Activity Deliverable

21062-D13 Validated SmartHubs value propositions

EIT Urban Mobility - Mobility for more liveable urban spaces

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List of abbreviations (if any)

MSP	Multiple Service Provider
MaaS	Mobility as a Service

Contents

1. Executive Summary

The overall goal of this deliverable is to take in to account all stakeholders' perspectives in order to fully understand a deepened sense of their views on SmartHubs. The validation process of value propositions for SmartHubs has been carried out through persona and value proposition canvasses. The input generated for these canvasses was done by conducting interviews with six different yet relevant actors.

The main desire of goal **municipalities** is to *reduce* inner-city car usage resulting in *less* environmental pollution while creating more *liveable* space by stimulating **travellers** to use shared, sustainable and affordable e-mobility of SmartHubs (preferably) via a single **Mobility as a Service (MaaS)** provider that fuses various **Mobility Service Providers (MSP)** that provide multiple modes of transportation.

The research results proved a sense of desirability and positive attitude towards shared mobility of electrified vehicles. Being able to try-out electrified cycling through sharing instead of purchasing an expensive e-bike privately speaks to residents and travellers as some of these modes of transportation are only necessary from time to time. An affordable fare and inclusive financial character (no credit card requirement) will ensure that customers with different social-economic backgrounds can be potential users. Yet fully charged, readily available vehicles are paramount. Moreover, the use of an easy and (preferably) single MaaS application that combines multiple MSPs is also required to stimulate large usage amongst several age groups. Besides, hub locations are imperative to be within reasonable distance from each other within the cities/municipalities to provide interchangeability. Respondents noted that especially in newly built and future neighbourhoods an integrated SmartHub can foster the shared mobility (r)evolution. The issue of randomly parked vehicles was cited as most prominent overall; the SmartHubs must appropriately stall its vehicles without obstruction of street views or blockage of sidewalks etcetera.

After all, the general sense of and perception on SmartHubs is positive. Yet its realization is surrounded by challenges, ones that are highly influential on its survivability. To successfully realize shared e-mobility amongst a large group of potential customers, the concerns and wishes voiced by the respondents in this deliverable are imperative to follow up in future research.

2. Deliverables

D13 Validated SmartHubs value propositions

Persona canvas

This chapter intends to explore and validate value proposition(s) that describe the value SmartHubs represents for its users, mobility providers and cities. To gain access to valuable information on how certain user groups experience the presence and use of SmartHubs, persona canvasses offered a way forward. These canvasses offer a format for understanding the needs, drivers, leverage points, and functional requirements of the 'SmartHub' concept from different stakeholder perspectives.

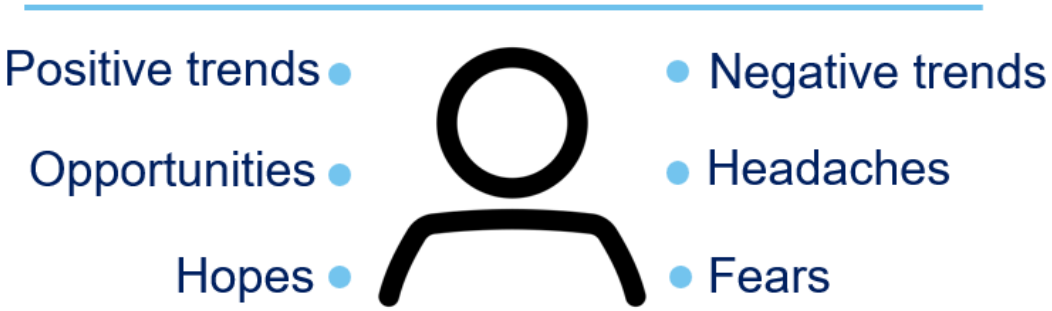


Fig. 1 – Example of a (blank) persona canvas

The value propositions are created by analysing data of users, conducting qualitative in-depth interviews and facilitating workshops. By doing so actors are given a decent chance to express their deepest emotions, attituded and feelings about SmartHubs, creating a deeper understanding of their views without excluding them from the overall research; it provides them with a sense of agency and inclusion, resulting in genuine information. The persona canvasses are represented by six different actors, these six are considered most relevant as they all influence or make use of a SmartHub in one of several ways. To identify the value drivers of the actors, a persona canvas is carried out for: the traveller, Mobility Service Provider, MaaS, municipality/city, resident and finally a local business.

Value proposition canvas

The value proposition canvas is a framework which can help ensure that a product or service is positioned around what the customer values and needs. It was initially developed by dr. Alexander Osterwalder as a framework to ensure that there is a fit between the product and market. It is a detailed tool for modelling the relationship between two parts of the Osterwalder's broader Business Model Canvas: customer segments and value propositions. The Value Proposition Canvas can be used when there is need to refine an existing product or service offering or where a new offering is being developed from scratch.

After assessing the interviews with and produced persona canvases of each actors involved, conclusions can be drawn by distilling certain opportunities/threats (headaches), hopes/fears and positive/negative trends the actors have experienced about shared mobility and SmartHubs in their region. The value proposition canvas is based upon the information provided through the persona canvas; this method visualizes validation of actors' opinions, concerns, and needs, resulting in validated value propositions that summarize actors' (added) value to SmartHubs as a whole.

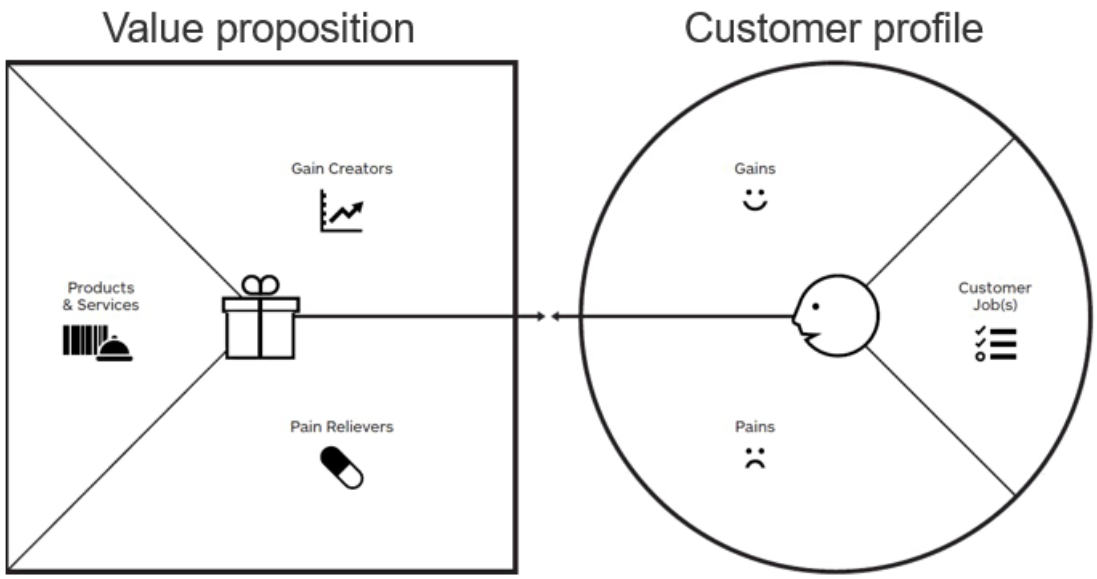


Fig. 1.2 – Example of a (blank) value proposition canvas

2.1. Traveller

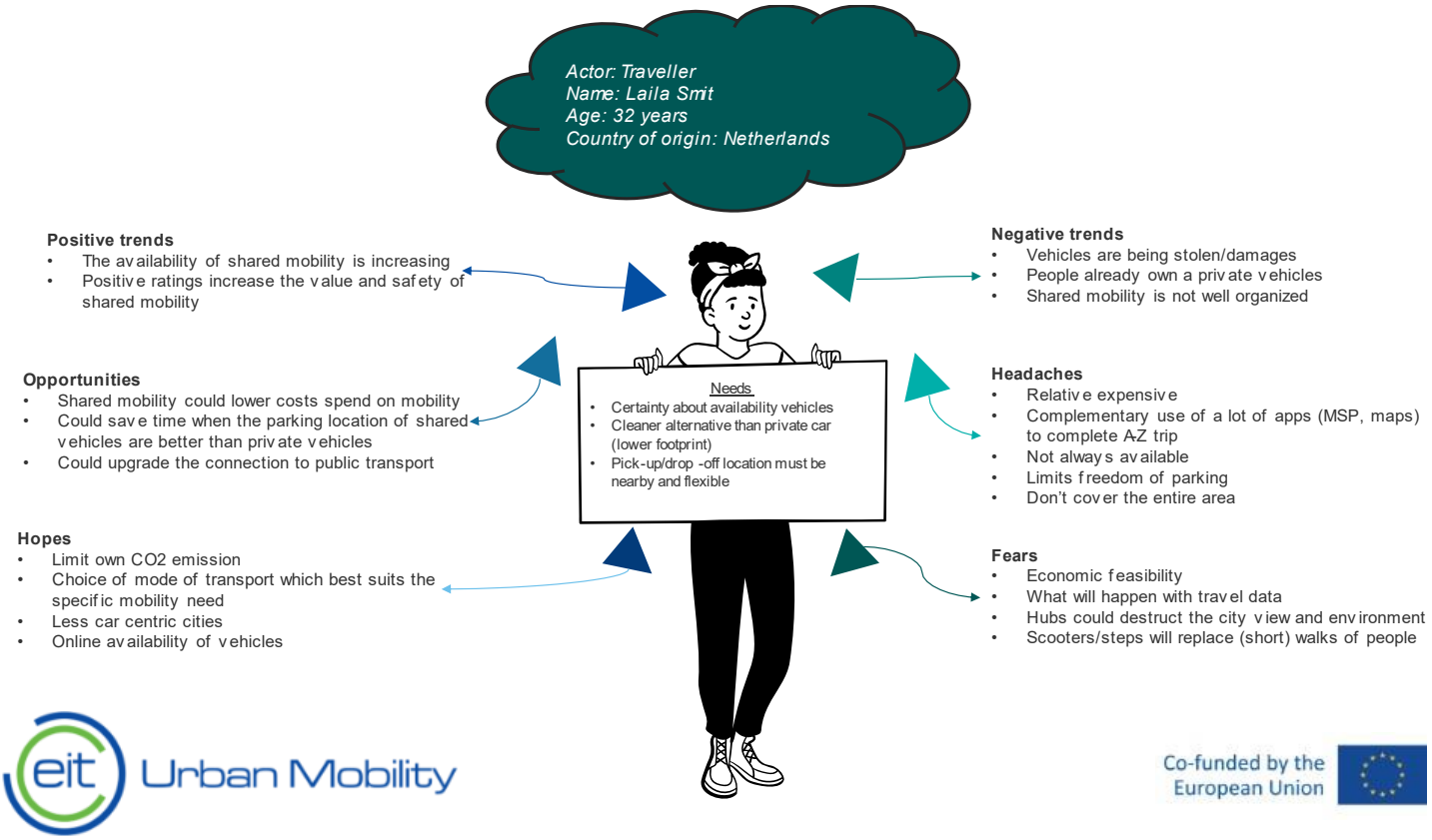


Fig. 2.1.1 – Traveller's persona canvas

As indicated by the traveller, he/she experiences certain negative trends like the fact that vehicles are being stolen or damaged. Also, many people already own private vehicles meaning they might not be inclined to use shared mobility. Lastly, the offered shared services today don't seem well organized enough to make a breakthrough; a hint that possibly remarks on the many MSP's and general lack of uniformity.

On the other hand, positive aspects the traveller has experienced are the increasing availability of shared mobility services as well as the effect of positive ratings by users; it increases value and safety of shared mobility in general as it is continuous reviewed and rated accordingly.

Value Proposition Canvas – Traveller

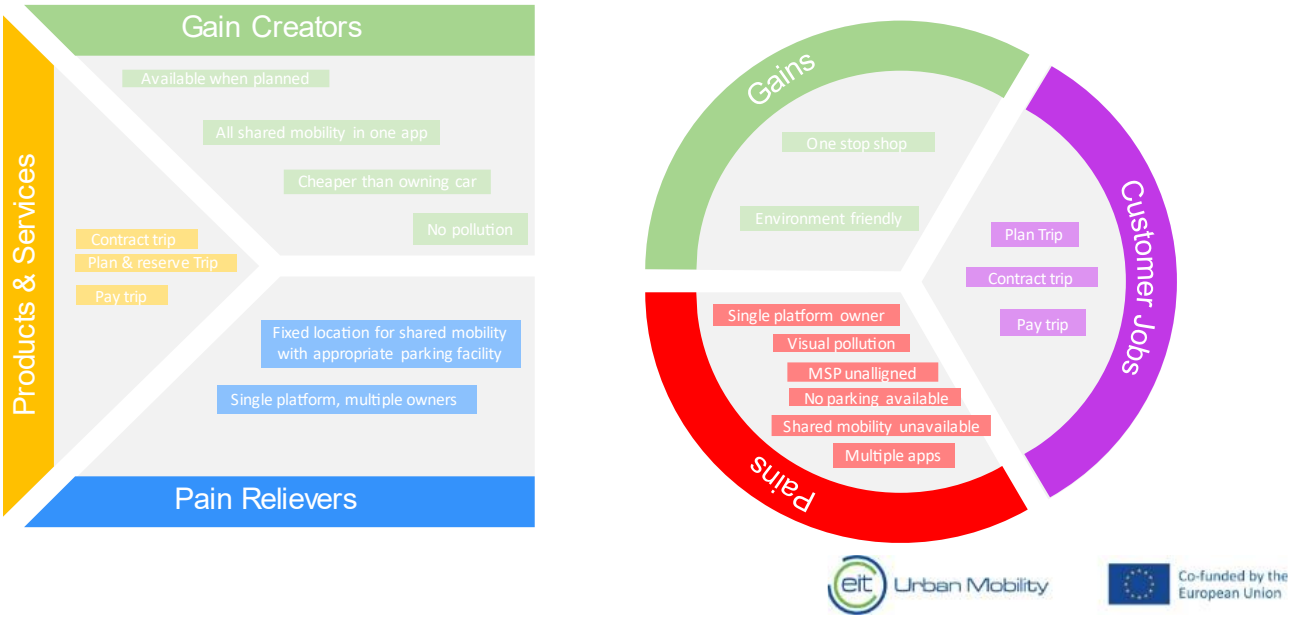


Fig. 2.1.2 – Traveller's value proposition canvas

To promote shared mobility the traveller mentions opportunities like low fares that mobility could (should) have, less time spent on searching for a parking spot (in comparison to a privately owned vehicles) and the possible upgrade to interconnect with (local) public transportation services. However, to succeed, headaches currently experienced like the fairly expensive nature of share mobility, the (perceived) lack of availability, limited flexibility of parking spaces, limited coverage within an area (perhaps due to a MSP's contracting with a municipality) and the necessity of using multiple apps that might hinder adaptation by the masses, must be taken into account.

Finally, the traveller noted hopes like limiting CO_2 emission, having multiple modes of transportation at his/her disposal suiting their needs, having less car centric cities and being able to check availability online prior to reservation. Fears that come to mind of the traveller are that the installation of SmartHubs might obstruct the environmental view, data/privacy concerns, economic feasibility, and the fact that laziness among (young) users might take over as they prefer to use a scooter/step for short distances instead of walking.

2.2. Mobility Service Provider

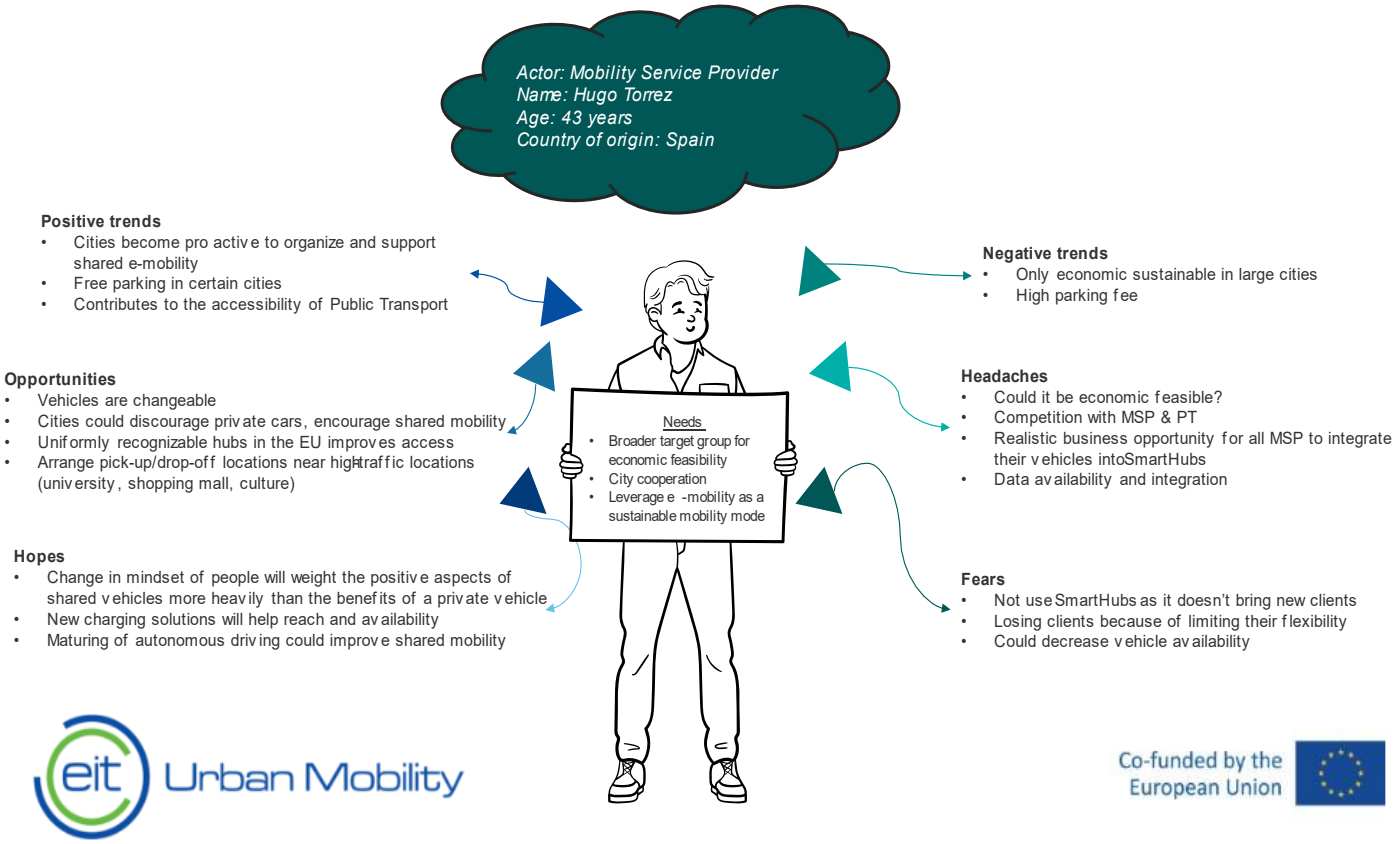


Fig. 2.2.1 – MSP's persona canvas

The mobility service provider (MSP) can be seen as (one of) the providers of vehicles and the corresponding application that travellers need to use in order to reserve, contract and pay for a ride. The MSP has noticed potential revenue opportunities as cities are becoming pro-active in organizing and supporting shared e-mobility.

Positive trends noticed are the provision of free parking and contribution to public transportation accessibility, while simultaneously negative trends like encountering high parking fees in other cities and the lack of economic sustainability in rural areas outside the (large) cities were also noticed.

Value Proposition Canvas – Mobility Service Provider

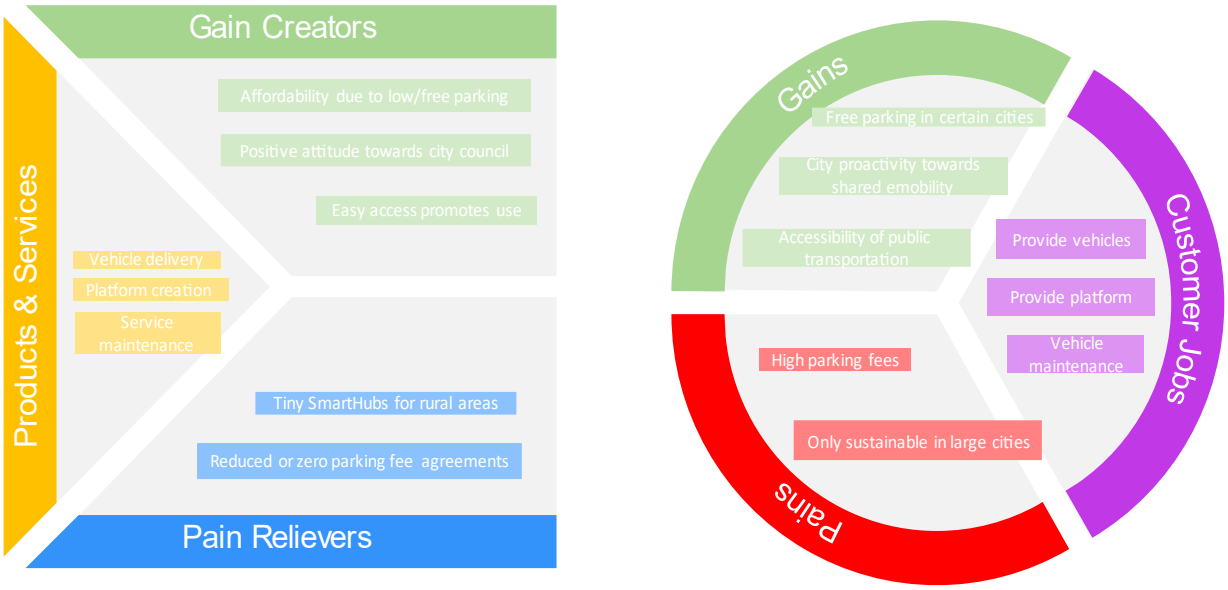


Fig. 2.2.2 – MSP's value proposition canvas

Headaches MSP's have experienced are the questionable economic feasibility, competition between MSP versus public transportation, creation of a realistic business opportunity for all MSP's to integrate their vehicles into SmartHubs, and data availability and integration. These headaches can be minimized when cities discourage the use of private vehicles while encouraging shared mobility. Opportunities to improve hub offerings are: making sure that the offered vehicles are changeable, arranging pick-up/drop-off locations near high-traffic locations like university, shopping malls, mass-transit locations (bus/train stations and airports), cultural landmarks, and creating recognizable (uniform) SmartHubs enhancing visibility and access.

Their main hopes are that people's mindsets will weigh the positive aspects of shared vehicles more heavily than the benefits of owning a private vehicle, that new charging solutions will increase reach and availability whilst the maturing of autonomous driving could improve shared mobility in the long run. The fear accompanying these hopes is that clientele is reduced when SmartHubs don't bring in new clients continuously.

2.3. Mobility as a Service

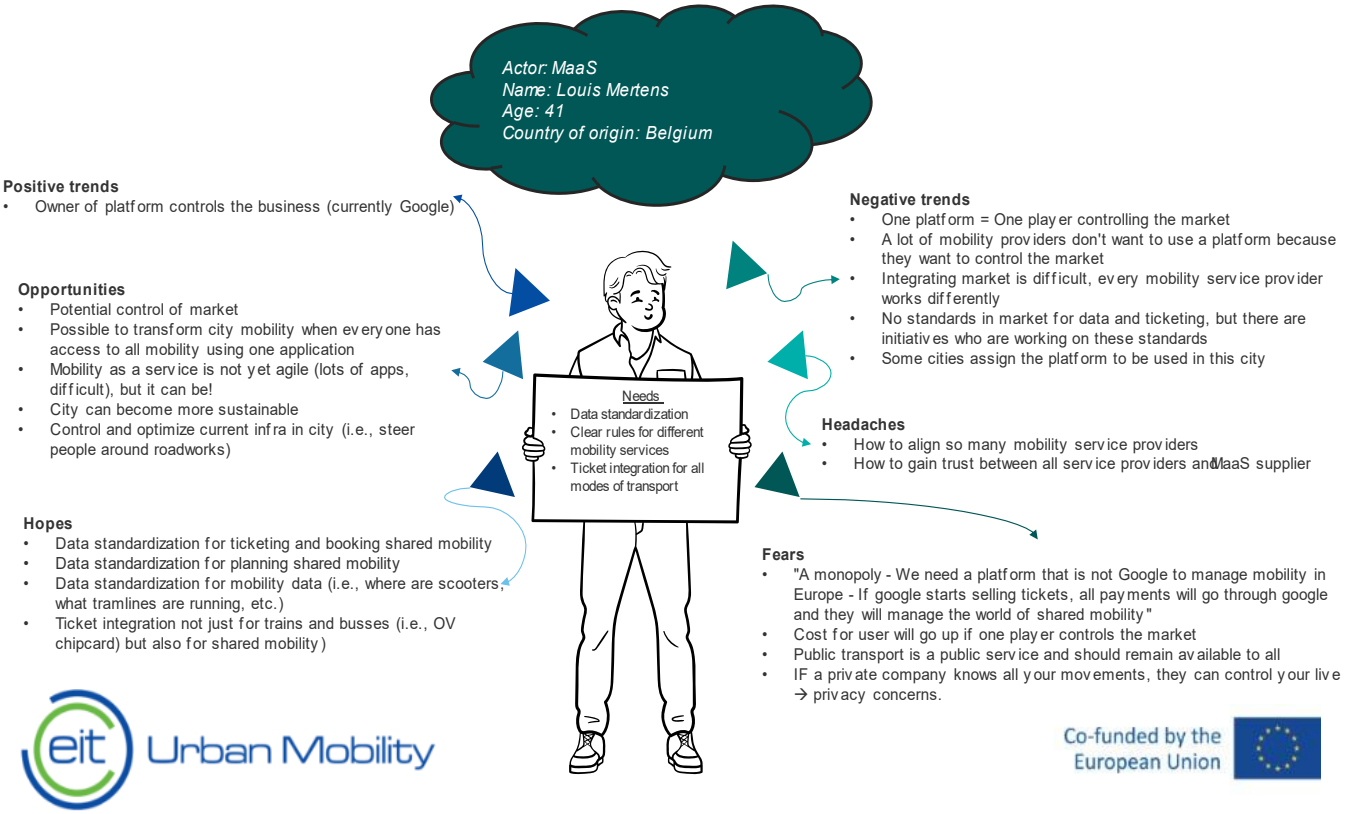
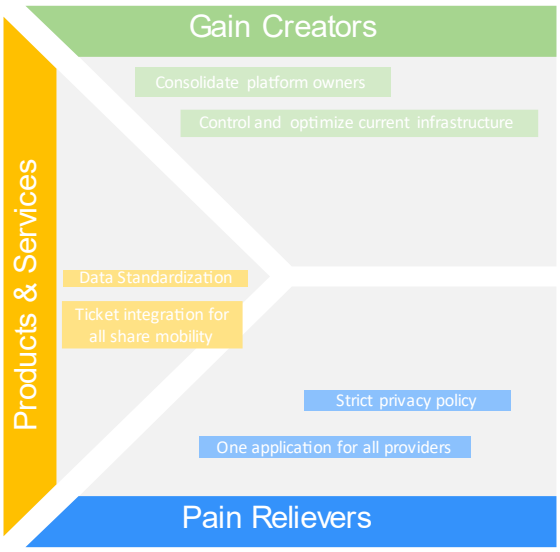


Fig. 2.3.1 – MaaS's persona canvas

Another service provider of mobility who's purpose it is to integrate and offer a unified mode of mobility as a service is the MaaS-provider. It can be seen as a coordinating platform which brings together multiple MSP's and other relevant parties to relieve the traveller of dealing with several platforms, apps and so forth. Although still dubbed as a 'pilot' here in the Netherlands (Gaiyo), in German cities like Berlin (Jelbi) and Hamburg (Hvv Switch) MaaS-providers are already up and running.

The Belgian MaaS-provider expresses concern about possible monopoly formation if only one party, like Google, is the sole owner of the MaaS and warns for this privately owned variant that has access to massive amounts of big data which could be used in devious ways to influence personal lives through these channels. This directly relates to MSPs not wanting to submit their sovereignty to a single MaaS as they themselves want to remain in control of their data and platform. Integration issues with the MaaS might also form a problem as many MSPs work in a different fashion.

Value Proposition Canvas – MaaS



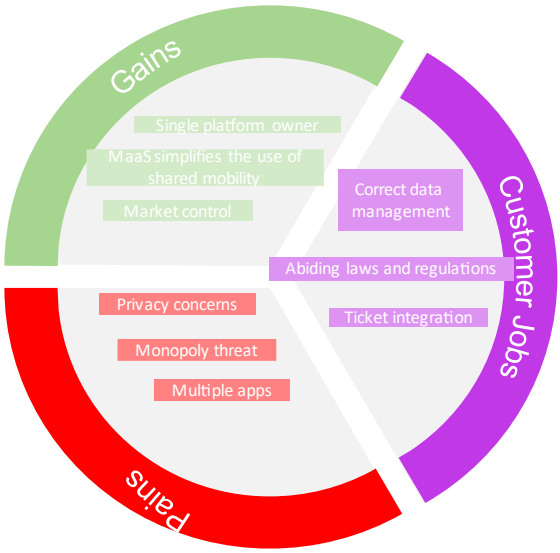


Fig. 2.3.2 – MaaS's value proposition canvas

MaaS believes that the possibility to transform city mobility where everyone has access to all mobility using one application is a great opportunity in creating a more sustainable urban area. However, aligning all MSPs and gaining their trust in a functionable MaaS remains a challenge.

MaaS advocates for data standardization of ticketing, booking, and planning for a shared mobility vehicle as well as the mobility data (i.e., where are scooters, what tramlines are running, etc.) including the need for further ticket integration, not just for trains and busses (OV chipcard) but also for shared mobility.

2.4. City/municipality

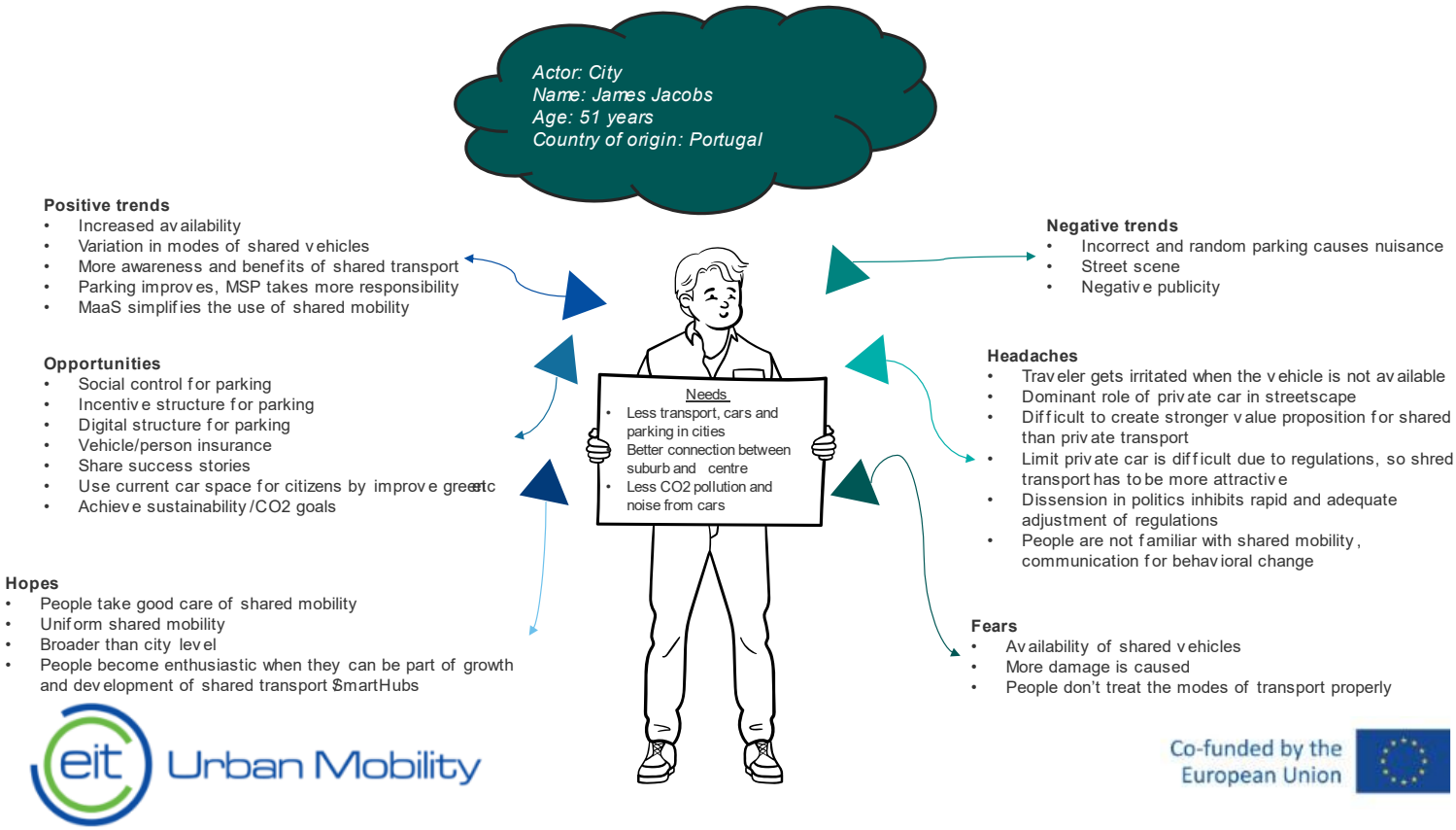
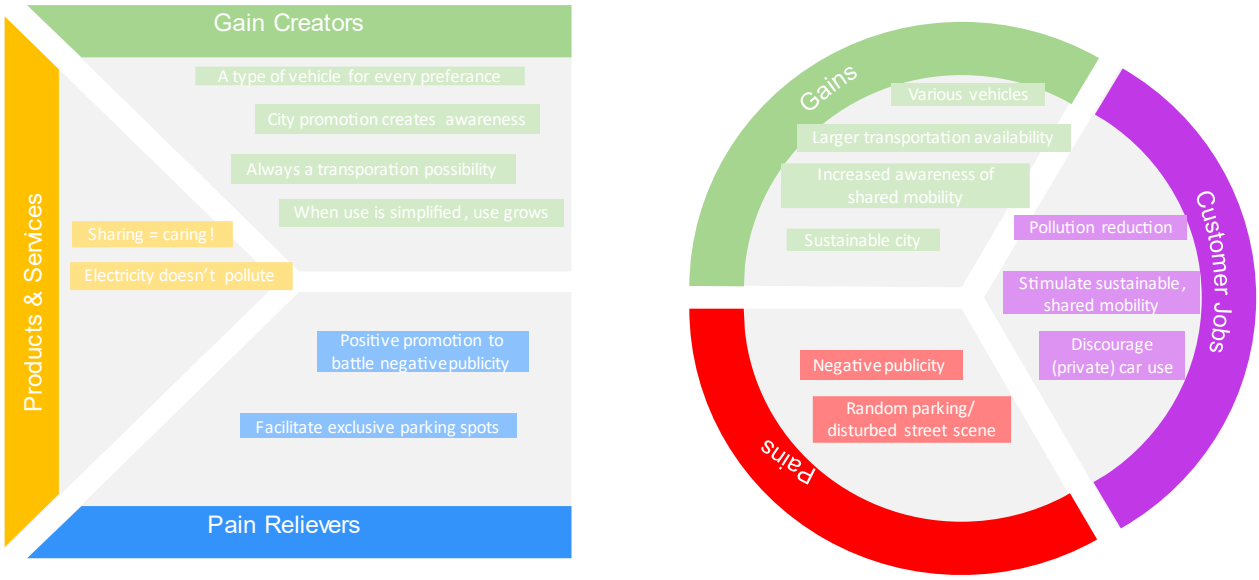


Fig. 2.4.1 – Municipality's persona canvas

While the municipality notices positive trends on shared mobility like the increased availability and various modes offered, increasing awareness and benefits of smart mobility are relevant. As parking improves (via geo-fencing for example) by MSP's taking responsibility, a MaaS (Mobility as a Service) can simplify the use of share mobility as a whole. Nevertheless, random parking, obstructing scenery and thus creating negative publicity are some of the negative trends noticed by civil servants as well.

Value Proposition Canvas – City



2.4.2 – Municipality's value propositions canvas

Opportunities lie in social parking control with incentives and digital structures, sharing success stories and using former parking spaces for greenery, improving liveability in downtown areas thus achieving sustainability and CO_2 reduction goals. Complementary headaches found are that the privately owned car is still dominating the streetscape and reducing this might only be able via laws and regulations which is controversial and time consuming, availability issues can irritate travellers who want to make use of shared mobility, difficulties of creating a strong value proposition for shared mobility in comparison to standard public transportation and the fact that this type of technology and transportation is new and adaption by the masses might be fraught with distrust and unfamiliarity.

The municipality hopes travellers will take care of uniform shared mobility, with a broader scope than just the city centres; promotion will occur automatically as people experience shared mobility as a pleasant way of transportation through which they themselves act as agents of sustainable change. However, the municipality fears that vehicles won't be readily available, and that people won't elicit good behaviour and show a respectable attitude towards the MSP's vehicles; they mustn't be wrecked, trashed or damaged by users for instance.

2.5. Resident

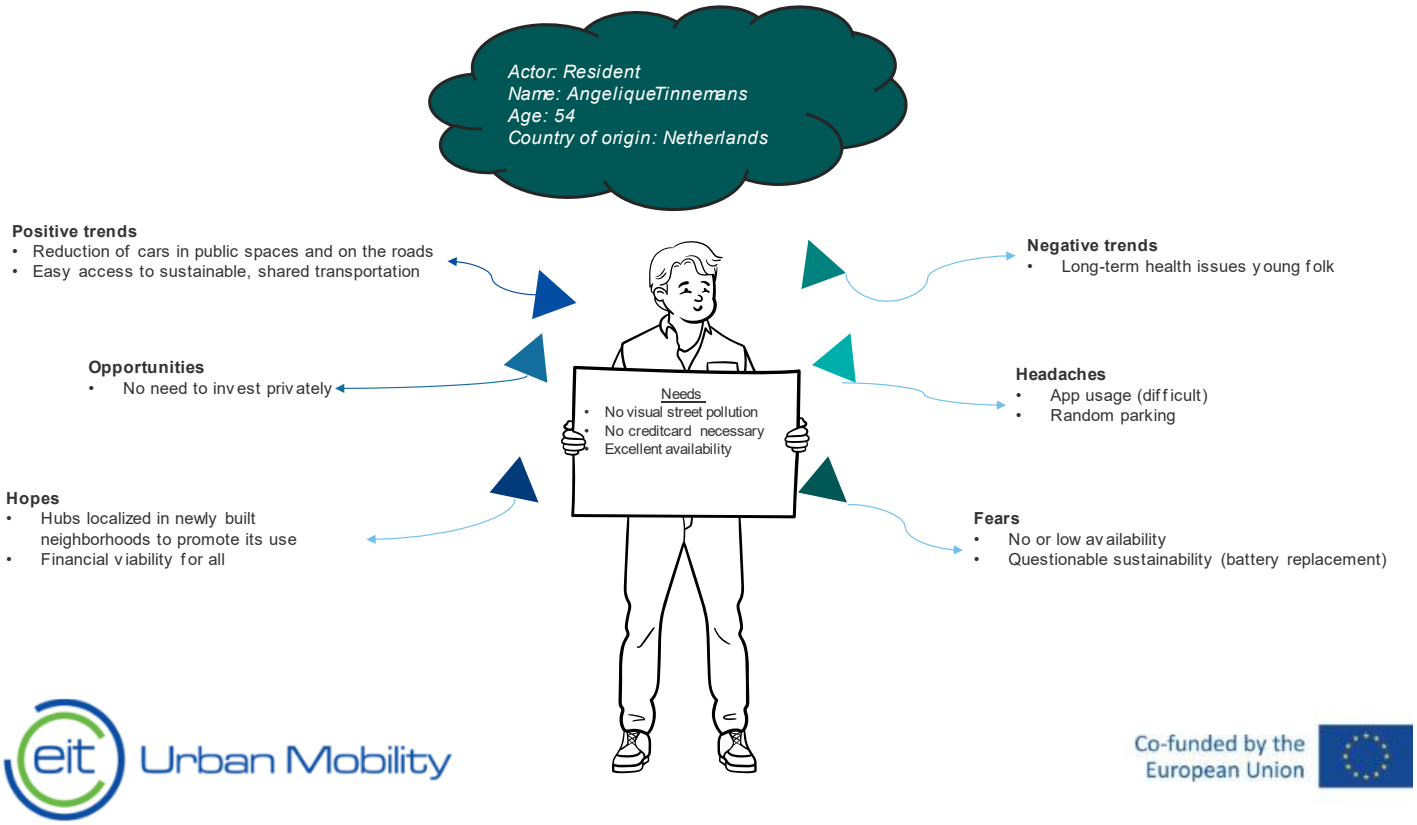


Fig. 2.5.1 – Resident's persona canvas

For the resident a SmartHub can be beneficial when it eliminates cars in public spaces and makes sustainable, shared mobility accessible for all; these are positive trends noted by the resident. Negative trends, however, are also mentioned, like worries concerning long-term health issues when people use shared mobility for short distances instead of more active modes such as walking or cycling.

Hopes are that the hubs will be integrated in newly built neighbourhoods to promote its benefits and the financial viability for all incomes by eliminating the credit card barrier as many low-income residents do not possess such a card. The fear of low availability and the questionable sustainability of the many batteries, containing heavy metals, that must be replaced sometime in the future are also present.

Value Proposition Canvas – Resident

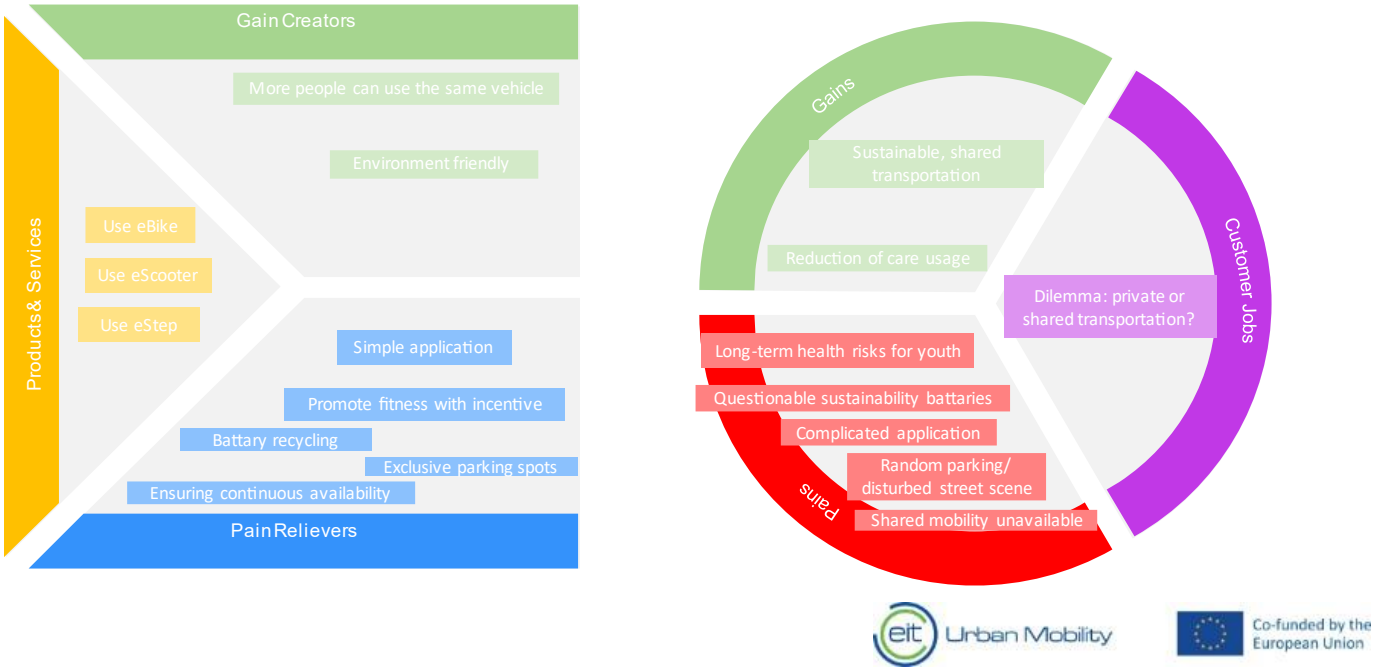


Fig. 2.5.2 – Resident's value proposition canvas

A gain mentioned is not having to private invest in an electric bike or scooter (or even a second car) yet is hesitant as the application use might be hard to understand for especially older users, not to mention the fear of randomly parked vehicles scattered all over town.

2.6. Local businesses

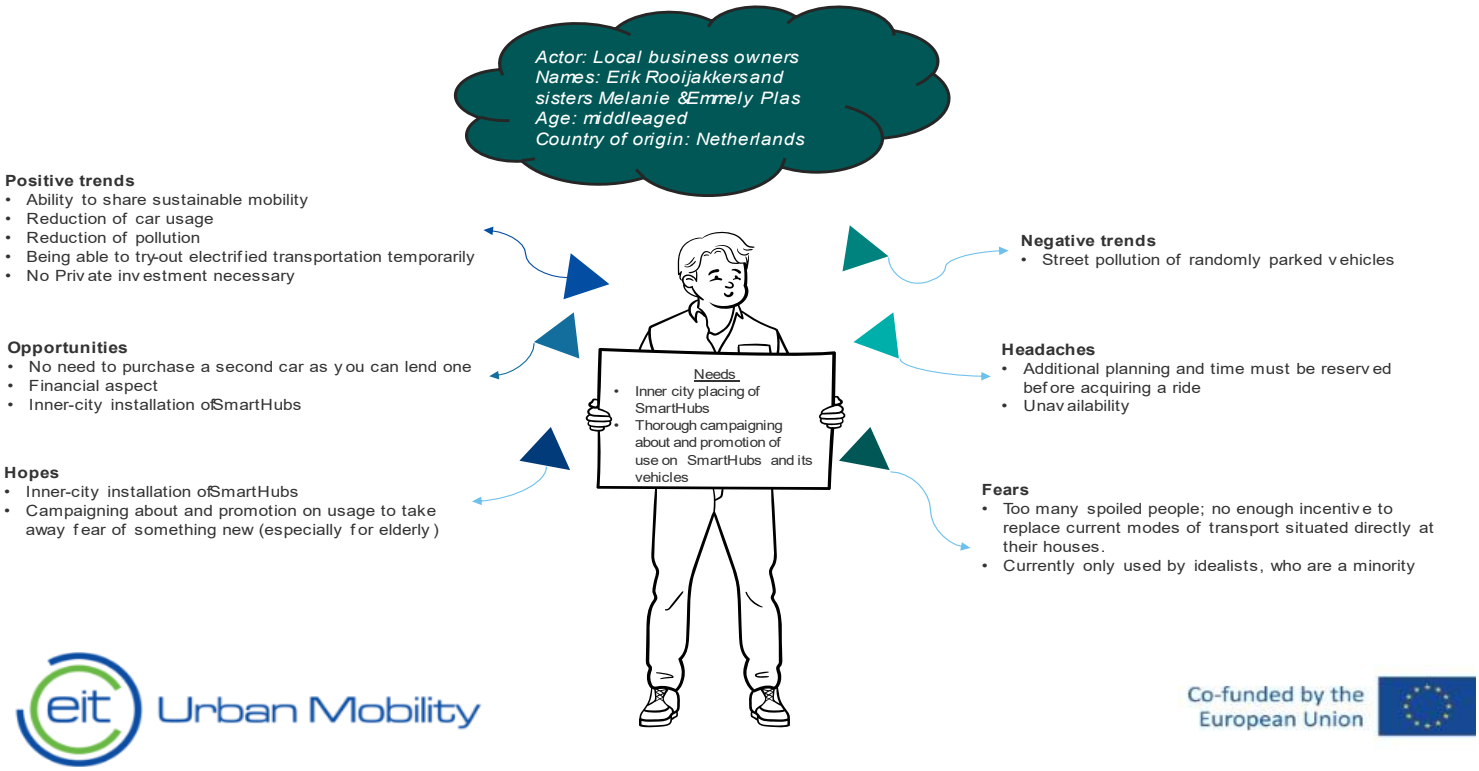


Fig. 2.6.1 – Local business's persona canvas

Finally, local business owners form the last group of actors of the research, and they also believe in the ability of shared, sustainable mobility that reduces car usage and its polluting emissions while being able to try-out electrified vehicles without having to invest privately. The financial aspect is thus of importance and if SmartHubs are installed in downtown areas they believe it can prosper commerce.

Their hopes are that educational materials/instruction will be present, especially for convincing the elderly in use as the applications might be hard to understand and extra time and effort are required before being able to get a vehicle (instead of hopping on your own bike in an instant, not worrying about availability).

Value Proposition Canvas – Local businesses

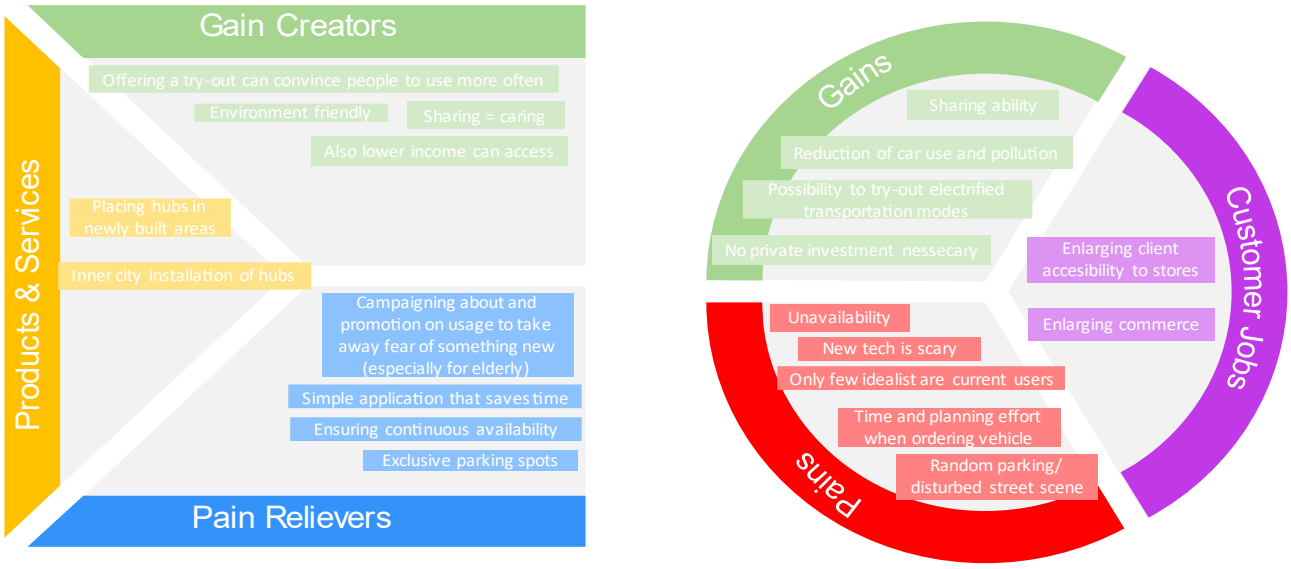


Fig. 2.6.2 – Local business's value proposition canvas

Furthermore, they fear for randomly parked vehicle too and unavailability in general. Lastly, they wonder if there's enough demand for SmartHubs as many people are spoiled and won't have sufficient incentive to replace current modes of transport situated directly at their houses/vicinity. In their eyes, current users are mostly a minority of idealists.

3. Results

This chapter reviews results derived from the SmartHubs pilot project. Through persona and value proposition canvasses, validated value propositions were discovered. The added value of a SmartHub per actor is summarized:

- Traveller
  - The value proposition of the traveller is that he/she is the **prime user** of the SmartHub, **paying** a fair price for shared mobility through an easy useable, data savvy (artificial intelligent) application that ensures privacy and corresponds with local public transportation services. Therefore, the multiple modes of transportation must be readily available at all times while the driving and parking ranges must be flexible yet convenient and centralized at the same time.

- MSP
  - The value proposition of the MSP is to **provide** various modes of transportation **readily available** at a SmartHub and **offering** an **easy usable application** for the traveller. In **cooperation** with the city the MSP can **broaden the target group to ensure economic feasibility** and **leverage e-mobility** as a sustainable and affordable mode of (shared) mobility.

- MaaS
  - The value proposition for the MaaS is to **create a fully integral platform and application** in which the traveller can **easily navigate through** the various MSPs **without leaving** the digital environment of the MaaS. Here **all necessities** for ticketing, booking, and planning for a shared mobility fare are standardized with the right security and privacy protocols in place.

- City/Municipality
  - The value proposition of the municipality is to **create** realistic places where the SmartHubs can be installed, **redesignating** conventional parking spots to greenery making urban areas more liveable and so achieving sustainability and CO_2 reduction goals while **enhancing connectivity** between suburbs and downtown areas.

- Resident
  - The value proposition for the resident is **elimination** of cars in the streets, **promotion** of SmartHubs via **integration** in newly built areas as well as making transportation more sustainable, ensuring shared mobility is continuously available and **accessible** for all incomes so residents are not tempted to purchase their own (extra) vehicle.

- Local Businesses
  - The value proposition of the local business owners is the SmartHubs might **prosper commerce** if **adequate campaigning and promotion** is done for all societal groups.

4. Conclusions and Lessons learnt

To conclude on this specific deliverable, one must think about it in sixfold as the added value per actor to a SmartHub is in fact its own conclusion.

To summarize: the ambition of municipalities to reduce environmental issues concerning pollution, car usage and increase liveability while ensuring sufficient inner-city transportation is a great opportunity for the installation of strategically located SmartHubs. Here the traveller can opt for various modes of transportation (e-bike, e-moped, e-scooter, e-car) through applications using a single MaaS solution that combines several MSP's – guaranteeing fully charged, readily available and fair priced vehicles.

To achieve this however, many prerequisites must be taken into account to ensure large scale usage like easy accessibility (no credit card barrier), affordability, availability, easy application, adequate infrastructural solutions to ensure correct parking, and sufficient SmartHubs located in each other's vicinity.

Even if all requirements are fully taken care of, the general attitude of travellers will be crucial for the survivability of SmartHubs as they are the end users; without customers there won't be any need for shared mobility. This is in itself, worthy of an investigation as cultural differences between citizens of various nations differs severely, especially concerning mobility. The two participating pilot countries for example have quite different understanding, history and attitude towards mobility. In The Netherlands cycling has been around for centuries and is considered a second nature while for most Spanish people it is not.

Further research on users and their perceptions is advisable. Moreover, it remains unclear who eventually will be paying the costs for investments to realizing SmartHubs in general, a debate for both policy makers, the government and involved parties of MaaS and MSP's.

A good practise brought forth from this pilot is the way in which stakeholders, in this case coined as 'actors', were invited to participate in the research. By interviewing them, a deliberate choice has been made to involve all parties who (might) have influence upon the deliverable or final product/service. This creates not only awareness of respondents for smart mobility, but also ensures people's views and opinions are being taken into account; something people always value – it gives them some kind of agency or feeling their voices are at least being heard.

5. References

The input for this deliverable consists of six persona and value propositions canvasses. Information was obtained solely through interviews with actors (field research). The canvasses were obtained through desk research which were selected prior to the authors assignment.

6. Acknowledgement

Thanks to all six actors for offering their time and voice to be heard as part of this research deliverable. Also, to consortium members and EIT in general for making this research possible.

Annex 1 – Interviews actors

Interview SmartHubs – Resident: Angelique Tinnemans (54)

Has two adult children living away from home and works in Best in healthcare. Was approached via Evy for the interview about SmartHubs, has no further knowledge of it herself. She does have experience with the NS ov-fiets (Dutch railways public transport bike), which she liked. She is interested in using the ebike and considers using it now and then. In general, she considers the arrival of SmartHubs, where the underlying idea is to make sustainable mobility possible for everyone, as welcoming: "a good development, I really like the idea of shared transport".

Positive aspects:

Because she works in Best (about 20km), she is forced to go to work by car: "And then especially in the summer period, I do regret having to go by car for such a distance, while my colleague who lives in Eindhoven and recently bought an ebike can comfortably cycle". Still, she considers the ebike (electric bike) to be "dull" and would never buy one herself because for pleasure trips, she prefers her new, regular bike where physical effort is still important as ever. However, she does admit that the (shared) ebike has its advantages: "I work three-and-a-half days a week (four times up and down) so then the convenience of an electric share bike that you don't own permanently is great, especially for this kind of (commuting) ride". Overall, she is in favour of shared transport to minimise the number of cars on the roads, however, to what extent it is realisable remains an issue for her.

Negative aspects:

From her worrisome perspective, she sees the development whereby young people in particular are increasingly going out on electric bikes, thus providing less to no physical containment as a bad thing, as it is more likely to lead to obesity and other health issues. As for sustainability, Angelique makes a strong point: "the colleague who bought the ebike from her employer four years ago now has to replace her battery, how sustainable is that with all those heavy metals? Let alone the fact that that the bike also has to be recharged with electricity all the time while I can last 20 years with my conventional one." A strong drawback which she has heard repeatedly through her son is "the hazardous parking of the e-scooters/bikes/steps in random places like in the middle of the pavement or on the side of the road - there needs to be a suitable solution for that".

Opportunity:
"The financial incentive is ever important of course". By this, Angelique is referring to affordability and (financial) accessibility for all.

Threat:
Ease of use must be paramount: "if you then want to use shared transport, it must firstly be easy to use but also available, otherwise you will still have no transport at that time".

Interview shop owners Helmond-Brandevoort: lunchroom ‘Op je Plaets’

Erik Rooijakkers, owner and initiator

Positive aspects:

Erik sees the idea of shared mobility as a positive point, in addition it is also financially attractive: "That you yourself do not have to make the investment to have electric bicycles".

Negative aspects:

The haphazard parking of scooters, bikes and scooters: "as is already the case in Eindhoven now, you see those things parked randomly everywhere".

Hope/opportunity:

Erik indicates that there is almost no noticeable communication/promotion regarding shared mobility; a missed opportunity in his opinion that could remove a lot of uncertainty (fear of the unknown). Erik considers it a great opportunity to have a SmartHub placed right around the corner: "Here in the shopping square, visibility is high so people are more inclined to use it". In addition, that perhaps his establishment could make use of the bikes/scooters to deliver meals while promoting SmartHubs.

Fears/threats:
Especially senior target groups (who have little to no app experience) should be able to test the experience of electric shared mobility precisely beforehand - this group should be clearly informed about not only the purpose but especially the use of the bikes/scooters/steps etc. "Otherwise, people have fear (of something new) and trepidation about using such devices and therefore leave it aside". Convenience and familiarity, he says, are essential to bring sustainable shared mobility to men and women. "It is too often assumed, with these kinds of modern things, that people will immediately know how it all works; that is not the case".

Interview shop owners Helmond-Brandevoort: Fashion shop ‘Zus’

Emmely & Melanie Plas, owners.

Both ladies have a history in healthcare and also come from a 'healthcare nest'. Melanie has worked in hospitals for over twenty-five years, twenty of which in the Intensive Care Unit (ICU). Emmely was in law as a divorce lawyer, so totally different backgrounds. Despite that, it was time for a turnaround and that resulted in: 'Sister' - a fashionable ladies' clothing shop. Despite the pandemic, the sisters are doing good business on the Helmond-Brandevoort shopping street. Both ladies have no experience with sustainable mobility to date.

Positive aspects:

As positive aspects, Melanie mentions the sharing option of transport, being able to try/experience electric driving and zero emissions. In addition, both ladies indicate that being car-free and the financial incentive are also additional advantages, Emmely: "people might not buy a second car because there is the possibility to share it, when necessary and temporary - especially for teenagers in this neighbourhood who soon own their own car".

Negative aspects:

Street pollution: "The haphazard parking of these things spoils the streetscape. However, it does require a bit more planning: "a (private) car is at the doorstep and always readily available without having to plan things in advance (via the app), book and still have to walk to pick one up in the first place". So there is talk of the effort to be made before the drive to work or sport can begin.

Hope/opportunity:
Emmely envisages a SmartHub being placed pontifically on the square in the middle of the shops: "provided the vehicles can be parked in a decent, orderly manner; under a canopy in a rack/slot so that it also looks visually pleasing - thus you immediately eliminate the 'street pollution' of randomly parked vehicles". The construction of a new housing estate nearby can significantly increase awareness of SmartHubs: "if considerable promotion and sensitisation is created with the residents of that estate, it can also enthuse the surrounding area; really an opportunity that needs to be seized as otherwise it will remain in place".

Fears/threats:
A common threat the ladies (and in many cases others too) consider their 'spoiledness' - by this they refer to their own transport that is always available parked in the driveway that does not need to be shared and for which virtually no effort needs to be made. In addition, they see buying their own ebike as more realistic than sharing via SmartHubs: "we are seriously considering buying an ebike instead of a second new, fuel-efficient/electric car for the smaller distances".

At the moment, shared mobility is mostly used by idealists; promotion and communication regarding (the benefits of) shared mobility is still in its infancy: "only those people who decided to live in the sustainable new housing estate did so because of their ideology; they are actively involved in it, however, that is far from the majority of the population - that needs to be promoted more".