GRADUATION PROJECT

“Living with Micro Mobility in 2030”

09 ‘21
03 ‘22

PRESENTING A SPECULATIVE DESIGN

MSc - DESIGN FOR INTERACTION
DELFT UNIVERSITY OF TECHNOLOGY
FACULTY OF INDUSTRIAL DESIGN ENGINEERING

JAEL LORENZO SPRINKHUIZEN / 4537793

“LIVING WITH MICRO MOBILITY IN 2030”

AUTHOR

Jael Lorenzo Sprinkhuizen
MSc Design for Interaction
Delft University of Technology
Faculty of Design Engineering

SUPERVISORY TEAM

CHAIR / Prof. Ir. M.B. van Dijk
Human Centered Design / DA

MENTOR / Dr. R. Bendor
Human Centered Design / DCC

COMPANY

Springtime Design
Amsterdam, NL

COMPANY MENTOR / M. Schreuder

DELFT, THE NETHERLANDS
03/22

EXECUTIVE SUMMARY

Micro mobility services aim to offer people new and more convenient modes of transport, usually across urban areas. In order to achieve this they make use of public space to implement their infrastructure on, for example by allowing people to freely park a vehicle almost anywhere in the city. One can imagine that this has a major impact on how people use and live in public space, as micro mobility services influence the design of a street. Since this industry is growing every year, the society-wide impact it makes grows along. Therefore this project focuses on the role of micro mobility in public space, and the relationship these services and operators have with people.

This is done by making use of the ViP (Vision in Product Design) approach, where the present context is analysed and researched in order to distill trends and developments concerning the future of this context. This context consists of not just the different micro mobility services, but also other stakeholders such as citizens (both the micro mobility users and 'non-users'), local governments, and of course public space. Eventually, a future world is envisioned for the year 2030. As this project also falls under the Critical Speculative Design-umbrella, this future world can be seen as a form of social critique on the current state of micro mobility, as well as the direction it is heading towards. Based on this critique, a new version of this future is composed that describes what is desirable.

The final design represents the shift from the 'undesirable' world to the 'desirable' world. It aims to first and foremost communicate a certain moral standpoint to the client Springtime Design, and should not be seen as a problem-solving proposal. This speculative design should rather be seen as a prop to facilitate discussion on the topic of micro mobility in public space, and what is important in its future.

Amby, as the final design is called, is an ownerless ambiguous vehicle that drives around autonomously in the city. As its features are ambiguous in their nature, it does not force people into a predefined system that determines their use behaviour. People can interpret Amby's features, and assign meaning to the vehicle on their own. This enables them to control their own mobility in public space, as they can use Amby for anything they like. In its core, Amby represents a future of micro mobility that is more human-centered and democratic in the way it organises and designs itself. After all, public space is meant to be shared by everyone. It should not be compromised by corporates and local governments that exploit and capitalise on public space, as a consequence of striving for maximum profit and convenience.

JAEL LORENZO SPRINKHUIZEN / 4537793

TABLE OF CONTENTS

no.	chapter	section	page
I.	**INTRODUCTION**	01.1 | Background on Micro Mobility 01.2 | Project Goal 01.3 | Springtime Design 01.4 | Project Approach	08 / 90
II.	**ViP AND SPECULATIVE DESIGN**	02.1 | Critical Speculatie Design 02.2 | VIP 02.3 | Compatibility 02.4 | Challenges	12 / 90
III.	**DEFINING THE FUTURE CONTEXT**	03.1 | Domain 03.2 | Factorising 03.3 | Clustering and Worldview Building 03.4 | Framework and Future Worldviews	20 / 90
IV.	**FUTURE VISION**	04.1 | Vision Statement 04.2 | Interaction Analogy 04.3 | Manifestation Qualities	32 / 90
V.	**EXPLORATIVE PROTOTYPING**	05.1 | Prototyping plan 05.2 | Proto 1 - Fantasy Pole 05.3 | Proto 2 - Ambiguity Card 05.4 | Outcomes and Insights	40 / 90
VI.	**FINAL DESIGN - 'AMBY'**	06.1 | Amby - A Speculative Design 06.2 | Amby in Context 06.3 | Designing Amby 06.4 | Value to Springtime	60 / 90
VII.	**CONCLUSION**	07.1 | Project Outcomes 07.2 | Design Guidelines for Springtime 07.3 | Recommendations for further research 07.4 | Personal Reflection	82 / 90
	REFERENCES		88 / 90
	APPENDIX REPORT		90 - 148

JAEL LORENZO SPRINKHUIZEN / 4537793

chapter I.

INTRO-DUCTION

01.1 BACKGROUND ON MICRO MOBILITY

Most of us have by now encountered the phenomenon of ‘shared micro mobility’ in some form or fashion. It is a type of last-mile mobility meant for people, packaged into a subscription-based or pay-per-use service. The services offer a fleet of shared -often electric- vehicles, for instance mopeds, kick scooters and bicycles. These ‘modalities’ are placed in the streets, and people can take them and park them almost anywhere. Most services adhere to free-floating, a system where the vehicles are freely parked on pavements and roads, and people can take and leave them wherever the operators allow them to. Others make use of dedicated parking spaces or docking stations, where the vehicles will always be parked in roughly the same spots.

Especially in the last few years, shared micro mobility made its entrance in many different cities across the world. The industry behind it is expanding rapidly, and gaining more traction[(Heineke et al., 2019)]. These services are often provided by operators, in the form of a privately owned commercial business. They work together with municipalities and local governments in order to organise and execute their business models. This collaboration usually finds its origin in the promise operators make that their mobility services can benefit causes such as congestion removal, bettering the environment, and improving connectedness of people. Though, the current state of shared micro mobility is still relatively immature, and could even be considered as a Wild West-like period[(McFarland & CNN Business, 2019)]. At the moment there is little indication of whether these promises will actually become reality, due to several reports exposing people’s usage patterns[(Kennisinstituut voor Mobiliteitsbeleid, 2021; Schaller, 2018)] and raising issues such as vehicle vandalism and parking misbehaviour[(NOS, 2020)].

This graduation project will operate in the context of western urban society. These include multiple micro mobility epicentra, were many operators are active with different kinds of mobility cultures.[(Friedel, 2021)].

FIGURE 001 - shared micro mobility offerings in Rotterdam[(Gemeente Rotterdam, 2020)]

01.2 PROJECT GOAL

Micro mobility operators, like many other commercial businesses, focus heavily on their customers (otherwise known as ‘users’) and potential future customers during the implementation of innovations. This is something that is also prevalent in design education: most attention goes to a selected group of users, and their needs. The main focus lies on improving the lives of these people, often with the underlying intent to grow a business. However, the services the micro mobility operators provide are active in the public space. This means that everyone present in this public space is affected, not just those that make use of shared micro mobility. This is something that this project will shed light on by presenting a conceptual design that falls under the umbrella of ‘Critical Speculative Design’. The aim of this design attitude is not to solve or offer mass-producible solutions, but rather to convey a message and facilitate a discussion about, in this case, the responsibility and effect on society these operators have. The focus will lie on the year 2030. More on Critical Speculative Design can be found in Chapter II.
The first reason for choosing to present a speculative design is to raise awareness for the society-wide effects micro mobility has. Not only their users, but also people who are not using these services are affected, the micro mobility vehicles are placed in public space after all. Secondly, as mentioned before the micro mobility industry has not matured yet. Speculating about its future is therefore relevant, not to predict the future but rather to use these speculations as ways to reflect on the present. Or as Sohail Inayatullah, professor and graduate of the Institute of Future Studies, puts it:

“We see the future as a learning journey, not a site of prediction”(SpeculativeEdu, 2021)

01.3 SPRINGTIME DESIGN

Springtime Design is an Amsterdam-based product design and branding studio that has years of experience in the field of mobility design. They are a consultancy working with different international clients, coming from the micro mobility industry as well. Their work has been praised with numerous awards over the years.
This project is done for, and in collaboration with Springtime. On the one hand, the developments and outcomes of this project can provide Springtime and Springtime’s clients with insights into a ‘speculated future’ of micro mobility. On the other hand the project can benefit from the collaboration due to the experience of the studio in this particular field, as well as contacts and opportunities Springtime could provide.

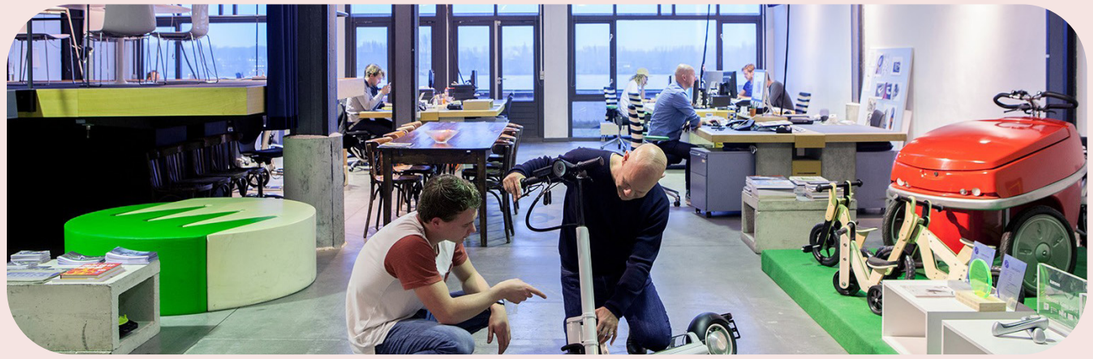


FIGURE 002 - Springtime Design studio in Amsterdam

01.4 PROJECT APPROACH

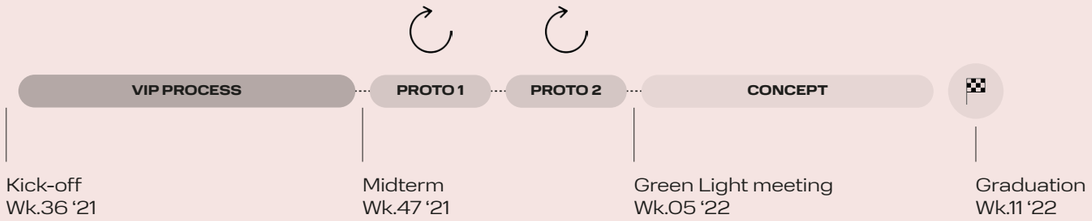


FIGURE 003 - linear project process

The structure of the project is based on the ViP approach (Vision in Product Design). This approach is based on deconstructing the present context, and from that, envisioning a future context on which the design will be based. The idea behind the approach is to first design a human interaction that fits the future world (the ‘interaction vision’), after which a manifestation of this interaction is designed(Hekkert & van Dijk, 2011). This means that up until deep in the project, it is not determined what the form factor of the design will be. It depends on the outcomes of the deconstruction phase, and the vision statement that will be constructed. The reason for choosing this holistic approach is that it offers the opportunity to involve everything that is connected to the chosen context, and avoid isolated thinking. There is also room for speculation, since the designer molds a future world that showcases possible societal developments.
After the ViP process, two prototyping cycles will be executed in order to ideate on and explore the different parts of the interaction vision. After this, the final concept will be given shape, which marks the end of the project. The entire project is visualised linearly in Figure 003.

chapter II.

ViP AND SPECU-LATIVE DESIGN

As mentioned in the Introduction the methodological backbone of the project is Vision in Product design, and eventually the final design should fall under the 'Critical Speculative Design' (CSD) umbrella. This chapter will therefore dive into the compatibility of CSD and ViP, as well as the challenges this project faces because of it.

02.1 CRITICAL SPECULATIVE DESIGN

Critical Speculative Design (CSD) aims to convey a message or moral standpoint with the intent to spark debate. This message is built around a form of social critique, and can come in any format possible. The way this message is conveyed is by envisioning a future world based on things that happen in the present. The construction of this should take into account technological developments, culture, and human behaviour in order to be perceived as a rich and sufficient context to work in[(Mitrović et al., 2021)]. Eventually, this world is captured by a means of design, like a concept, product or an art installation for example. CSD in itself does not limit the designer to a specific format in which the final design should come.

A good way to understand what Speculative Design is about, is by the 'A/B, A Sort of Manifesto' from Dunne and Raby (2009), see figure 004. This manifesto describes the differences between conventional product design (A) and CSD (B) by a simple A/B comparison. B is not supposed to replace A, but rather to complement it. In a review of the manifesto by Johannessen et al. (2019), it is highlighted that CSD unlocks new potential of design by embracing speculation as an asset, and therefore consciously staying away from a 'tapering' design world. The following A/B comparisons are highlighted in further detail for illustrative purposes. They are applied to the context of this project.

- **(A) Affirmative / (B) Critical.** The organisation of micro mobility is heading in a certain direction which is embraced by a lot of people. However, instead of designing something that fits this system and could help streamline it, this project will take a critical stance towards this direction with the intent to reflect on it.
- **(A) Provides answers / (B) Asks questions.** Rather than answering existing questions concerning micro mobility by solving an existing problem, this project will indicate new problems by raising new critical questions.
- **(A) Design for production / (B) Design for debate.** The final design of this project is not supposed to be produced in the real world, it should instead act as a probe to facilitate debate, meaning that the focus of the design lies on the manifestation rather than the producibility.
- **(A) Consumer / (B) Citizen.** This project looks at people as citizens and raises questions about their involvement in the organisation of micro mobility, and their level of agency over it. It does not look at the capacity of people to consume.

(a)	(b)
affirmative	critical
problem solving	problem finding
design as process	design as medium
provides answers	asks questions
in the service of industry	in the service of society
for how the world is	for how the world could be
science fiction	social fiction
futures	parallel worlds
fictional functions	functional fictions
change the world to suit us	change us to suit the world
narratives of production	narratives of consumption
anti-art	applied art
research for design	research through design
applications	implications
design for production	design for debate
fun	satire
concept design	conceptual design
consumer	citizen
user	person
training	education
makes us buy	makes us think
innovation	provocation
ergonomics	rhetoric

FIGURE 004 - 'A/B, A Sort of Manifesto' (2009)

In their book 'Speculative Everything' (2013), Dunne & Raby go deeper into the workings of CSD by specifying showcasing different kinds of futures with 'The Futures Cone' by Voros (2017), see Figure 005. According to the book, CSD is interested in the preferable future, and it aims to help define what a preferable or dystopian future is (by sparking discussion for example). Though, this does not automatically mean that a CSD project will provide the answer to what a preferable future is, the aim should be to involve an audience that eventually will debate the future and the corresponding conceptual design presented in the project. This graduation project is built on this interpretation.
It should also be pointed out that CSD is not like a descriptive method that provides the designer with specific steps and tasks to do. Instead, it is more of an attitude or approach that leaves it up to the designer to decide what methods they want to use[(Mitrovic, 2016)]. This obviously often ends up in discussions about what is the 'right' type of speculative design, if there even is such a thing. For example, in many cases CSD projects are seen as design for designers[(Malpass, 2013)], or elitist, since the designer takes on an author-like position and the audience is required to have sufficient knowledge about the topic in order to understand the design. This role is often criticised as others believe that 'regular' people should be included in the process of speculating about (their own) futures, like co-creation methods, in order to let them participate rather than being a passive audience[(Mitrović et al., 2021)].

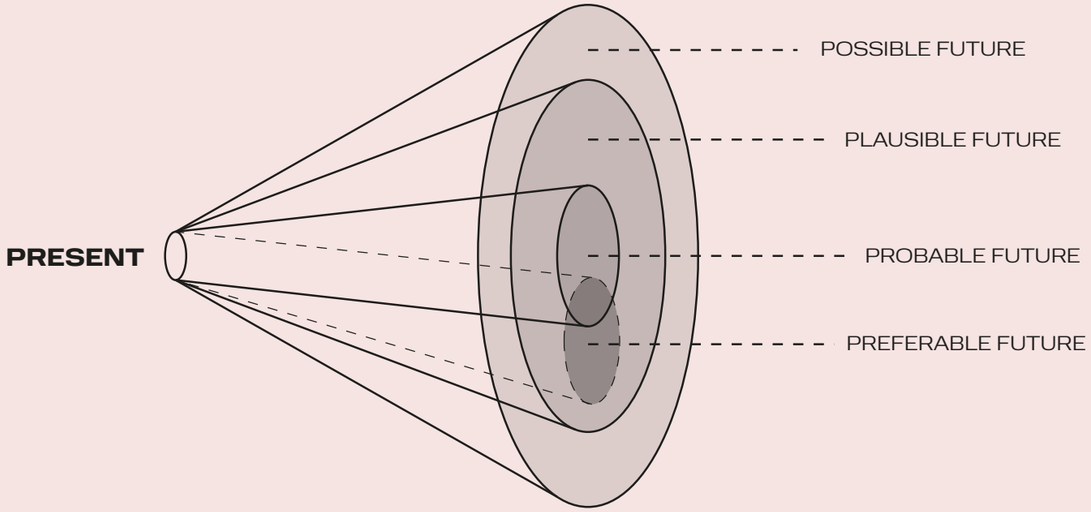


FIGURE 005 - 'the futures cone'[(Voros, 2017)]

02.2 VIP

Vision in Product Design, or ViP in short, is an approach that has the goal to provide designers with a selection of steps to design innovations, by constructing a future world and future human interaction. The final design, or manifestation, is based on this interaction vision. The actual classic design process, meaning activities such as giving shape, defining features and functionalities etc., is pushed back as far as possible in the process. Only at the end this process is supposed to start. Up until defining the interaction vision, designers should not think of the actual design and form factor of the manifestation. The reason for this lies with the original idea behind ViP, which is to avoid situations where designers are limited by designs that already exist. First, it is determined what people need, after which the solution to satisfy this need is determined.
The inventors of ViP, Matthijs van Dijk (Chair of this project) and Paul Hekkert, wrote the book 'Vision in Design' (2011) from which Figure 003 was taken. Figure 006 describes the structure of ViP in a linear fashion. It shows that the first stage is the deconstruction of the working field, called the context. The deconstruction is then used to define the future of this context. These steps are still very factual and research-based. The designer is then supposed to 'design' a human interaction that fits and responds to this future context. The interaction vision can be seen as a vehicle to move from a future world to a desirable or preferable future world. In this case it is up to the designer or design team to decide what is preferable and what is not. Finally, at the end this interaction is translated into a manifestation. ViP consciously embraces subjectivity in these last steps from interaction vision to manifestation. The combination of the frame of reference of a designer and their empathic skills is seen as a successful way to achieve rich, new ideas. Another way of looking at ViP could be that it gives shape to the 'fuzzy front end', the bridge between research and the final design or concept. This phase is often characterised by a lack of structure, and can sometimes be seen as random. One could argue that subjectivity is always present in a design process, especially when there is something as undefined as a fuzzy front end.

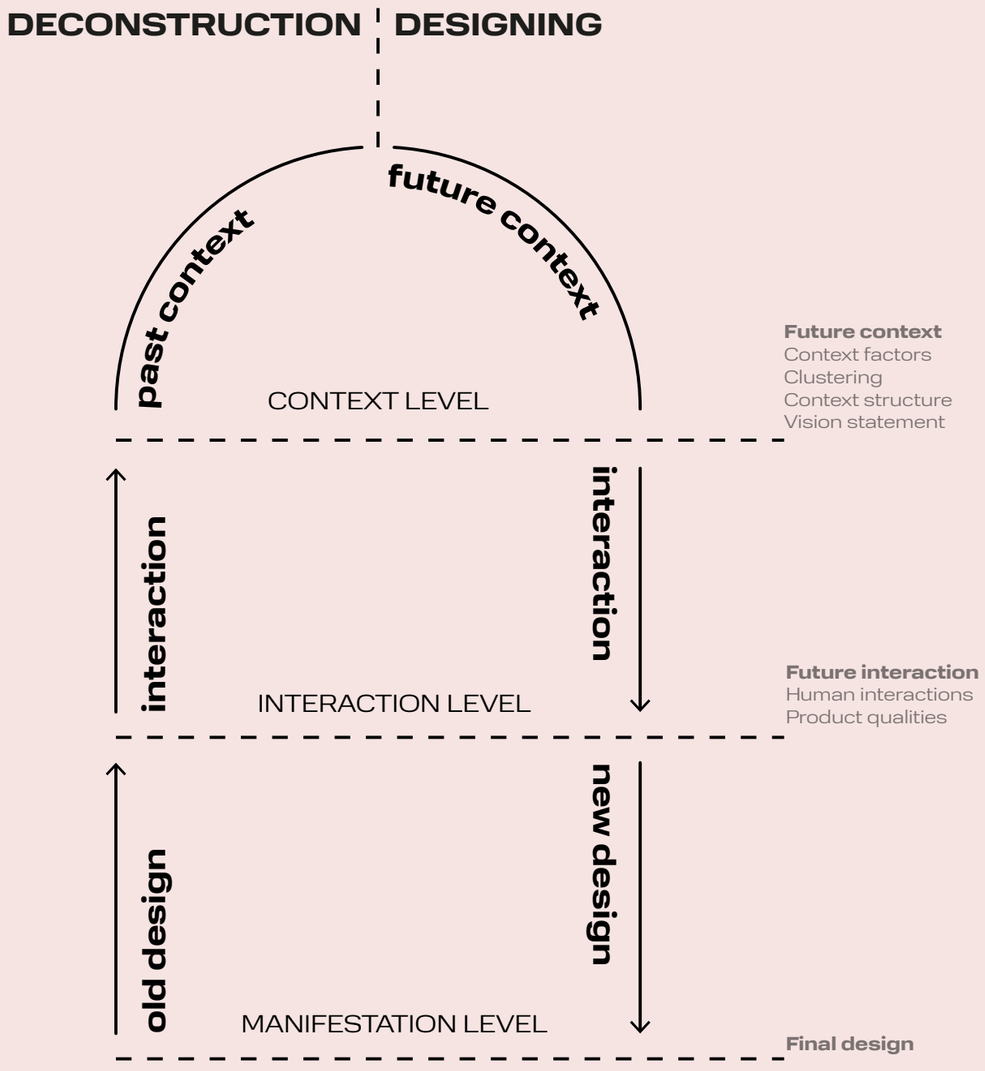


FIGURE 006 - the VIP process

02.3 COMPATIBILITY

Let us start this section with stating the obvious: both CSD and ViP are future-oriented in their core. They both aim to construct a future worldview to base the design on. However, where CSD does not go into detail about how this future should be envisioned, ViP does. The difference in the way both of them guide a designer is actually something that repeats itself when comparing them with each other. CSD usually delivers overarching, and more existential input to the project, and ViP builds onto this input and allows the designer to express it on a more design-level. For this project, CSD acts as a source of inspiration. It is a guiding attitude that gives the project a certain value and meaning. That said, this project should be seen as a ViP project first and foremost, as the research and construction of a future world will be done according to the steps provided by the method. The combination of CSD and ViP in this graduation project can be described by Figure 007, where the basis of ViP is influenced by the overarching CSD philosophy.

A good example of how CSD and ViP work well together is with the topic of taking an author-like position as a designer. Although opinions differ amongst designers whether or not to include people in the design process, CSD can also bring value by working as a standalone designer. The same goes for ViP, where the method actually embraces author-like designers as it can lead to innovation (since everyone has their own frame of reference). Of course people are included in the sense that their beliefs and behaviours are valuable data during research and design.

Another link between CSD and ViP lies with the construction of the future. As section 02.1 mentiones, a speculative future should take into account a wide range of different data types (such as behaviours, technological developments etc.). ViP addresses this by deconstructing and reconstructing future worldviews: the designer is supposed to look for four different data types (trend, development, state, principle). These can subsequently be divided into eight different categories, like ‘cultural’ or ‘psychological’. The idea here is that the research covers an entire context, and does not leave out important data.

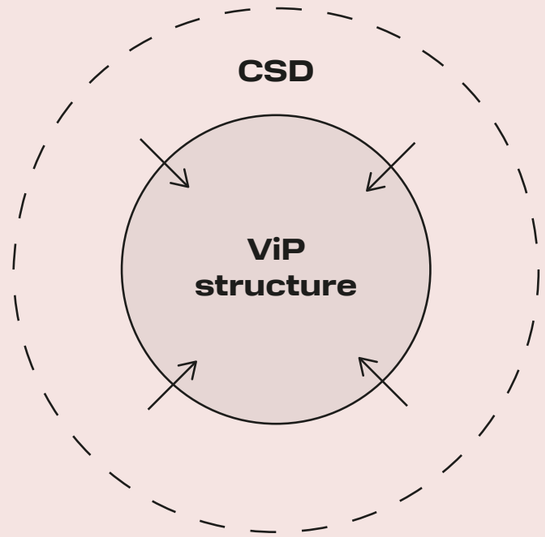


FIGURE 007 - the methodological hierarchy

02.4 CHALLENGES

Even though CSD and ViP are considered a good fit, at least for this graduation project, there are still some challenges that arise when combining the two. First, there is the fact that ViP is supposed to be used to design innovations that are at a certain level implementable. The designs coming from ViP tell the client something about the future, and show them in a concrete manner what steps to take right now in order to anticipate this future. CSD differs from this, as the final conceptual design is merely a communication tool, and not supposed to be implemented. There is a certain level of fiction embedded, and there is no direct intention to provide solutions to problems (as discussed in section 02.1).

Second, there is not a clear hierarchy between CSD and ViP. Both are supposed to guide a designer and help them in their process. Yes, ViP offers more concrete 'steps', but in similar fashion to CSD it acts as an approach and not as a method. ViP makes the designer think about the context, and form an opinion about it in order to decide what this context could look like in the future. This overlap could cause confusion during the project. However, as the previous section mentioned, this is a ViP project that is inspired by CSD. That should be the leading thought when issues arise.

Third, in the case of this project the audience consists of Springtime Design and perhaps other professionals and experts from the design field. The design should be targeted towards them. With ViP the design is usually targeted towards the user group, which in many cases is not the client. This essentially means that the final design will be double layered in a way. On the one hand it should be a clear communication tool for the audience, including the client, and on the other hand the design should be relevant for those who are supposed to interact with it. The exact way this project has been executed will be described in the following chapters that dive deeper into the research and design process.

chapter III.

DEFINING THE FU-TURE CONTEXT

This chapter dives into the first few phases of the ViP process; setting the domain and constructing future worldviews, based on the deconstruction of the present. The chapter shows and explains the process, and the decisions that were made. It closes with presenting a set of eight different future worldviews, coming from a worldview matrix.

03.1 DOMAIN

Setting the domain is the first step in the ViP process, it hepls set the boundaries for the context the designer is working with. The domain should be specific enough to narrow down the searching field, but simultaneously be broad enough to not leave out important elements that influence the subject. For this project the following domain was chosen:

“Living with Western Urban Micro Mobility in 2030”

The reason for this domain can be best explained by diving deeper into the three main elements of it. First, there is the word “Living”. Using this word in relation to the rest of the domain refers to the society-wide influence micro mobility has. It goes beyond just the utilisation of shared vehicles, and reaches almost everyone living with and around these services. Therefore focusing the domain on just a group such as the users, or ‘non-users’ (people not using shared micro mobility), or ‘anti-users’ (people refusing to use shared micro mobility) is too narrow and does not cover the entire impact shared micro mobility has on society - let alone that categorising people in groups like these is limiting the richness of the research, as a person can be part of multiple categories for example.
Next up is “Western Urban Micro Mobility”. This element sets the geographical boundaries of this project. Within this specific area there is much movement around the development of micro mobility services. Cities like Berlin, Paris and even Rotterdam offer many different modalities in different forms(Friedel, 2021). In addition, clients of Springtime Design are active in this area, making the focus of this project also relevant to them.

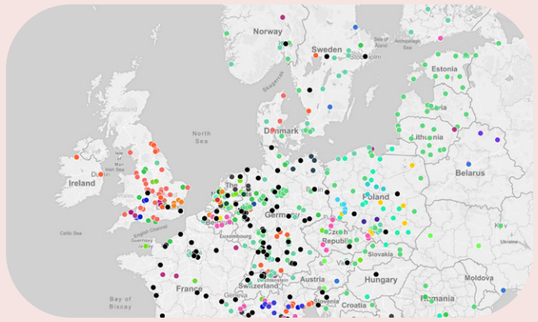


FIGURE 008 - overview of micro mobility services in Europe wtih Maphub(Friedel, 2021)

Finally the domain indicates a timeframe, “2030”. The world surrounding micro mobility services is relatively new and still in a revolutionary phase, meaning much is changing in a rapid pace. The year 2030 is far enough to speculate, but also close enough to make it relevant for today’s context.
As might be already clear by now, the domain served as the main inspiration for the title of this graduation project.

03.2 FACTORISING

Next step in the process is collecting 'context factors'. These little pieces of information should be relevant to the context, set by the domain. Factors serve as building blocks of the future context which will be given shape in later stages of ViP. A factor can be anything from a factual statistic, up until a subjective belief of someone, although factors are not supposed to be influenced by the designer and should be free of their personal values[(Hekkert & van Dijk, 2011)].
Factors usually fall under one of four categories: trends, development, states, and principles. Below a brief explanation of each of them.

- **Trend:** a change in human behaviour or society. Often a more qualitative piece of information.
- **Development:** a change concerning technology and society. Often a more quantitative piece of information.
- **State:** often has to do with culture, and can be considered stable. A state will still hold up in the future context.
- **Principle:** something that will never change, like laws of nature. It can be assumed that a principle will always be relevant.

In addition, factors can be linked to eight different topics. These topics give the designer insight into how well their factors cover the topics a context is usually defined by. The topics, including the matrix that shows the factor coverage are collected in figure 009.
As the factor matrix table shows, in total 142 factors were found. The full list can be found in Appendix A.

	CULTURAL	PSYCHOLOGICAL	DEMOGRAPHIC	SOCIOLOGICAL	ECONOMIC	BIOLOGICAL	EVOLUTIONARY	TECHNOLOGICAL	TOTAL
TREND	7	1	4	1	10	1	-	11	35
DEVELOPMENT	8	6	3	3	4	-	-	3	27
STATE	12	7	4	4	11	1	1	7	47
PRINCIPLE	4	9	2	2	3	2	7	4	33
TOTAL	31	23	13	10	28	4	8	25	**142**

FIGURE 009 - Factor Matrix

03.3 CLUSTERING AND WORLDVIEW BUILDING

03.3.1 | Clustering

After gathering all the context factors, the clustering phase starts. Clustering is a way to structure the context and find the underlying connections between all the factors. A cluster is a combination of several factors that together tell something about the future context. The designer is therefore not supposed to cluster based on topic, but to cluster based on storyline. The factors in a cluster should be complementary to each other, and the cluster itself should carry the richness of each factor[(Hekkert & van Dijk, 2011)].
In total 11 clusters were found from the original 142 factors. In the end, only a single factor was considered to be irrelevant and was therefore left out. Below, all eleven clusters are shown. Per cluster there is a description that captures the nuance of the factors it consists of. Appendix B showcases all clustering iterations, as well as the dedicated factors.

1 **Us vs. Them-mindset** (15 factors)
There is a rising awareness among people about the influence commercial companies have on their lives, as well as the potential danger they can cause. Especially the bigger ones (micro mobility exploiters included). The cause of this has mainly to do with the fact that many of the commercial companies carry the responsibility to handle private and delicate data of their customers in the right way, and a lack of trust and transparency from the customer's side. In 2030, there will be an even bigger discrepancy between the two. People will be more careful and suspicious, and companies will be forced to play into this in order to save their public image. The effect of public execution via social media will be even stronger; a viral meme can cause severe damage. Therefore, the people and the companies will be opposing parties, held together by an interdependency between each other.

2 **The Inner Anarchist** (13 factors)
People do not like to be told what to do when they did not ask for it or expected it. In a 2030 society, where innovation is an even more guiding norm, new inventions are being pushed out in public left and right. Especially if these innovations cause societal issues, like the parking problems today, people will eventually feel the urge to protest, riot and take action. This comes from a feeling of powerlessness, since the disruptive and (unmatured) innovations are coming from bigger forces like commercial companies, and governments. These bigger forces will try to change the anarchist behaviour by penalising and schooling people, though this will only make matters worse since people will not care due to a lack of intrinsic motivation to obey.

3 **Mobility, a Discriminating Business** (11 factors)
Like it has been the case for a long time, in 2030 micro mobility exploiters will still have their main focus on expanding market share and reaching the most number of customers in the shortest amount of time. Meaning; young, tech-savvy, and financially capable people. Since micro mobility is very much related to the hypermobility concept, and cities will tailor their infrastructure planning to these services, certain social groups will be excluded. This exclusion is mostly based on gender, physical/mental ability, and age.

4 **Innovation is a Modern Day Religion** (13 factors)
Even though there are voices stating it should be the opposite, 'innovation' in 2030 is seen as a guiding principle when it comes to improving society. People are being faced with promises, and 'will be's'. This is the result of an ever growing trust in expert opinions, and the fact that most people will follow each other's beliefs once there is a hype created. These innovations are mostly technology-driven, and lack a sense of human quality. This means that society will move to a place where the first question to answer is 'is it physically possible?', after which the invention will be molded into something people (might) like. 'Needs' and 'wants' will be seen as the same thing, and as a result the majority of people will not question the relationship between society and technology. Being an innovator or early adopter is desirable, and envied by people.

5 **Mobility, a gentrified privilege** (11 factors)
In 2030, the promise Mobility as a Service (MaaS) was once pitched on, is now transformed into an assumption that is believed to actually happen. These assumptions, such as the one about young people not caring about ownership, will be forced into a reality due to governments catering towards these ideas with their policy. Mobility strategies will cause hypermobility, offer options to those that already have many options, and worsen 'motility' for the non-rich, even though the assumption is that these strategies will lead to improved mobility for all. This eventually results in an even

more exposed wealth gap, as well personal mobility being a desirable and well-earned luxury instead of a primary human necessity.

6 **Enforcing the Homo Economicus** (15 factors)
In 2030, productivity and efficiency are even more important values than they are now, resulting in travelling being seen as a disturbance or inconvenience in the process. This is mainly the cause of marketing, done by mobility exploiters and providers. People will believe this, which will place them in the position of 'Homo Economicus'. Everything that one does in relation to mobility, is based on being efficient and quick. The systems of micro mobility exploiters are built on having the most efficient and shortest trip from A to B, therefore forcing and promoting the rise of the Homo Economicus when trying to reach customers. There is little interaction with actual people, due to automated digital infrastructures, paywalls, and punish/reward-systems. Spontaneous interactions with people are seen as a crease in the cloth that needs to be ironed out.

7 **Battle for Space** (13 factors)
In 2030, the roads will be filled with all sorts of (new) forms of mobility. Cars will still drive around in the way they did before, cyclists fight for their space, and on top of that a big chunk of public space is now dedicated to shared micro mobility infrastructure. People are in desperate need of space, this goes beyond mobility and also includes topics such as housing and leisure. Every type of traffic runner has a strong feeling of community with their group, this feeling convinces people of their right to have a dedicated place on the road, pushing them to take action in order to claim their space and safety. New innovations and companies keep entering this space that is already overcrowded due to a lack of regulation. Legislation around micro mobility will still be undeveloped, which makes the fight for space only more important to society.

8 **Capitalisation and Exploitation of Public Space** (14 factors)
Micro mobility exploiters are active in the public space, of course to make their vehicles available to their customers, but also to act as an advertisement for their services. In 2030 this will be no different, regardless of new and stricter legislation. The design of the vehicles will always act as a way to grab the attention of people, and the exploiters will still be responsible for the placement of their vehicles across the city. More and more micro mobility offerings, exploiters and touch points will be visible on the streets, resulting in it being as much part of a city as park benches are. Mobility hubs for example; a nice way to structurise the issues caused with parking, though they also offer the opportunity to place even more ads and logos of companies in the public space. Not only are people exposed to advertisements on billboards up in the sky and on the walls, now also the objects that obstruct their way when walking are there to remind them of companies that are interested in their money.

9 **From a Means to Reach a Goal, to a Goal on its Own** (10 factors)
Cities in 2030 will be more spread out than they are now due to a lack of living space and a growing urban population. This urban sprawl also has its effects on the mobility of people and infrastructure; these require more complex solutions since the people are becoming more diverse. There will be more ethnicities, more subcultures, more diverse socio-economic groups, and each of these people should be able to travel as this is a requirement to be able to participate in society. The focus will shift towards making sure everyone has access to mobility, therefore mobility goes beyond being a means to reach a goal, and turning into a goal on its own.

10 **A Changing Street Hierarchy** (14 factors)
In 2030 there will be more micro mobility offerings, as well as new innovations such as Aerial Mobility. The culture in most places is still very much car-focused, and cities adopt an 'add-on' approach, meaning they add new things to the existing situation to solve problems, rather than rethinking this situation. A lot of people will still not have the financial privilege to freely choose any modality or service they want, which means that society will be distributed over all kinds of modes of transport. The streets will therefore also change; the clear distinction between pedestrians, cyclists and cars will blur due to new modalities entering the streets. This will force people to be more aware of their surroundings in traffic in order to stay safe. Cities will try to play into this and compensate for the hecticity by converting streets into safe spaces for slow traffic such as cyclists and pedestrians.

11 **An Inevitable New Normal** (14 factors)
Most local governments and municipalities in 2030 will be committed to allowing vehicle sharing services in their cities, and will be busy implementing new regulations concerning this topic. It all started with micro mobility companies entering the streets in order to make money from it, which could be seen as the Wild West time period. This period will end by more regulation, the organisation behind micro mobility will become much more manageable. Regardless of whether people actually need these new forms of transportation or not, society will get used to them and accept them simply because they will be there and will not go away in the foreseeable future. People are creatures of habit. Living with micro mobility will therefore become a new normal in 2030 due to determined municipalities and exploiters.

03.3.2 | Driving Forces

The way clusters play together, exist alongside each other, or contradict themselves defines the possible directions of the future context. This future context explains the way society will behave, what its values are and what its needs are. These relations between the clusters are called driving forces, and help to build a single narrative that connects the independent narratives told by each cluster(Hekkert & van Dijk, 2011).

The two driving forces found between the eleven clusters are first of all **the way society reacts to mobility-related change**, this is a two-sided driving force. The first possibility is that people in 2030 will take a more rebellious position, where change is constantly reflected upon and if necessary, fought against. People will experience a strong sense of belonging to their socio-economic groups. The other possibility is that people will focus very much on the concept of innovation, and those who facilitate this like governments and commercial companies. The consequence is that people will be accepting and tolerant towards change, but on a subconscious level. This driving force includes clusters 1, 2, 4, 6, 7, 10 and 11.
The second driving force has 4 layers, each defined by one the remaining clusters 3, 5, 8 or 9. It is about **how society is being 'hypercapitalised' on**. Meaning: for every possibility there is, companies or other commercially oriented parties will try to make a business from it. The layers of this axis are defined by discrimination, gentrification, privatisation of public space and fetishisation of means.

03.4 FRAMEWORK AND FUTURE WORLDVIEWS

03.4.1 | Future Context Framework

A future context framework is a way to structure and visualise future worldviews. The form it comes in is determined by the driving forces and corresponding clusters, described in section 03.3. Building a framework based on factors, clusters and driving forces is a way to remove complexity and showcase the main themes and patterns in the chosen context(Hekkert & van Dijk, 2011).

As section 03.3.2 explained, two driving forces were found, one defined by two different layers and the other by four layers. The chosen format for the framework is therefore a 2x4 matrix. The result is a future worldview, described by 8 different possible directions this world could move towards, in relation to the two driving forces. See figure 010.

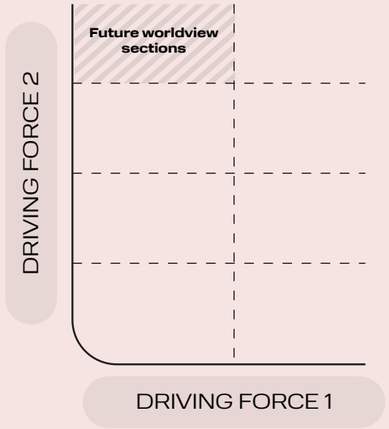


FIGURE 010 - Framework format

The framework is shown on the next page in figure 011. The driving forces and layers are spread over the X and Y axes, the future worldviews are shown in bold in the eight sections. The naming of each layer on both the X-axis and Y-axis is based on the clusters that define the layer. The corresponding cluster numbers are also referred to. Appendix B includes the process of designing the matrix.
The cards on the next pages explain in more detail the eight different future worldviews coming from the framework. Each card also shows the corresponding clusters. Every worldview can be considered a possible future scenario, that results from the things that happen in the world of today. All eight of them coexist alongside each other and none of them should be regarded as 'right' or 'wrong'. That said, considering the duration of this project the focus will lie on one of these worldviews. The choice and explanation will be discussed in the section 03.4.2.

The Matrix: a Client Deliverable

The matrix provides Springtime with eight focus points to use for their own future work concerning micro mobility projects. All of these represent plausible negative developments concerning micro mobility and public space. Therefore this matrix should be seen as a part of the deliverables, as it is essentially the outcome of extensive qualitative research on the future of micro mobility. Due to time constraints, the final design will only dive into one of these eight directions (see the next section), leaving the remaining seven directions open for other projects.

My recommendation to Springtime is to see this matrix as part of the final deliverables and consider it valuable input for their own projects, as it contains rich and nuanced insights about the forseeable future of micro mobility.

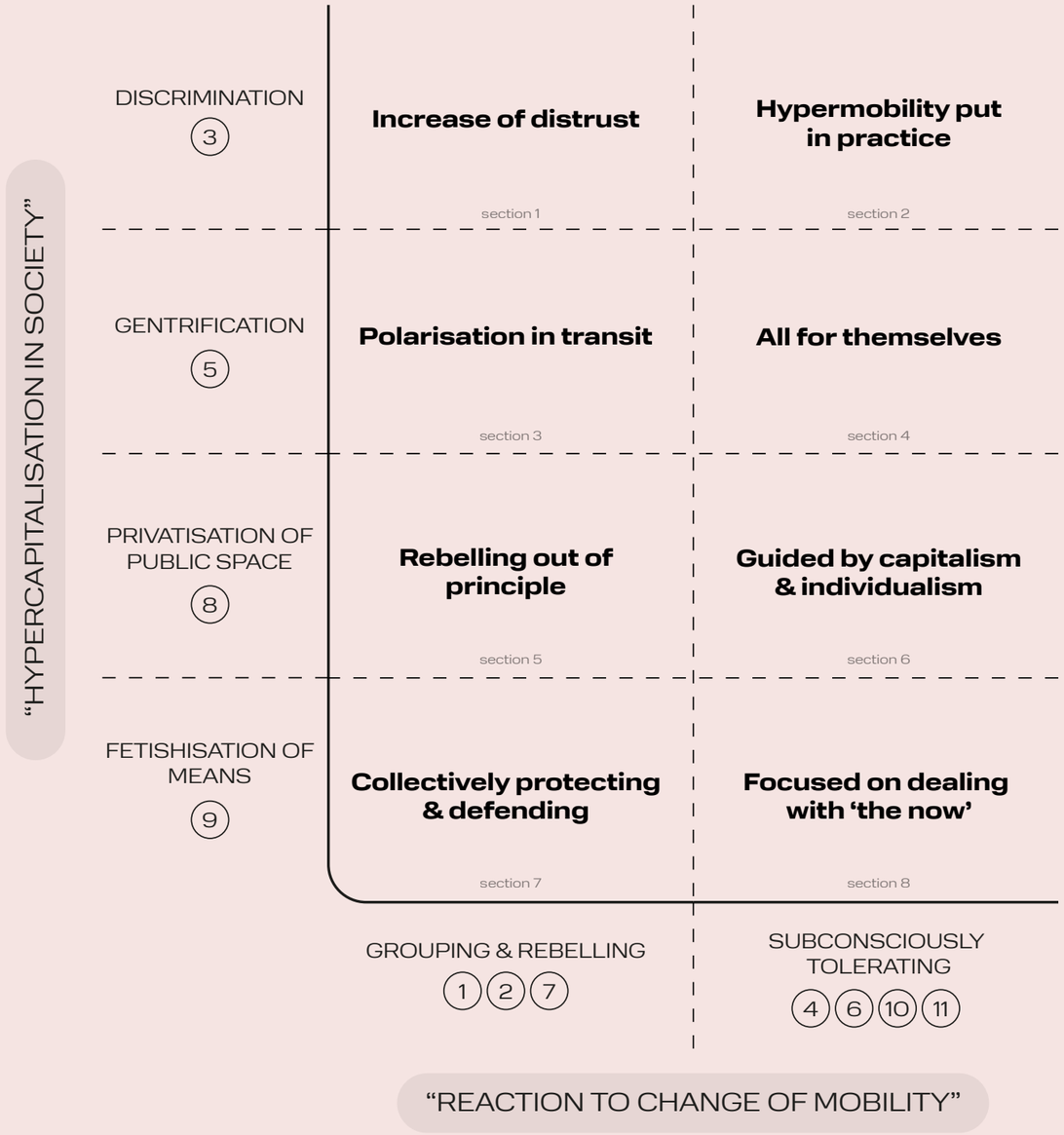


FIGURE 011 - Future context framework

1 Increase of distrust

Government policies and developments cause people to look at (micro) mobility as something for the happy few, resulting in a bigger distrust in these policies. The policies are shaped in collaboration with companies providing their services. As a result, governments and companies are seen as two entities sharing the same mindset and attitude.

1 2 7 + 3

2 Hypermobility put in practice

Society will be more dependent on micro mobility, due to changing infrastructures and local governments going into business with mobility exploitants. The developments around micro mobility tailors to a specific easy-to-reach audience, and are mainly technology-driven. It lacks human and inclusive elements. Social inequalities increase even more as a result.

4 6 10 11 + 3

3 Polarisation in Transit

Comfortable urban mobility is something mainly reserved for the rich, this creates a bigger discrepancy between socio-economic groups in society. People are aware of this, and as a result their sense of belonging to their group increases. This is reflected in the means people use to move themselves through the city, but also in the way they interact with others.

1 2 7 + 5

4 All for themselves

Mobility has evolved to something that disconnects rather than connects, due to poor accessibility and inclusivity. It is expected that everyone accepts this and deals with it. People need to find their own way in transit, in order to be mobile. The effort put in finding this way is the highest for the poorest, and the lowest for the richest.

4 6 10 11 + 5

5 Rebelling out of principle

Micro mobility operators privatise public space by claiming pieces of it. They gain more and more power over something that is supposed to be public property. This fuels anarchist and rebellious behaviour of people, due to a feeling of powerlessness and disapproval. The segregation between human and company becomes only bigger as a consequence.

1 2 7 + 8

6 Guided by capitalism

People will notice the capitalisation of the public space, but will not be asking whether this is right or wrong. They will unconsciously follow this mindset and participate in it, because it is there. This results in an even more capitalist and individualistic society, where the lines between private and public are blurred.

4 6 10 11 + 8

7 Collectively protecting & defending

The people recognise the need for accessibility in mobility (motility). They will find their (sub)groups and fight for their values and needs in order to put pressure on policy makers to make mobility accessible to them. Otherwise, due to the complex situation, they might be overlooked and be disadvantaged.

1 2 7 + 9

8 Focused on dealing with ‘the now’

People are continuously adapting their behaviour in transit in order to keep up with the changing conditions and systems, caused by new operators and vehicles entering the streets. This disallows people to reflect on the situation and be aware where these changes come from. As a result they will follow the path, guided by the agenda of higher forces.

4 6 10 11 + 9

03.4.2 | Chosen Future Worldview

In coordination with Springtime, worldview 5, ‘Rebelling out of Principle’, was chosen. This future world will be the basis of the vision statement, and therefore everything that will be done further in the process of the project.

A main influence on the preference of Springtime is their clientele, and how relevant the future worldview is to those specific brands. Springtime expressed interest in the relationship between people and company, expressed best by cluster 1 ‘Us vs. Them-mindset’. Worldview 5 dives deeper into this and highlights the power balance between people and exploiters active in the micro mobility industry. Also the distribution of (public) space, and society’s reaction to this turned out to be a preferred direction. Worldview 5 represents a future scenario in which people will take an active approach and ‘fight’ for their spot on the streets. In this worldview, clusters 1, 2, 7 and 8 are most relevant (see section 03.3.1).

The worldview card gives a brief impression of how this future world will look like. Below, a more detailed description is presented:

“Streets are filled with moving advertisements due to an increasing amount of shared vehicles. On top of that, micro mobility operators claim more and more pieces of public space to place infrastructure for their services to work. The public space, what was meant to be public property, is now being privatised. Operators gain more and more power over the design of the streets, with the result that people are serving the company by tailoring their behaviour to a profit and efficiency-based system. This should instead be the other way around. The organisation of micro mobility is very much business-driven, and people are seen as pawns (or ‘users’) that should function in a system in order to achieve maximum convenience and efficiency. Coming from a feeling of powerlessness, people’s reaction to it is to show anarchist and rebellious behaviour as a way to express their disapproval towards the organisation of micro mobility. In addition, people feel the need to take action to protect what belongs to them since space is scarce due to a lack of democracy around mobility. All of this leads to an even bigger segregation between human and company.”

5 **Rebelling out of principle**

Micro mobility operators privatise public space by claiming pieces of it. They gain more and more power over something that is supposed to be public property. This fuels anarchist and rebellious behaviour of people, due to a feeling of powerlessness and disapproval. The segregation between human and company becomes only bigger as a consequence.

1 2 7 + 8

CORRESPONDING CLUSTERS

1 Us vs. Them-mindset

2 The Inner Anarchist

7 Battle for Space

8 Capitalisation and Exploitation of Public Space

chapter IV.

FUTURE VISION

___ IV. Future Vision

In this chapter, the construction of the future vision is explained. The future vision is the reaction of the designer to the chosen future worldview, in this case number 5 ‘Rebelling out of Principle’. It determines what is preferable, and what is not within this worldview, and how to transition from a negative future scenario to a positive future scenario. This phase in the ViP process is the first where the designer actively and consciously incorporates subjectivity and personal values. A future vision consists of a description of a desired future world, a vision statement and an analogy.

04.1 VISION STATEMENT

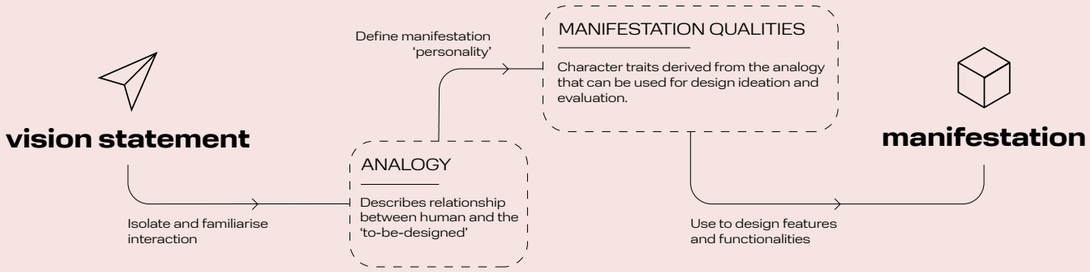


FIGURE 012 - from vision to manifestation

The interaction vision starts with a vision statement, after which two more steps follow in order to come to the point where the designer can think of the features and shapes of the manifestation. Figure 012 shows the structure of these steps, and a short explanation behind them.

04.1.1 | The Desired Worldview

Chapter III left off with the chosen future worldview ‘Rebelling out of Principle’. It can be characterised by a number of elements. First of all, there is an unfair distribution of power over the design of public space between people and micro mobility operators, where the most amount of power lies with the latter. As a consequence people feel powerless and therefore show anarchist and rebellious behaviour in order to cope with this. Second, micro mobility operators are striving towards a maximum amount of travel convenience, with the result of losing ‘humanness’ in the process and people being seen as pawns in a business-driven system. These elements combined lead to the conclusion that ‘Rebelling out of Principle’ should not be considered as preferable. The promise behind micro mobility in its essence is to make cities better places for people, by for example reducing the need for people to rely on polluting cars[Crivello, 2019]. If that is the starting point, then the organisation of micro mobility should be human-centered first of all. This is not the case in the chosen future worldview.
Constructing a vision statement is a way to transition from this negative future world, to a positive one. The first step is then to define what a positive and preferable future world would be. This ‘desired worldview’ is

described below.

"In the desired future world, the people will have the most, or at least as much power over the distribution of public space as the corporates, operators and local governments have. The designing of the streets should be human-centered first of all, and the variety of systems and business models should therefore not be forced onto people. Mobility, a crucial need in society, should become democratic (especially on a more pragmatic detail level). Micro mobility systems should serve the people, instead of the opposite."

The desired future world reacts to the lack of humanness from 'Rebelling out of Principle' by promoting a more democratic form of micro mobility. The power balance between operator and people changes, meaning that people have a much bigger influence on micro mobility in public space. In its core, the transition from 'Rebelling out of Principle' to the desired future world describes a change of agency.

04.1.2 | Transitioning to a Desired Future

Figure 013 shows the role of the vision statement in relation to the envisioned future worldview ('Rebelling out of Principle'), and the desired worldview described in 04.1.1.

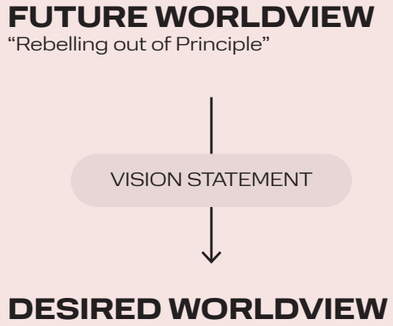


FIGURE 013 - The role of the vision statement

A vision statement describes an interaction that happens between a person and the to-be-designed manifestation. This interaction can be seen as the vehicle used to go from the envisioned future world, to the desired future.

A vision statement should not describe the shape, form, or functionalities of the manifestation, rather, what the manifestation should evoke and how. Specifying what the manifestation should look like at this stage in the process might cause the designer to be influenced by what is already out there, essentially resulting in a less honest design and less design freedom. Here, 'honest' should be interpreted as 'staying true to the intent of ViP', which is the designing of context-aware innovations, instead of building on what has already been done(Hekkert & van Dijk, 2011). A form factor should be based on the interaction, meaning that a vision statement might reveal that the things that already exist are not the right fit for the job. According to Hekkert and van Dijk (2011), a vision statement consists of two main elements:

- The goal: this is what the manifestation should achieve. This can be a feeling, an experience or a change of situation. This is generally centered around the to-design-for audience.
- The mechanism: this is the way that describes how the goal is achieved. Again, this should not be about the functionalities of the manifestation, but rather about the psychological, sociological or environmental phenomenon that leads to the intended goal.

The way these two elements are put into a vision statement is according to the following structure:

1. We, the company and/or designer...
2. ...want (people/audience) to [goal]...
3. ...by [mechanism]

04.1.3 | Composing the Vision Statement

The process of constructing the vision statement started with analysing the differences between worldview 5 and the desired future world. A major change between the chosen worldview 'rebelling out of principle' (see the previous chapter) and the desired worldview, is the lack of anarchist and rebellious behaviour of people. As can be derived from worldview 5, this behaviour comes from a feeling of powerlessness. The vision statement should therefore remove the need for this behaviour by providing people with 'power'. The feeling of powerlessness comes from a lack of control over one's own mobility, and not having enough participation in the design and organisation of mobility in public space. This of course relates to the power imbalance between private company (the micro mobility operator) and the citizens, described in detail in Cluster 1. In the envisioned future world, worldview 5, it is the mobility operators that are in charge over the mobility of people. This should be different in the desired future, where people are in control.

Then there is a clear transition from a surface level type of democracy around public space, to a detail level type of democracy. This too is a crucial element of the statement as mobility is a very 'human' phenomenon. This means that a mobility system should serve and adapt to the needs of people instead of the other way around, where people are forced to adapt their behaviour in order to be mobile.

Using the goal/mechanism structure described above, the following forms the basis of the statement:

- **The goal**
  Helping people experience a feeling of control and agency over their own micro mobility. By giving people autonomy over how they want to move themselves and their luggage around, the need for anarchist and rebellious behaviour will disappear, as it takes away the feeling of powerlessness. People do not want to be forced into a system, especially when this system does not fit their environment and culture. In short: power to the people, not the corporations that want to exploit them and their environment (public space).
- **The mechanism**
  Enabling people to express their mobility needs. Mobility needs consist for example of intentions, preferences, wishes, and fantasies. Here, having the ability to express needs will be used as a mechanism to experience control. This is a manifestation of the need for detail-level democracy in micro mobility, and the design of public space.

The final statement is shown on the next page, as an explanation of the cause/effect structure of the goal and mechanism. From this statement, a number of interaction values were derived. These, as well as the different iterations of the statement, can be found in Appendix C.

Version 5.3

“Springtime and I want people to experience **a feeling of control** over their (micro) mobility in public space, by **enabling them to express** their mobility needs”

Cause / effect structure

04.2 INTERACTION ANALOGY

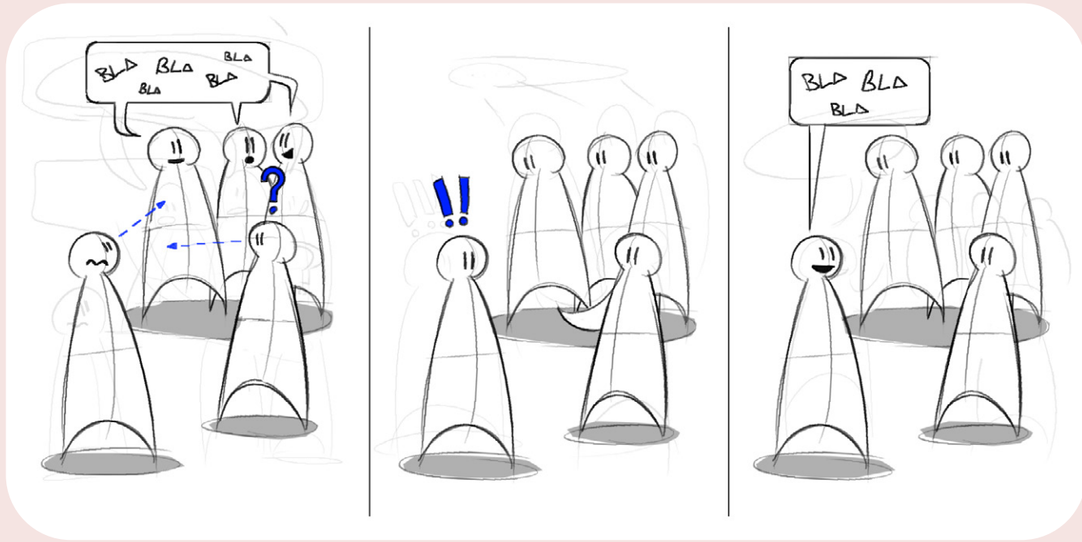


FIGURE 014 - The analogy visualised

The manifestation represents the final design. As clarified above as well, this design has not been assigned a form factor, nor does it even have any functionalities attributed to it. As part of bridging the gap between the vision statement and the ‘yet-to-be-designed’ manifestation, an interaction analogy can be composed. It acts as a tool to use during the next steps in the design process, which are defining manifestation qualities and going through the prototyping cycles. The analogy isolates the interaction described in the vision statement, and presents it in a more relatable form. It takes the most important elements and puts it in a different, but more familiar storyline. This storyline is not related to the original domain or context. One could describe an interaction analogy as the relation between people and the yet-to-be-designed manifestation, this can be seen in Figure 014. It can be difficult for both the designer and project stakeholders to imagine what the design eventually should be like, this is where the analogy comes into play. The interaction analogy is described below.

“The interaction should be like making a person wanting to add to a group conversation feel confident to speak out loud, by giving them a turn to speak.”

The vision statement mentions ‘people’ as its main stakeholder, otherwise known as those who are in transit and partake in public traffic. These people are represented in the analogy by the person in a group conversation that wants to say something, but is not given the chance. The yet-to-be-designed manifestation is represented by the turn to speak, handed to the person. This enables them to express themselves, and therefore feel relevant and in control of the group conversation. How the manifestation can be designed to feel like a turn to speak, will be explained in the next section.

04.3 MANIFESTATION QUALITIES

The final step in composing an interaction vision is the defining of manifestation qualities. This is based on the interaction analogy, and are a way to give the designer something to hold on to during the ideation and concepting. The manifestation qualities essentially describe the character the design should have, and form the final step between the vision statement and designing actual functionalities and shapes. As mentioned, the yet-to-be-designed manifestation should be like giving someone a turn to speak. With a list of 638 character traits(Gunkel, 1998) serving as the main source of inspiration, the following three manifestation qualities were found.

Encouraging
A turn to speak is a sign from a sender to a receiver that they have a chance to add to a conversation. It gives the receiver a certain confidence, since the barrier and awkwardness of finding the right time to join in is removed, and enables them to speak freely. In other words, it encourages the person receiving the turn. The manifestation should do the same to people in transit, as they should be encouraged to express themselves in order to gain a feeling of control.

Approachable
A turn to speak in itself is a clear form of communication, that signals a specific kind of action taking (speaking). The signal is clear and simple, and makes it easy to understand. That is also how people should perceive the manifestation. One should not be scared away by something overly complex, but should be able to understand it with little effort put in.

Allocentric
By giving someone a turn to speak, you provide the other with an opportunity rather than yourself. Also, other than telling the receiver that they can speak out loud, the speaker is not restricted in what to say. Therefore, allocentric can be used to describe it. The manifestation should also offer freedom to people in what to express.

The final design that follows from the interaction vision should embody these manifestation qualities. They say something about the 'personality' of the design, and are therefore a useful tool during the remaining steps in the design process. For example, on the one hand these qualities can act as a source of inspiration during exploration, but on the other they could also be a way to evaluate the design at the end. The manifestation qualities will be taken into the next step of the project, that being the explorative prototyping cycles.

chapter V.

EXPL-ORATIVE PROTO-TYPING

This chapter dives into the two different prototyping cycles mentioned in the project approach in the introduction, called ‘PROTO 1’ and ‘PROTO 2’ respectively. The prototyping phase is the bridge between ViP and the final design, and serves the purpose of exploring different parts of the interaction vision presented in chapter IV. First, the prototyping plan is explained, after which the chapter dives into the two prototypes and presents the outcomes and insights that came from them.

05.1 PROTOTYPING PLAN

The interaction vision presented in the previous chapter captures information about the envisioned future and the preferable future, as well as personal values and interests. And of course it consists of a goal and mechanism. In order to persevere the nuance of the work done up until this point, two different prototyping cycles will be conducted. One can imagine that by simply diving into the interaction vision there is the chance of missing out on details, which could lead to a design that only partially meets the original interaction vision.
Each cycle will explore a different part of the vision statement, and take into account the relevant manifestation qualities. Per cycle, a prototyping goal is set. This goal describes what part of the interaction vision is explored. PROTO 2 will start from the insights gathered during PROTO 1, but will not necessarily iterate on it. The two cycles are related, but they both have their own prototyping goal each exploring different aspects. Eventually, the insights from both cycles will be combined to form the basis for the designing of the final concept. Figure 015 shows the prototyping structure, in relation to the interaction vision and final design.
Each prototyping cycle will go through a fairly simple diverge/converge process. The final prototype can come in any form or shape, and is not bound to a specific medium. For instance, a simple sketch will fulfil as long as it fits with the prototype goal and can be communicated to Springtime.

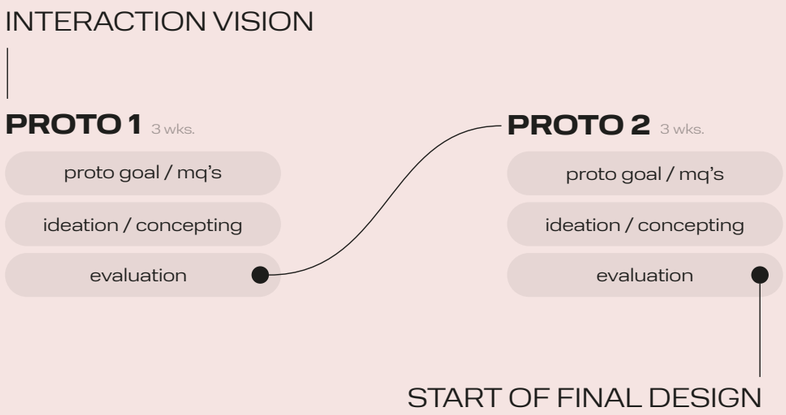


FIGURE 015 - The prototyping plan

As described earlier the statement's goal is achieved by the mechanism. Therefore it makes sense for these prototyping cycles to focus on the mechanism, while respecting the original goal. The mechanism can be split into two main parts, see Figure 016. Each part will be dedicated to one of the prototyping cycles. The statement parts are explained in further detail below.

PROTO 1 / How to enable expression

This part of the mechanism is about providing people an opportunity, and making this opportunity accessible. The relevant manifestation quality is 'approachable', because part of making something accessible is to remove any burdens and make it as easy as possible to engage. Looking back at the analogy, the process of giving someone a turn to speak is comparable to this part of the mechanism. The prototyping goal is presented below.

"Exploring ways to make expressing mobility needs approachable."

PROTO 2 / How to express mobility needs

The focus here is on the medium of expression, PROTO 2 will explore ways for people to express their mobility needs. 'Allocentric' is the first dedicated manifestation quality, as a medium of expression does not have its own agenda. People can use the medium for whatever they want. The second manifestation quality is 'encouraging'. Much like how a turn to speak encourages one to join a conversation, the medium of expression should be encouraging and inviting. The prototyping goal is as follows.

"Exploring allocentric and ecnouraging media of expression"

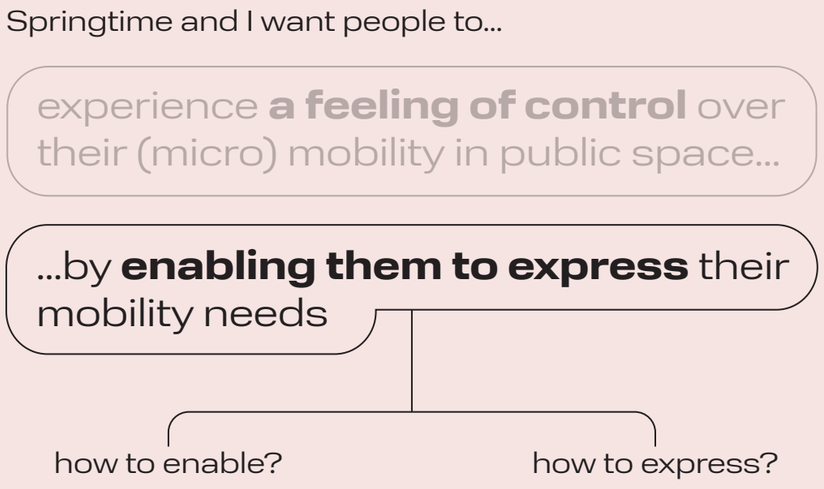


FIGURE 016 - The statement splitted in two

05.2 PROTO 1 - FANTASY POLE

Goal: Exploring ways to make expressing mobility needs approachable.

APPROACHABLE

The end result of the first prototyping cycle is displayed below. The prototype comes in the form of a digital sketch, and explores a system to enable people to express, put their expressions out on the streets, and reach others such as micro mobility operators. The focus of the sketch is to showcase this system, and combines it with aesthetic concepts that embody the manifestation qualities.

PROTO 1 / concept "Fantasy Totem"

The totem, an autonomous pillar driving around and displaying different kinds of people's (micro) mobility fantasies

A tall and rounded shape makes it easy to see the fantasies from every angle **(approachable)**

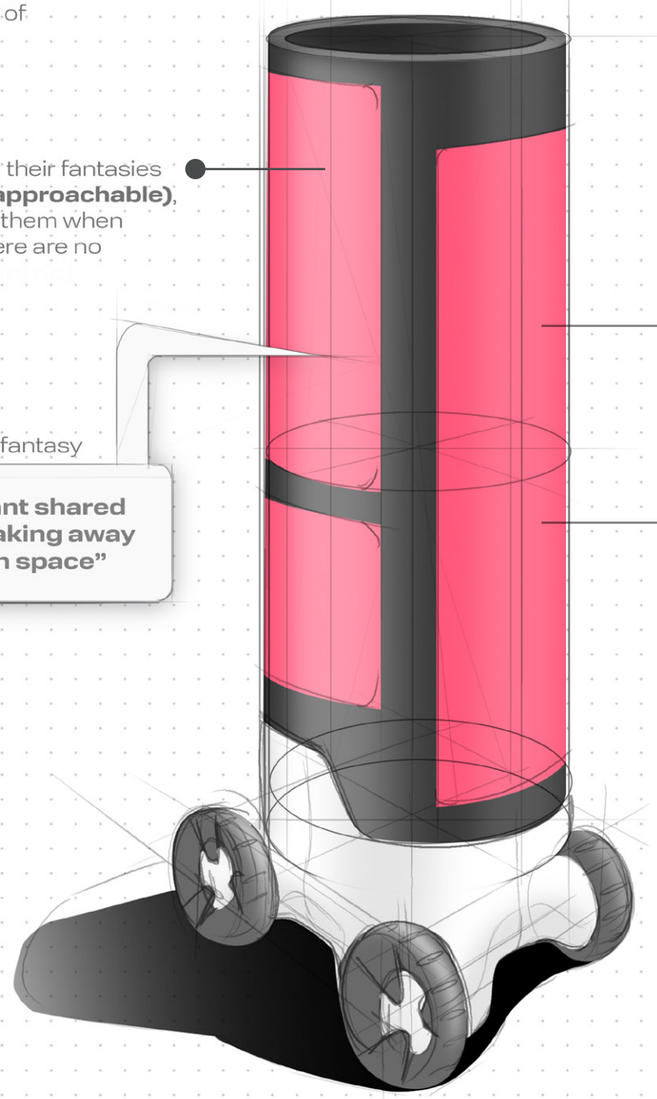
People can send in their fantasies via an online tool **(approachable)**, the totem displays them when driving around. There are no restrictions

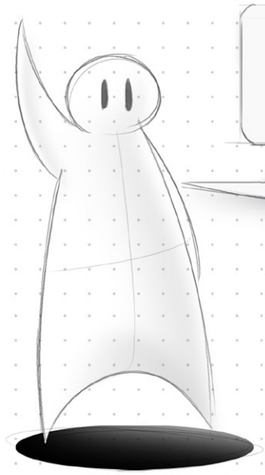
The Totem drives random routes through the city. It does not prefer one neighbourhood over the other **(approachable)**

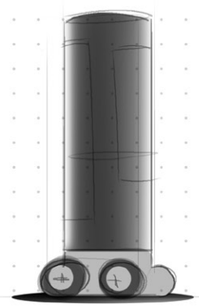
Fantasies are shown in a relevant context, sparking inspiration and imagination with people

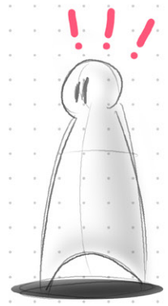
Example of a fantasy

"I don't want shared vehicles taking away pedestrian space"









By being present in public space, the totem will become a recognisable object, and could create hype among society

JAEL LORENZO SPRINKHUIZEN / 4537793

05.2.1 | Ideation Phase

As clarified before, the theme of the research question for this prototyping cycle is ‘medium of expression’. First, there is the question of how people can express their mobility fantasies (via what medium). Second, these fantasies should reach other people, as well as micro mobility operators and companies. The process that led to the final prototype, described on the previous pages, is displayed below.

The ideation started off by exploring all kinds of ideas to enable people to express. This resulted in a total of 30 small ideas. There were no constraints set on both the quality and quantity of the ideas, meaning that the role of this step was to diverge as much as possible. All 30 ideas can be found in Appendix D.

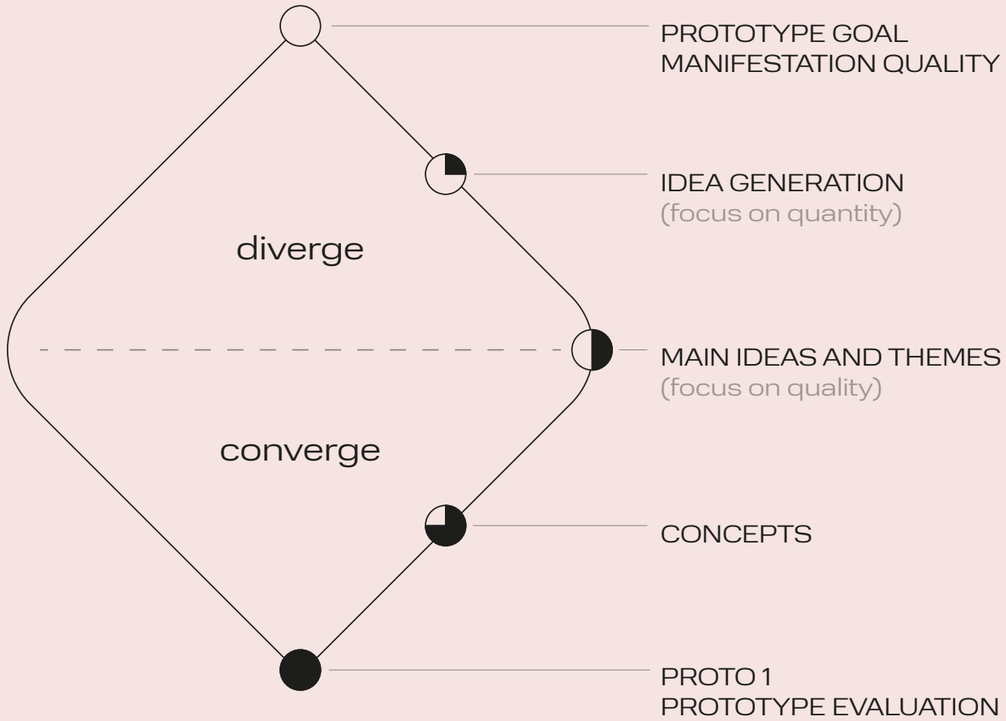


FIGURE 017 - PROTO 1 process

On the right hand side, the 10 most valuable, most inspiring and of highest quality ideas from the total of 30 ideas are presented.

The ideas are illustrated with the visuals displayed on this page. They are not always directly related to the context, as the ideas serve as starting points and do not represent final designs.

JAEL LORENZO SPRINKHUIZEN / 4537793

05.2.2 | Conceptualising

The goal of the concepting phase was to converge into a final prototype. This was done by combining, clustering, and isolating the main ideas and themes presented in the previous section. The Fantasy Pole was the result of this process. Below, a brief visual summary is shown to give an overview of the concepting phase. Appendix D includes all sketching materials concerning the concept phase.

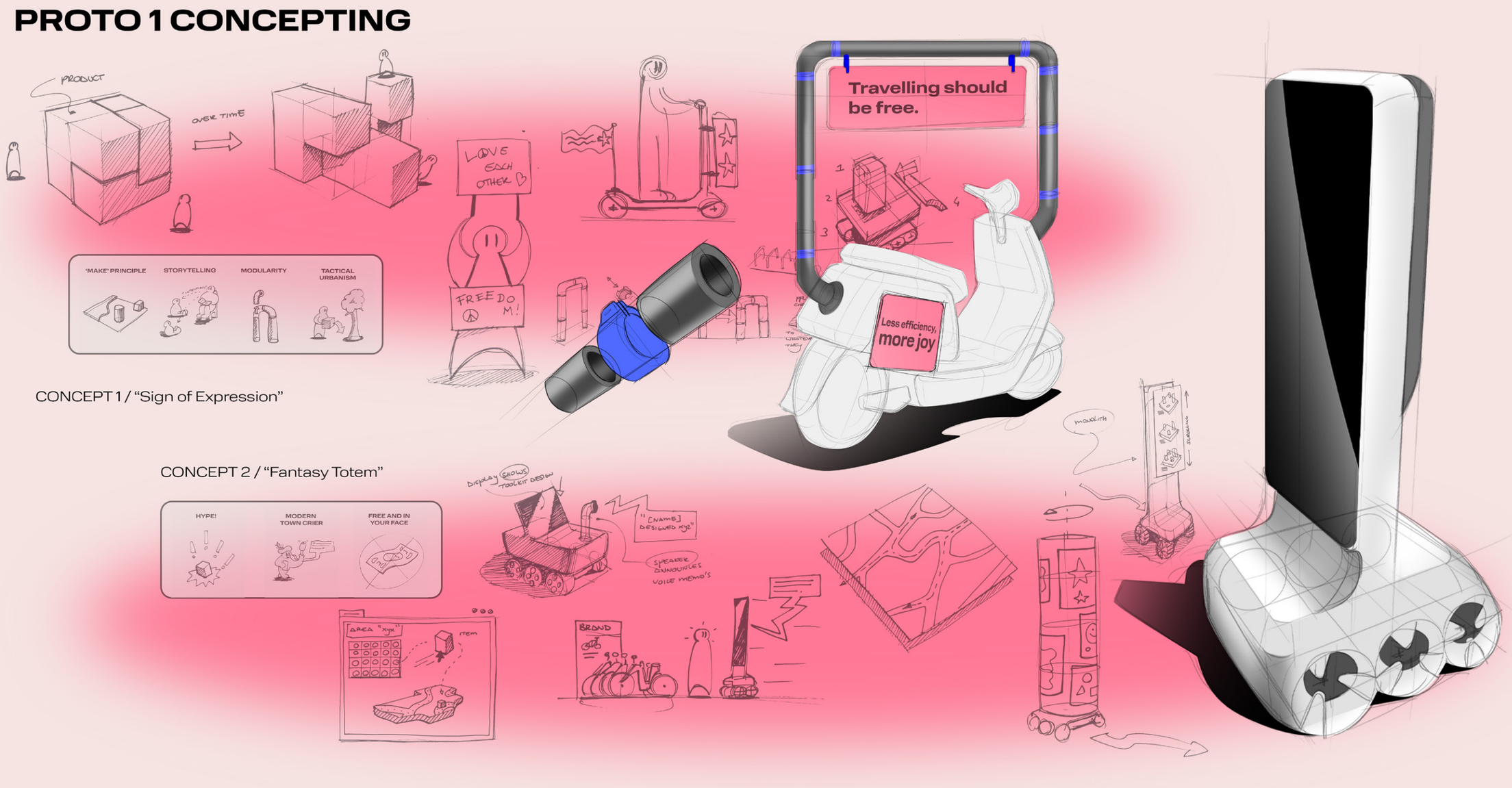


FIGURE 018 - PROTO 1 concepting phase

05.2.3 | Prototype Evaluation

The Fantasy Pole answers the prototyping goal ('Exploring ways to make expressing mobility needs approachable') by offering a system for people to voice their mobility needs out there on the street for everybody to see. The aim is also to make it easily approachable for people to participate. Micro mobility companies and operators are included in the sense that the mobility needs of people could be about them, as well as that the pole can serve as a representation of the public opinion concerning micro mobility.

The Fantasy Pole explores ways for the final manifestation to design for the selected manifestation quality: 'approachable'. 'Approachable' is represented by the cylindrical and tall shape of the vehicle, making it easy to see and read even from a distance. The tool to send a mobility fantasy to the pole is also free and online, lowering the threshold to participate, at least for those with internet access (it is assumed that this number in 2030 is even higher than it is now). This threshold would be higher if the pole required analog input, like writing on it directly, people would need to come up to the vehicle and essentially make a detour or deviate from their original route. In addition the pole itself drives around freely through random neighbourhoods and allows people to display any message they want on it (there is no filter, like a turn to speak does not filter either). Yes, this freedom could lead to abuse, but it could be argued that even those kinds of actions are insightful or relevant in the sense that they still portray a person's sentiment or mindset.

A strong point of the Fantasy Pole is that it offers a way to put people's voice out there on the streets. It can be considered a modern town crier, since it draws attention to itself and therefore the mobility needs of people, alhough the concept hardly explores the way people can express these needs. Currently they are displayed in the form of a textual statement. Perhaps a more visual manner of expression would be more suitable, as this could spark creativity as well as resulting in better readability by those looking at the pole when it drives around. Whether or not this would be the better solution, there is still a lot to explore concerning the medium of expression. PROTO 2 will dive deeper into this of course.

Next to this, the way people interact with the pole is by looking at it, and putting their fantasies on it. One can argue that this is too little to fully engage people in the process. As discussed with Springtime, this could be improved if the pole is also a mode of transportation for people to use, by allowing them to enter the vehicle. This could also mean that people get more inspired, since they are actually in the context. This could look something like Figure 019.

There is still a wrap-around shell, that displays people's mobility fantasies to others.

+ The passenger is part of the audience
+ The passenger can get inspired and stimulated to think of their own fantasies

The passenger can come up with mobility fantasies on the spot and display them on the vehicle.

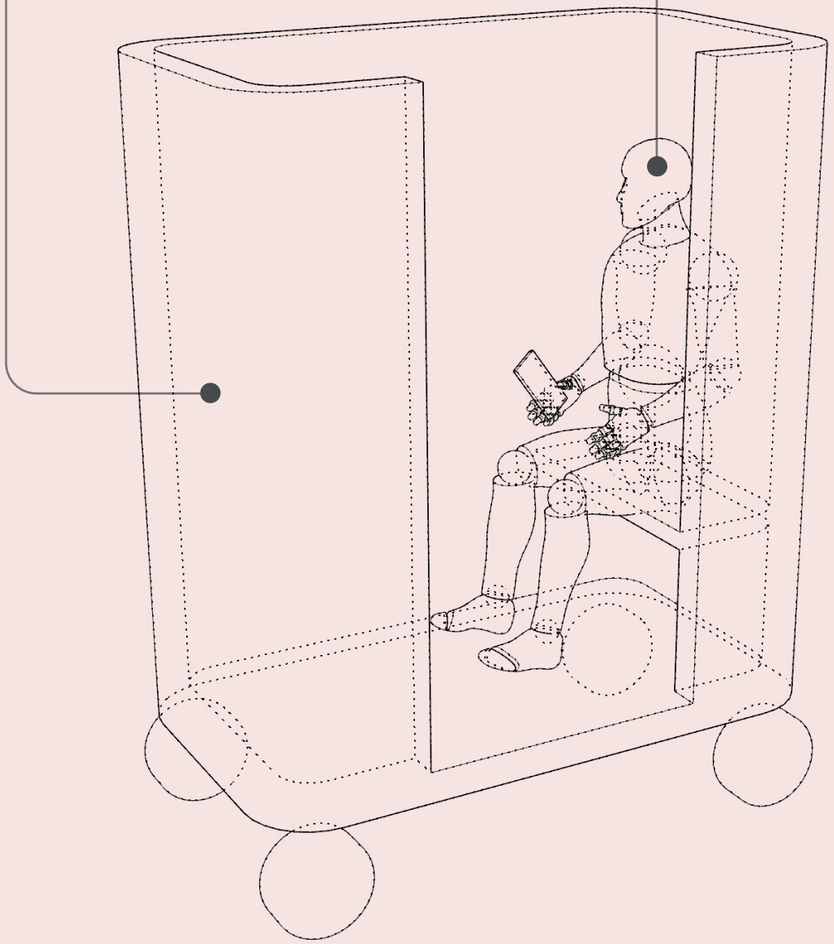


FIGURE 019 - Suggested change to PROTO 1

05.3 PROTO 2 - AMBIGUITY CARD

Goal: Exploring allocentric and ecnouraging media of expression

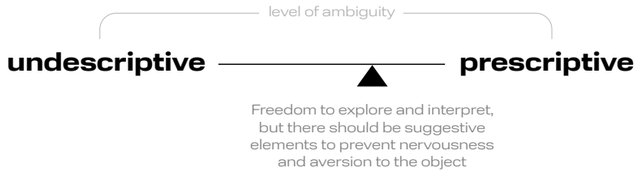
ALLOCENTRIC

ENCOURAGING

The end result of the second and final prototyping cycle is displayed on the right. The prototype explores the concept of ambiguity as a mechanism to make people feel in control and confident in their mobility. It touches upon what ambiguity is and how it can be used in design. It provides handles for the design process, as well as ambiguous design examples.

PROTO 2 / Ambiguity Card

When ambiguity is used, people should be confident to explore and use the object, instead of getting scared (if something is too ambiguous). There should be a balance the level of ambiguity and predefined use.



What defines ambiguity in design?
Removing the 'directionality' and embracing open-endedness(Boon et al., 2018).
Some examples of means to achieve this:

- Mixing objects
- Removing 'use cues'
- Unfamiliarness / abstraction

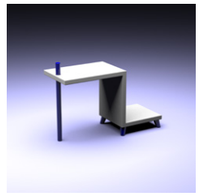
Relevance of ambiguity for the project
Ambiguity can give people a feeling of control by not predefining their mobility (worldview 5 to desired world), and allowing them to interpret and express. This is a human approach to organising micro mobility, which is both relevant to the goal of the project and Springtime's viewpoint.

The 'Do Hit chair', by Marijn van der Pol (2000), succesfully embracing 'building' and 'breaking'

How to express in an ambiguous context?

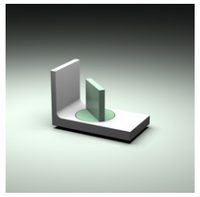
- By building
- By interpreting
- By breaking
- By ignoring
- By abusing

Exploring ambiguous shapes in relation to mobility
Using abstracted shapes with suggestive features and colour schemes.



Theme: furniture and fixtures

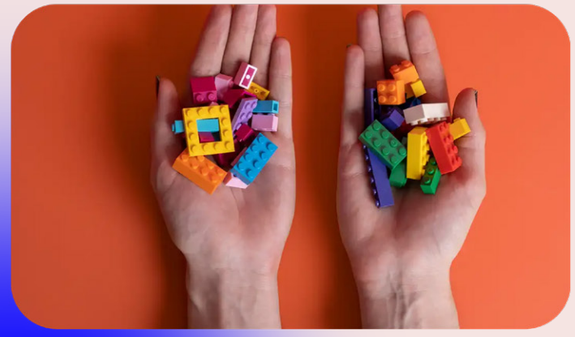
Theme: attributes and movables



Theme: layout and seating

Theme: detailing

AMBIGUOUS DESIGN



LEGO

Although LEGO bricks suggest how they can be used for building, they do not push the builder in what to build. People can do everything they want with the bricks, and therefore spark imagination.

"Learn to Unlearn" (2012)
Lina Marie Koepen

A selection of objects based on furniture archetypes, they stimulate people to redefine and reshape thing around them. The project reacts to the current world in which the objects we use are determined and complement human limitations. (Ieva, 2013)

"Ambiguous Objects" (2019)
Ning Zhāng

The installation consists of multiple geometric shapes that do not have a predefined meaning. Visitors are expected to answer this question (MARE, 2019). The project can be seen as a real-time research project.

"Stickz" (2018)
Boudewijn Boon

Meant for children's play, Stickz are toy objects with no predefined functionality. They can be used as attributes, or as construction objects. They encourage children's fantasy (Desmet, 2018).

FIGURE 020 - Ambiguity in Design collage

05.3.1 | Ideation Phase

Ambiguity as a Mechanism

As mentioned earlier, the Fantasy Pole (PROTO 1) explores a way for people to put their fantasies, beliefs and wishes out there onto the streets for everyone to see them. However, the way people express themselves was not clearly defined. An iteration on this could be to transform the pole into a usable vehicle, in order to spark imagination with the user. From this, the idea of ambiguous design was born. The following was used to define ambiguity:

> "Something that does not have a single clear meaning" ('Ambiguity', n.d.)

Designing ambiguous products on purpose is becoming a common practice in research projects, mostly as a way to critique the way we design for people, which is very prescriptive and limiting (Ieva, 2013; MARE, 2019). In other cases, ambiguity is used in research projects as a proof of concept (Desmet, 2018). Designing for ambiguity can be described as removing directionality, and embracing open-endedness (Boon et al., 2018). A collage was made as inspiration for the design process, it showcases different examples of ambiguous design. See Figure 020.

Ambiguity and Agency of Mobility

As described in Chapter IV, the transition from 'Rebelling out of Principle' to the desired future describes a change of agency over the design and organisation of publc space. Design for ambiguity relates to agency as it leaves the definition of the meaning of something to the audience. It does not limit one in their behaviour with planned user journeys or predefined features, which is often the case with 'regular' directional design. When looking at the design goal described by the statement, the agency over mobility in public space should lie with citizens. As this group also forms the audience for the final manifestation, design for ambiguity makes a good fit. It can give people control via the interpretation of the ambiguous, defining their own meaning to the manifestation and its features. For this exact reason, design for ambiguity plays into one of the main issues people will have with micro mobility in 2030. Looking back at the ViP research, specifically the worldview matrix (section 03.4), it is the total lack of influence on the design and organisation of mobility systems that people dislike about the world of micro mobility. Everything is defined and fixed, and can often only change when a (big) group of people makes an effort to battle against it.

05.3.2 | Conceptualising

The four shapes displayed on the right were made as a way to learn about ambiguity in design as a concept, as well as getting experience with designing something that can be considered ambiguous. For every shape, a specific theme was chosen that relates to mobility design (since PROTO 1 ended with the recommendation to design a vehicle of some sorts). The shapes explore what the level of ambiguity should be, and what the right balance is between being open-ended and being suggestive. For example, when looking at language, if a text is too ambiguous it can cause the reader to be uncomfortable and feel out of control[Codd Walker, 2018].

From the insights gathered during the modelling of the shapes, a list was derived of five different use behavours that could be applied in ambiguous design. By embracing ambiguity, a designer gives people a certain freedom. Instead of thinking how people 'should' use a design, the mindset shifts to how people 'could' use a design. The use behaviours are listed below.

- **Building**. A person can combine different objects together to create a new object with new functionalities.
- **Interpreting**. An object can have different meanings for different people, this all depends on the frame of reference of someone, as it determines how they look and perceive things.
- **Breaking**. As 'expression' is the focal point of design for ambiguity, being able to break something is also a way of expressing oneself as a medium of communication. Breaking also offers freedom to people, like 'building' does.
- **Ignoring**. Not all features of an object have to be used at the same time. By being able to ignore something a person can decide on how they want to look at something.
- **Abusing**. Being able to abuse something is also a form of self expression. It differs from 'breaking' in the sense that abusing something does not mean disassembling something. A good example of 'abusement' is the Do Hit Chair on figure 021.

FIGURE 021 - The 'Do Hit Chair' embracing abusive behaviour[van der Poll, n.d.]

FIGURE 022 - Exploring 'furniture and fixtures'

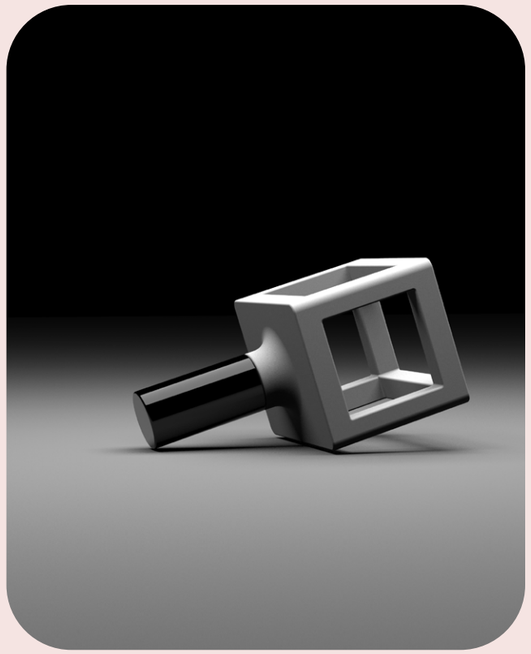


FIGURE 023 - Exploring 'attributes and movables'

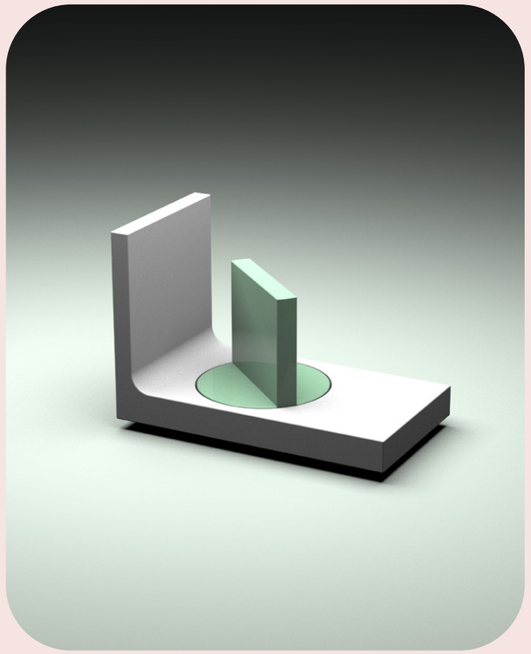


FIGURE 024 - Exploring 'layout and seating'

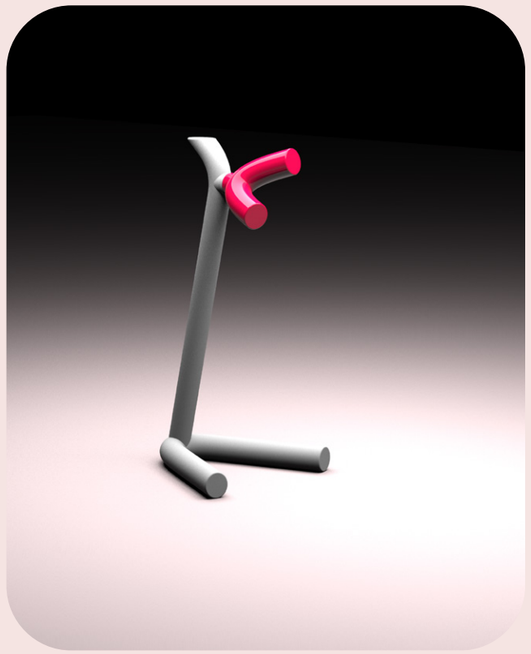


FIGURE 025 - Exploring 'detailing'

Ambiguity: A Double Edged Sword
As briefly discussed above, amibiguity in design could also negatively affect people, for example when an object is too ambiguous to make sense of it. By removing too much directionality in an object, the person interacting with it will most likely get frustrated and perhaps even get scared away. The level of directionality in a design is dependent on the context. As this project is about micro mobility and public space, there should be some level of suggestion to guide and invite people. This is similar to LEGO, where a brick suggests what it could be used for, but not tell the person what it should be used for.

05.3.3 | Prototype Evaluation

The goal for PROTO 2 was to explore allocentric and encouraging media of expression. The three weeks dedicated to this prototyping cycle resulted in interesting findings and new ideas. By iterating on what was done during PROTO 1 a new and promising concept was found; that of design for ambiguity. The conclusion is therefore that the prototyping goal is achieved. This prototyping cycle serves as a good starting point for the final design when it comes to the medium of expression used for the mechanism of the vision statement.
Relating to the prototyping goal, the manifestation qualities dedicated to this prototyping cycle are 'allocentric' and 'encouraging'. Starting with allocentric. This manifestation quality can be recognised in design for ambiguity, as this concept is not egocentric. It offers people the freedom to express themselves however they want, by removing directionality and allowing them to see what they want to see. Of course, there should be some level of suggestion present in the design, as discussed before. Otherwise people will end up confused. This brings us to the next manifestation quality: encouraging. This is embedded especially in the four ambiguous shapes that explored the optimal level of open-endedness. This prototyping cycle lead to the insight that people will feel encouraged to explore ambiguous objects when the abstraction level is not too high, and there are enough suggestive features present in the design. In that case, ambiguity can tap into the curiosity of people, and encourage them to engage with the designed artifact.
Next to this, the big question to answer is how design for ambiguity can be translated into something more concrete for the final design. Other than the four ambiguous shapes, the Ambiguity Card does not provide a detailed set of steps to follow during the final design process. It mostly acts as a source of inspiration.

05.4 OUTCOMES AND INSIGHTS

The idea behind the two explorative prototypes was to structure the transition from interaction vision to final manifestation. PROTO 1 and 2 each explored a different part of the mechanism presented in the vision statement. The main insights gathered from this are presented in figure 026.
PROTO 1 ended with a recommendation to design a vehicle that would allow people to get inspired to express their mobility needs. This enables people to express since the vehicle is approachable as it drives around the streets and is ownerless, and because they are immersed in the right context. While PROTO 1 left a gap on the way people could express themselves, PROTO 2 filled this gap by exploring and recommending ambiguity for design. The way people express themselves is via interpretation of an object, and acting upon this interpretation.
The goal of the vision statement is achieved by combining PROTO 1 and 2, that together form the mechanism. People will feel in control of their micro mobility in public space by providing them an ownerless ambiguous vehicle, that allows people to express their mobility needs via interpretating its meaning. The meaning of the vehicle is 'fluid', as it is based on what people see in it. The features are ambiguous, allowing for different kinds of use behaviours - from building to abusing.

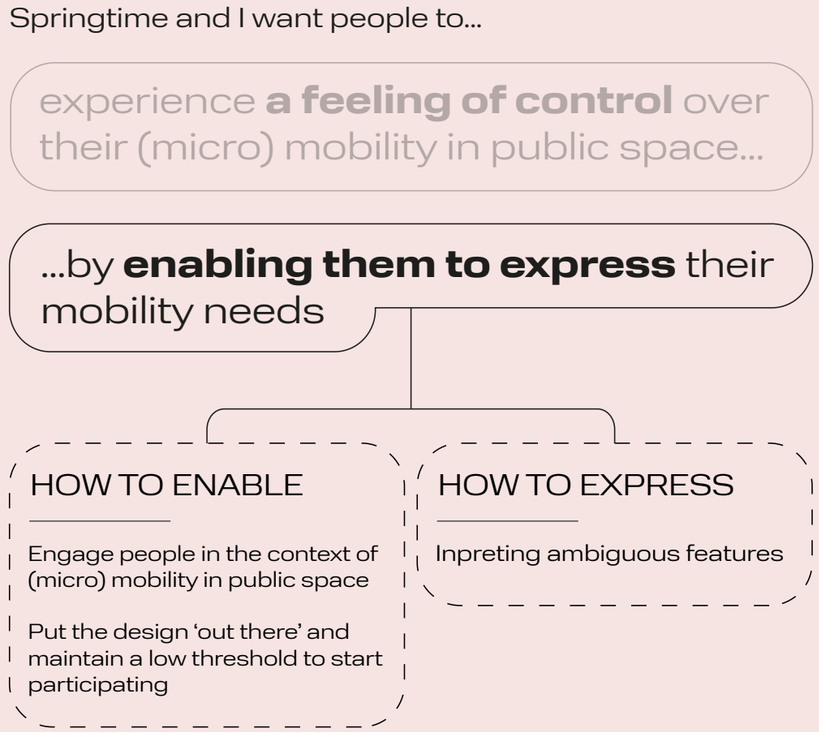


FIGURE 026 - Prototyping outcomes

chapter VI.

FINAL DE-SIGN - ‘AMBY’

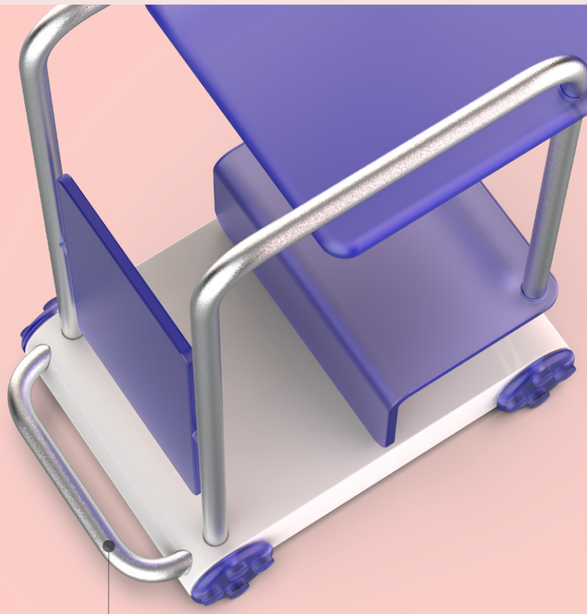
___ VI. Final Design - ‘AMBY’

In this chapter the final manifestation called ‘Amby’ is presented. First, an overview of the design is given including a description and scenarios. Second, the design process of Amby is explained by diving into the ideation and concepting phases. The chapter closes off with the value this speculative design brings to Springtime as a client, summarising in what way and on what topics this design should facilitate a discussion.

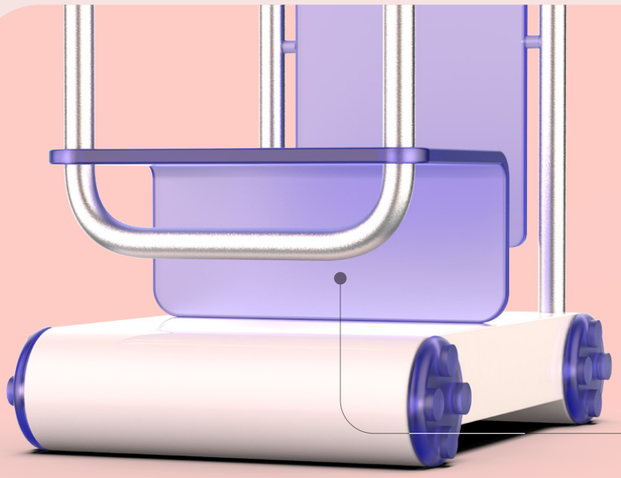
06.1 AMBY - A SPECULATIVE DESIGN

Amby can be described as an ambiguous micro mbility prop in public space. What this means is that this vehicle is ambiguous in its nature; they way people should interact with it is not predefined. Its features are multistable, and people can assign meaning to them based on their own interpretations. The people are in control when it comes to the way they interact with Amby. This is in line with the interaction statement, where people should experience a feeling of control over their own micro mobility in public space. The mechanism, as explored in PROTO 2, is based on design for ambiguity. The process of interpreting the meaning of Amby, and interacting with it based on this, is seen as the expression of one’s mobility needs. Amby and its features are showcased on the follwing pages.

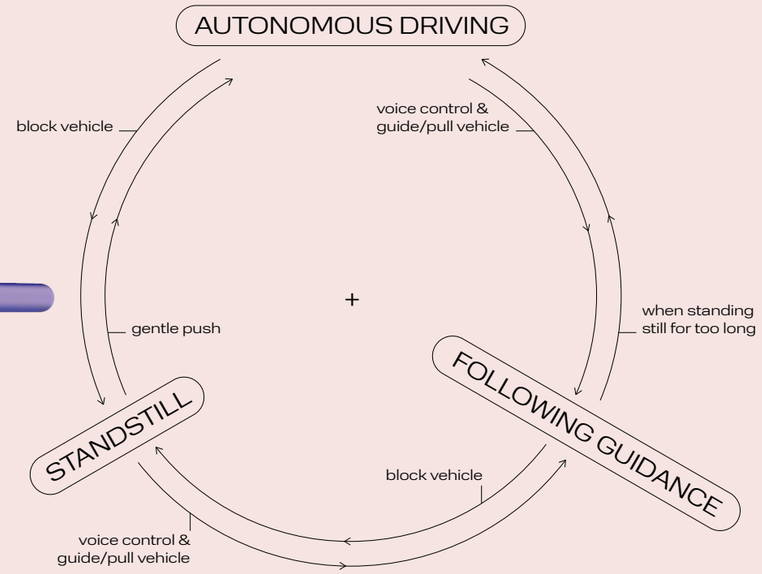
AMBY



The frame consists of metal tubes, similar to those often found in public furniture and public transport interiors. Public furniture acted as a inspiration, as this vehicle is context-aware and part of public space, it should not be ‘a visual intruder’.



In total there are three reconfigurable elelments (the blue panels). These can move up and down, or rotate around.



People can interact with amby in a human way. This interaction scheme is based on human interactions, such as talking and physical touch. There is no app, as this design aims to involve all people in public space and does not require them to be part of a user-based system

With a maximum speed of 10 km/h the Amby drives around autonomously in the city.

JAEL LORENZO SPRINKHUIZEN / 4537793

People can reconfigure the Amby in any way they want to meet their mobility needs. The open-endedness of the design allows for multiple interpretations, people can give their own meaning to Amby and its features

06.2 AMBY IN CONTEXT

This section presents three different scenarios that illustrate use cases for Amby. What should be made clear again is that this design is ambiguous in its nature. It gives people agency over their mobility and micro mobility in public space by not limiting them to a specific kind of use behaviour. People have the freedom to do with Amby what they want, to meet their mobility needs. The process of them interpreting the vehicle's features and interacting with it is the expression of these needs. This means that the three scenarios presented are merely for illustrative purposes of how Amby could be interacted with in public space. They showcase its features and aim to give an impression of the possibilities the concept offers. The idea is of course that the amount of interactions people have with it are limitless, and can not all be captured in a couple of scenarios.

The three scenarios can be found on the following pages. On this page, figure 027 shows a number of illustrative examples of how Amby can be used. These are an extension of use cases discussed the scenarios.

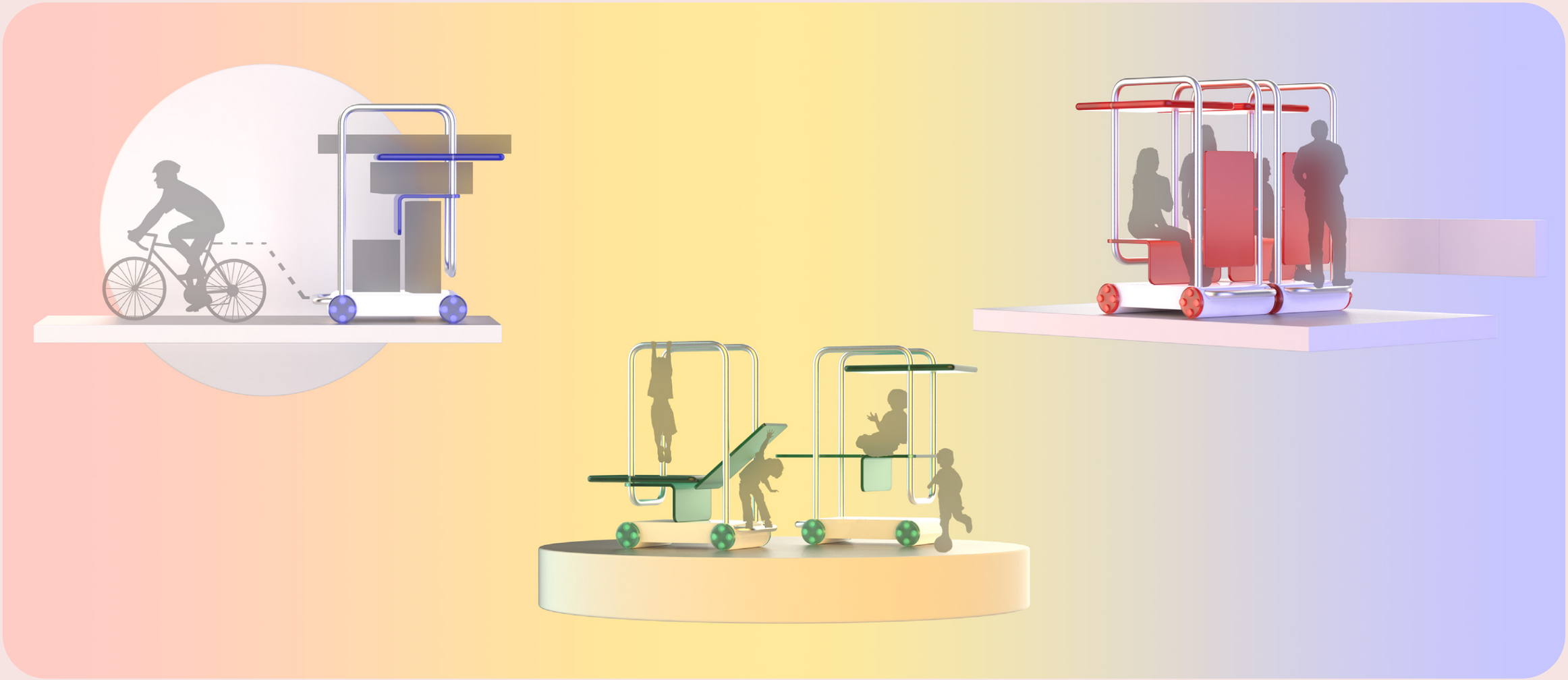


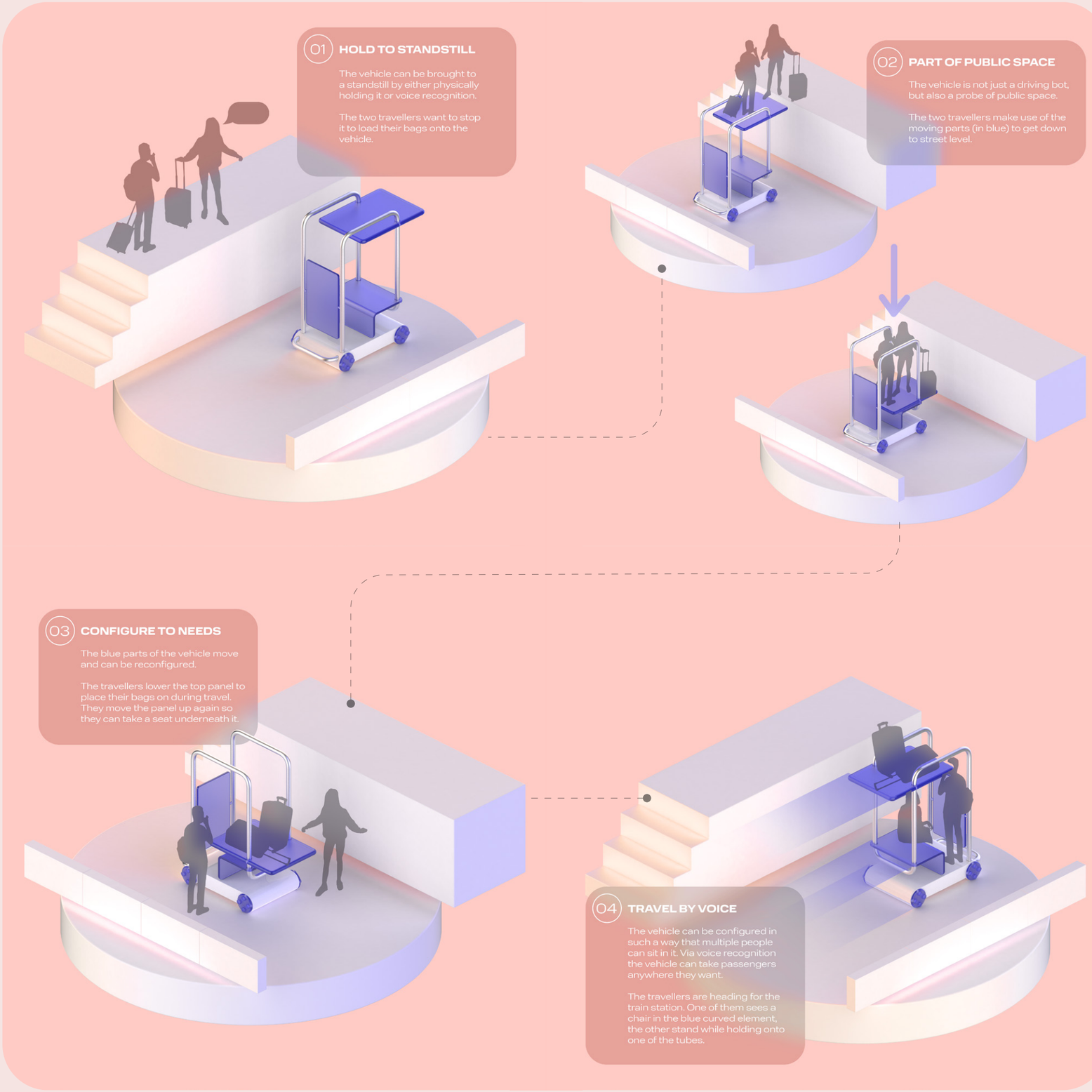
FIGURE 027 - Examples of people interachting with Amby

JAEL LORENZO SPRINKHUIZEN / 4537793

SCENARIO A

“ON THE GO”

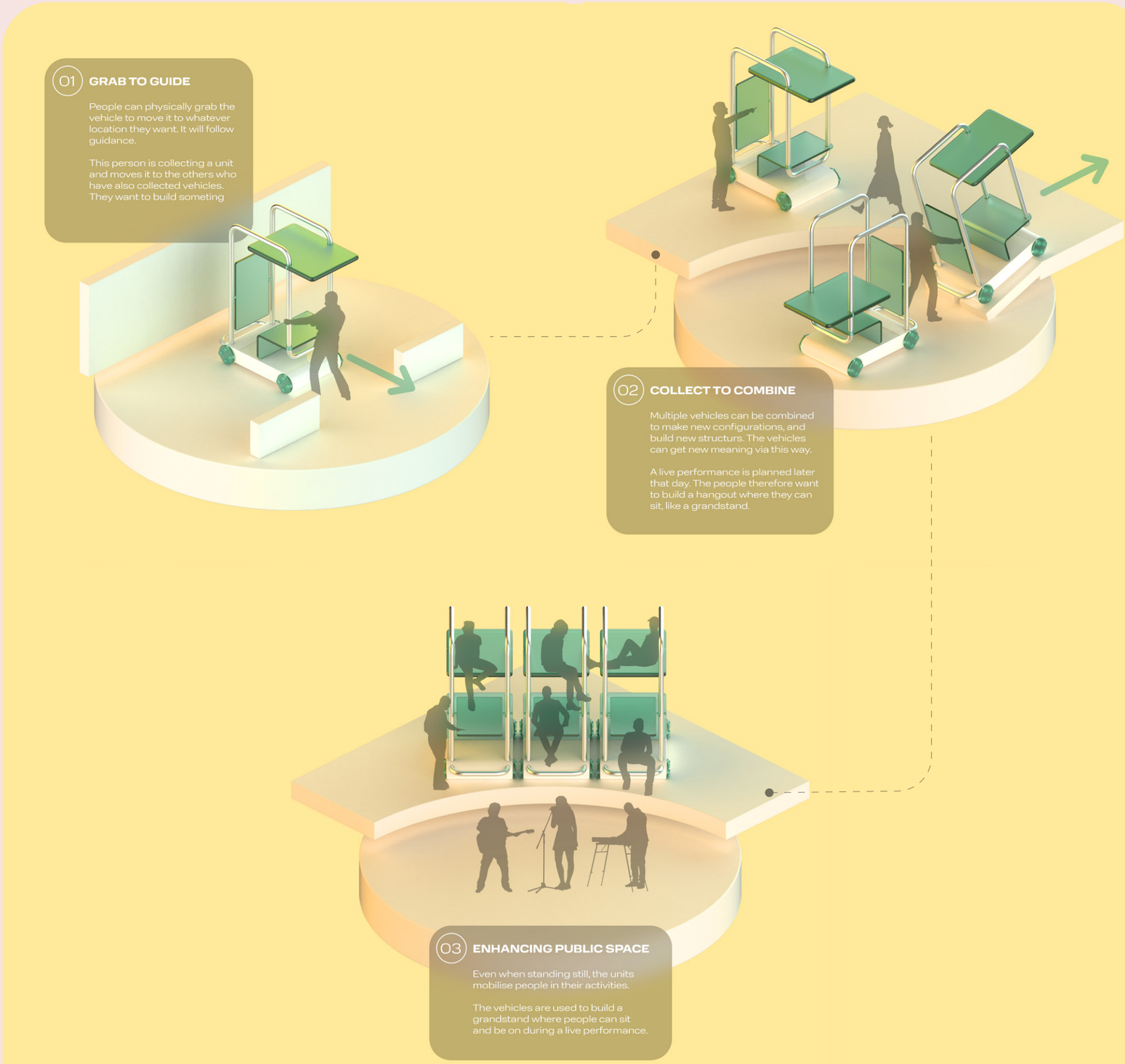
This scenario shows how Amby could be used as a way to travel from A to B, as well as how the vehicle interacts with its environment in public space. The scenario shows two tourists who want to travel to a train station.



SCENARIO B

“COMBINED EFFORT”

Scenario B illustrates a situation where people need to be mobilised in their activities. They combine multiple Amby units to build a structure and give the vehicle new meaning. The people here want to attend a live performance outside, and need a place to sit and hang on during it.

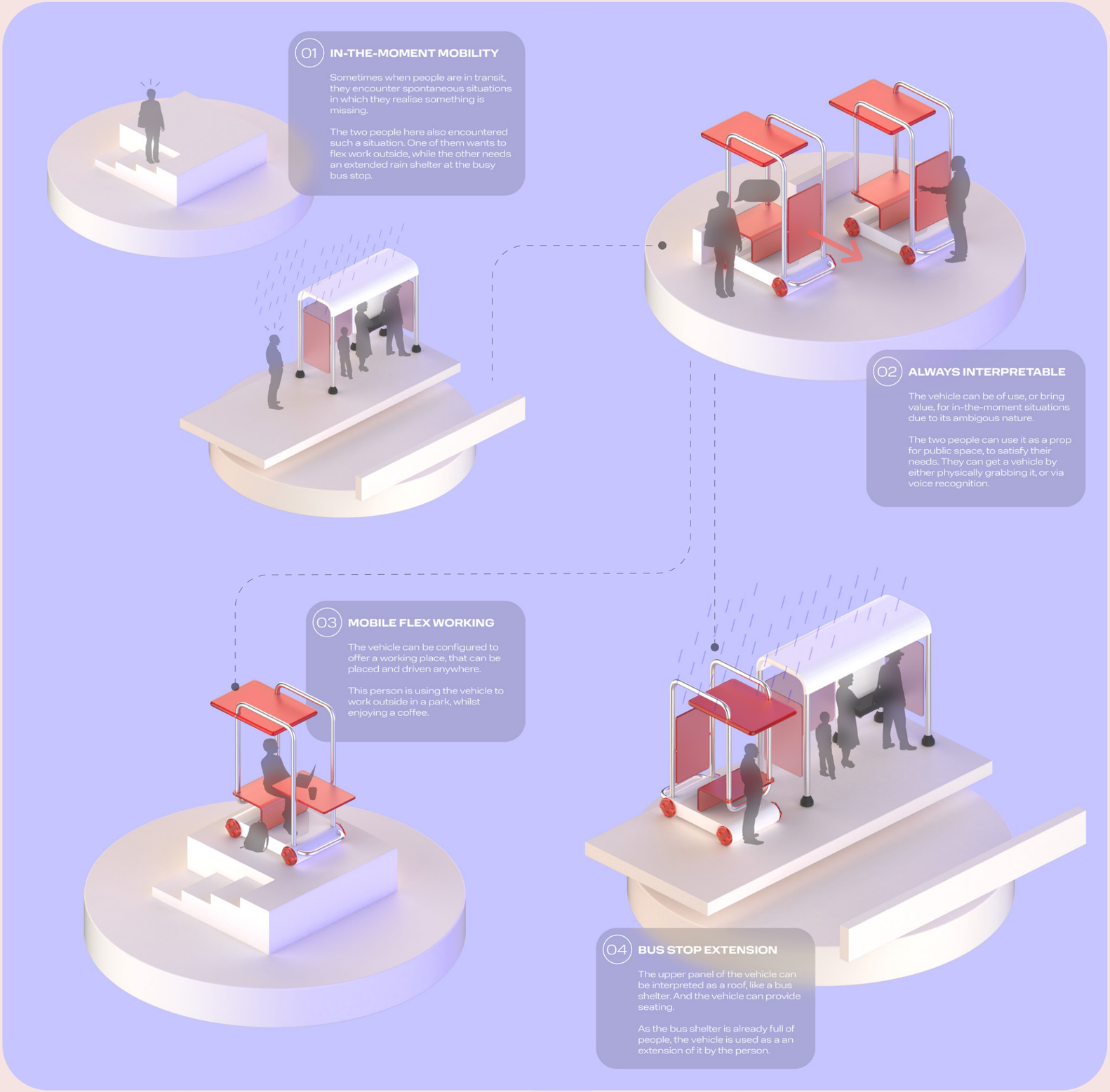


JAEL LORENZO SPRINKHUIZEN / 4537793

SCENARIO C

“A PUBLIC PROP”

The third and final scenario explains how Amby is usefull for ‘in-the-moment mobility’. People realise they need something to enhance their mobility right now, they use Amby for this as it can be easily grabbed from the street and reconfigured to their specific need.



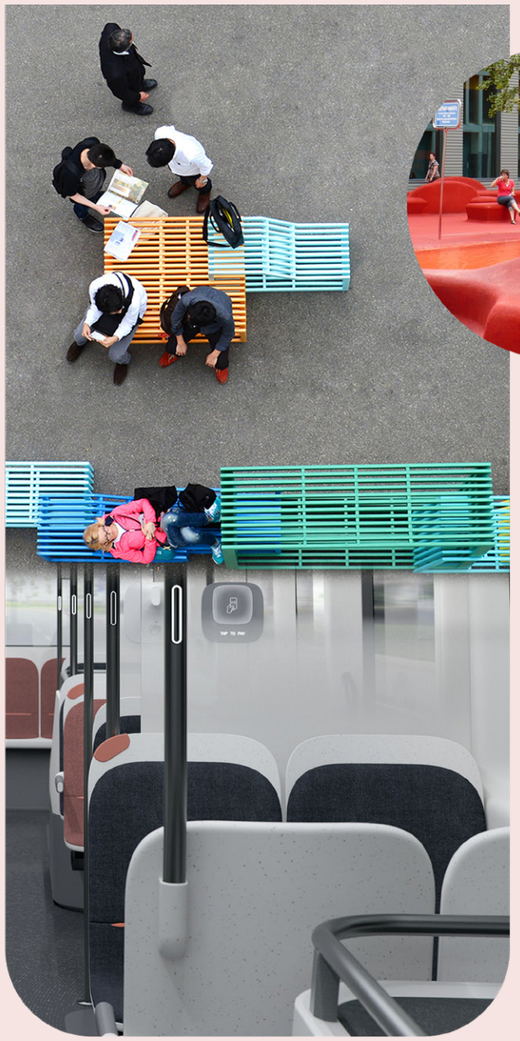
06.3 DESIGNING AMBY

06.3.1 | The inspiration

Chapter V left off with the conclusion to design an ownerless ambiguous vehicle. This vehicle should be present and part of public space, as this makes it **approachable** to people. It will be a vehicle that people can interact with in mutliple ways, due to the open-endedness of the design. It should be **allocentric**, and not force people into a predefined type of use behaviour, facilitated by some user-based system. The open-endedness, or ambiguity, should also be **encouraging** in the sense that people feel curious and comfortable interacting with it. This is part of enabling people to express their mobility needs.

A main source of inspiration for the final concept is public furniture, including things like public seating, art, public space design, and tactical urbanism. As part of the start of the ideation phase, a collage was made about public furniture which is displayed on the right in figure 028. The collage serves the purpose of representing the aesthetic framework for the final concept. The reason why public furniture is an inspiration, and therefore why the aesthetics of the concept will be based on it, has to do with the relation between people and public space.

Take for example a metal tube, which is often found in public transport interiors. We as people recognise a metal tube as something that we can hold on to, sit on, or barricade with. A metal tube makes sense in public space, as it is effective, simple and honest. This relationship that people have with public furniture should be part of the final design. Even though it can be considered a vehicle, it should not look like a vehicle but rather a part of public space. As this project has already mentioned a number of times, mobility and public space lie very close to each other. The vehicle should therefore not ‘intrude’ on the public space, but complement it.



structured and light
simple geometrics
colourful detailing

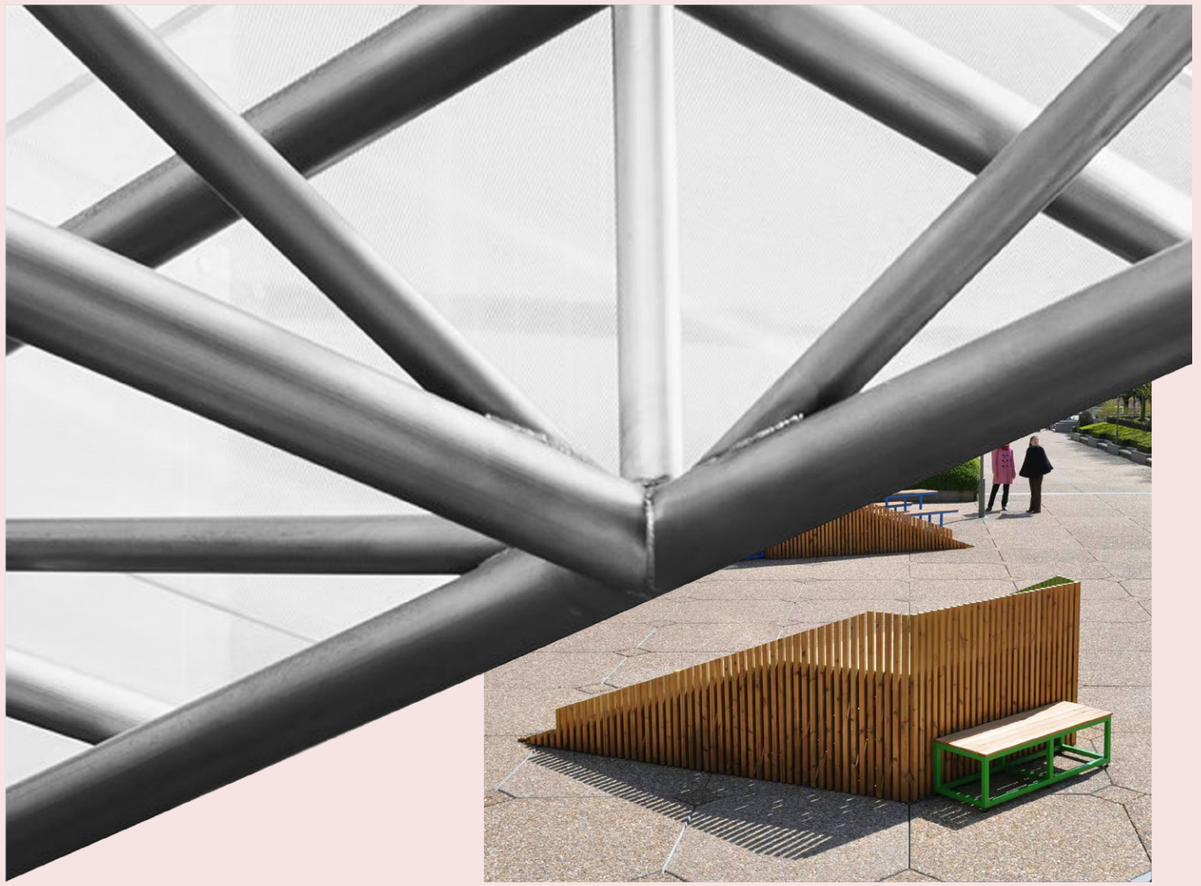


FIGURE 028 - The aesthetic framework of public furniture

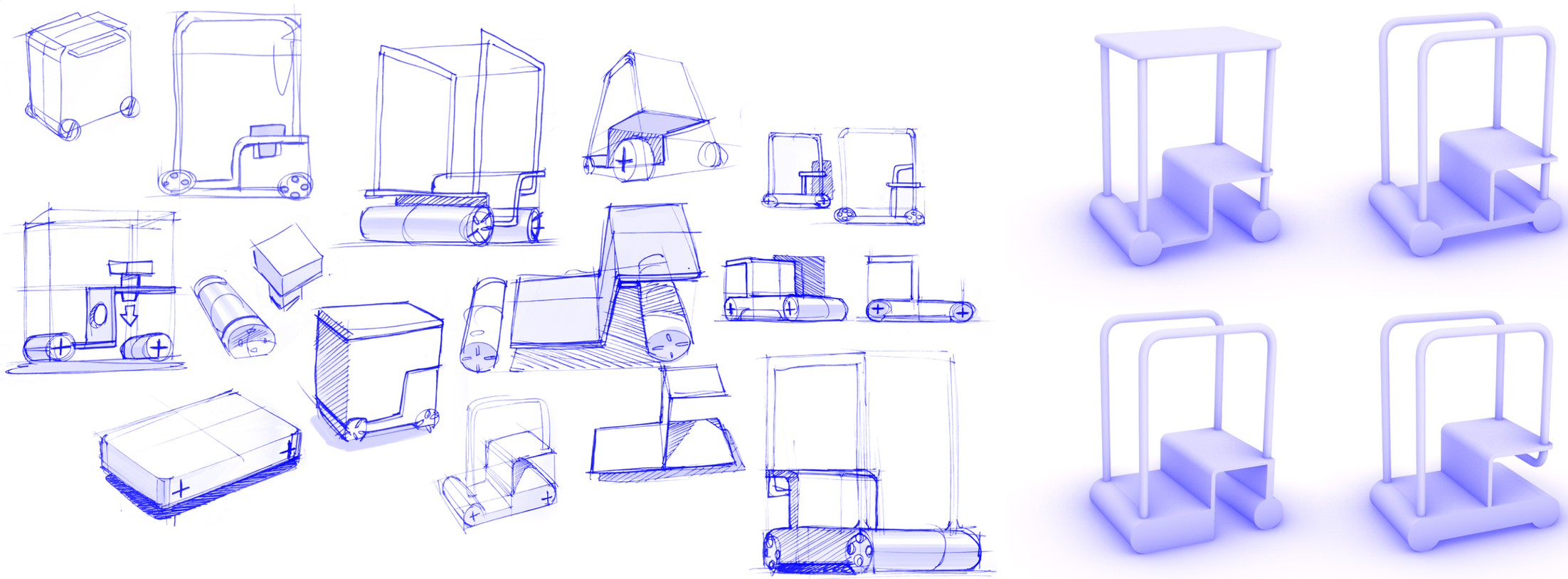


FIGURE 029 - Ideation sketching

06.3.2 | Ideation

In order to give substance to the conclusions from the explorative prototyping, a number of sketching excercises were executed. During ideation, it turned out that is easy to mix up ‘ambiguity’ with ‘evoking confusion’. Previous iterations of the final design went this route by accident, these can be found in Appendix F. After a design evaluation with the designers from Springtime, as well as a feedback session with the graduation team, we concluded that ambiguity should be about ‘abstraction’. Design for ambiguity should be open-ended, but give subtle suggestions to those interacting with the object. Climbing up the abstraction ladder is the way to go, as this keeps a design pure and simple, but still keeps it open for many interpretations (like abstract art does).

The sketches presented in figure 024 fit this insight, as they explore a vehicle constructed from simple geometry such as cubes, planes and cylinders. This is in line with the collage presented on the previous pages, which names ‘simple geometry’ as one of the inspirations. Next to the collage, the objects designed for PROTO 2 also served as a source of inspiration, as each of them explores a different theme relating to micro mobility in public space.

During the sketching, it was decided that the vehicle should have a small footprint, but can accommodate for multiple people to stand, sit or lie down in it at the same time. The chosen direction is a tall-shaped vehicle, constructed from a base and a frame on top of it. The four shapes on the right of figure 029 show this direction.

The vehicle was named ‘Amby’, inspired by the word ‘ambiguous’. This was done as the name should instantly refer to the core of the design.

06.3.3 | Concepting

The concepting phase can be seen as the last phase of the design of the vehicle, as it is a speculative concept. During concepting, these forms were further elaborated to define the features of the design in more detail.

Maintaining a level of 'unrealness'

This is a speculative design that is not supposed to be a real product that will be produced and eventually hit the streets. It is first and foremost a communication tool that represents the social critiques and values this project presents to the client. This influenced the aesthetics framework of the concept, meaning that the design should look deliberately 'unreal'. The client, and other stakeholders, should not look at the design as if it is an actual problem-solving proposal, but rather something that carries a message.

This has its effect on several aspects. It actually goes beyond just the physical design, as the environment in which it will be displayed on the final deliverables also says a lot about the fidelity and realness of a product. The style on which the final design, as well as the environments, will be based is displayed by the collage in figure 030. Takeaways from this collage are:

- Elements that make something look real, such as fillets and parting lines, are not neccessary as they do not add any value to the concept.
- The design and environments should be suggestive. For example, the concept will be placed in context (public space). There should be a suggestion of public space, using an actual image makes the audience think the design should work in a real environment.
- Displaying people interacting with the design are good, shilhouettes work best.

Previous iterations of the design's styling can be found in Appendix G.

FIGURE 030 - Styling collage

Configurable and adjustable

One of the ideas that was executed during this phase was to include reconfigurable elements in the design. For example, one might want to sit in the vehicle. This person would probably need some sort of panel at a low height where they can sit on. On the other hand, another person might need to seek shelter from the rain, they would need a panel that is higher up so they can stand underneath it. These 'scenarios', or situations, were taken into account whilst designing the configurable elements. Eventually, next to the wheels, three configurable parts were designed as showcased by Figure 031. In the design, these parts will have a contrasting colour to indicate that they can be reconfigured.

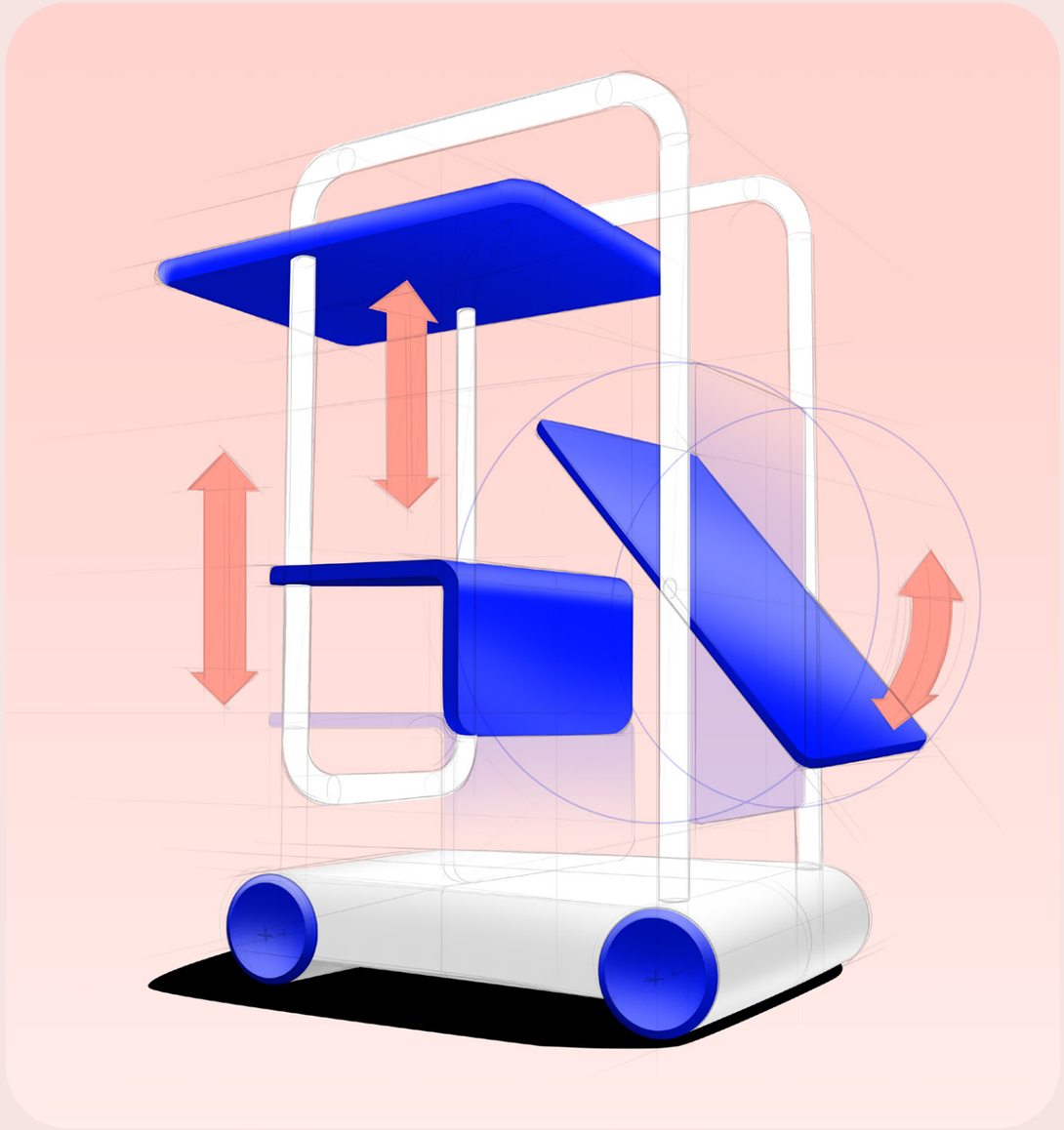


FIGURE 031 - Concept sketch showing moveable elements

The human interaction scheme
As Amby is supposed to be a part of public space, people should also be able to interact with it without actually using its reconfigurable features. The control people should have over micro mobility in public space goes beyond using the vehicle as just a vehicle, it also involves deciding where it stands and goes. After all, the way micro mobility vehicles in the present day make use of public space is one of the main critiques of this project.
The answer is an interaction scheme presented in figure 032. This scheme is not to be confused with a service system, as these often limit the interactions people can have with a vehicle. App-based systems for example already exclude people that are not a customer of a brand because they do not have the app or an account. This scheme aims to include all people in public space, by basing the interactions people can have with the vehicle on human interactions. For example, when someone is standing in your way you could ask the person to move or physically push them away. This is the same with this vehicle, as it listens to voice input or physical touches. As the scheme shows, people can bring the vehicle to a standstill, make it follow them, and let it drive autonomously at a low speed (max. 10 km/h).

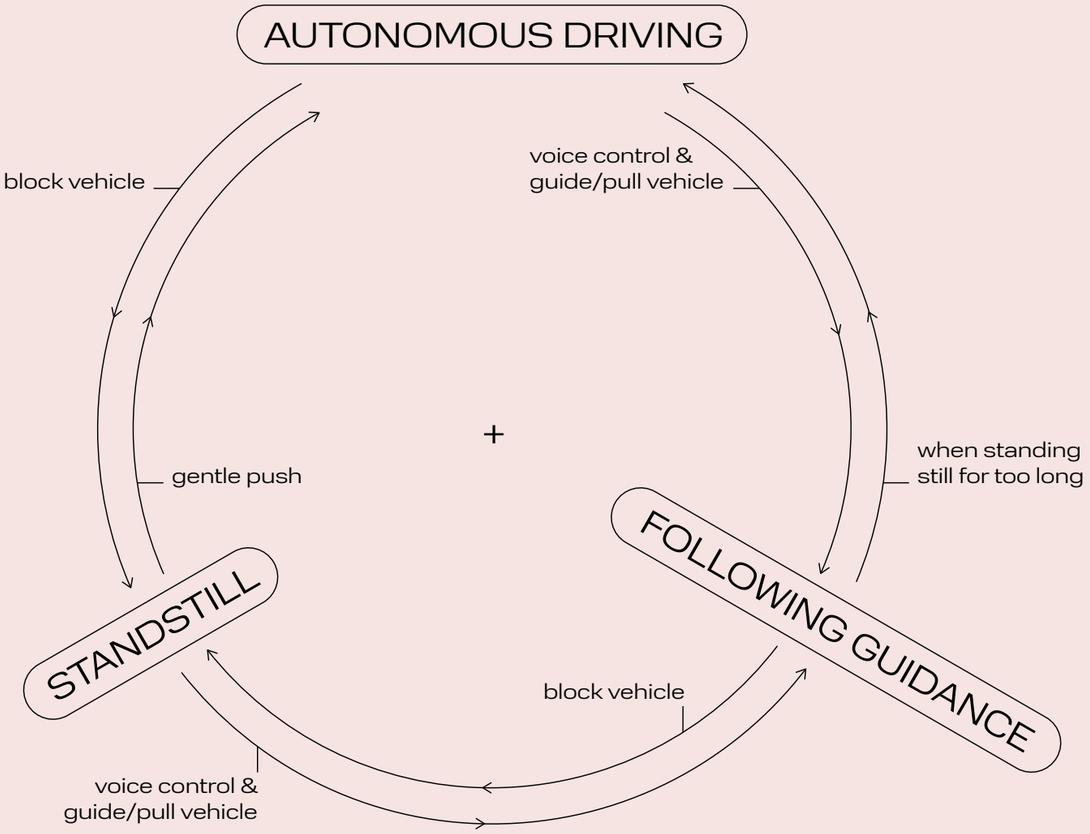


FIGURE 032 - The human interaction scheme for Amby

06.4 THE ROLE OF AMBY TO SPRINGTIME

This ciritical speculative design is targeted towards Springtime as a client, and brings value by highlighting the less ideal aspects of the future of micro mobility. The intent is to make Springtime reflect on these aspects and facilitate a discussion about what is important in their own future micro mobility projects. The exact goal of this design can be described according to the following points.

- **Showcase a speculative future**, where people feel powerless in public space, as commercial micro mobility companies gain the control over it and privatise it. The design considers this future undesirable, and therefore critiques current developments happening in the micro mobility industry.
- The design **represents involving people** in the organisation and design of micro mobility in public space in order for this future to transform into something desirable. This is done by enabling them to express their mobility needs, via the act of interpreting an ambiguous mobility installation that allows people to create, tweak and (mis)use, in a way that they feel represents their preferred version of micro mobility best.
- The design is **not a problem-solving design proposal** ready to be implemented, as speculative design brings value by indicating future problems, and asking the question what is important and what is right.

The critiques, values, and research this manifestation represents is useful for Springtime in their future work, as multiple clients come from the micro mobility industry. This project is not suposed to be presented directly to these clients, but rather offer Springtime the opportunity to embed the insights of this project in their own work done for micro mobility clients.

chapter VII.

C O N - CLUSION

___ VII. Discussion

In this chapter the conclusions of the entire graduation project are presented. These consist of the findings coming from the ViP research as well as the final concept. In addition, a set of design guidelines for the present are described, which are derived from the project outcomes. The chapter ends with an overview of recommendations for further research.

07.1 | PROJECT OUTCOMES

The goal of this project was to raise awareness for the society-wide impact shared micro mobility services have. The observation that initiated this graduation project was that micro mobility operators usually tailor to their customers when it comes to designing and organising their systems. Though, as micro mobility has a big impact on the physical environment, it is not just the selected group of users that are affected. After all, the services are active in public space, which is supposed to be used by everyone and owned by nobody. The following key topics defined the focus of this graduation project.

– The role of micro mobility in society
– The relationship between citizen and micro mobility company (power balance and accountability)
– Capitalisation and exploitation of public space

A future worldview was composed, consisting of eight different directions. One direction was chosen as the focus for this project. It describes a future in which micro mobility operators have the most control over mobility in public space, leaving the people with a feeling of powerlessness. As this future was considered undesirable, a speculative design was presented as a way to critique it, and simultaneously showcase a desirable version of this future direction. The design, called 'Amby', was the result of ViP and comes in the form of an ownerless ambiguous vehicle that is part of public space. It gives people control over their mobility, by enabling them to interpret the features of Amby and assign meaning to them on their own. It does not force them in a certain user-based system, and includes all people in public space. In its essence, the speculative design questions agency over mobility; to what level should people be in full control over their mobility, as well as the design of it in public space? The most important conclusions coming from Amby, and the rest of the project, are listed below.

– The design of micro mobility in public space should be **human-centered**, meaning that people should not have to adapt themselves to micro mobility services, it should be the other way around. Mobility is after all crucial for people if they want to participate in society.
– Micro mobility should be **democratic on a detail-level**, meaning that citizens should be actively involved in the organisation and design of it. This includes both 'users', and 'non-users', as micro mobility affects both.
– **Public space is meant for people**, it is a place where we can live, eat, meet, and exist. People should therefore be the ones in control, not the commercial companies that want to capatalise on it.

As Springtime is the client of this project, the takeaways above are targeted to them. The final design does not propose a ready-to-implement solution to them, but instead showcases a speculative future that can spark debate and facilitate discussion on the topic of micro mobility design.

07.2 DESIGN GUIDELINES FOR SPRINGTIME

PROJECT PART	VALUE
FUTURE WORLDVIEW 'Rebelling out of Principle'	+ defining project focus + presenting a real future
DESIRED WORLDVIEW	+ part of design deliverable + contains micro mobility critiques + contains concrete insights
INTERACTION STATEMENT	
SPECULATIVE DESIGN	+ embodiment of insights + communication tool + showcasing a desired future

derived from project work

↓

RECOMMENDATIONS FOR THE PRESENT WORLD

FIGURE 033 - Indicating the value different project parts bring

Based on the project outcomes described in the previous section, a total of three recommendations for Springtime are composed. The way this project brings value to the client is described by Figure 033, the recommendations displayed below are derived from the final design and research. They are design guidelines for the present day, and serve as an example of what one could take from the outcomes of this project.

Guideline 01
The physical design of micro mobility vehicles should take more inspiration from public furniture (tram interiors, park benches, bus stops). This establishes a different connection with people, as a vehicle will feel more natural in its habitat, and therefore less of an 'intruder'.

– Example 1: Good design is context-aware. The Tier electric bike in Utrecht does not fit with the Dutch bike archetype due to its form and colours. The bike is not Dutch context-aware and catches the eye for the wrong reasons. Yes, a bright and striking object is good for marketing purposes, and for users to spot it, but it has a negative impact on the rest of a city.

FIGURE 034 - The Tier bike visually not fitting in with other bikes (112 Vallei, 2021)

– Example 2: Take inspiration from public furniture, like lamp posts, park benches, and bus stops in order to make the design part of public space.

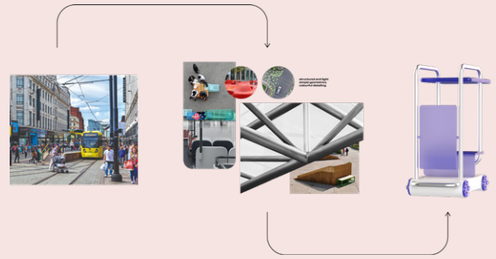


FIGURE 035 - The design process of Amby: observing public space > deriving aesthetic principles > converting into a design language

Guideline 02
The design of micro mobility services should early on in the process anticipate on situations in which a vehicle is not used by someone. The effect these situations have on public space, and 'non-users' should be considered, and be an integral part of the design and service.

– Example 1: a quick and easy interface for non-users to contact the operator in case of a wrongly parked vehicle.

FIGURE 036 - With such a system, people are enabled to influence situations like these (Voorburgs Dagblad, 2020)

– Example 2: A parking facility that can also be used as a hangout, with benches, trees, and tables for example.

FIGURE 037 - A schematic example of such a hub (CoMo UK, n.d.)

Guideline 03
Micro mobility services should be designed in such a way that public space, meant for people, is preserved (or better: enhanced). This involves not only operators, but also local governments.

– Example 1: Design and organise a system in such a way that it takes away car infrastructure, instead of predestrian/ cyclist space. After all, a big promise of micro mobility is that it will help lower the need for car use in cities. This should be a combined effort of operator, municipality, and designer.

FIGURE 038 - '1 car = 10 bicycles' (Micromobility and Car Parking, 2019)

07.3 RECOMMENDATIONS FOR FURTHER RESEARCH

This project has explored in depth the relationship between people in public space and micro mobility. However, as there was limited time available and in general any design project has room for improvement, a number of recommendations for further research are presented in this section.
Even though Chapter II described the 'how' and 'why' behind the combination of CSD and ViP, the project was executed in a rather pragmatic manner. ViP served as the basis and CSD hovered above it as an overarching and guiding philosophy, occasionally influencing decision making. Our first recommendation for a future project would be to do in-depth research on the relationship between CSD and ViP. The exact compatibility and challenges can be insightful for both professional work and educational purposes. For this graduation project, CSD and ViP turned out to work well in the sense that the results of the project are of value and contribute to the chosen subject. Our belief is therefore that this is an indication that CSD and ViP can go hand in hand, although, at points it was pick and mix when it came to the application of the CSD and ViP mindsets. Considering the goal of this project, and the time constraints, the possibility to further investige the theory behind this combination of approaches was unavailable.
The second recommendation would be to explore in more detail where the outcomes of this project could lead the industry. Ultimately the goal of this project is to spark debate on the topic of micro mobility design in public space. A future project could focus on this conversation and develop a more applied and problem solving proposal based on it. This should involve multiple stakeholders in order to include as many opinions and perspectives as possible. Of course, the previous section already gave three recommendations for design guidelines, but these are deliberately not as concrete as an actual design proposal, simply because this was not part of the scope of the project.

07.4 PERSONAL REFLECTION

One of the main personal learnings from this graduation project is that communication is key, and has a big influence on how a project unfolds. During the first stages of the project, my communication style for both the client and the TU Delft graduation team was the same. This turned out to not be the right way to go forward, as both parties are totally different stakeholders with different interests and qualities. At some point in the project, the story I wanted to tell did not catch on with the client, as I focused too much on the academic side of the work, and not enough on what the value of my deliverables were to the client. This resulted in a reset meeting were we had to realign our expectations of this graduation project. After this, the way I communicated with Springtime changed, and that improved the situation. On the contrary, the communication with the graduation team, chair and mentor, has to my experience always been good and fluent, even though most of our meetings were online.
Another major learning experience was to commit to designing a critical speculative design. I had never done this before, and it is safe to say that I have developed much in this field. I have learned what else design can be, and how it can bring value in a different way to a client. Though, the combination of CSD and ViP caused for some struggle, as these approaches were never combined before. I had to figure it out along the way, sometimes desperately searching for the perfect way to streamline them together. Eventually after some time I realised that a pragmatic approach worked best, due to the limited time frame there was not enough room for exploring the relationship between in CSD and ViP in depth.
In general I can say that I am proud of how the project went. I am happy with the end result, and especially my planning. At no point during the project I was in short of time or capacity, it helped to review the planning every two weeks and see how well I was doing. This also helped me in defining the scope of the project, as I was forced to think of what I wanted to end up with. The topic of the project, micro mobility and public space, also proved to be interesting to me. I can definitely see myself working on the same subject in future projects as the human-centered aspect and society-wide impact spoke to me. The same goes for ViP and CSD, both approaches work well for me as I see myself as a designer that works best on a conceptual level were research is translated into design.

———

JAEL LORENZO SPRINKHUIZEN / 4537793

REFERENCES

112 Vallei. (2021, November 22). Elektrische deelfietsen in Amersfoort klaar voor gebruik [Photograph]. 112vallei.Nl. https://112vallei.nl/elektrische-deelfietsen-klaar-voor-gebruik-amersfoort

Ambiguity. (n.d.). In Merriam-Webster.com Dictionairy. Merriam-Webster. Retrieved 4 January 2022, from https://www.merriam-webster.com/dictionary/ambiguity

Approachable. (n.d.). In Cambridge Dictionairy (Cambridge Advanced Learner's Dictionary&Thesaurus ed.). Cambridge University Press. Retrieved 6 December 2021, from https://dictionary.cambridge.org/dictionary/english/approachable

Boon, B., Rozendaal, M. C., & Stappers, P. J. (2018). Ambiguity and Open-Endedness in Behavioural Design. DRS2018: Catalyst, 5, 2076–2078. https://doi.org/10.21606/drs.2018.452

Codd Walker, M. (2018, March 7). How your brain reacts to ambiguity — and what to do about it. Center for Plain Language. Retrieved 31 January 2022, from https://centerforplainlanguage.org/how-your-brain-reacts-to-ambiguity/#:%7E:text=In%20other%20words%2C%20too%20much,clear%20answer%20is%20in%20sight.

CoMo UK. (n.d.). Why mobility hubs are crucial to making transport more sustainable [Illustration]. Intelligenttransport.Com. https://www.intelligenttransport.com/transport-articles/120069/mobility-hubs-uk/

Confidence. (n.d.). In Cambridge Dictionairy (Cambridge Advanced Learner's Dictionary&Thesaurus ed.). Cambridge University Press. Retrieved 6 December 2021, from https://dictionary.cambridge.org/dictionary/english/confidence

Crivello, F. (2019, August 19). Five Promises of Micromobility. Florent Crivello. Retrieved 8 November 2021, from https://florentcrivello.com/index.php/2019/01/28/five-promises-of-micromobility/

Desmet, P. M. A. (2018). Positive design: Delft students design for our well-being. Delft University of Technology.

Dunne, A., & Raby, F. (2009). A/B, A Sort of Manifesto [Illustration]. https://www.researchgate.net/figure/Dunne-Raby-A-B-A-Manifesto-2009_fig4_282460352

Evans Ogden, L. (2021, November 9). The two sides of envy at work. Knowable Magazine. https://knowablemagazine.org/article/mind/2021/what-is-professional-envy?utm_source=email&utm_medium=knowable-newsletter&utm_campaign=K_newsletter_2021-09-12

Friedel, A. (2021, May–September). Free Floating Micro Mobility Map Europe by Augustin [A Free Floating Micro Mobility Map of Europe]. Maphub.net. https://maphub.net/Augustin/micro

Gemeente Rotterdam. (2020). Deelvervoer | Rotterdam.nl. Retrieved 7 September 2021, from https://www.rotterdam.nl/wonen-leven/deelvervoer/

Gunkel, P. (1998, May 10). 638 Primary Personality Traits [Dataset]. Ideonomy: The Science of Ideas. http://ideonomy.mit.edu/essays/traits.html

Heineke, K., Kloss, B., Scurtu, D., & Weig, F. (2019, October 28). Micromobility's 15,000-mile checkup. McKinsey & Company. Retrieved 7 September 2021, from https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/micromobilitys-15000-mile-checkup

Hekkert, P., & van Dijk, M. (2011). Vision in Design: A Guidebook for Innovators. Laurence King Publishing.

Ieva, V. (2013, December 3). 'Learn to Unlearn'. Archilovers. Retrieved 8 December 2021, from https://www.archilovers.com/stories/4469/learn-to-unlearn.html

Jealousy. (n.d.). In Cambridge Dictionairy (Cambridge Advanced Learner's Dictionary&Thesaurus ed.). Cambridge University Press. Retrieved 29 November 2021, from https://dictionary.cambridge.org/dictionary/english/jealousy

Johannessen, L. K., Keitsch, M. M., & Pettersen, I. N. (2019). Speculative and Critical Design — Features, Methods, and Practices. Proceedings of the Design Society: International Conference on Engineering Design, 1(1), 1623–1632. https://doi.org/10.1017/dsi.2019.168

Kennisinstituut voor Mobiliteitsbeleid. (2021, October). Deelauto- en deelfietsmobiliteit in Nederland. Ministerie van Infrastructuur en Waterstaat. https://www.kimnet.nl/publicaties/rapporten/2021/10/05/deelauto--en-deelfietsmobiliteit-in-nederland-ontwikkelingen-effecten-en-potentie

Malpass, M. (2013). Between Wit and Reason: Defining Associative, Speculative, and Critical Design in Practice. Design and Culture, 5(3), 333–356. https://doi.org/10.2752/175470813x13705953612200

MARE. (2019, November 1). AMBIGUOUS OBJECTS. Anticipate. Retrieved 8 December 2021, from https://anticipate.amsterdam/home/2019/10/31/ambiguous-objects-gw2f2

McFarland, M. & CNN Business. (2019, August 30). Scooters are a huge problem for cities. No one knows how to solve it yet. CNN. Retrieved 7 September 2021, from https://edition.cnn.com/2019/08/30/tech/scooter-management/index.html

Micromobility and Car Parking. (2019, August 6). [Photograph]. Construction21.Org. https://www.construction21.org/articles/h/micromobility-and-car-parking.html

Mitrovic, I. (2016, May 4). Introduction to Speculative Design Practice. Speculative. Retrieved 16 February 2022, from http://speculative.hr/en/introduction-to-speculative-design-practice/

Mitrović, I., Auger, J., Hanna, J., Helgason, I., & SpeculativeEdu. (2021). Beyond Speculative Design: Past - Present - Future. Speculative Edu.

NOS. (2020, December 2). Deelscooter is groene belofte, maar vaak ook overlastgever. NOS. https://nos.nl/artikel/2359052-deelscooter-is-groene-belofte-maar-vaak-ook-overlastgever

Parrott, W. G., & Smith, R. H. (1993). Distinguishing the experiences of envy and jealousy. Journal of Personality and Social Psychology, 64(6), 906–920. https://doi.org/10.1037/0022-3514.64.6.906

Podcast #81: Marco te Brömmelstroet. (2020, July 2). Pakhuis de Zwijger. Retrieved 20 September 2021, from https://dezwijger.nl/update/podcast-81-marco-te-brommelstroet

Sanders, L., & Stappers, P. J. (2013). Convivial Toolbox: Generative Research for the Front End of Design (Illustrated ed.). Laurence King Publishing.

Schaller, B. (2018, July). The New Automobility: Lyft, Uber and the Future of American Cities. Schaller Consulting. http://www.schallerconsult.com/rideservices/automobility.pdf

SpeculativeEdu. (2021, February 25). Sohail Inayatullah: We see the future as a learning journey, not as a site of prediction. Retrieved 27 October 2021, from https://speculativeedu.eu/interview-sohail-inayatullah/

Springtime.nl. (n.d.). Springtime.Nl. https://springtime.nl/

van der Poll, M. (n.d.). Do Hit Chair [Photograph]. Droog.Com. https://www.droog.com/product/do-hit-chair-new/

Voorburgs Dagblad. (2020, February 21). Aanpak fout geparkeerde scooters Felyx [Photograph]. Voorburgsdagblad.Nl. https://voorburgsdagblad.nl/112/aanpak-fout-geparkeerde-scooters-felyx-

Voros, J. (2017). Big History and Anticipation. Handbook of Anticipation, 1–40. https://doi.org/10.1007/978-3-319-31737-3_95-1

Vrabel, J. K., Zeigler-Hill, V., & Southard, A. C. (2018). Self-esteem and envy: Is state self-esteem instability associated with the benign and malicious forms of envy? Personality and Individual Differences, 123, 100–104. https://doi.org/10.1016/j.paid.2017.11.001

APPENDIX REPORT

APPENDIX 0 - Project Brief
APPENDIX A - List of context factors
APPENDIX B - Clustering and worldview building
APPENDIX C - interaction vision iterations
APPENDIX D - PROTO 1 materials
APPENDIX E - PROTO 2 materials
APPENDIX F - Final design iterations
APPENDIX G - Final design styling iterations

JAEL LORENZO SPRINKHUIZEN / 4537793

“Living with Micro Mobility in 2030”

GRADUATION PROJECT

APPENDIX 0

Signed project brief

DESIGN FOR our future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name [redacted]
initials
student number
street & no.
zipcode & city
country
phone
email

Your master programme (only select the options that apply to you):

IDE master(s): ( ) IPD (★) DfI ( ) SPD

2nd non-IDE master:

individual programme: - - (give date of approval)

honours programme: ( ) Honours Programme Master

specialisation / annotation: ( ) Medisign ( ) Tech. in Sustainable Design ( ) Entrepeneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair M.B. van Dijk dept. / section: HCD / DA

** mentor R. Bendor dept. / section: HCD / DCC

2nd mentor Marcel Schreuder

organisation: Springtime Studio

city: Amsterdam country: Netherlands

comments (optional)

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

TU Delft

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair M.B. van Dijk date 07 - 09 - 2021 signature Digitaal ondertekend door Matthijs van Dijk Datum: 2021.09.08 12:18:11 +02'00'

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 33 EC

Of which, taking the conditional requirements into account, can be part of the exam programme 30 EC

List of electives obtained before the third semester without approval of the BoE

(★) YES all 1st year master courses passed

( ) NO missing 1st year master courses are:

name C. van der Bunt date 13 - 09 - 2021 signature C. van der Bunt Digitally signed by C. van der Bunt Date: 2021.09.13 10:54:20 +02'00'

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: (★) APPROVED ( ) NOT APPROVED

Procedure: (★) APPROVED ( ) NOT APPROVED

comments

name Monique von Morgen date 28 - 09 - 2021 signature

Initials & Name J. Lorenzo Sprinkhuizen Student number 4537793

Title of Project Taking a Speculative Approach to Non-users of Micro Mobility

Taking a Speculative Approach to Non-users of Micro Mobility — project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 07 - 09 - 2021 — 07 - 03 - 2021 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Project context:
By now, almost everyone living in a developed urban area has encountered some form of shared micro-mobility. Think of electric scooters, bikes and electric mopeds. Lots of effort goes into designing these vehicles and systems to improve usability and branding. The current state is that these type of mobility modalities can be considered as much part of a city as lantern poles and park benches are. And even though they offer a lot of advantages for the people using them, they also cause problems for those not using them (1).
For the brands behind these type of micro-mobility solutions, this group of "non-users" appears not to be a priority. And it does not stop there, in similar fashion municipalities and local authorities are getting frustrated with them due to a lack of proper legislation and accountability (2). In short, the world behind the actual users of these shared systems is very much unexplored. Companies such as Facebook and Google are also expected to take responsibility for the side effects the size and impact of their business causes. Most likely there are mutliple wicked problems connected, since there are stakeholders with different values, as well as the societally an culturally sensitive nature of the situation.

For the project we will rely on the Speculative Design approach. This approach enables designers to use design in a way that is critical and speculative, and does not aim to solve a problem per se. The approach is mainly there to make those involved think about the context and start debates (3). The base of the project will be qualitative research and the ViP approach, after which conceptualisation is used to embody the outcomes and gained insights.

Opportunities and limitations:
Since the world of shared micro-mobility is relatively new and upcoming, it can still be considered as a sort of Wild West. Especially for the group I want to focus on (the "non-users"), there has been very little mapped out thusfar in terms of the group's needs, wants and values. This brings many opportunities, but we should also be aware that total freedom can be dangerous.
The main foreseeable limitations focus on the current situation most of us live in, which is the pandemic. The measures taken in order for eachother's safety may have a negative effect on research activities such as group sessions for example.

Stakeholders:
As mentioned, one of the first main stakeholders are the companies behind the mobility services. They usually are commercially set and want to make a profitable business out of it. They want people using their product as much as possible. Then there are the local authorities, who are sometimes in direct contact with these companies. They have a big picture-view on shared mobility, and are mainly interested in the implementation and effects on the people and their environments. The final concept of the project will therefore be targeted towards these two stakeholders, since they effectively pull the strings when it comes to the implementation of these kind of mobility services.
Then there are of course the "non-users". This group looks at shared micro-mobility from their own personal context, and face the consequences of others using these services (either positive or negative ones) on the daily. This group consists of people living in the area, but could potentially also include local businesses and wildlife. The concept will be mostly based on the context of this group.
Finally, the group of end users can also be seen as a stakeholder, since most micro-mobility services are designed around them. They also have carry certain values, which might contradict with those of the non-users.

space available for images / figures on next page

introduction (continued): space for images

image / figure 1: Example of non-users' concerns: shared micro-mobility acting as public landfill.

image / figure 2: A representative of Go Sharing, making the debatable assumption that end-users are responsible. (2)

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

As part of exploring what the future role of shared micro-mobility in our society entails, this project will aim to find out about the most important values, beliefs and concerns of the "non-user" group. This group exists of people (and their contexts) living in areas where these shared mobility systems are active, and local authorities such as municipalities. In addition, local businesses, and nature and wildlife could also get involved if during the process it turns out this is relevant.

With a speculative approach as its backbone, the project will dive in an almost unexplored, but important area. Thusfar, the end-users of shared micro-mobility are often the main priority for designers. Though, as these type of services are becoming more popular, companies and designers will also have to take indirect stakeholders in mind like the group described above. During the project, a goal is to talk with people and involve stakeholders in order to get an understanding of all relevant stories and contexts.

In the end, a conceptual design will be presented that acts as a way to communicate the outcomes of the research and takes a moral stand in the situation. This stand is based on the viewpoint that non-users of shared micro-mobility services are often unprioritised and are as relevant as the actual end-users. The concept should be relevant and insipring for the shared mobility providers and local authorities for reasons mentioned earlier in the introduction. Ideally the project will be insightful for all of course, but that is not considered as the main priority. To clarify; we will not put effort in designing something that sells, rather it should act as a piece of societal critique relating to how the unprioritised group of non-users of shared mobility services are treated.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

We will be looking into the context, needs, wants and values of those that do not use shared mobility systems, but still have to deal with them. By taking a speculative approach, new insights in this group will appear that are valuable for both the academic side and the commercial side, as well as all stakeholders involved.

The end-goal of the project is to come up with a conceptual design, that falls in the category of speculative design. The concept is not supposed to be a sellable, mass-producable product or service, rather a probe to convey a message and a standpoint. The reason for choosing this approach is because the world of shared micro-mobility is new and upcoming at this point in time. Much is still left to be explored and discovered, resulting in multiple problematic scenarios (e.g. local parking problems). Taking a visionairy standpoint to open up debate and conversation about what is important and valuable will undoubtly benefit this situation and help it mature.

It will be an embodiment of the outcomes of the qualitative research and design process, and should start debates on the topic. The form factor of the concept is left open deliberately, and will be determined during the course of the project. This will depend on what the outcomes and conclusions of a context analysis. A type of methodology that matches with this is ViP. This is also a pragmatic approach where there is no intention to prematurely define the form of the final design. This approach will therefore be the backbone of the project's structure.

The research will be based on the (future) context and state of shared mobility services in some of the main centres of shared micro-mobility in Europe. These are Rotterdam, Berlin, Paris and London (4). Though, the outcomes of the data should also be relevant for other areas in the world with similar situations, like the USA for example. Stakeholders from these areas will be involved as much as possible, with the help of Springtime Studio.

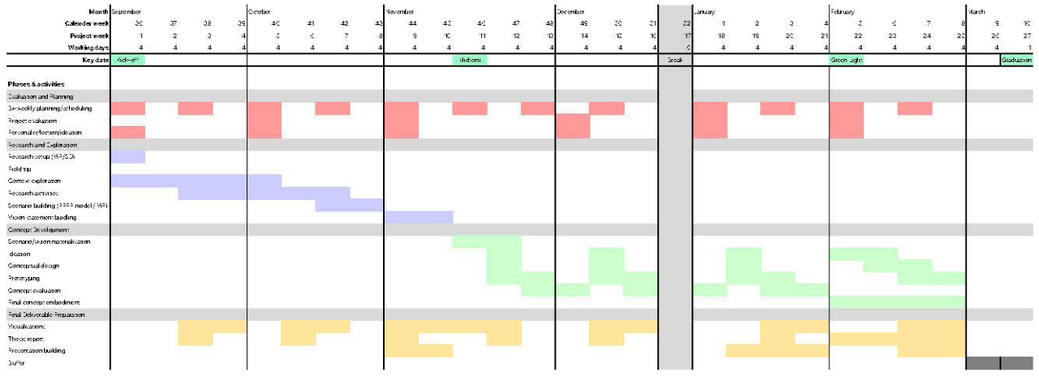
Personal Project Brief - IDE Master Graduation

TUDelft

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 7 - 9 - 2021 7 - 3 - 2021 end date



The base of the project is qualitative research-focused, guided by the ViP approach, and will close off with a conceptual speculative design. The two match in the sense that both methods are based on a vision or scenario and require a more author-like designer.

ViP research is usually a linear process, therefore from week 11 there will be multiple iteration cycles on the design. These are there to test if the design meets the vision and product qualities set earlier in the process. In total there three lo-fi prototypes will be made and tested, resulting in one final concept at the end of the project. Additionally, there will be moments of reflection on both a project level and a personal level. These moments are here for us to keep asking whether the project is still on the right track.

As can be seen in the planning, our plan is to spend four days a week on the project. Of course the 100 day-limit will not be exceeded, but the entire project will take 26 weeks instead of 20 weeks full-time. During the Christmas period, a single holiday week is planned. At the end of the planning there is a buffer week in case the project catches a delay along the way.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

For a long time I have been interested and focused on the domain of mobility design. It started with wanting to become a car designer, and lately this has shifted towards wanting to become a conceptual mobility designer. This project slots in with this recent transition very well, since I will be aiming to place myself outside of my comfort zone by taking a speculative approach (with the intent to develop and improve further as a designer). Of course I will also be using things I have learned during my career as an IDE student. For example, basing my research activities on the ViP approach, and use my prior gained knowledge about conducting qualitative research.

A goal of mine during this project is to be a mobility designer, without restricting myself to only design mobility modalities (such as vehicles, products, or services). Especially in the automotive industry, old-fashioned design methods are regularly applied which to me sounds like it is very easy to fall into the trap of narrow-mindedness. These methods are also often based on problem solving. At this point in time I like to think that the world of mobility design can benefit from another type of design; a more critical and/or speculative one.

That brings me to the main personal ambition is that I am eager learning more about Speculative Design. It would definitely be an interesting addition to my knowledge about design methodology, considering my interest for using ViP and conceptual design in general. This will be the first time that I take this approach during a project, so I expect there to be some hurdles to overcome. Though, this will most likely bring many moments of learning for me.

Next up is my goal to learn more on working as a designer in a professional environment. Doing a graduation internship at Springtime Studio will help me do so. Being exposed to professional designers is not only inspiring, but will also be also beneficial for the project. Springtime works for many clients that are active in the field of shared mobility, this can help me get in touch with stakeholders and also provide me with insights from a commercial point of view.

The final design should be of value to both Springtime, as well as their clients, in the sense that it should be helpful to them in future projects. The design will represent the context and values of mostly the non-users of micro-mobility. This should provide for a unique angle that is not common in this specific field of mobility design.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

Resources used:
(1) https://edition.cnn.com/2019/08/30/tech/scooter-management/index.html
(2) https://nos.nl/artikel/2359052-deelscooter-is-groene-belofte-maar-vaak-ook-overlastgever
(3) https://tinyurl.com/tkxxfrt6
(4) https://maphub.net/Augustin/micro

APPENDIX A

A full list of all 142 context factors

List of factors

Factor	Type	Field	Source
MM providers earn about €10.000 to €15.000 per year per moped	state	Economic	https://www.waltherploosvanamstel.nl/deelscooters-wat-kunnen-gemeenten-leren-v
There is a growing amount of people voicing their complaints about MM vehicles on social media	trend	Sociological	Observation
#felyxchallenge puts pressure on MM providers to take responsibility for wrong parking	development	Cultural	https://www.parool.nl/amsterdam/jacht-op-aso-scooter-boekt-succesje~be23e336/
"Don't be gentle, it's a rental"	state	Cultural	Famous saying
People want to be valued members of society	principle	Psychological	https://www.quora.com/Is-there-an-instinctual-need-to-want-to-feel-relevant
People don't like to be told what to do (psychological reactance)	principle	Psychological	https://health.clevelandclinic.org/why-we-dont-like-being-told-what-to-do/
MM services are the Wild West in the world of transportation	state	Technological	https://edition.cnn.com/2019/08/30/tech/scooter-management/index.html
Graphic design of MM modalities is there to act as an ad for the provider	state	Economic	Talk with Springtime, general state of MM companies
People pick MM services as a replacement of their bicycles (in NL)	trend	Cultural	https://www.ad.nl/auto/deelscooter-maakt-razendsnelle-opmars-in-steden-maar-nie referrer=https%3A%2F%2Fwww.google.com%2F
More and more situations occur where shared MM vehicles are being vandalised	trend	Sociological	Search for 'deelscooter vandalisme', multiple sources
Fundamental human need of recognition (receiving respect)	principle	Evolutionary	https://diopd.org/wp-content/uploads/2021/05/13-fundamental-psychological-needs
Facebook is forced to take social responsibility due to their big influence on society	development	Technological	https://www.forbes.com/sites/chunkamui/2021/02/03/facebook-2050-exclusive-the-sh=23e0dfce3460
Municipalities provide MM companies access to public space	principle	Economic	Given
Smaller municipalities rush to implement MM providers, resulting in bad implementation	trend	Technological	https://www.waltherploosvanamstel.nl/deelscooters-wat-kunnen-gemeenten-leren-v
Over the years MM providers put an increasingly big focus on sustainability in their marketing	trend	Cultural	Observation (felyx, GO, Tier, Bird, Donkey)
Media and experts question the sustainability claims made by MM companies	development	Technological	https://www.destentor.nl/home/deelscooter-maakt-razendsnelle-opmars-in-onze-ste referrer=https%3A%2F%2Fwww.google.com%2F
MM companies putting the responsibility of wrong parking at the end-user	state	Psychological	(Go Sharing and Check) https://nos.nl/artikel/2359052-deelscooter-is-groene-beloft
Driving behaviour of end-users causing annoyance to non-users	state	Psychological	Field observation, Rotterdam, The Hague, Amsterdam
More public space is taken due to parking of and increasing amount of MM vehicles	development	Economic	Field observation Rotterdam, The Hague, Amsterdam
Non-users are not an intrinsic priority to MM companies	state	Economic	Observation
Difficult to park MM vehicles in the right way due to the mindset that someone else will take care of it if there is something wrong	principle	Psychological	Personal experience (Felyx, Go Sharing, Tier, Lime)
Legislation around MM services is developing	development	Technological	https://mashable.com/article/electric-scooters-sidewalk-litter
MM vehicles are seen as sidewalk litter	state	Cultural	https://mashable.com/article/electric-scooters-sidewalk-litter
MM vehicles use and abuse turning into memes and online entertainment	trend	Cultural	https://twitter.com/TheRideshareGuy/status/984835304660975617
The humans behind MM services are hardly visible to the public	state	Technological	Observation, based on personal experience with different MM services (Tier, Felyx,

Factor	Type	Field	Source
MM providers feeling pressure from outside when it comes to accountability	development	Cultural	Observation, based on interviews and recent media outings of different companies, by society (wrong parking for example)
MM companies are starting to track riding behaviour and taking control when needed	development	Technological	https://www.fastcompany.com/90670435/dystopian-intervention-or-safety-necessity
People question the level of authority MM companies should have	state	Technological	https://www.fastcompany.com/90670435/dystopian-intervention-or-safety-necessity
Concept of 'anti-user': people that refuse to use MM services	trend	Psychological	Comment of Roy
Visual pollution: brightly coloured MM vehicles all across cities	state	Psychological	
When a MM business fails, there is nobody to take responsibility over the vehicles, unless this is regulated	state	Economic	https://www.rtlnieuws.nl/economie/business/artikel/4830226/nederlandse-bv-obike-
Oversaturated and unregulated MM markets lead to vehicle 'graveyards'	development	Economic	https://www.theatlantic.com/photo/2018/03/bike-share-oversupply-in-china-huge-pil
Car segments are gentrifying (growing prices, but not growing incomes)	development	Economic	https://www.autoweek.nl/columns/artikel/de-gentrificatie-van-het-a-segment/
Young people (20-35) own less and less cars	trend	Economic	https://fd.nl/fd-persoonlijk/1221737/waarom-kopen-jongeren-minder-auto-s
Cars are financially unreachable for younger audiences	state	Economic	https://fd.nl/fd-persoonlijk/1221737/waarom-kopen-jongeren-minder-auto-s
Free floating principle adds to the parking problems	principle	Technological	https://nos.nl/artikel/2359052-deelscooter-is-groene-belofte-maar-vaak-ook-overlas
People using MM vehicles draw more attention than people using privately owned vehicles due to branding	state	Psychological	Observation based on personal experience, and based on a talk with Springtime
Inclusivity is a hot topic and will become bigger in the future	development	Cultural	Observation, general topic that comes back in media, politics, public opinions
People will always have attribution bias	principle	Sociological	Psychological principle

Factor	Type	Field	Source
People like to experience comfort, and seek simplicity and structure	principle	Evolutionary	http://pure.tudelft.nl/ws/portalfiles/portal/85830175/Desmet_2020_13_fundamental
The less abled cannot use MM vehicles, since they often require human forms of input	state	Biological	General observation, and based on talk with MM representative from Delft municipa
People will become more and more critical towards online data-driven companies and their ethical/political standpoints	trend	Cultural	BEP 2019
People value personal privacy more	trend	Psychological	Observation
Greenwashing is applied heavily in marketing and product design	development	Economic	Marketing observation
People will understand the technicalities of sustainability better in the future	trend	Technological	Observation, based on conversations with family members/friends/people
Depending on the quality and formality, online Word-of-Mouth information has a big impact on people's opinions	principle	Sociological	https://www.researchgate.net/profile/Fengyan-Cai-2/publication/239508506_Making_your_online_voice_loud_The_critical_role_of_W voice-loud-The-critical-role-of-WOM-information.pdf
Public space is not free to claim	principle	Economic	Quote, Walther Ploos van Amstel
Reaching the sustainability and usability goals of MM services is a long-term process, that is currently in a trial & error phase	state	Technological	https://dezwijger.nl/update/de-zwijger-spreekt-met-kai-draaisma
"There will always be conservative people who stick to an idealised image of the past, where technology was not an inherent part of our society yet"	principle	Cultural	https://dezwijger.nl/update/de-zwijger-spreekt-met-kai-draaisma
People want to belong to groups (fundamental need of community)	principle	Evolutionary	http://pure.tudelft.nl/ws/portalfiles/portal/85830175/Desmet_2020_13_fundamental
MaaS is a promise, people should believe in this to see the added value of MM integration	state	Psychological	Observation - BNR Mobility podcast

Factor	Type	Field	Source
People are creatures of habit	principle	Evolutionary	Saying
People do not always plan their journey ahead	state	Evolutionary	BNR Mobility podcast
People focus on having the most efficient en shortest journey possible	state	Cultural	Observation - BNR Mobility podcast
Different companies are testing with all-in-one MaaS apps	development	Technological	BNR Mobility podcast
Exploitants and providers focus more on converting people to MM modalities	development	Economic	BNR Mobility podcast
People are questioning the 'wants' and 'needs' of people in transit	trend	Sociological	Pakhuis de Zwijger podcast, ep.81
Society is built on trusting experts, and assuming they know best what to do	state	Cultural	Pakhuis de Zwijger podcast, ep.81
People are turning into 'homo-economists' due to automated systems such as Uber, MM services	trend	Economic	Pakhuis de Zwijger podcast, ep.81
Social rules in traffic is result in less conflicts than preset policy and legislation	principle	Technological	NPO Voor de Vorm (ep. 'de fiets')
"Your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should."	state	Sociological	Quote: Dr. Ian Malcolm
MM companies will use AI to detect wrongly parked vehicles	development	Technological	https://www.ad.nl/delft/gebruikers-van-deelscooter-felyx-moeten-fotobewijs-leveren
The end-user is the one to blame with messages and fines (by the company) in case of wrong parking	state	Economic	https://www.ad.nl/delft/gebruikers-van-deelscooter-felyx-moeten-fotobewijs-leveren
Municipalities will control the fleet size of MM companies in a city, thus the amount of vehicles on the street	development	Economic	https://denhaag.raadsinformatie.nl/document/10387351/2/RIS309484 Jaarrapporta aanbieders en aantal deelvoertuigen,de stad (maart 2021).

Factor	Type	Field	Source
MM companies use repression and gamification to force behaviour that fits with their model	development	Sociological	Interview with Rogier (sociologist)
People feel like they need to take action or start citizen's initiatives to enfore democracy around MM	trend	Psychological	Interview with Rogier (sociologist)
There is almost no democracy involved in the implementation of MM services	state	Cultural	Interview with Rogier (sociologist)
Cities like Paris are rolling out tests with docking stations for MM vehicles	development	Technological	https://www.traffictechnologytoday.com/news/multimodal-systems/paris-to-pilot-uni
Big cities in Europe will eventually shift to completely car-free spaces in the future	development	Cultural	https://www.bbc.com/future/article/20191011-what-happens-when-a-city-bans-car-f
“Mobility is how far you can go in a given amount of time. Accessibility is how much you can get to in that time.”	principle	Technological	Quote from Daniel Herrige
There is growing awareness among decision makers that access, not mobility, should guide planning.	development	Economic	https://www.15minutecity.com/blog/access
Having too much traffic is a consequence of a bigger problem, namely a traffic distribution problem	state	Technological	https://www.strongtowns.org/journal/2017/3/16/everyone-knows-we-have-a-traffic-p
People think we have a traffic problem, but don't know exactly what the problem is	state	Sociological	https://www.strongtowns.org/journal/2017/3/16/everyone-knows-we-have-a-traffic-p
Marchetti Constant: commuting times stay roughly the same due to growing cities and faster travel speeds	principle	Demographic	http://www.cesaremarchetti.org/archive/electronic/basic_instincts.pdf
In city planning, policy is based on the prevention of conflict	state	Cultural	Het Recht van de Snelste

Factor	Type	Field	Source
Mobility hubs are starting to roll out across cities to centralise MM	development	Technological	https://mobility-as-a-service.blog/mobility-hubs/
55% of the city is dedicated to car real estate in NL	state	Economic	Milieudefensie (Recht van de Snelste)
People are getting used to live with and around MM vehicles	trend	Psychological	Observation, based on talks with people and personal experience
Windscreen-perspective: society looks at traffic from a car-centric perspective	state	Cultural	Het Recht van de Snelste
Cars have taken over the streets, and forced pedestrians and cyclists to the side	state	Cultural	Het Recht van de Snelste
People start to feel powerless when new mobility companies enter their neighbourhood	trend	Psychological	Observation, based on talk with Rogier van Reekum, comments from Marco te Brö
People do not like to be seen/treated as a (potential) consumer	principle	Psychological	Het Recht van de Snelste
People are more inclined to accept new ideas and initiatives if they are seen as a citizen or community member	principle	Psychological	Burger-begroting.nl
It is about market shares for MM exploitants	state	Economic	Talk with Ugo (springtime designer)
MM Companies want to be seen, hence the bright colour marketing	state	Economic	Talk with Ugo (springtime designer)
'Urban sprawl': cities grow outwards and will cover more and more of the Earth's surface	development	Demographic	https://www.theguardian.com/cities/2016/jul/12/urban-sprawl-how-cities-grow-chan
More people will live in urban areas in the coming years (55% to an expected 68% in 2050)	trend	Demographic	https://www.un.org/development/desa/en/news/population/2018-revision-of-world-u
White parking lines-effect: people will obey perceived authority	principle	Psychological	'Fietsenzwermen' by Roosmarijn Vergouw
Humans are social animals and will follow each other's behaviour	principle	Biological	'Fietsenzwermen' by Roosmarijn Vergouw

Factor	Type	Field	Source
More people are working from home	trend	Economic	Observation
Due to the COVID-19 pandemic, people are moving out of the city (counter-urbanisation)	trend	Demographic	https://theconversation.com/covid-has-disrupted-our-big-cities-and-regional-plannir
Due to the COVID-19 pandemic MM exploitants noticed a dip in people using their services	development	Economic	https://www.orange-business.com/en/magazine/driving-change-micromobility-and-(
Wealth gaps are increasing worldwide	development	Demographic	https://www.stlouisfed.org/open-vault/2020/december/has-wealth-inequality-change
Modern day technology is built on racist idealogies	state	Cultural	https://dl.acm.org/doi/pdf/10.1145/3449291
Municipalities want to avoid 'strooifietsen', based on previous experience with Asian shared bike providers	state	Technological	CROW Kenniscafé (The Hague, Rotterdam, Utrecht, Groningen)
Mobility has changed from being a means to reach a goal into being a goal on its own	development	Cultural	file:///C:/Users/jaell/Downloads/Graduation_report_Donovan_Lewis_4628403_edd.
Number of road deaths is increasing, and concerns mainly the groups of pedestrians and cyclists	development	Demographic	Het Recht van de Snelste
The amount of overweight and obese people is growing in the EU	development	Biological	https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Overweight_and_

Factor	Type	Field	Source
Motility: “the set of characteristics that enable people to move from one place to another,” in other words, the physical means, the earnings, the aspiration to either a sedentary existence or to mobility, the social conditions needed to be able to access the available technical systems of transport and telecommunications, plus acquired knowledge such as training, a driving licence and knowledge of international English in order to travel etc.”	principle	Demographic	Vincent Kaufmann (2002)
A more hypermobile society leads to more exclusion of groups to the system	state	Demographic	file:///C:/Users/jaell/Downloads/Graduation_report_Donovan_Lewis_4628403_edd.
Hypermobility fuels social and economic exclusion	state	Demographic	file:///C:/Users/jaell/Downloads/Graduation_report_Donovan_Lewis_4628403_edd.
Working hard and being productive is seen as a status symbol	state	Sociological	https://www.bbc.com/worklife/article/20210914-the-way-we-view-free-time-is-makin
People care more about transperacy of companies, and the demand for this is increasing	trend	Cultural	https://portera.nl/transparency-the-new-customer-expectation-hidden-in-plain-sight/
Ghost bikes are placed by citizens and members of the community as a form of protest against bicycle-unsafe areas, and used to influence perceptions about safety, legislation and infrastructure	state	Cultural	https://digitalcommons.lsu.edu/cgi/viewcontent.cgi?article=5469&context=gradscho
Ghost bikes perform as a way to build and maintain communities	state	Sociological	https://digitalcommons.lsu.edu/cgi/viewcontent.cgi?article=5469&context=gradscho
More and more people use and rely on navigational apps to find their way in new areas	trend	Technological	https://www.emarketer.com/content/people-continue-to-rely-on-maps-and-navigatio

Factor	Type	Field	Source
Societies are becoming more individualistic	trend	Psychological	https://www.npr.org/sections/13.7/2018/02/05/581873428/could-a-more-individualis
Independence and uniqueness are prioritised more as cultural values, as a result of increasing individualism	trend	Cultural	https://bigthink.com/politics-current-affairs/individualism-is-spreading-and-thats-not
People will expect a level of flexibility from work when it comes to working from home or from the office	trend	Cultural	https://bthechange.com/in-2021-we-must-focus-on-how-we-travel-not-where-c0984
Dutch municipalities want to replace people's second bike with shared ones across the city, in order to get rid of parking overload	development	Technological	CROW Kenniscafé
The belief that young people do not care about owning things is an assumption	state	Economic	Observation: based on gentrification, and the info provided by companies/news out
People need social interactions in order to have a sense of relatedness, community and security	principle	Evolutionary	https://diopd.org/wp-content/uploads/2021/05/13-fundamental-psychological-needs
Longer commuting times are associated with increased stress and poorer mental health	state	Psychological	https://link.springer.com/content/pdf/10.1007/s11116-019-09983-9.pdf
Someone's happiness is not defined by outside event, but rather by how the person interpreters them	principle	Psychological	https://mktgsensei.com/AMAE/Consumer Behavior/flow_the_psychology_of_optima
"Everyday mobility is endemic and intrinsic to life, society and space and plays a crucial role in defining, sustaining or transforming subjectivities"	principle	Evolutionary	https://www.tandfonline.com/doi/pdf/10.1080/23800127.2021.1912947?needAcces
"Daily mobility plays a key role in conveying meaning to places and as a dynamic learning and personal development tool"	principle	Evolutionary	https://www.tandfonline.com/doi/pdf/10.1080/23800127.2021.1912947?needAcces

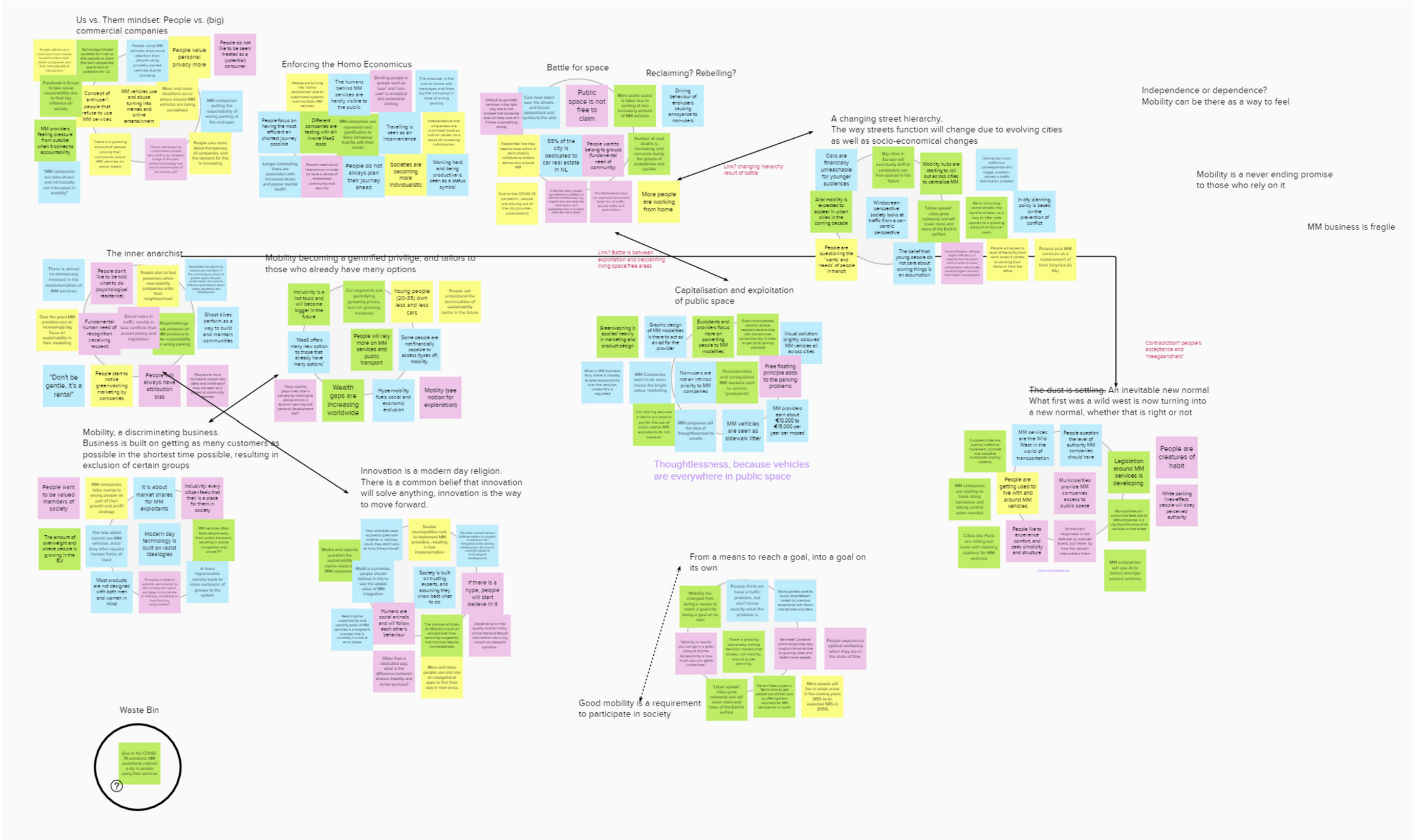
Factor	Type	Field	Source
People experience optimal wellbeing when they are in the state of flow	principle	Biological	https://mktgsensei.com/AMAE/Consumer Behavior/flow_the_psychology_of_optim
Arial mobility is expected to appear in urban skies in the coming decade	development	Technological	https://www.easa.europa.eu/domains/urban-air-mobility-uam
The promise of Urban Air Mobility is built on saving travel time, removing congestion, and improve intercity connectedness	development	Economic	https://www.airbus.com/innovation/zero-emission/urban-air-mobility.html
The main concerns around UAM are related to people's 'acceptance' and integration in the existing infrastructure, the focus is currently mainly on technological developments	state	Technological	https://www.easa.europa.eu/sites/default/files/dfu/uam_detailed_survey_evaluation
European cities are putting in effort to implement, promote and subsidise multimodel mobility systems	development	Economic	CROW kenniscafé / https://reader.elsevier.com/reader/sd/pii/S0040162513002217?token=83AD633657CFD2F4E1C08537960877E5749E174EBFD166BA80F434618west-1&originCreation=20210928123412
Most products are not designed with both men and women in mind	state	Cultural	PDZ meetup: Designing Cities for All #1
Deine Flotte-project in Berlin aims to get people out of their cars by offering them vouchers for MM services for a month	development	Cultural	https://neue-mobilitaet.berlin/
Jevons Paradox: offering higher efficiency or capacity for a resource used in order to lower consumption will actually result in higher demand, thus higher consumption	principle	Technological	General definition (Wikipedia)
The Netherlands have car seperated/dedicated areas for car traffic, bicycle traffic and pedestrians	principle	Cultural	General observation
In German cities, people use different modalities on different infrastructure, e.g. mopeds and cars share the same space, and pedestrians and e-scooters share the same space	principle	Cultural	Talk with Freddy, his observation
People will rely more on MM services and public transport	development	Cultural	
Car sharing services in Berlin will have to pay for the use of public space, MM exploitants do not however	development	Economic	Talk with Patrycja Lema (ShareNow, business development)
Berlin is turning some streets into bycicle streets, as a way to offer safe spaces to a growing amount of non-car users	development	Demographic	Talk with Patrycja Lema (ShareNow, business development) + observations in Berl

APPENDIX B

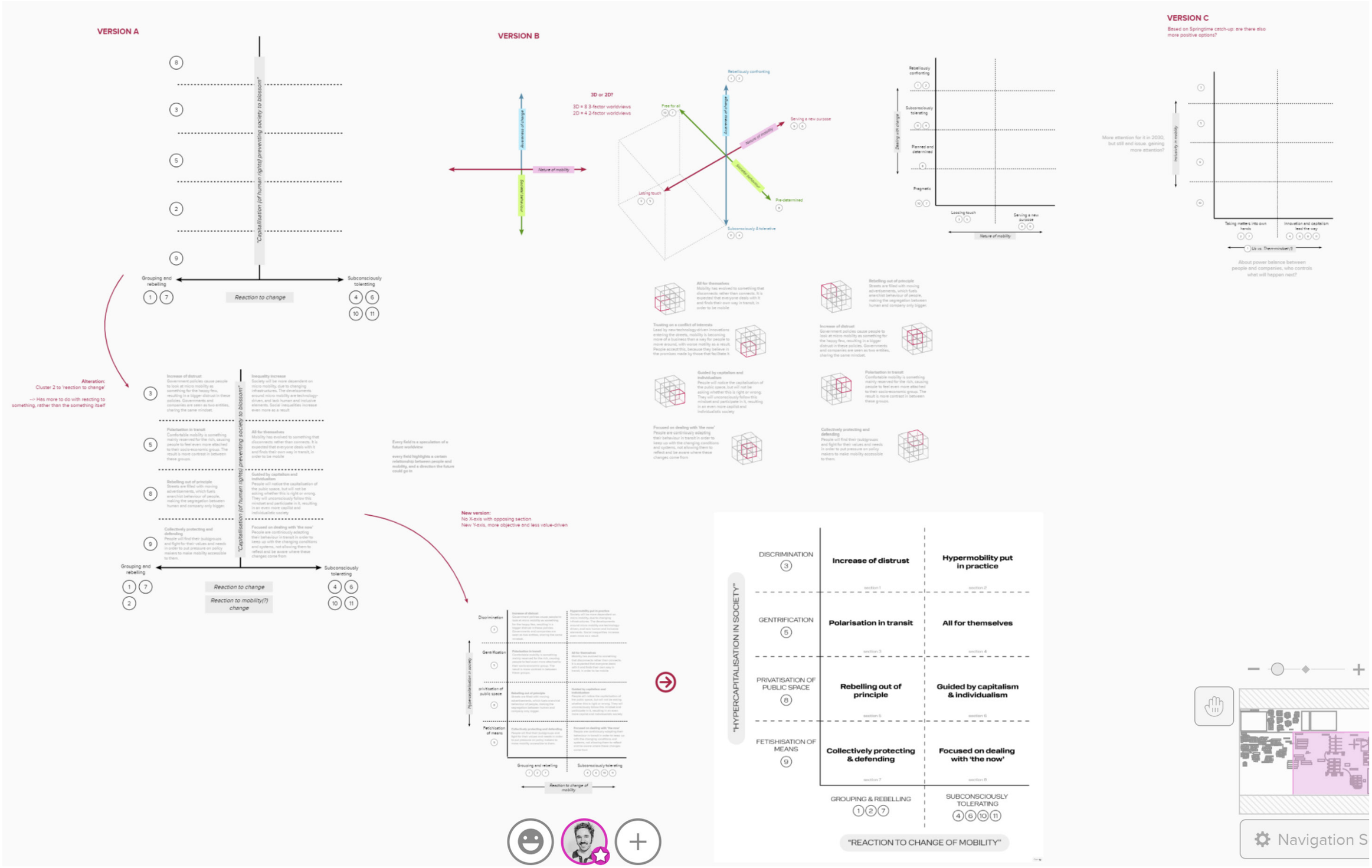
Clustering and worldview building

B.01 / Clustering iteration 1

B.02 / Clustering iteration 2



B.03 / Worldview building process



APPENDIX C

Interaction statement iterations and interaction values

C.01 / Iterations

— VERSION 1

Iteration 1.1
“I want people to be able to ignore and exclude/rule out the exploitation of their public space... by...in order to...”

Iteration 1.2
“I want people to feel calm and free in public space, by enabling them to ignore/exclude/rule out the exploitation of it”

— VERSION 2

Iteration 2.1
“I want people to be able to reclaim public space, taken by micro mobility infrastructure, by...”

Iteration 2.2
“I want people to experience justice by enabling them to reclaim public space, taken by micro mobility infrastructure”

Iteration 2.3
“I want to empower people by enabling them to reclaim public space, taken by micro mobility infrastructure”

Iteration 2.4
“I want people to feel in control of public space by enabling them to reclaim what is taken by the micro mobility infrastructure”

Iteration 2.5
“I want people to feel empowered by enabling them to reclaim public space, taken by micro mobility infrastructure”

— VERSION 3

Iteration 3.1
“I want people to feel satisfied by embracing and stimulating their anarchism/rebellion”

Iteration 3.2
“I want people to feel heard by embracing and stimulating their anarchism/rebellion”

Iteration 3.3
“I want people to feel satisfied by embracing and stimulating their anarchism/rebellion”

— VERSION 4

Iteration 4.1
“I want people to experience a sense of control over the design of public space, by making them express their needs and wants concerning their (micro) mobility”

Iteration 4.2
“I want people to experience a sense of control over the design of public space, by enabling them to express their needs and wants concerning their (micro) mobility”

Iteration 4.3
“I want people to experience a sense of control over the design of public space, by practicing their needs and wants concerning (micro) mobility”

Iteration 4.4
“I want people to experience a sense of control over the design of public space, by making them showcase/exhibit their needs and wants concerning their (micro) mobility”

Iteration 4.5
“I want people to experience a sense of control over the design of public space by making them showcase their needs and wants concerning their (micro) mobility, and make other parties envy those”

Iteration 4.6
“I want people to experience a sense of control over the design of (micro) mobility in public space, by making them showcase their needs and wants, and make other parties envy those”

Iteration 4.7
“I want people to experience a sense of control over the design of (micro) mobility in public space by making them express their mobility fantasies, and make other parties envy those”

C.02 / Interaction values

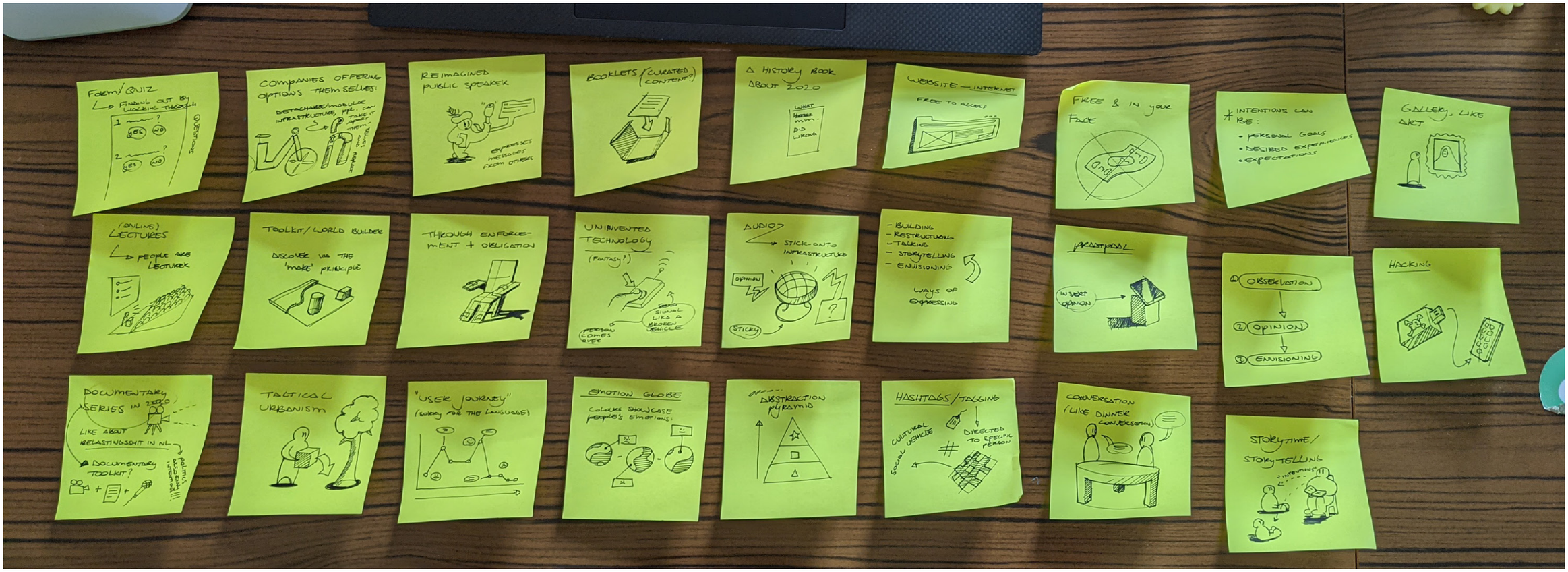
Final statement:
“Springtime and I want people to experience a feeling of control over their (micro) mobility in public space, by enabling them to express their mobility needs” (v5.3)

Values:
- Acknowledgement
- Assertiveness
- Involvement
- Liveability
- Relatability
- Pro-activeness

APPENDIX D

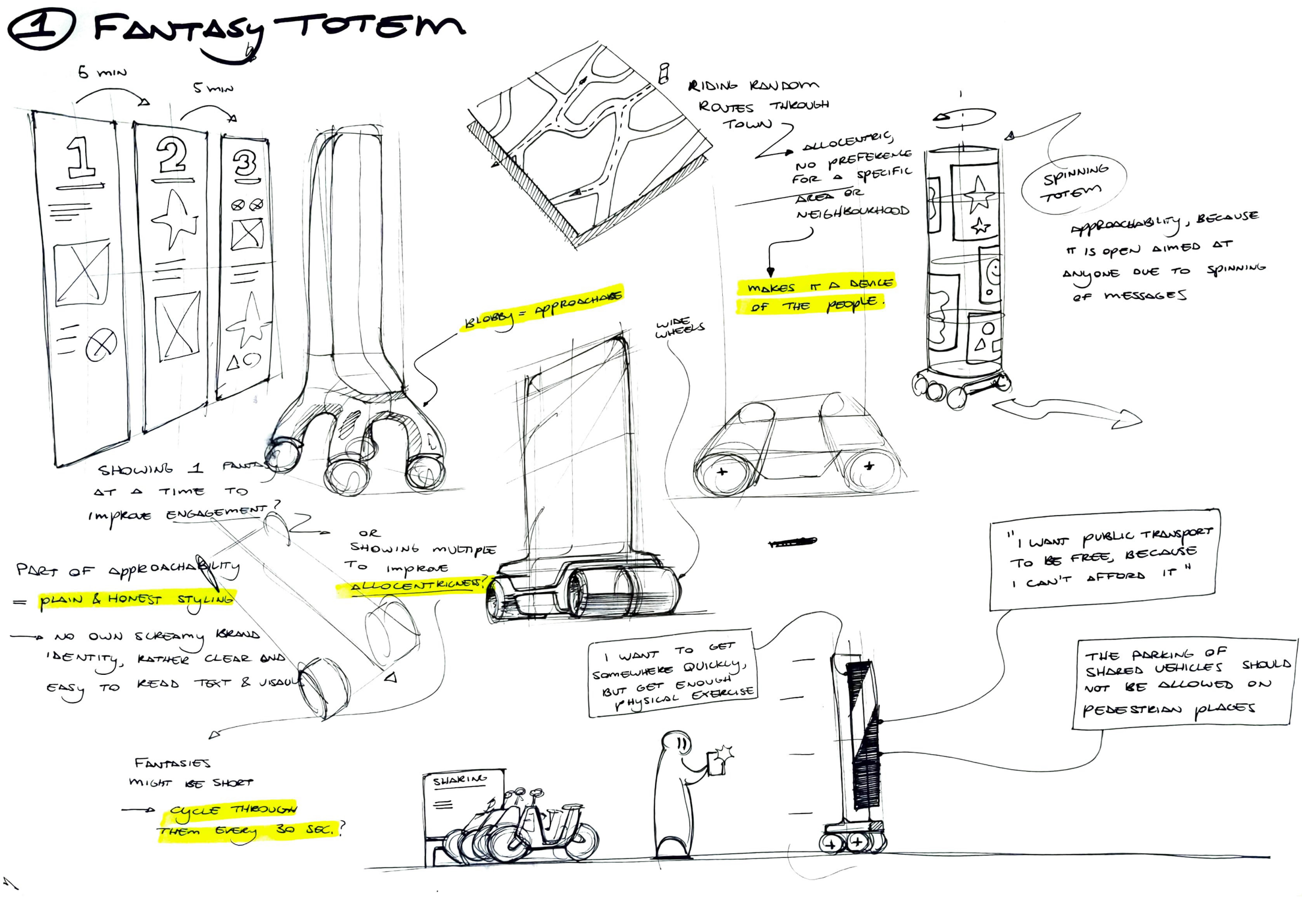
PROTO 1 materials

D.01 / All ideas from ideation

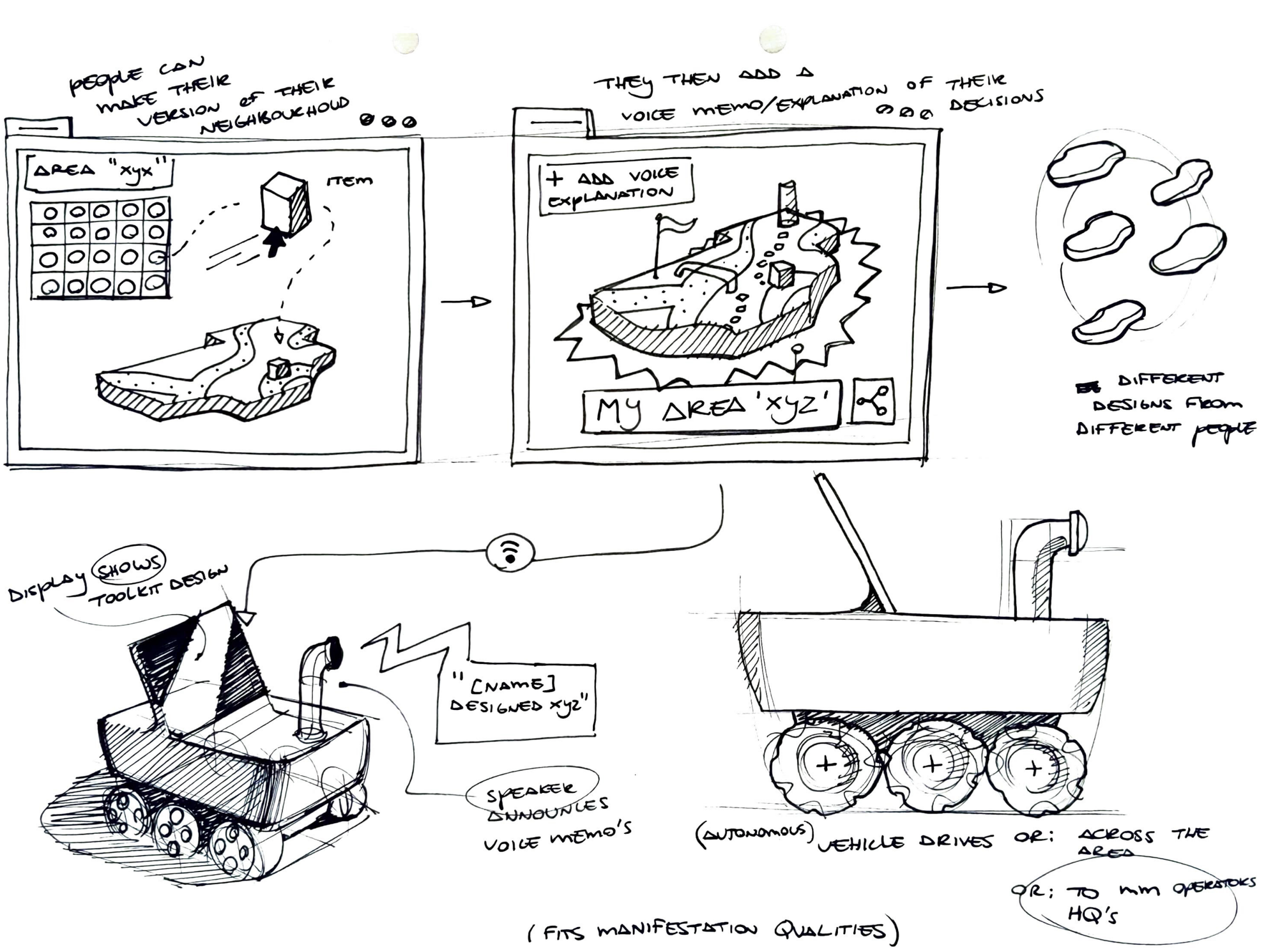


D.02 / Concept sketching

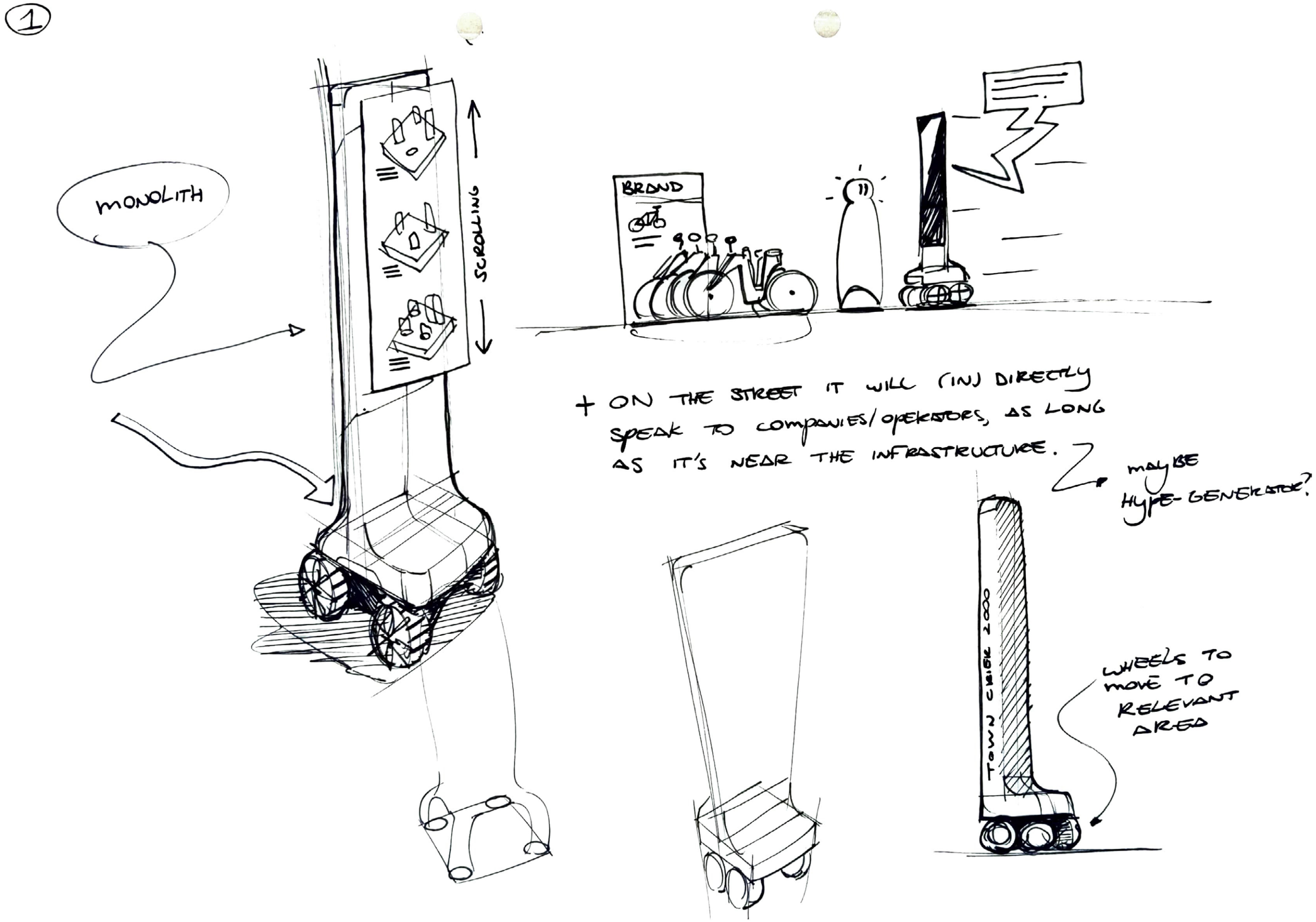
CONCEPT 1



CONCEPT 1

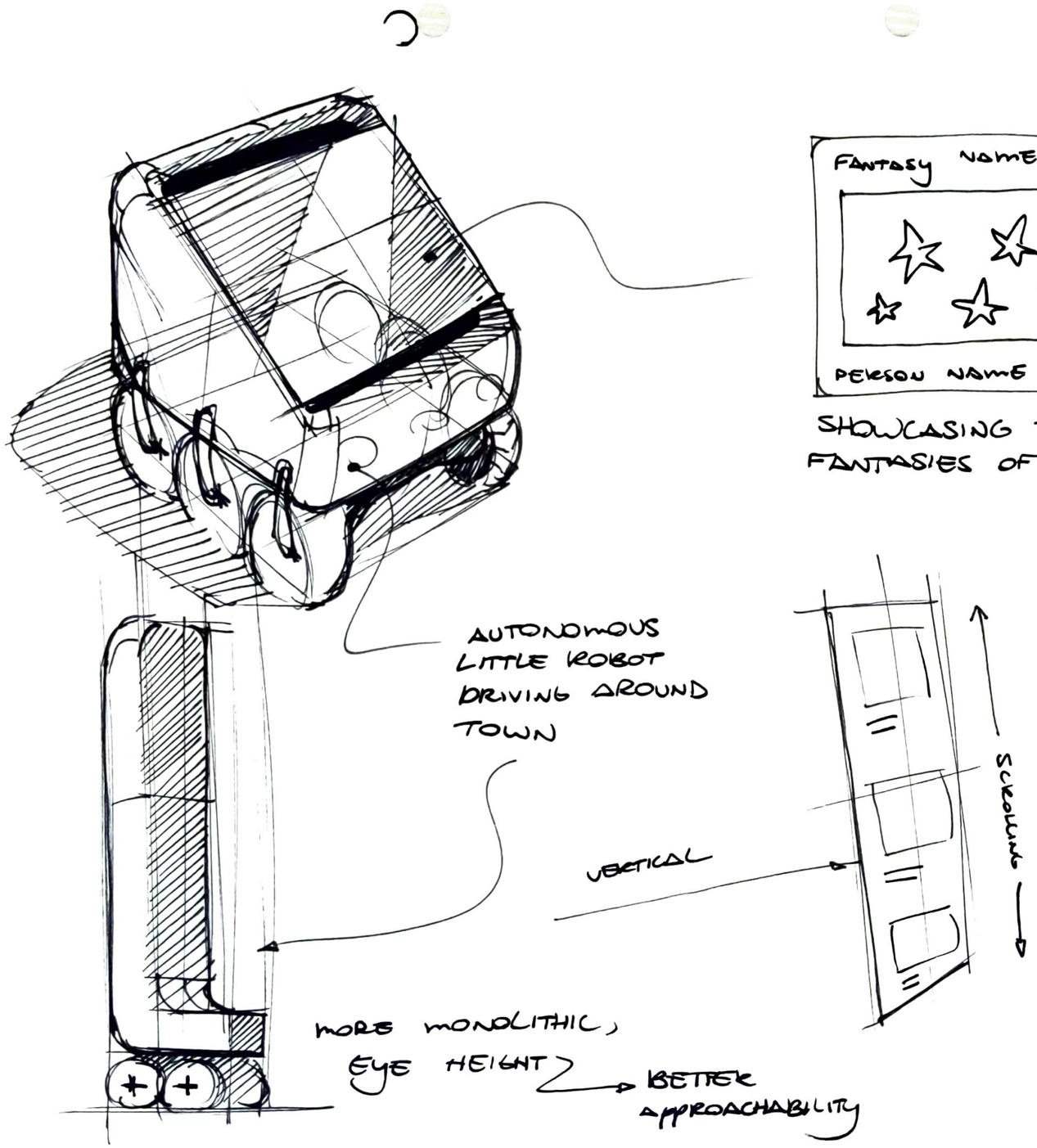

1
PEOPLE CAN MAKE THEIR VERSION OF THEIR NEIGHBOURHOUD
AREA "xyx"
ITEM
THEY THEN ADD A VOICE MEMO/EXPLANATION OF THEIR DECISIONS
+ ADD VOICE EXPLANATION
My AREA 'xyz'
EG DIFFERENT DESIGNS FROM DIFFERENT people
DISPLAY SHOWS TOOLKIT DESIGN
"[NAME] DESIGNED xyz"
SPEAKER ANNOUNCES VOICE MEMO'S
(AUTONOMOUS) VEHICLE DRIVES OR: ACROSS THE AREA
OR: TO HM OPERATORS HQ's
(FITS MANIFESTATION QUALITIES)

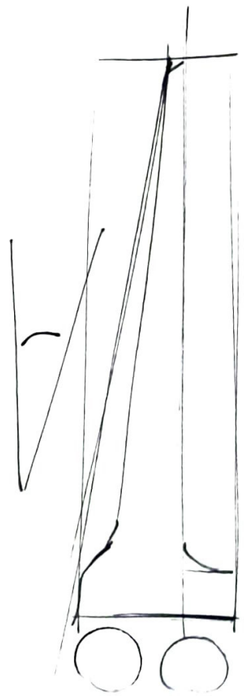
CONCEPT 1



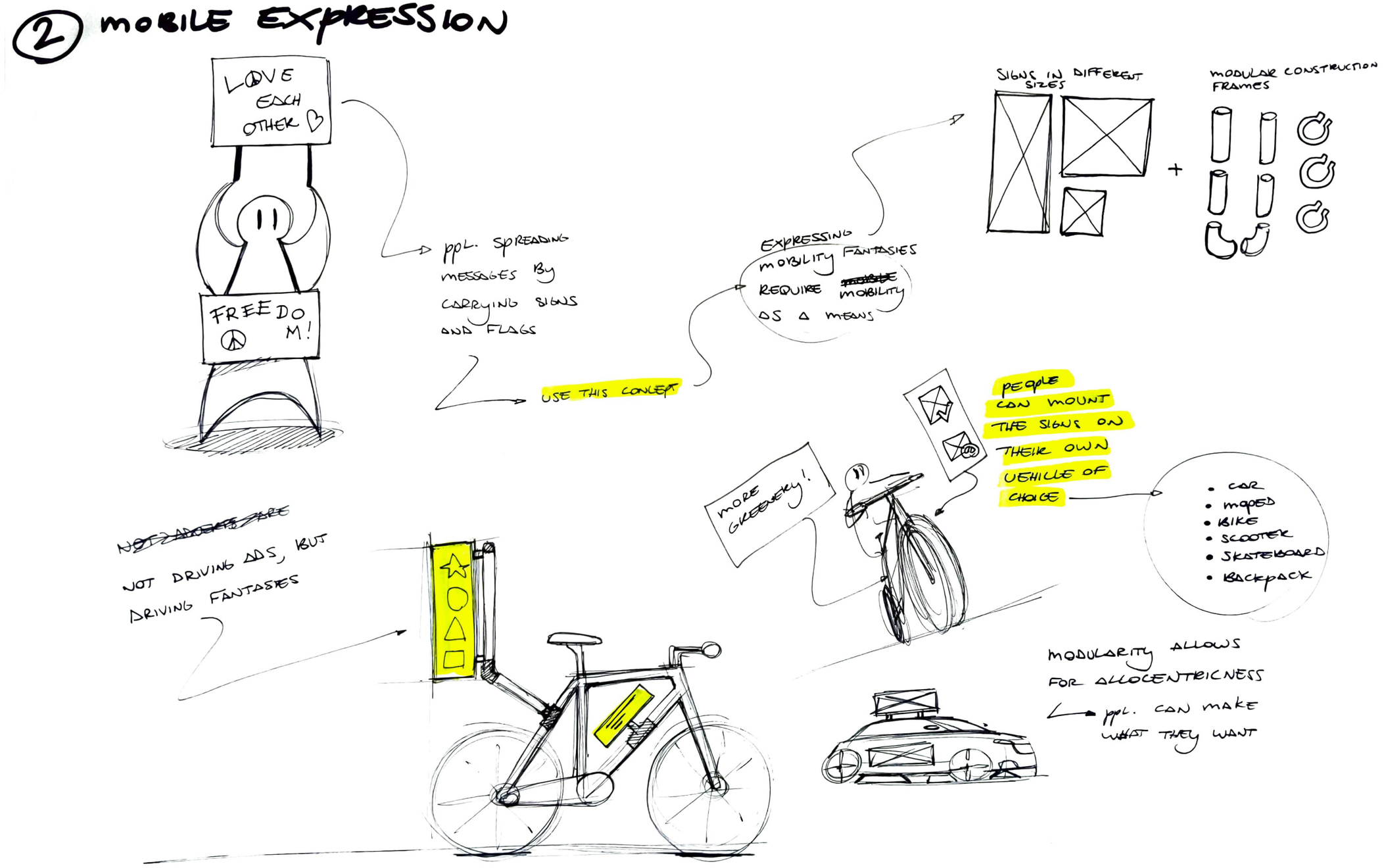
APPENDICES

CONCEPT 1


FANTASY NAME
PERSON NAME
+
SPEAKER TO COMMUNICATE VOICE MEMO'S
SHOWCASING THE FANTASIES OF PEOPLE
AUTONOMOUS LITTLE ROBOT DRIVING AROUND TOWN
SCROLLING
VERTICAL
MORE MONOLITHIC, EYE HEIGHT > BETTER APPROACHABILITY


CONFIDENT?
(PROTO 2)

CONCEPT 2


② MOBILE EXPRESSION
LOVE EACH OTHER ♡
FREEDO M!
ppl. SPREADING MESSAGES BY CARRYING SIGNS AND FLAGS
USE THIS CONCEPT
EXPRESSING MOBILITY FANTASIES REQUIRE ~~MOBILE~~ MOBILITY AS A MEANS
SIGNS IN DIFFERENT SIZES
MODULAR CONSTRUCTION FRAMES
+
PEOPLE CAN MOUNT THE SIGNS ON THEIR OWN VEHICLE OF CHOICE
MORE GREENERY!
• CAR
• MOPED
• BIKE
• SCOOTER
• SKATEBOARD
• BACKPACK
~~NOT ADVOCATE FOR~~ NOT DRIVING ADS, BUT DRIVING FANTASIES
MODULARITY ALLOWS FOR ALLOCENTRICNESS
↳ ppl. CAN MAKE WHAT THEY WANT

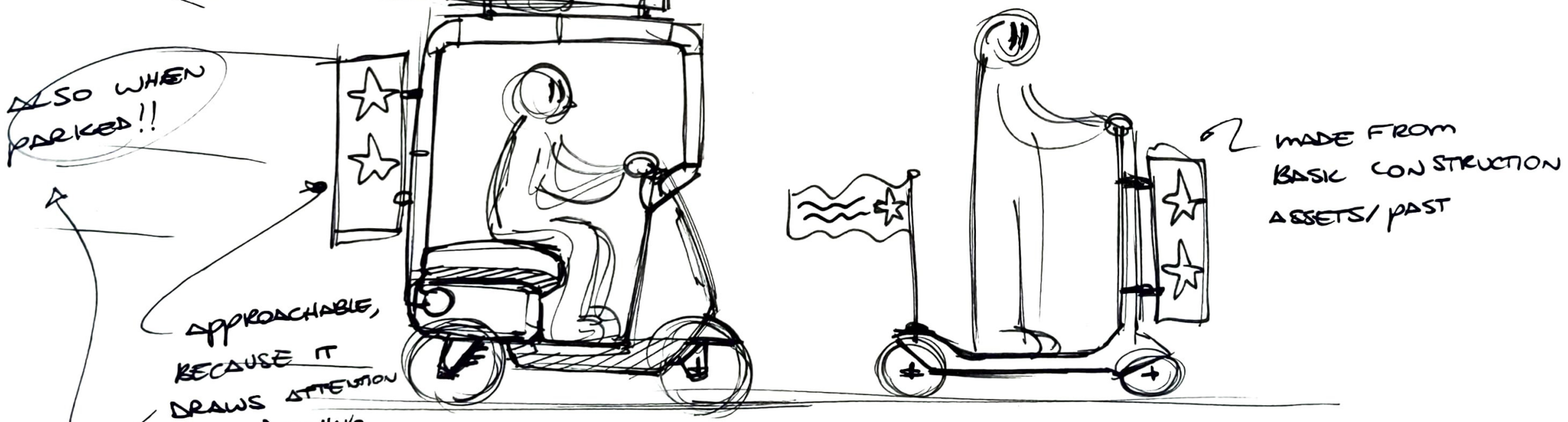
CONCEPT 2

~~ALLOCENTRIC~~

MODULARITY, ADAPTIBILITY = ALLOCENTRIC
CUSTOMISABILITY

AN ATTACHMENT FOR A MM VEHICLE OF CHOICE

→ OFFERS SPACE TO EXPRESS FANTASY



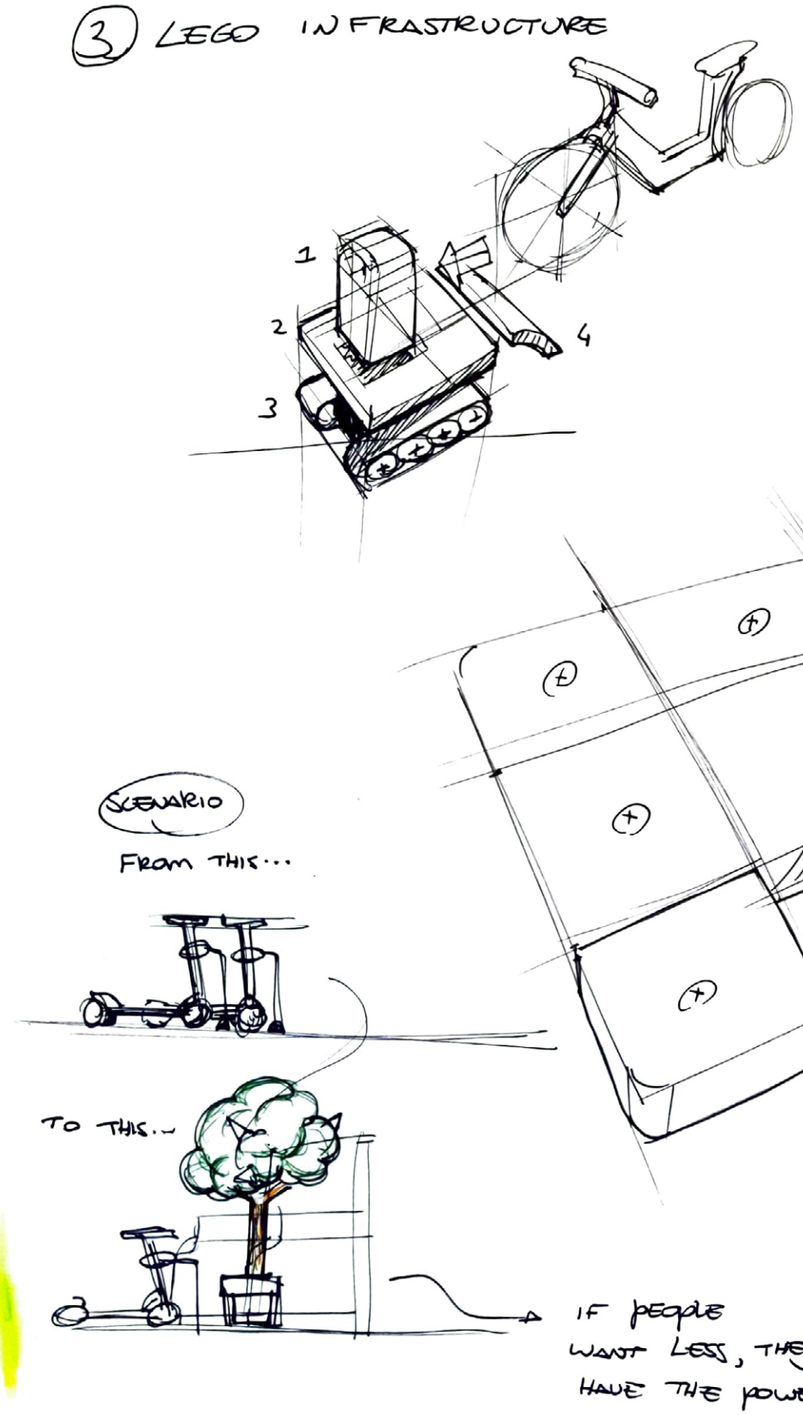
ALSO WHEN PARKED!!

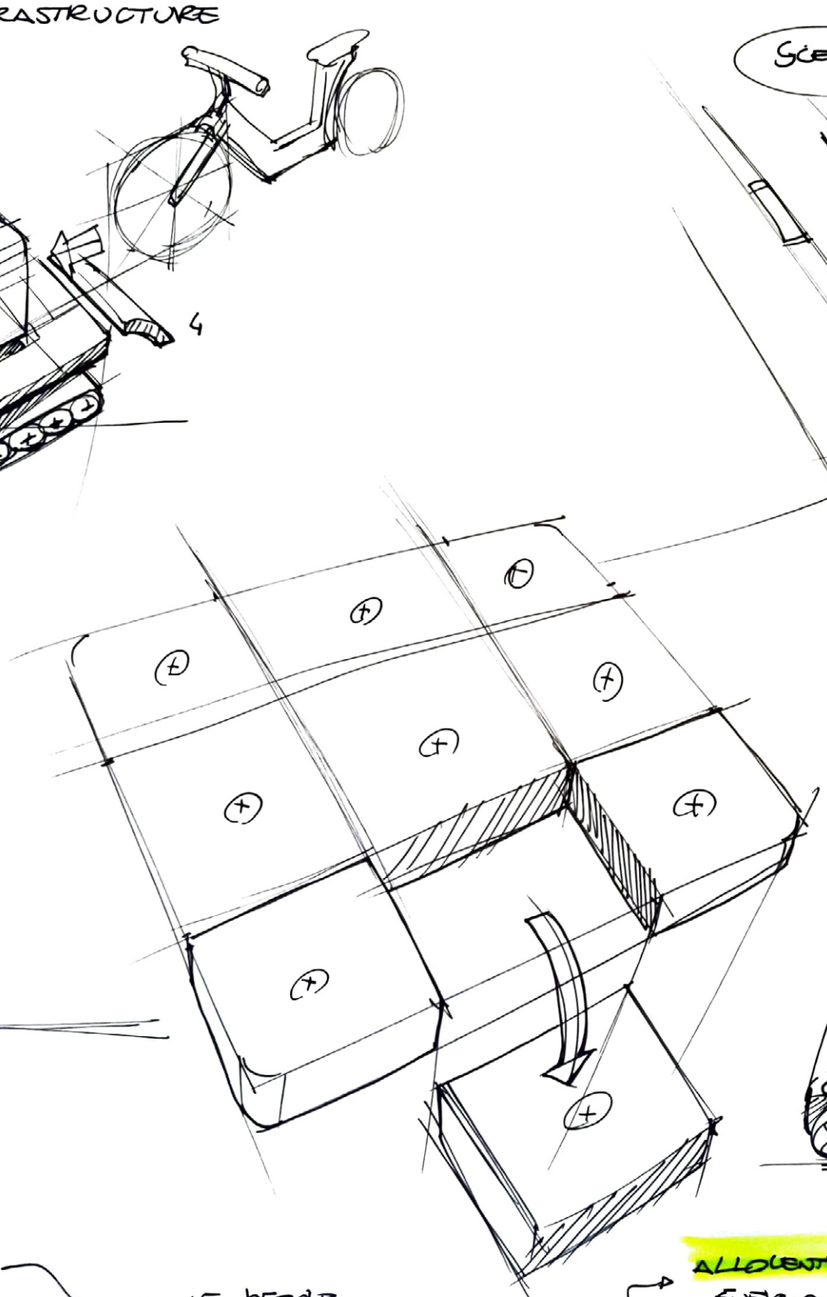
APPROACHABLE, BECAUSE IT DRAWS ATTENTION WHEN DRIVING AROUND

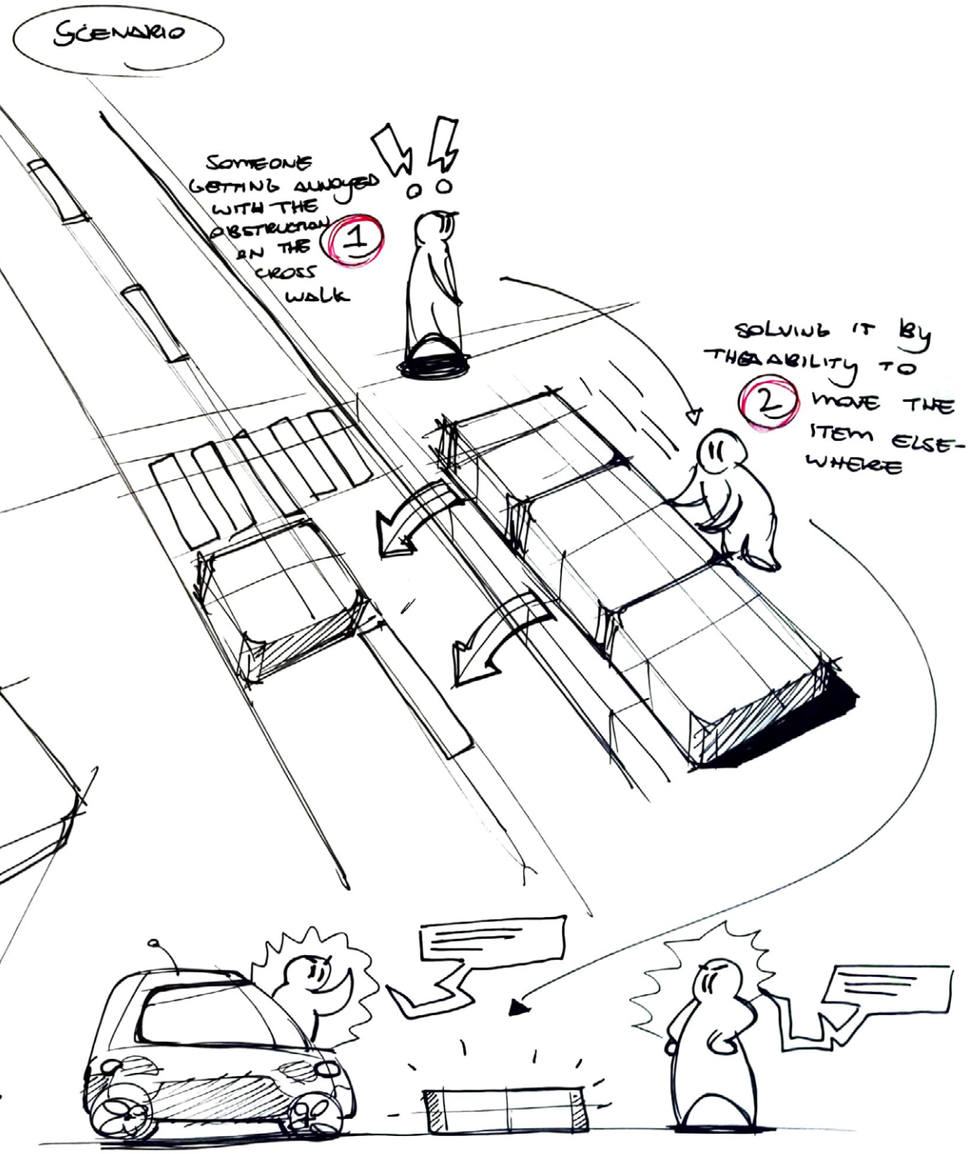
MADE FROM BASIC CONSTRUCTION ASSETS/ PAST

→ LIKE THOSE ~~YEY~~ NEW YORK STREET PERFORMERS, OR STREET ART.

CONCEPT 3





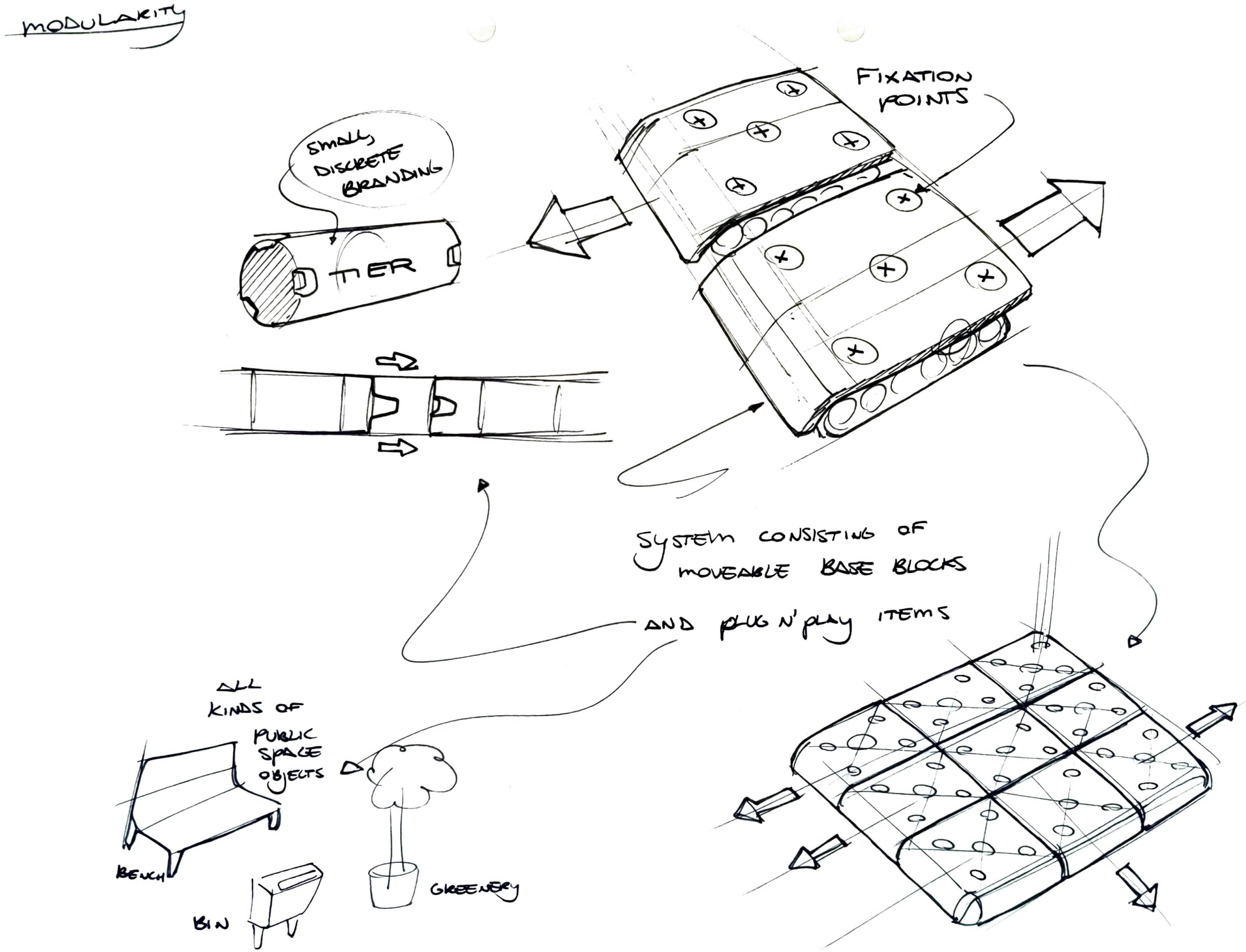


IF PEOPLE WANT LESS, THEY SHOULD HAVE THE POWER TO DO THIS

ALLOCENTRIC:
EVERYONE, ALSO COMPANIES, CAN USE AND RECONFIGURE

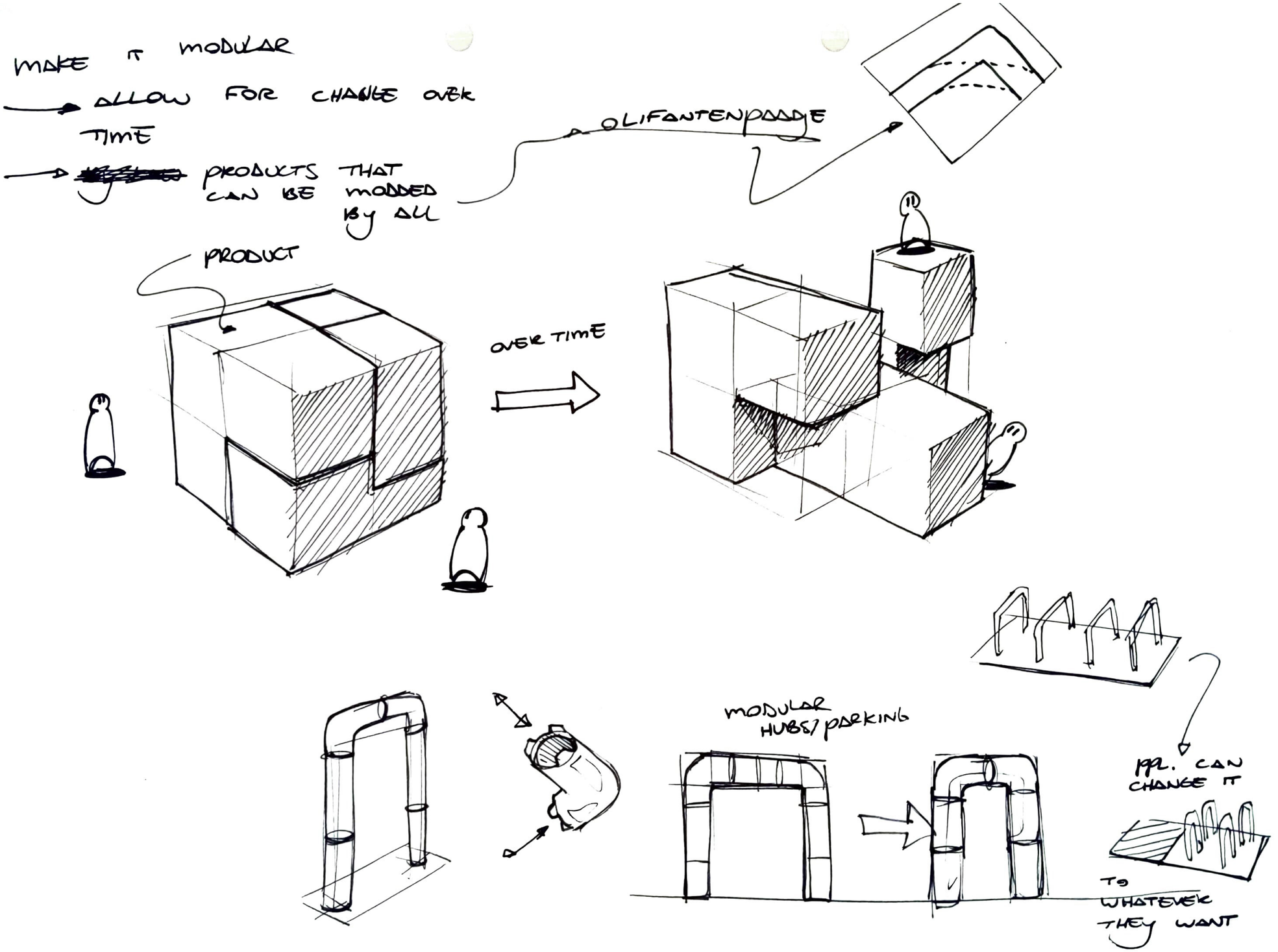
3 IF A CONFLICT WITH A DIFFERENT PUBLIC SPACE-USER HAPPENS, THIS IS NOT A PROBLEM. THIS IS MUCH EASIER TO OVERCOME THAN A CONFLICT BETWEEN 1 PERSON AND A COMPANY

CONCEPT 3



APPENDICES

CONCEPT 3

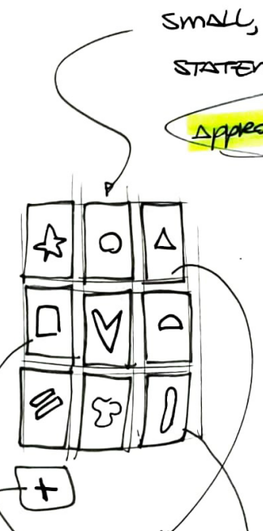

MAKE IT MODULAR
ALLOW FOR CHANGE OVER TIME
PRODUCTS THAT CAN BE MODDED BY ALL
OLIFANTENPADDE
PRODUCT
OVER TIME
MODULAR HUBS/ PARKING
PPL. CAN CHANGE IT
TO WHATEVER THEY WANT

CONCEPT 4

(4) COMPOSING CARDS

COMPOSING OWN BOOKLET WITH FANTASIES

PICKING FROM STACK OF CARDS



small, simple STATEMENTS, LIKE "FREE MOBILITY" "MORE GREENERY"

APPROACHABLE

STACK OF PERSONAL IDEAS & VALUES

PEOPLE CAN ADD THEIR OWN CARD WITH OWN STATEMENTS

ALLOCENTRIC

HOW TO MAKE IT APPROACHABLE TO COMPANIES?

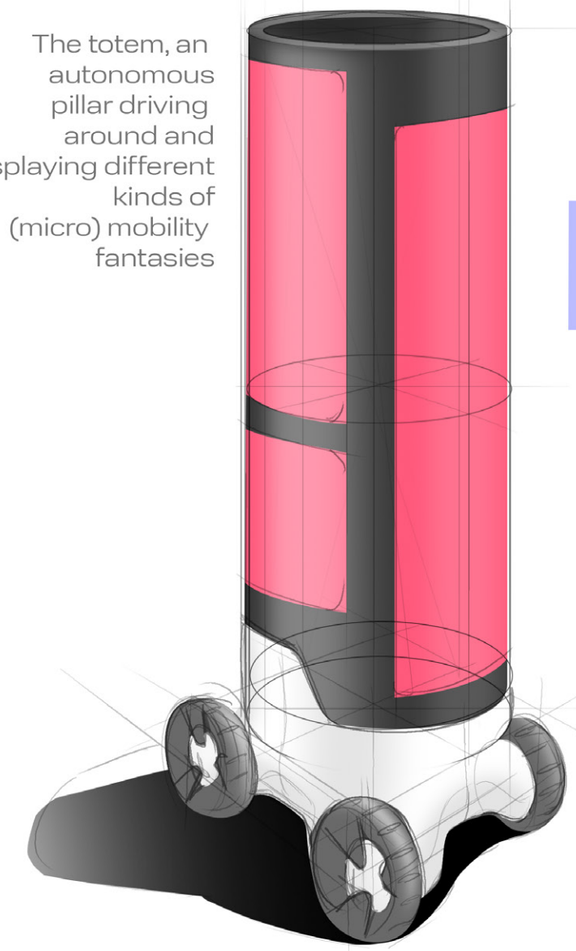
POST IT TO ONLINE - SOMETHING

FEATURE OF AN APP OF PROVIDER?

D.03 / Final concepts presentation slides

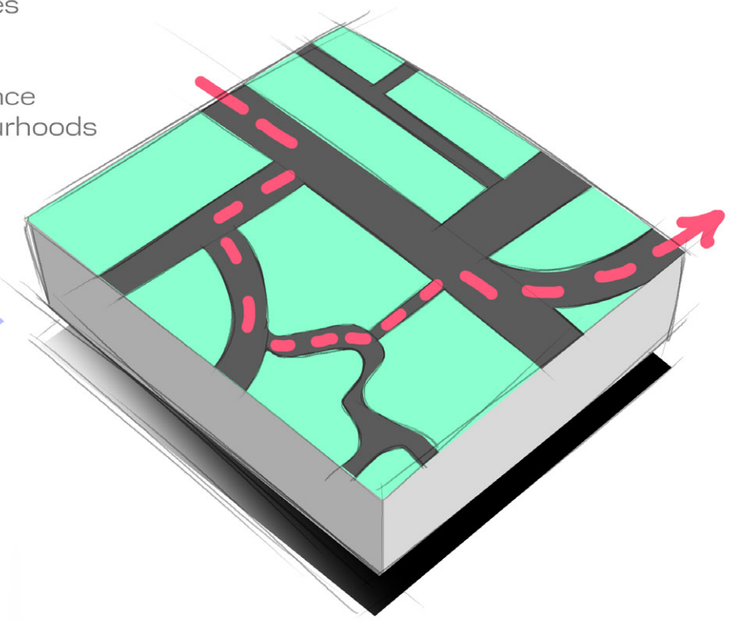
PROTO 1 / concept “Fantasy Totem”

The totem, an autonomous pillar driving around and displaying different kinds of (micro) mobility fantasies

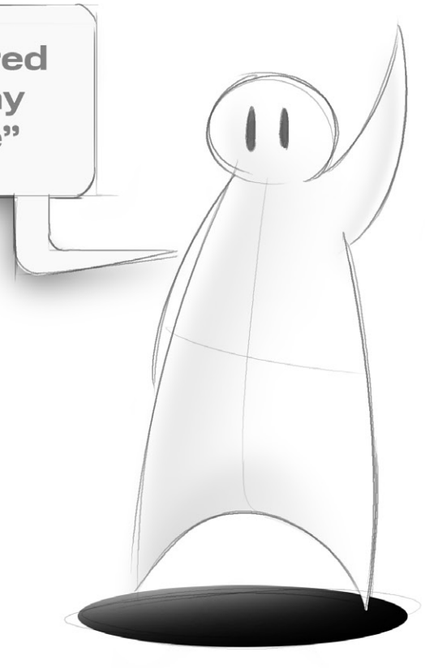


driving random routes through the city

Allocentric, no prefence for specific neighbourhoods



“I don’t want shared vehicles take away pedestrian space”



people can send in their fantasies, the totem then displays these when driving around

Design should be approachable, by making it easy to read fantasies and use honest/simple styling.

PROTO 1 / concept “DIY storyteller”

Based on the sight of people holding signs in public

By making it look DIY and handmade, the design becomes approachable

People can mount the signs to their personal vehicles, and drive around like they usually do.

Kit with all kinds of building materials, allowing the user to build whatever suits their fantasy (allocentric toolkit)

APPENDICES

APPENDIX E

PROTO 2 materials

E.01 / The envy mechanism in the interaction vision

- The interaction vision

"Springtime and I want people to experience a sense of control over the design of (micro) mobility in public space by making them express their mobility fantasies, **and make other parties envy those**"

- The interaction analogy

The interaction should feel like:
Two siblings, where the younger sibling (2) usually follows in the footsteps of the older one (1). At one point during a dinner conversation (3), the younger sibling is actually the first of the two who tells that he is making plans to move out of their parents' house. This makes the older sibling also want to move out, resulting in the younger sibling feeling relevant and heard.

(1) Other parties (micro mobility operators and companies)
(2) The people
(3) The manifestation

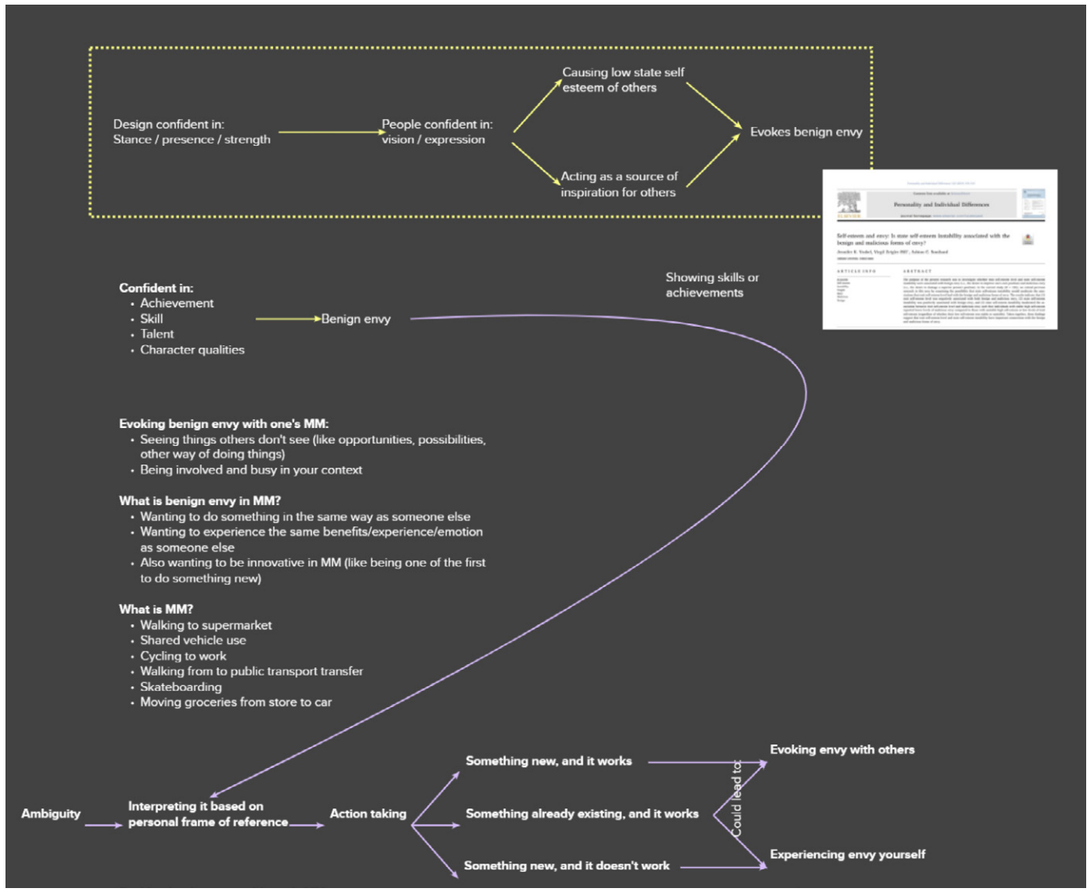
- The manifestation qualities

Confident. At least in western Europe, people talk during dinner. A dinner conversation is therefore very likely to happen, thus it can 'feel' confident about its existence. This confidence is channelled through to people, and allows them to feel confident too and rely on the dinner conversation. The to-be-designed manifestation should have the same effect, since it should allow people to feel confident in expressing their fantasies. The manifestation carries this responsibility, and should therefore radiate confidence.

Approachable. A dinner conversation can be considered approachable, because there are no rules or big hurdles to overcome when starting it or partaking in it. The concept of a conversation is understandable and accessible. The to-be-designed manifestation should be approachable too. On the one hand, people should feel comfortable expressing their fantasies, and on the other hand the micro mobility operators should be able to easily get involved in these fantasies.

Allocentric. A dinner conversation could go in any way possible. One thing is certain at least, which is that the direction a conversation is heading towards is decided by those partaking in it. A conversation has no ego and no personal agenda, this should be the same with the to-be-designed manifestation. It should just facilitate the expressing of people's mobility fantasies.

E.02 / Ideation on envy as a mechanism for PROTO 2



The ideation started with questioning how (benign) envy can be evoked. Benign envy is the type of envy where one wishes to have what the other person has. Next to this the definition of envy in relation to mobility is explored. Finally, two flow charts are displayed that aim to connect the manifestation qualities to experiencing envy, which eventually lead to the idea to use design for ambiguity as a concept as envy was considered too complex.

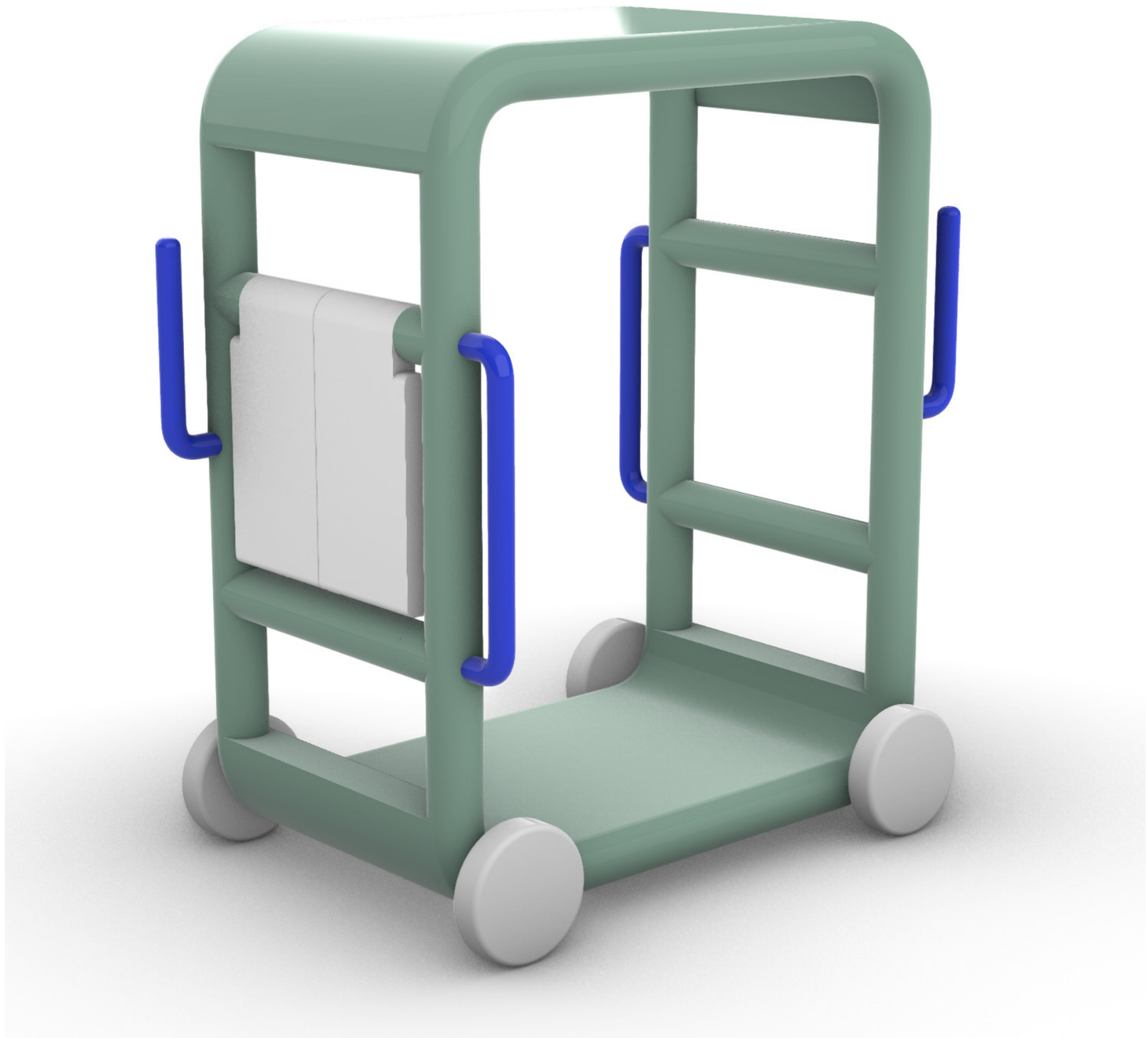
APPENDIX F

Final design iterations

ITERATION 1

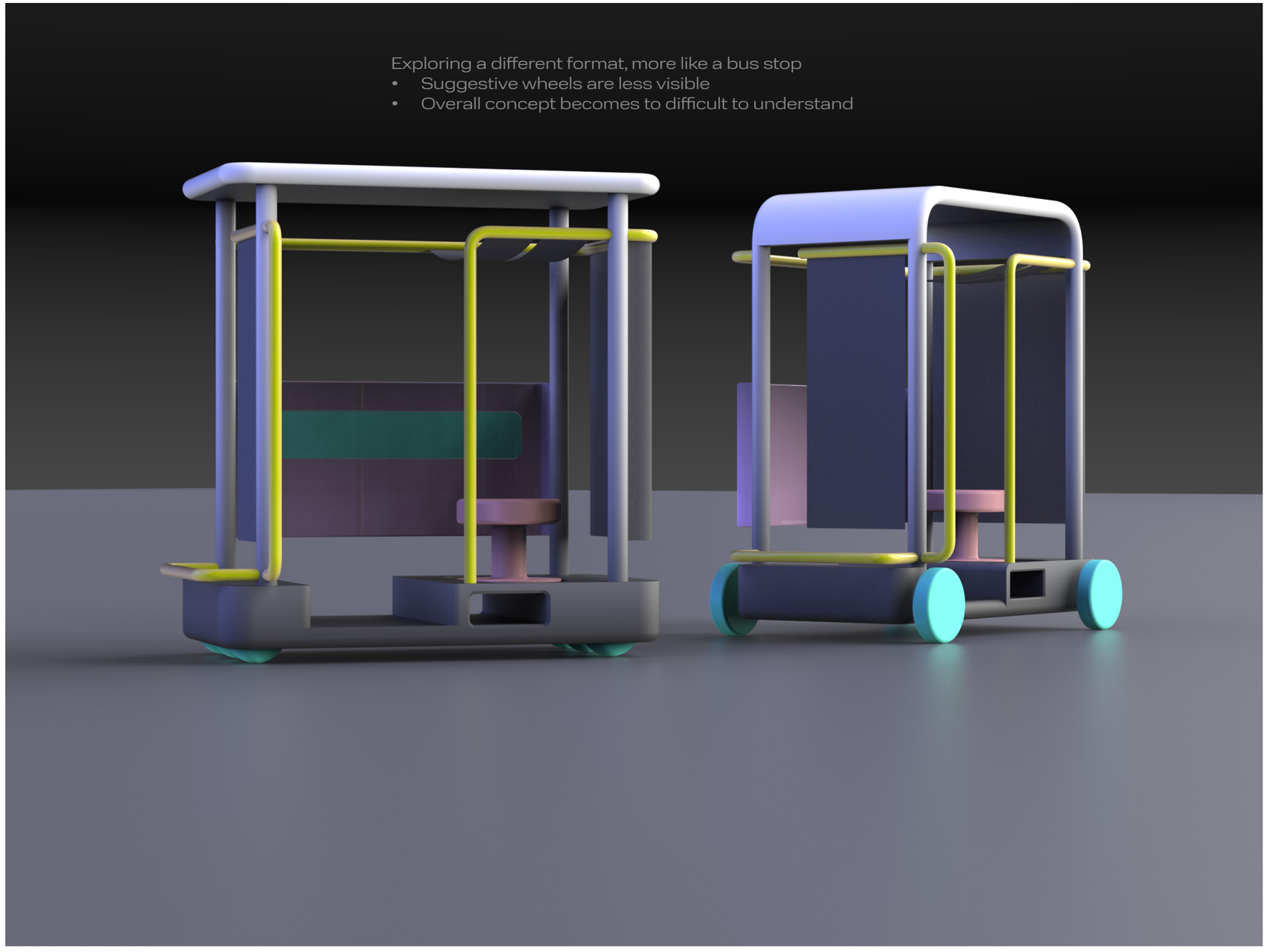
- Initial idea for ambiguous vehicle.
- Main element is a frame to which all moveable parts are attached

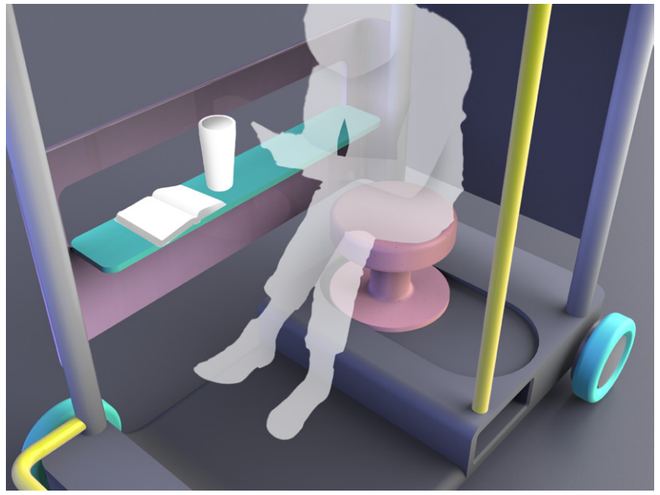
The abstraction level was OK, but the proportions and thickness of the frame were not right, and required a next iteration.



APPENDICES

ITERATION 2

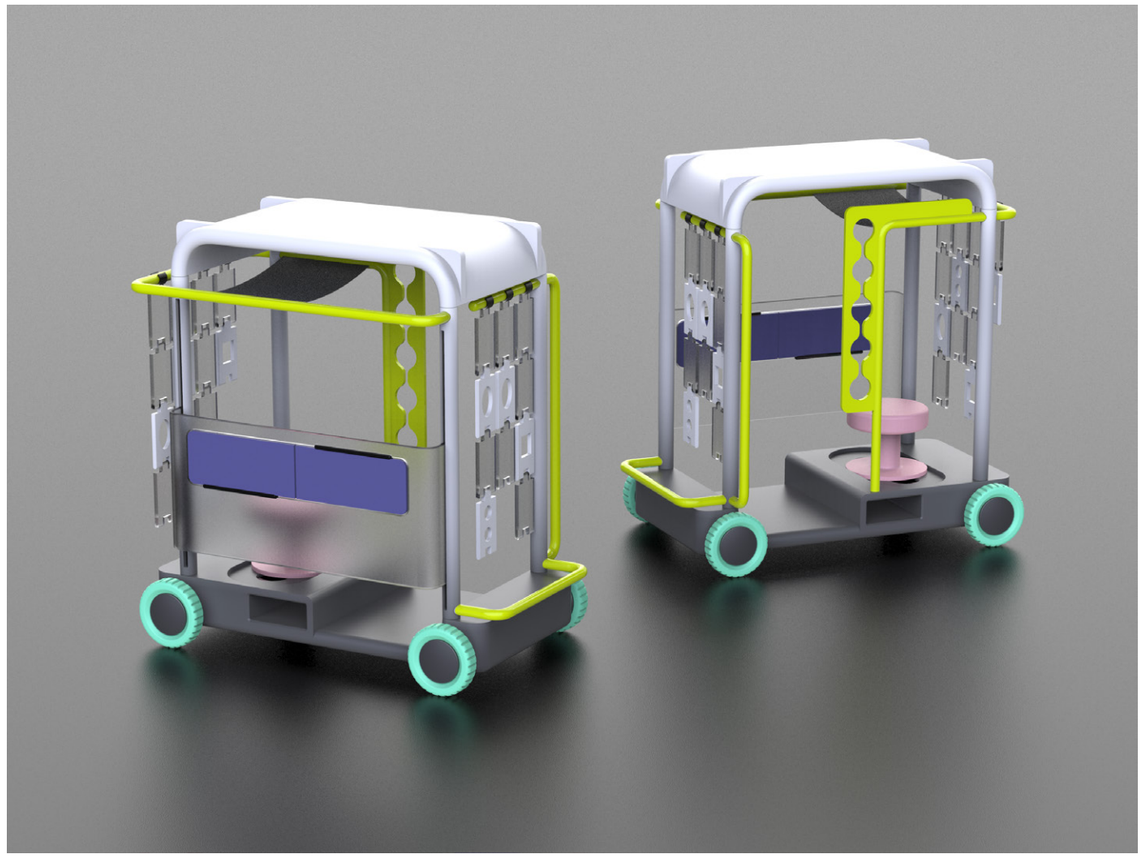


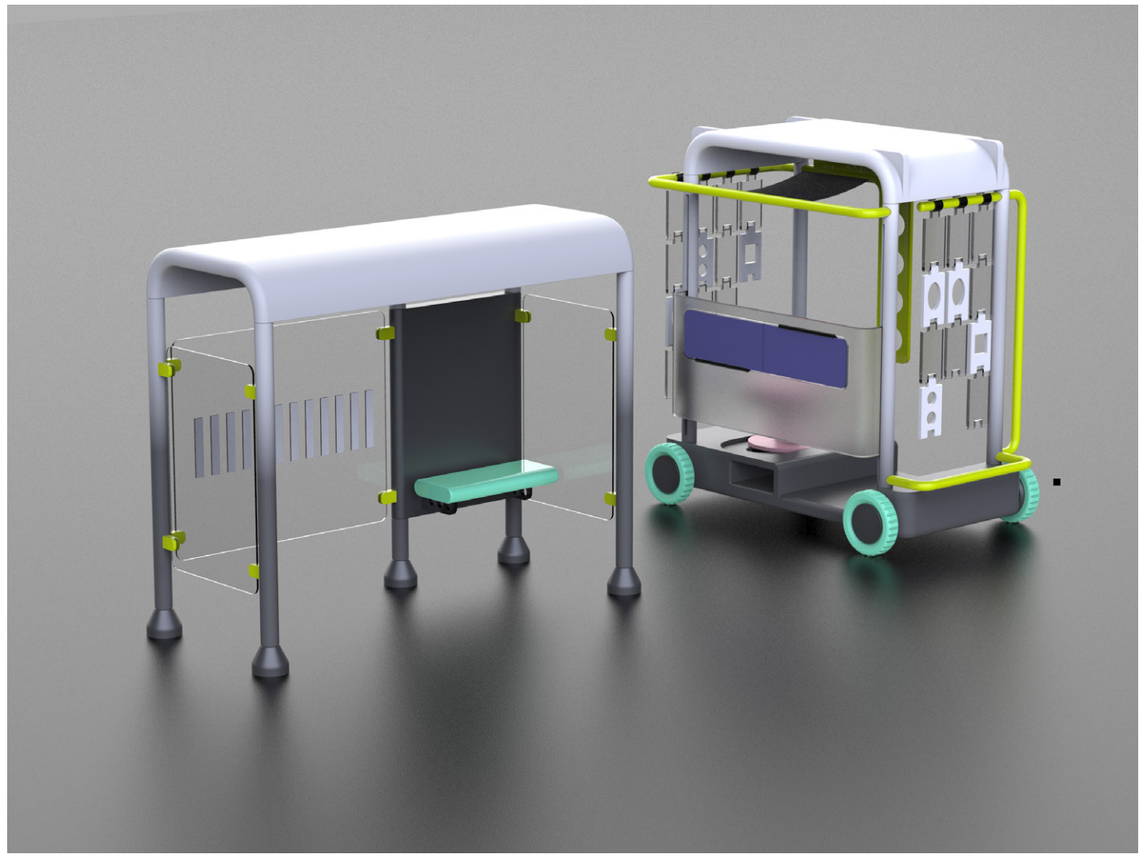


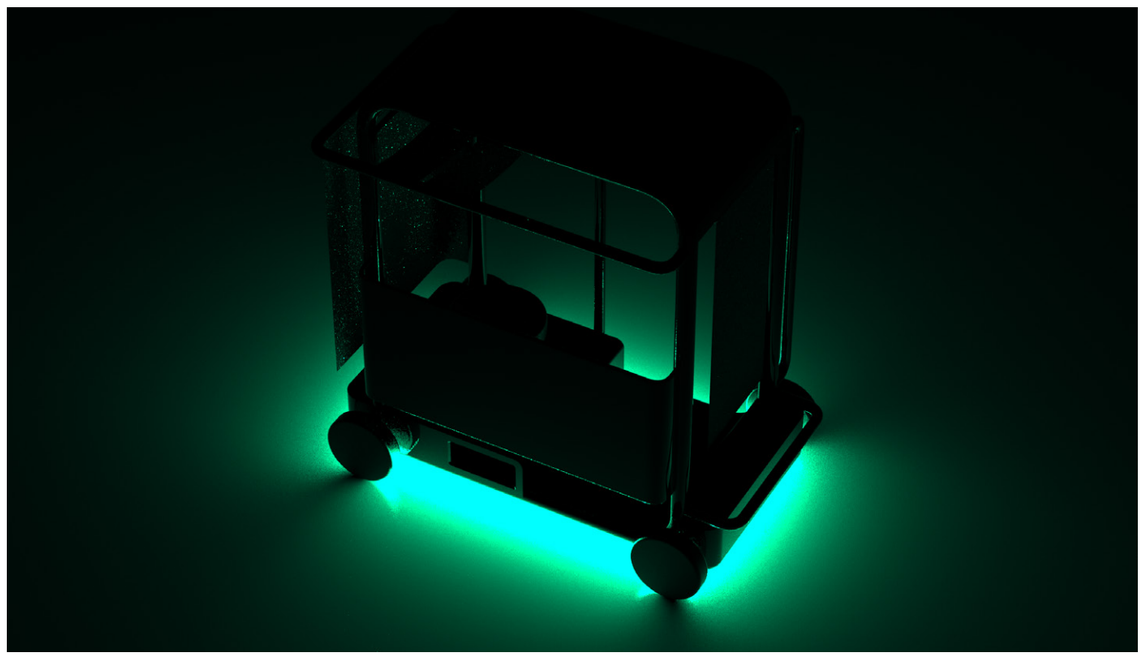
- More inspiration was taken from public furniture
- More exploration with adjustable elements
- First scenarios were made

This iteration has a lot more detail and a higher fidelity. It needed a new iteration as it was not polished enough for the final design, and some of the ambiguous features were not though out enough yet.

ITERATION 3





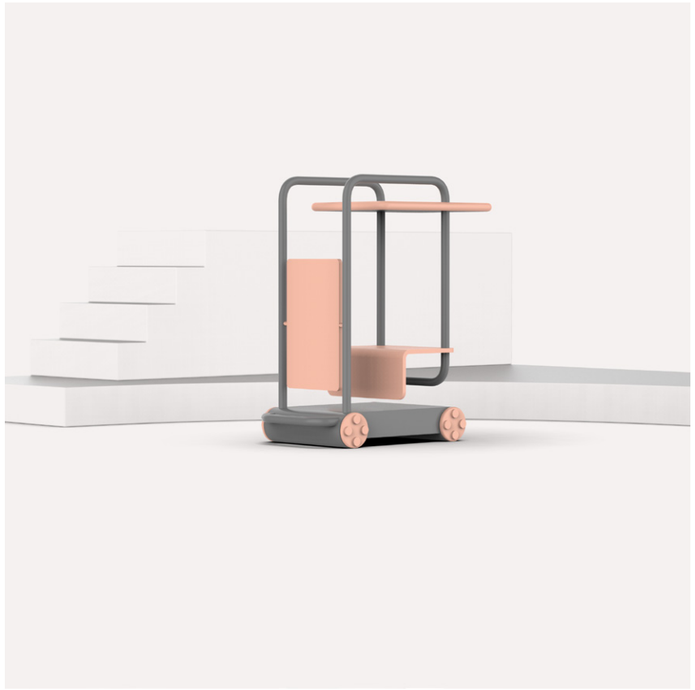


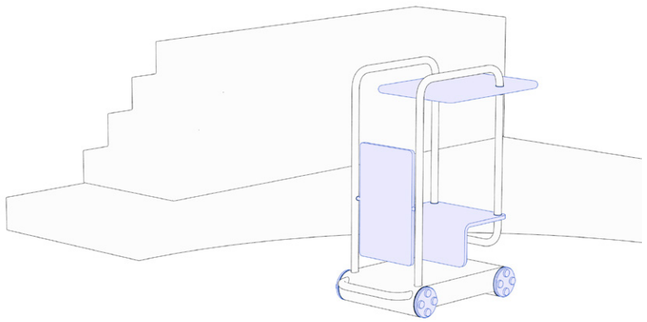
- Final iteration before ‘Amby’
- This iteration causes a turning point in design philosophy

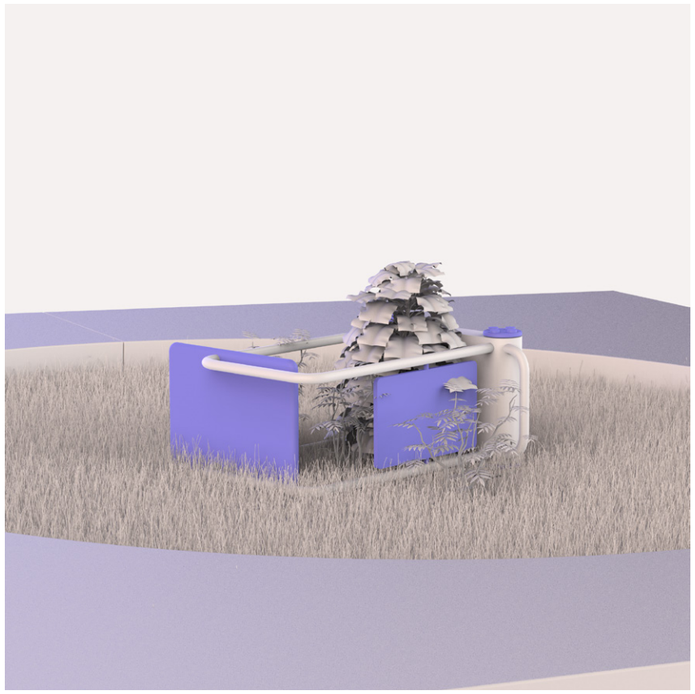
The third iteration added more detail to the configurability of the vehicle. At this point during review it turned out the design had to take a different direction. This concept turned out to be too detailed and complex, and was confusing instead of ambiguous.

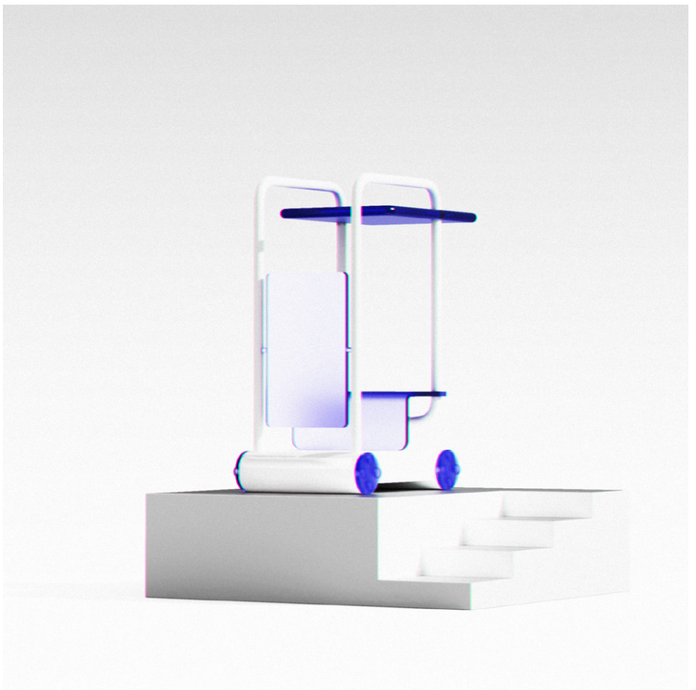
APPENDIX G

Final design styling iterations









“Living with Micro Mobility in 2030”

PRESENTING A SPECULATIVE DESIGN

Jael Lorenzo Sprinkhuizen

MSc Design for Interaction
Delft University of Technology
Faculty of Design Engineering