over the role of world leader. Since America is more focused inwards than ever, this opens up the opportunity for China to step in. Due to their rapid economic growth in the past years, they are able to step up to this role and become a world leader in more and more fields.

Increasing economic differences

Although economic growth is happening to all classes in society, the differences in growth between these classes is rising as well. The differences between economic growth between classes has never been this big before.

City development

With more crowded cities,the need, especially in old cities to prevent cars entering the city center rising. Because these old city centers are not build for cars, and cannot be developed better. Policy makers want to make these city centers car free, which again opens up opportunity for other modes of transport to take over the role of cars.

Political trends

Alternative mobility solutions

Policy makers are confronted with rising pressure on current mobility solutions. There are limits to how much you can make roads broader, increase the amount of parking spots and the number of buses over a certain route. Therefor policy makers look to different solutions to make sure urban

areas are well connected.

Data hungry policy makers

To optimize better mobility over urban areas, policy makers are more data hunger to depend their analysis on. They are in need of more data and that translates not back into the question what data we need, but more in the question what data is available. They tend not to ask for specific data but expect everyone to share all data that is available.

Need for adaptive policy

Something that hangs on the eagerness of data, policy makers are urged to be more adaptive. A certain area is not designed anymore for a single functionality and policy makers have to realize to be future proof, only thinking about solving a "now" problem makes for different problems in the future. Being more adaptive, changing policy when it goes makes for a smoother change.

Rising amount of Tourists

The total amount of tourists in the Netherlands are rising. More and more people from inside or outside Europe see the Netherlands as a go to country for a holiday. This adds stress to current mobility solutions, and increases the opportunity for other mobility solutions to step in.

Spread of Tourism

There are several hotspots in the Netherlands for tourists to go to. These places see this as a rising problem. They cannot handle all the tourists. Therefor the Netherlands is trying to spread the tourists to more places. There are still cities in the Netherlands that could benefit from more tourists.

MaaS in policy

One of solutions that policy makers go to when discussing better connectivity for urban areas is MaaS. In Mobility as a Service all options are combined into one offering towards the traveler. Policy makers see MaaS as the future solution for the rising stress on current mobility solutions.

Populism

More and more political parties evolve to the extremes of the axes they move on. This makes political parties move away from each other, and also gives room to populism to happen as well. Mostly nationalistic feelings, echo good with the nostalgic feeling of people. This rise in populism does not solve any problems but only inflates the insecurities people already have and increases differences between groups.

Ecological trends

Better tomorrow

Both the population in general as well as for policy makers a better future for the next generation is important. This includes a better preservation of nature, and a smaller ecological footprint. Therefor people take nature more into account when choosing for certain products and services.

Paris agreement

In the Paris agreement, the ecological footprint of the future is determined. In these agreements the Netherlands has to reduce their emissions drastically. For this, policy makers have to look for different ways of doing this. Looking to alternative mobility solutions is one way of doing that.

Societal trends

Health, wellbeing and wellness

On societal level there is more a focus on Health, Wellbeing and wellness. Science tell us more and more that getting old and happy has to do with they way we live. Eating healthier, do not smoke and sport more are key elements to get old and happy.

Technology dependent

We rely more on technology to tell us how we are doing and what we should do next. Not only with dating applications we rely more on technology to determine we should meet, but also technology is telling us whether we are healthy, but also telling us how we could do better.

Increasing need or social healthcare & security

With a increasing population getting older, the need for social healthcare is increasing. Also, with differences getting bigger between cultural groups, the need for social security is increasing as well.

Private vs public

More and more, companies take the job over of municipalities to take care about public space. More and more public space becomes private space. What was formally a street with shops, is now a shopping mall privately owned.

Intergenerational differences

Since globalization is happening so fast, and people are getting better educated, get knowledge from different sources, the differences between generations is increasing as well. This causes tension between generation as well as protectionism to your own generation.

Nostalgic

Much is changing globally, this causes unrest on a macro level. People are trying to handle this better by looking to the past and learning from that. Some even linger in the past, romanticizing the past as better than the future. This nostalgic makes people to cling more to things they know and enforces people to control more the things they know they can control.

Local products and services

More and more people focus on locally produced products. Not only in consumables but all product categories people look for locally produced alternatives. Nationalistic feeling enforces this, as well as the perceived lower ecological footprint.

Technical trends

Privacy

Privacy is more and more getting important than before. People know better what the consequences are when tech. Companies do not deal with privacy properly. This does not only result in user demanding higher standards for privacy but also policy makers on all levels become more demanding in their focus on privacy.

Internet security

Internet security is a big topic where much can be said. What is important is that in combination with privacy this is an important topic which will evolve rapidly over time. With the opportunity for individuals to protest in new ways, taking out whole ICT systems behind a desk, disrupting businesses or even whole countries, in combination with more and more products being connected through the internet, internetsecurity is becoming more and more important in the future.

Downfall of traditional media

Traditional ways of news and media are changing. The need for these traditional ways of getting knowledge is fading away. People look for what they want to know on demand whenever they want through the internet. This also opens up opportunity for incorrectness in news and people getting informed badly on certain matters.

Automation

Automation is already happening since the 1800, this does not mean that this is not happening anymore. Currently more and more products and services are getting automated still.

Emerge of 5G

With more and more products getting connected through the internet, the need of wireless solutions with higher amount of connections possible is rising. This opens up the way for 5G to be introduced. 5G will not increase internet speed for consumers but focuses on more internet of things solutions to be able to connect to the internet.

Internet of Things (IoT)

More and more products get connectivity possibilities. This opens up possibility for products to add a online service to a certain product as well as increasing functionality of these products.

Big data

Connecting data to each other creates big data bundles that can help companies in optimizing several services. It can help optimizing products better to the user by data helping to create a better understanding of the user.

Decentralized platforms

Currently most of the online platforms are done on a centralized server. With the emerging of blockchain, more and more services will not rely anymore on data on one server but combines data from different servers.

Smart contracts

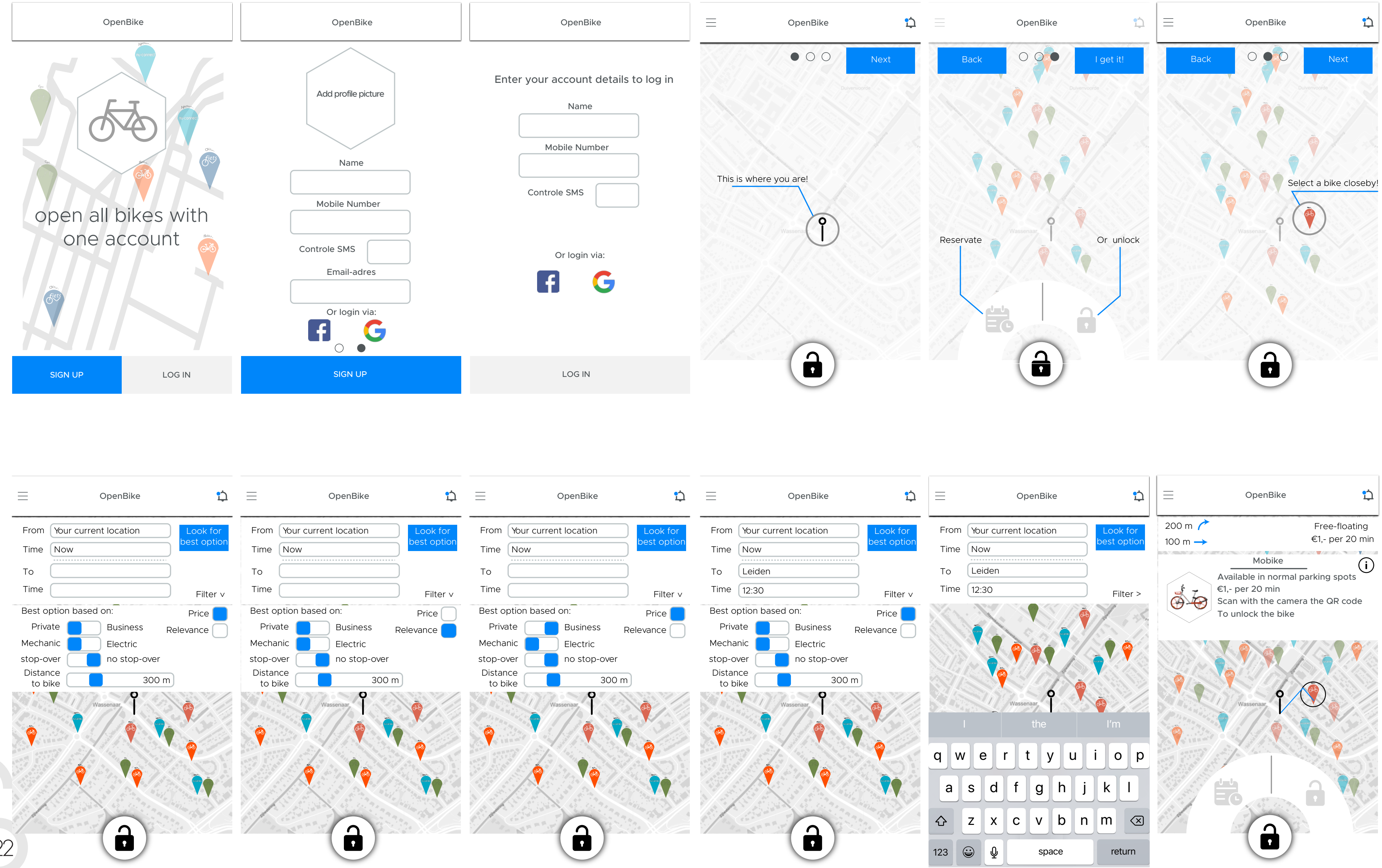
Smart contracts are an application of blockchain in which agreements between companies are streamlined though a digital interface. Digital contracts make it possible to without interference of a person execute certain predetermined actions on the acceptance of certain values.

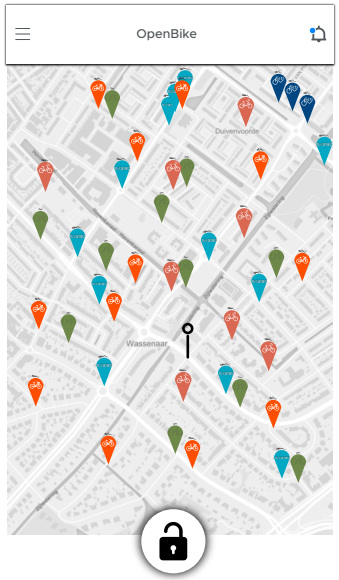
Self driving cars

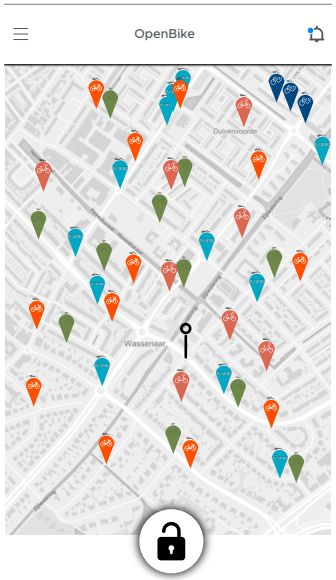
In the field of mobility, development of self-driving cars is rising. In the future, self-driving cars will take-over tasks of users in driving a vehicle, giving its traveler time to do other stuff.

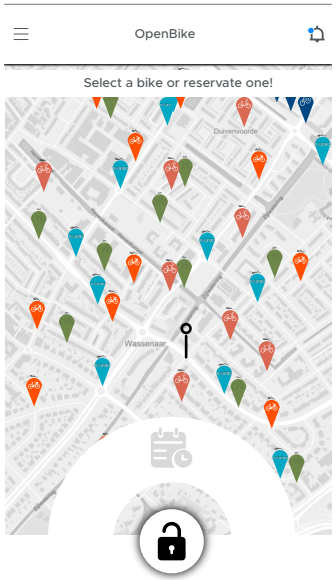
APPENDIX F

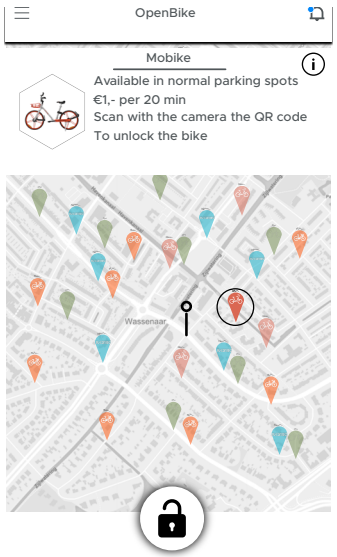
Wireframes

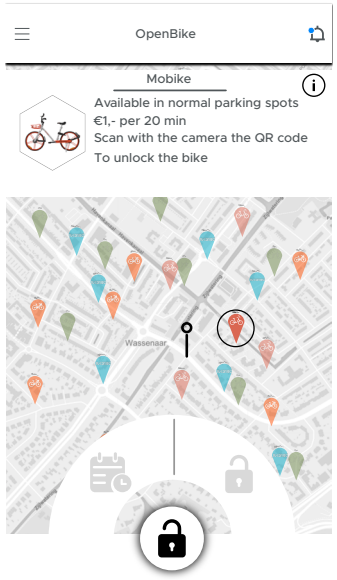

OpenBike
open all bikes with one account
SIGN UP
LOG IN
Add profile picture
Name
Mobile Number
Controle SMS
Email-adres
Or login via:
Enter your account details to log in
This is where you are!
Next
Back
I get it!
Reservate
Or unlock
Select a bike closeby!
From
Your current location
Look for best option
Time
Now
To
Filter v
Best option based on:
Price
Relevance
Private
Business
Mechanic
Electric
stop-over
no stop-over
Distance to bike
300 m
Leiden
12:30
Filter >
space
return
200 m
100 m
Free-floating
€1,- per 20 min
Mobike
Available in normal parking spots
€1,- per 20 min
Scan with the camera the QR code
To unlock the bike

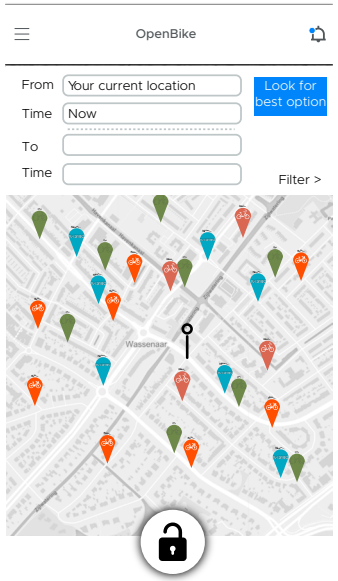

OpenBike

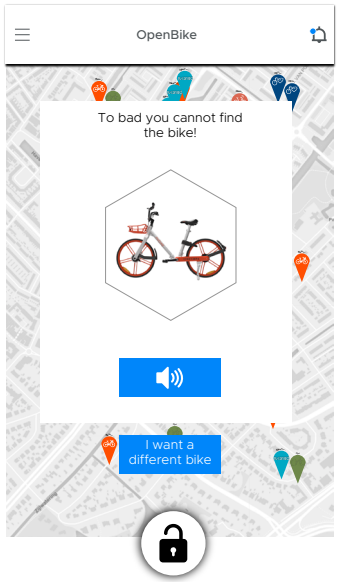

OpenBike

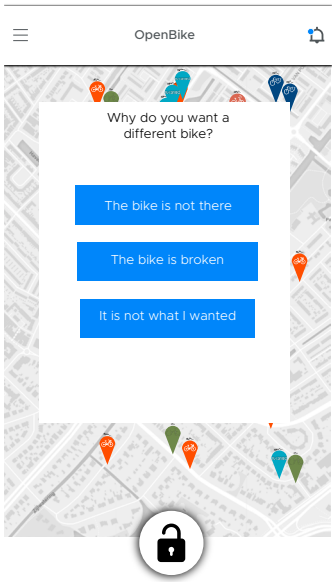

OpenBike
Select a bike or reservate one!

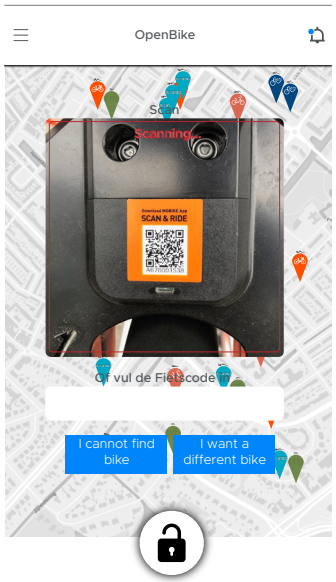

OpenBike
Mobike
Available in normal parking spots
€1,- per 20 min
Scan with the camera the QR code
To unlock the bike

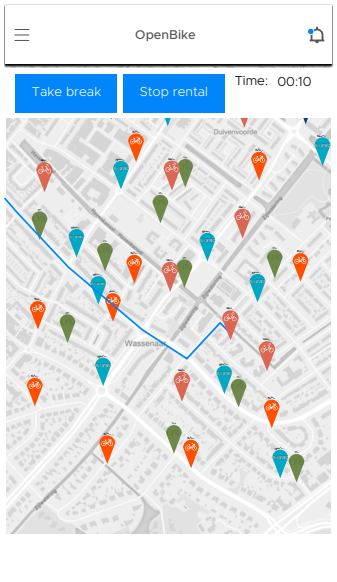

OpenBike
Mobike
Available in normal parking spots
€1,- per 20 min
Scan with the camera the QR code
To unlock the bike

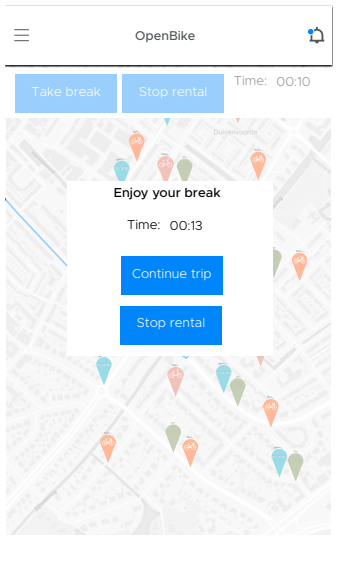

OpenBike
From
Your current location
Look for best option
Time
Now
To
Time
Filter >

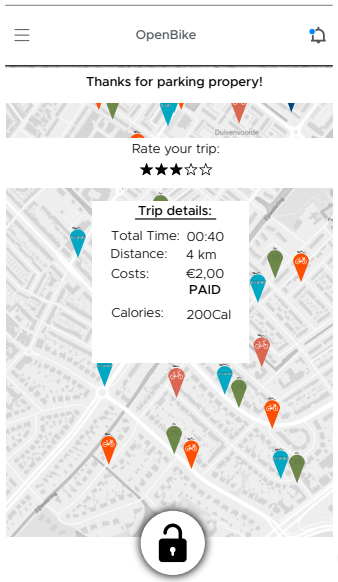

OpenBike
To bad you cannot find the bike!
I want a different bike

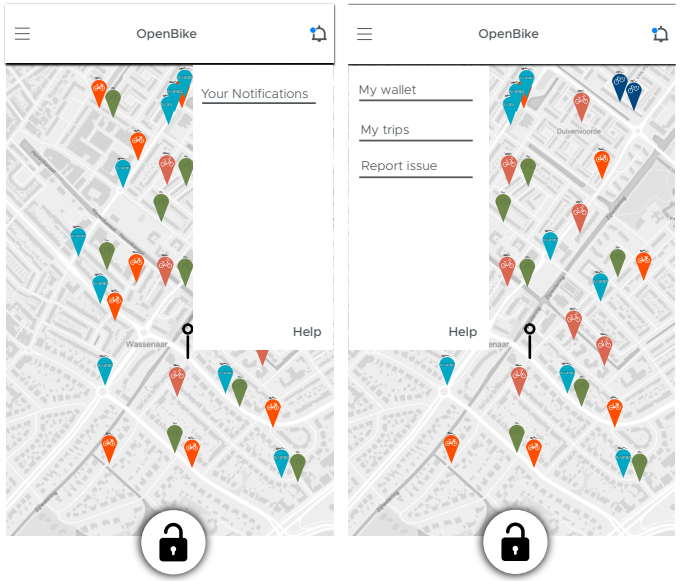

OpenBike
Why do you want a different bike?
The bike is not there
The bike is broken
It is not what I wanted


OpenBike
Scanning...
Of vul de Fietscode in
I cannot find bike
I want a different bike


OpenBike
Take break
Stop rental
Time: 00:10


OpenBike
Take break
Stop rental
Time: 00:10
Enjoy your break
Time: 00:13
Continue trip
Stop rental


OpenBike
Thanks for parking propery!
Rate your trip:
Trip details:
Total Time: 00:40
Distance: 4 km
Costs: €2,00
PAID
Calories: 200Cal


OpenBike
Your Notifications
Help

OpenBike
My wallet
My trips
Report issue
Help

APPENDIX G
Governance model

Introduction

Like discussed earlier, every platform should be accompanied with a governance model. This is important since in this model different roles that are possible on the platform are discussed, how disputes gets resolved and who can and cannot participate on the platform.

Method

Although the nature of a governance model is jurisdictional, the process that builds towards such a model is creative as well. Discussion must take place between the different stakeholders how to deal with issues. Therefor a discussion group is formed. In this discussion the focus is on translating the customer journey into a governance model that accompanies it. The difficulty lies in structuring it in a way that it is logical. The format of the result will therefor be a document that discusses the relationship between the provider and operator.

Results

The results of this session can be found in appendix G the outline of what is discussed will be put here:

There are five roles possible:
* Traveler (User)
* Provider
* Operator
* Integrator
* (Local) Government

1.
Article one:
Will go into the deliverables of the operator on operational level.

Article two:
The operator has the obligation to commit to the deliverables that are set in article one.

Article three:
Provider can only use the data of the operator to deliver the best MaaS solution for the traveler

Article four:
The provider has the obligation to commit to deliver only trustworthy travelers, who deal with the products of the operator properly.

Article five:
Periodically or when requested, the provider provides data to the operator about cumulative customer requests on locations, so operators can optimize their offerings to the users.

Data:
Data can only be use by earlier defined roles; provider, operator and integrator.

2. Customer service
Responsibilities of roles
Channels
Availability
Time handling

3. Payments, transactions and pricing
Responsibilities of roles
Way of processing
Misuse / default

4. Type of systems / terms and conditions
Rental conditions
5. Type of bike
* “Regular” bike
* Electrical bike
* Cargo bike

6. To be included / discussed:
* Offerings / pricing / margins / warranty
* (non)Exclusivity, resale to sub-agents or resellers
* Customer data, which data does the operator need from the provider do deliver its offering?
* Privacy of customer data
* Who is responsible for the authenticity of the user and which warranties can be given with that?
* Agreements with cancellation
* Agreements with use of each others brands / products
* Liability in case of damage

Conclusion

Like the customer journey it is an iterative process in which much has to be developed. Currently the governance model is not in the jurisdictional language that it has to be when the concept is market ready.

The important take-aways are that alongside the concept a governance model is already being developed. In this governance model the agreements, between the different roles in MaaS are discussed and who is responsible for what and how are disputes solved.

Model aansluitovereenkomst tussen bike share organisaties

Draft (op basis van verslag van vergadering 21 juni 2018, uitgebreid tijdens werkgroepvergadering 5 juli)
{voel je vrij hier invulling aan te geven}

{We willen voorstellen onze fasering te hernoemen naar 1, 2 en 3 om spraakverwarring te voorkomen. Concept = voorstel}

1. *Het zichtbaar maken van het aanbod van deelfietsen (zoals fase 1 in intentie verklaring}*
2. *Aan zichtbaarheid een deeplink toevoegen zodat een fiets te huren is via de (bike) operator app.*
3. *In-app integratie zodat verschillende fietsen met één account te huren zijn (al dan niet via een maas-partij). Fase 3 omvat de gehele intentieverklaring.*

Inhoudsopgave

Operator, Provider en Integrator spreken het volgende met elkaar af:

1. Aanbod (Fase 1)

Artikel 1. Operator maakt zijn Aanbod van deelfietsen op een bepaalde plek bekend aan Provider. Provider kan hiermee de beste MaaS-reis voor de klant aanbieden. Voor het Aanbod van Operator gelden de volgende afspraken:

1. Het Aanbod is gebaseerd op de feitelijke beschikbaarheid
    a. die maximaal 30 seconden geleden is vastgesteld
    b. die voor 95% of beter betrouwbaar is
    c. en waarvan maximaal 5% een defect na vertrek blijkt te hebben
2. Het Aanbod in ten minste een straal van 500 meter rondom de uitgevraagde locatie wordt ontsloten;
3. Het Aanbod hoeft niet alle fietsen te tonen; fietsen die binnen een straal van 10 meter rondom een fiets staan, hoeven niet getoond (mag wel);
4. Het Aanbod omvat het type deelfiets, eventueel het aantal binnen de straal van 10 meter, en bijzondere verhuurvoorwaarden, zoals
    a. Uitzonderingen op de standaard verhuur-duur
    b. Uitzonderingen op de standaard gebruiksmogelijkheden

Artikel 2. Operator heeft een inspanningsverplichting om te zorgen voor voldoende zekerheid dat hetgeen is aangeboden in het Aanbod, ook volgens de afspraken in Artikel 1 worden waargemaakt.

Artikel 3. Provider mag het door Operator beschikbaar gestelde Aanbod alleen gebruiken voor het samenstellen van de beste MaaS-reis voor de klant.

Artikel 4. Provider heeft een inspanningsverplichting om te zorgen voor betrouwbare klanten, die zorgvuldig omgaan met gehuurde deelfietsen.

Artikel 5. Provider stelt periodiek en op verzoek data beschikbaar aan Operators over cumulatieve klantvraag op locaties (aantal geïnteresseerde klanten en hun bestemmingen). Op deze manier kunnen Operators bepalen hoe het aanbod verbeterd kan worden.

Data:

1. Data mag alleen gebruikt worden door eerder gedefinieerde rollen: Provider, Operator en Integrator
2. Wijze van verwerking
3. Eigendom / gebruik van klant-data
4.

2. Klantenservice
a. Kanalen
b. Beschikbaarheid
c. Afhandeling tijd

3. Betalingen en transacties en tarieven
a. Innen, cred/de bit

4. Type deelsysteem /gebruik van fiets algemene voorwaarden (operator?)
a. B21
b. B2M
c. FF

5. Type fiets
   a. Reguliere fiets
   b. Elektrische fiets
   c. Bakfiets (elektrisch)

Nog toe te voegen:

- Aanbod:
    - Prijs (inkoop), adviesprijs (verkoop), staffels
    - Product en levering, garanties
- Betalingsafspraken tussen operator en provider
- Algemene-/huurvoorwaarden
- (non)Exclusiviteit, doorverkoop aan subagenten of wederverkopers
- Klantgegevens: welke gegevens krijgt de operator van de provider om het contract ten uitvoer te kunnen brengen?
- Privacy: indien er klantgegevens van de provider naar de operator gaan, verwerkt deze persoonsgegevens in de betekenis van Verwerker volgens de AVG. Een verwerkersovereenkomst is dan noodzakelijk.
- Identiteit: wie stelt de identiteit van de klant vast en wie draait er op voor de bijbehorende risico's?
- Wanbetaling: wie is er verantwoordelijk voor een eventueel wanbetalingsrisico.
- Afspraken rond annuleren, geld terug, wanprestatie
- Afspraken rond gebruik van elkaars merken
- Aansprakelijkheid bij schade