WP Pilots: Mapping best practices and failed initiatives

DELIVERABLE 10.1 and 10.3

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Summary sheet

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Project partners

Organisation	Abbreviation	Country
Gemeente Amsterdam	AMS	The Netherlands
Promotion of Operation Links with Integrated Services aisbl (POLIS)	POLIS	Belgium
Taxistop asbl	Taxi	Belgium
Autodelen.net	Auton	Belgium
Bayern Innovativ GMbH	BI	Germany
Cargoroo	CA	The Netherlands
URBEE (E-bike network Amsterdam BV)	URBEE	The Netherlands
Gemeente Nijmegen	NIJ	The Netherlands
Transport for the Greater Manchester	TfGM	Great Britain
Stad Leuven	LEU	Belgium
TU Delft	TUD	The Netherlands
University of Newcastle upon Tyne	UN	Great Britain
Ville de Dreux	DR	France
Stadt Kempten (Allgäu)	Kemp	Germany
Universiteit Antwerpen	UAntwerp	Belgium
Mpact vzw	Taxi2	Belgium
Mobipunt vzw	Mobipunt	Belgium
Electricity Supply Board	ESB	Ireland
The Highlands and Islands Transport Partnership	HITRANS	Great Britain
Service Public de Wallonie Mobilité et Infrastructures, Autorité Organisatrice du Transport	SPW MI, AOT	Belgium

Document history

Version	Date	Organisation	Main area of changes	Comments
0.1	December 2021	Leuven	First draft	Focus on best practices (D 10.1) planning phase
0.2	May 2022	Leuven	Second draft	Best practices added from implementation phase
0.3	June 2022	Leuven	Final draft regarding best practices	Literature review and insights regarding failed initiatives still lack

Table of contents

1. Best practices

Within the consortium, we have drawn up 78 guidelines from the group of pilot cities, in consultation with the partner-providers of shared e-(cargo)bikes. These guidelines are divided into thematic modules. They should help replication cities to plan and install eHUBS in their own environment. As the group of cities is diverse, ranging from small to medium-sized and large cities, the lessons learned are diverse. The planning and rollout of eHUBS is customised. Because of the mix of experiences and insights, it becomes easier as a replicating city to find relevant insights.

Between Q2 of 2021 and Q2 of 2022, we sent two comprehensive questionnaires, the first focusing on planning and the second on implementation, to cities and providers Cargoroo and Urbee.

For each of these questionnaires, we translated the answers into concrete guidelines within the 13 selected modules. We then supplemented the guidelines with quotes from the city/provider to make them sufficiently realistic. In this way, a replicating city can also check how the guidelines play in small, medium and large cities.

During the project management meetings, the approach and timing was outlined. There was also close coordination with Bayern Innovativ in order to maximise the flow of information from these lessons learned to the blue-print platform.

In a final step, we sent the draft reports with guidelines and related quotes to the cities for validation. Based on that, some final editing was done.

1.1.)Vision, objectives and target groups

1. A strong and clear vision regarding mobility within the municipality is key to the success of getting started with eHUBS

Amsterdam:
"The City of Amsterdam started the project based on the assumption that the bottom-up creation of (shared) mobility hubs would lead to a better adaptation of smart and clean mobility. We built upon three main policies adopted by their local government:
1) Car-free city (Autoluw): getting rid of 10.000 parking lots within 3 years. The project was presented as a carrot (in contrast to a stick) in relation to which citizens could actively participate in the transformation of parking lots.

2) Amsterdam carbon free by 2030: the city center needs to be carbon free by the end of 2030. Since not everyone can afford a new electric car, shared electric vehicles are considered an alternative.

3) Participation: since the installation of our new city government, participation and citizen engagement is part of every project. Therefore, Amsterdam decided to implement a bottom-up approach, giving far-reaching power to the users of the mobility hub."

Manchester:
"There has been a clear vision from the start of the project in Greater Manchester in relation to the objectives we were looking to achieve. These are mainly in relation to contributing significantly to Greater Manchester realising its ambitions for carbon reductions, including:
- Making electric vehicles more accessible to the general public, in turn demystifying their use and promoting the uptake of electric vehicles.

- Expediting the reduction of car ownership through the uptake of Car Club schemes.
- Getting more people cycling by capitalising on the record levels of cycle infrastructure investment in GM.
- Creating a knowledge bank of how to embed the use of electric vehicles and e-cargo bikes into the city – creating a blueprint for further roll out
- Encouraging more active and sustainable travel practices."

Nijmegen:
"Overall our goals in terms of mobility policy are sustainable, active and space efficient transport. The eHUBS project fits well with all of these goals. The goals of the eHUBS project can however be viewed as a two-step process: first, we want to stimulate the use of shared mobility, getting the eHUBS to be well known and well used, and secondly we will aim at trying to target specific target groups to use the eHUBS. More specifically, this means getting car drivers out of their cars and onto shared (cargo-)bikes or shared cars. Don't try to build your vision around eHUBS, but see whether eHUBS fit within your vision and only commit to eHUBS if the answer is yes."

Kempten:
"The city should know what the citizens want, but also be aware of environmental and climate change issues and try to combine these to create public space that is well received but also helps push environmental needs."

Leuven:
"The vision of Leuven is high-level (Ambition 2030: car -20%, OV x2, bicycle x2): we want to reduce car trips and therefore mainly look at combined and shared mobility organised through eHUBS/mobipoints. With the experience of the planning and roll-out of the eHUBS, it seems appropriate to us to work out this broad vision in more detail, to formulate a number of targets concretely and to work out the necessary action points for this and to link them to measurable indicators."

Dreux:
"The initial objective of eHUBS as a real alternative to the use of private car looks unadapted to our eHUBS network, as they are close to each other.
We initially planned to implement 3 more eHUBS to complement our 3 first ehubs located in the city center. These 3 additional hubs were meant to connect surrounding neighborhoods to facilitate city center access. Due to financial constraints, we had to abandon this plan."

Cargoroo:
"What we sometimes missed was more thoughtful consideration of when eHUBS are the correct means to the end instead of seeing them as an end in themselves. Why do some modalities of shared

mobility need to be placed together? In which cases does it have added value for citizens, and in which cases not?"

URBEE:
"We strongly believe that a vision, combined with a strategy and concepts that combine existing public transport with shared mobility and eHUBS are required to build a successful sharing and hub concept. And similar to other public transport services these visions should be supported by budgets".

2. **Get key principles agreed for the eHUBs and stick to these throughout the planning process. (Manchester)**

3. **Hire a mobility project officer for the consolidation of a complete mobility strategy in case of being a smaller city or not so active in mobility issues.**

Dreux:
"The city of Dreux was not so active on mobility policies before entering into the eHUBS program. Hiring a mobility project officer helped a lot in the consolidation of a complete mobility strategy in 3 axes: (1) Infrastructure; (2) Services and (3) Change of behavior."

4. **Participate in a pilot so that you get the opportunity to set out a clearer vision based on practice and exchange.**

Within a pilot project some of the challenges regarding bureaucratic processes get more easy to deal with. While the pilot is being carried out, it is appropriate to ensure the continuity of eHUBS.

Nijmegen:
"In the deployment period our attention is shifting from getting the eHUBS out on the street and improving the usage towards trying to fit in the eHUBS with our broader shared mobility policies and towards trying to make sure that the eHUBS remain after the end of the INTERREG project."

5. **Enable flexibility within the vision, so that you can still adjust according to the provider's business model, for example.**

Manchester:
"We initially envisaged the mobility options would be in hubs with the vehicles more densely co-located. However, from working closely with Cargoroo, we realised their business model works best when the e-cargo bikes are distributed in a network across a location so we changed our approach."

"We have learnt that a neighborhood approach i.e. situating the e-cargo bikes near to residential properties has proven to be more successful than a more destination based approach. In addition, some of the more city central locations have been subject to some antisocial behavior, so we believe we need to adjust our approach to situating these bikes in more residential locations."

Amsterdam:
"The idea of implementing hubs started with the traveltest ('reisproef') in 2018. During that test, a group of citizens had to exchange their car for a monthly shared mobility budget. The evaluation of that test showed that part of the group was quite interested in shared mobility and even considered giving up their car, provided that there was sufficient supply of shared mobility, which wasn't the case then. Secondly, Urbee and Cargoroo pitched the idea for the Interreg program, providing sufficient ground to start the project.

During the first months, the idea was to link the transition to shared mobility with the ambition to give back the vacated public space to the neighborhood. This idea turned out to be too ambitious as the internal organization was hesitant to facilitate this. This case clearly showed the discussion between people that believed they owned the right to use the space to park their car versus people that believed they owned the right to the same space for other purposes such as green.

As a result, we altered our vision and limited our goal to offering shared mobility on street, without giving back the public space. In 2022, however, we continued with our initial vision and succeeded in convincing the organization to offer us ground to experiment with a first pilot (ED de Pijp)."

6. Consider well the preconditions in order of effective implementation, such as internet and electricity.

Dreux:
"As the city wanted to get the real-time data from the offered modes on a regular basis, we needed to supply power and internet at the eHUBS, so that the provider could install the necessary device at these locations."

7. Choose an integrated approach (MaaS, availability of clustered shared mobility, participation, …), also on the level of the city administration.

Amsterdam:
"Since former projects in our city suggested that there was a direct link to the development (and uptake) of Mobility-as-a-Service and the availability of clustered shared mobility, we decided to study the role of mobility hubs in our future mobility scheme. In order to create a mobility hub an integrated approach was necessary."

8. Define well your role as local government and the role of the other stakeholders and make sure you are clear about it to the citizens.

Amsterdam:
"Our role was to empower citizens to organize their own eHUB. So far, we learned a few lessons about our role.

1) Participation and self-organization cost time. This led to an uneven distribution of hubs in rich and left-oriented neighborhoods. We adjusted our approach by introducing a participation light eHUB (see also: approach)

2. When working with citizens you need to be clear about your role as a government. In the first eHUBS the community was responsible for communication. On one side, this was highly effective

since their communication was positive community driven. On the other hand, the non-believers had no place to go with their complaints and it was not clear that the project was approved by the city. This led to a lot of formal complaints that could have been handled earlier in the process if they had someone to go to. Thus, make sure you are clear about your role and the role of others."

Leuven, Manchester and Nijmegen:

"We would recommend to a replication city to take on the role of facilitator as it helped keep the project on track, as well as being the known point of contact throughout the process. We do not see the municipality as the party responsible for offering mobility modes. It is up to the mobility service providers to create a sound business case for their vehicles. However, we can facilitate the eHUBS locations and we can play a role in marketing and behavioral change campaigns to facilitate the startup phase."

Dreux:
"We wanted to control the future services offered to our inhabitants, preventing mobility operators from displaying the service as a private one: we designed a brand-new name "Mobipoint" for our eHUBS. We didn't let the operators communicate as they wanted to do, but rather chose to enhance the eHUBS as a public-led service. The decision will be up to the replication city, according to the willingness of the local councilors."

Kempten:
"It was clear from the beginning that the city cannot take up the role of a shared mobility provider and that we would have to find a provider who will take care of everything."

Leuven:
"We also see an important role for the city in encouraging participation to broaden support but have found that it is good to keep control and make the preconditions as clear as possible to citizens."

Cargoroo:
"Any approach necessitates an active involvement from the city government; maybe even more in a bottom-up than in a top-down approach, in order to prevent delays in the establishment of eHUBS locations."

URBEE:
"We believe that cities should take the lead in establishing a complementary network with e-modalities and e-hubs. To maintain consistency, quality and continuity there a clear leading role for the municipalities".

9. Reflect about the specific target groups you are aiming at on the short, medium, and long term

You can also base the choice of your target group on the modes of transport. If certain modes of transport are new, it is good to find out from the respective provider which target groups it aims at.

Kempten:
"Finding the right target group was not easy. We had several ideas about the target groups and the setup of the mobility system suitable for that group. We decided to choose residents and tourists in the end, because in our opinion these groups have the highest potential to use the hubs in Kempten."

"In the meantime, there are no new insights yet on how to approach target groups, we are still happy to have chosen the citizens and will, if the hubs work, extend the services to tourists."

Leuven:
"We mainly had the modal shift in mind as aim, i.e. to replace car trips of Leuven residents, commuters and visitors. We would advise other cities to work in phases, i.e. first focus on the inhabitants of the municipality and on neighbourhood hubs, and in a second phase develop the larger transport nodes."

"After some months of deployment, we indeed think it is best to first focus on the people of Leuven and its students, and try to meet their transport needs. In a later stage, visitors and commuters can be considered; this requires more and longer networking/collaboration with stakeholders such as public transport providers and large employers."

Dreux:
We still need to conduct a proper survey toward our users as the reporting provided by our mobility provider does not display profile data.

Cargoroo:
"Our primary target group are residents, and our secondary target group are SMEs. Setting a clear target group is helpful in the selection of relevant data that in turn can be used to analyse which neighbourhoods are particularly interesting for the deployment of hubs."

URBEE:
"Our target groups are the residents that live and work In the city, the commuters that work in/visit the city, the tourists that visit the city".

"We don't feel that there is enough traction within the combined target groups to justify the investment."

Manchester:
"The target groups for the project were identified through close collaboration with the mobility providers. For example, Cargoroo have indicated that their target market is for young families making leisure trips, and people who want to use a cargobike to make a short journey to the local shops. As e-cargo bikes are a relatively new form of mobility in the UK, we have leaned heavily on learning from the mobility providers themselves to understand who the target market should be."

"TfGM have utilized targeting end users via geo-located social media ads, to make sure the people seeing the ads are in the proximity of the e-cargo bikes. We have also analysed the types of people interacting with the ads and have pushed further ads to these groups – these tend to be young adults and people with young families."

Nijmegen:
In our behavioral change campaign we are exploring new groups to try and persuade to use the eHUBS, most specifically trying to focus on potential car owners. This approach is still being developed.

Amsterdam:
"Our neighborhood approach shows us that each neighborhood has different demographic characteristics, thus suggesting that we should target our communication strategies based on those demographic characteristics.

To understand and measure the effectiveness of different messages about the BuurtHubs in relation to different target groups, an a/b test was done in six different neighborhoods, resulting in interesting insights that can be used for targeting of potential prospects but also to decide where to place the BuurtHubs based on demographics per area. It was found that the self-efficacy frame (which uses a tone with an ability to succeed; 'In just 5 steps on the road, thanks to the eHUB') as well as the social-frame (what other people do or think is central to this frame; 'discover the eHUB just like Amy') worked best in the tested neigborhoods"

1.2. Stakeholders (internal and external)

10. Be sure that the project lead has a clear mandate on a political and administrative level.

As eHUBS do cover several domains, it might save you time and energy afterwards if you can get the mandate clear from the start.

Amsterdam:
"One of the biggest setbacks is the fact that different departments within the organization have different mandates, different goals and work siloed. Also, political mandates differ. Our deputy mayor, for example, approved the project. However, the program *Autoluw*, (later *Ruimte Regie*) decides where we can and cannot start the participation process on eHUBS, which thereafter would come in conflict with the vision drafted by the 'city districts' (who also have political influence). Although mandate might appear clear on paper, in reality it may conflict and result in a political argument between two bodies of government. It takes time and effort to make sure mandate is govern well."

Amsterdam:
"In relation to the public space and all the amendments that need to be made we also encountered some organizational problems. Our department (the innovation team) cannot give assignments to alter things in the public space. Hence, we cannot make eHUBS without the departments responsible for making changes in public space. Therefore, we needed to find an external party to help us with realize this in the public space, but also make sure that we have the approval of the internal departments."

Manchester:
"Sometimes there were competing priorities for some of the stakeholders involved. For example, some of the councillors believed that the locations chosen were not suitable and that other locations would fit better with their wider agenda. This caused some delay in getting the location signed off. We overcame this by meeting with councillors to take their ideas on board and also explain the logic behind each location chosen, sometimes making a compromise to ensure all parties were happy."

Dreux:
"The eHUBS projects gathered various services (Finance, Roads, Energy, Communication…) that were not directly under the responsibility of the project officer. It was then sometimes difficult to ask some work to do for the project to colleagues out of the project officer service. Indeed, involvement in the project was slowed by lack of time, lack of interest sometimes."

11. Invest in an interdisciplinary team of professionals to plan the eHUBS.

It helps to have a coordinator and main point of contact that knows the procedures within the civil engineering department and about the political steps.

Kempten:
"The biggest setback was that we had not done something like that before and that at the time the project started we did not have a responsible person within the department of civil engineering. Because the people within the climate protection department did not know exactly how the process

of implementing such a new system works the decision-making process was delayed. Luckily, at some point we got a traffic manager who took on the project and that sped up the process. Another delay was, as we are new to this and a lot of people are involved in a project like this, there were a lot of different opinions which had to be discussed."

Dreux:
"The eHUBS project was a completely new process for the City of Dreux, which had no previous experience on such implementation. All the different steps were to invent with relevant stakeholders, but we can say that overall we succeeded in addressing the right partners to develop the project.
It was rather a stop-and-go process: political approval was necessary for each step (localization, size, type of service, price list etc), which was sometimes difficult to obtain due to a moving context: municipal elections in 2020, many changes in the administration (new project officer early 2021).
A stable and dedicated project team (project officer + city counsellor) was lacking. Another element holding us back was the "innovative" nature of the project, making it complicated to take decisions on subjects that were never faced before by the city. Ex : grid connection, tender procedures, internal competences of the City."

12. Engage the relevant internal and external stakeholders from the start.

A common action plan with an estimate of impact can help to get them on board. It does work to establish an eHUBS working group incorporating diverse divisions of the city administration.

It is necessary to keep all internal and external partners continuously up-to-date and involved in the project, as some city departments may have different priorities or ideas, also to avoid misunderstandings between partners.

Manchester:

"Get key stakeholders involved from the start of the process."

"It helps knowing the right people to contact and having regular communication, being open about aims and timelines and understanding the competing priorities of the teams working with."

"It helps also to have kind of an action plan; we had a list of deliverables that we worked towards and shared widely with the other project partners.

Amsterdam:
"During the implementation process, we did succeed in getting the right people addressed and involved, however having them onboard before the implementation would have made it all a lot easier. We didn't move smoothly through the process mainly due to the newish aspects of eHUBS and in our case the amount of influence we gave to the citizens (bottom-up creation of eHUBS). In the end the politicians were most easy to get to our side. The civil servants, who work according to protocols found it more difficult to okay the innovative changes the eHUBS required. For that they needed to go pass their protocols, which results in the question: is this a legitimate request they should adhere to?

We did work with an project action plan, which was accorded by the city council; giving it a level of legitimacy and political power. Whenever colleagues felt their protocols prohibit them from making the necessary arrangement that were needed, new ways could be found after this 'proof' of legitimacy for the project.

Kempten:
"As we are a smaller city it is not too difficult to get to the right people within the city, it was however a problem to get the right providers to the table."

Dreux:
An action plan was realized before the beginning of the project, updated after first implementation. This document was one of the deliverables for the project. Other replication cities should also write down such action plan to guide the services during the implementation process.

Leuven:
"Our internal eHUBS working group with participation of the departments of mobility, roads and works, signage, area functioning, greenery, accessibility and police did work well. We drew up a general memo to inform other departments about our plans with regard to eHUBS. We informed the politicians systematically based on the standard procedures. With respect to external stakeholders, we find that we should have involved the public transport providers earlier in the process. Additionally it is interesting to get more inputs from peer cities."

"We rolled out the 40 eHUBS in 4 phases. Each time, about 10 eHUBS were scheduled to be discussed at the eHUBS working group. We had worked out the design plans for them. For some places, different scenarios were worked out. Based on these preparations, the discussions went smoothly and the choices were made without much discussion.

Within this working group, we did not involve external actors such as public transport providers (NMBS (trains), De Lijn (buses)) and other stakeholders from important attraction poles (KUL, research park Haasrode, ...). Consultation with KUL, research park Haasrode or companies such as IMEC, NMBS and De Lijn takes place on a bilateral basis. Large players such as KUL, Researchpark Haasrode, UZ look for win-win between their own mobility policy and action plan and that of the city. It remains a challenge to include national/regional actors such as public transport providers in a local story because they are also bound by higher-level agreements. Public transport providers search for integration between their own policies, those of Flanders or Belgium and those of Leuven The results of the roll-out at Leuven station are therefore less than expected.

In Flanders, the renewed policy on basic accessibility was recently started and there is still a lot of uncertainty among the actors involved as to where we are going, how and when, and who is responsible for what. For example, the Flemish Administration for Roads and Traffic is responsible for the development of the mobility points along regional roads. When determining the locations in Leuven, 10 of the 50 planned mobipoints are located along regional roads. Leuven has already started a number of eHUBS, because we did not want to wait any longer. For the larger ones, e.g. at IMEC, Science Park and KUL, we would like AWV to take care of those dossiers.

We had listed which additional stakeholders we needed to involve for certain eHUBS, but were not concrete enough in terms of responsibilities and timing. Such a more concrete action plan, quite dynamic, can help to work towards concrete results on the ground within an agreed timeframe."

13. Be aware that the process of stakeholder management is time consuming.

Since the planning and deployment of eHUBS is a new and integrated 'project' for most cities, it is wise to foresee time for meetings and consultations.

Nijmegen:
"It helps that it was deemed a pilot project. It's easier to get things done if you can explain that the goal is to try and find out what works. This helps people act in a more flexible manner."

Urbee:
"These projects take a lot of time and as a business we have to run a normal business. It is challenging to combine both."

1.3. Approach

14. **Do not underestimate the time taken to set up a mobility hub and the steps involved**
15. **Involve the citizens in the planning of the eHUBS if the roll-out of the eHUBS is not so urgent, because this implies a better uptake.**

Leuven:

"We are convinced that the efforts we have made in our participation projects are paying off in terms of using the eHUBS; however, we should have been clearer to the citizens from the beginning about what and when they could expect to be able to use the eHUBS so that they would not have to be disappointed too often during the process."

16. **Rely on a data-led approach to initial short-list of areas.**

It has the potential for better uptake of the vehicles. Engage with citizens once you have a shortlist of potential locations, that have been agreed by the local authorities and mobility providers.

Manchester:

"If we had gone for a fully bottom-up approach, then there would have been lots of potential locations put forward and it would have been very difficult to then decide where the eHUBs should be located based on this. Having a datailed approach from the University of Delft was a great starting point for us as it allowed us to have a clear vision in terms of where the hubs should be located. As locations had to be signed off by the local authorities, it was then important that they influenced the shortlisting of locations. In addition, MCC (Manchester City Council?) have regular feedback from the general public, so have a good knowledge of which locations may be best in terms of promoting uptake."

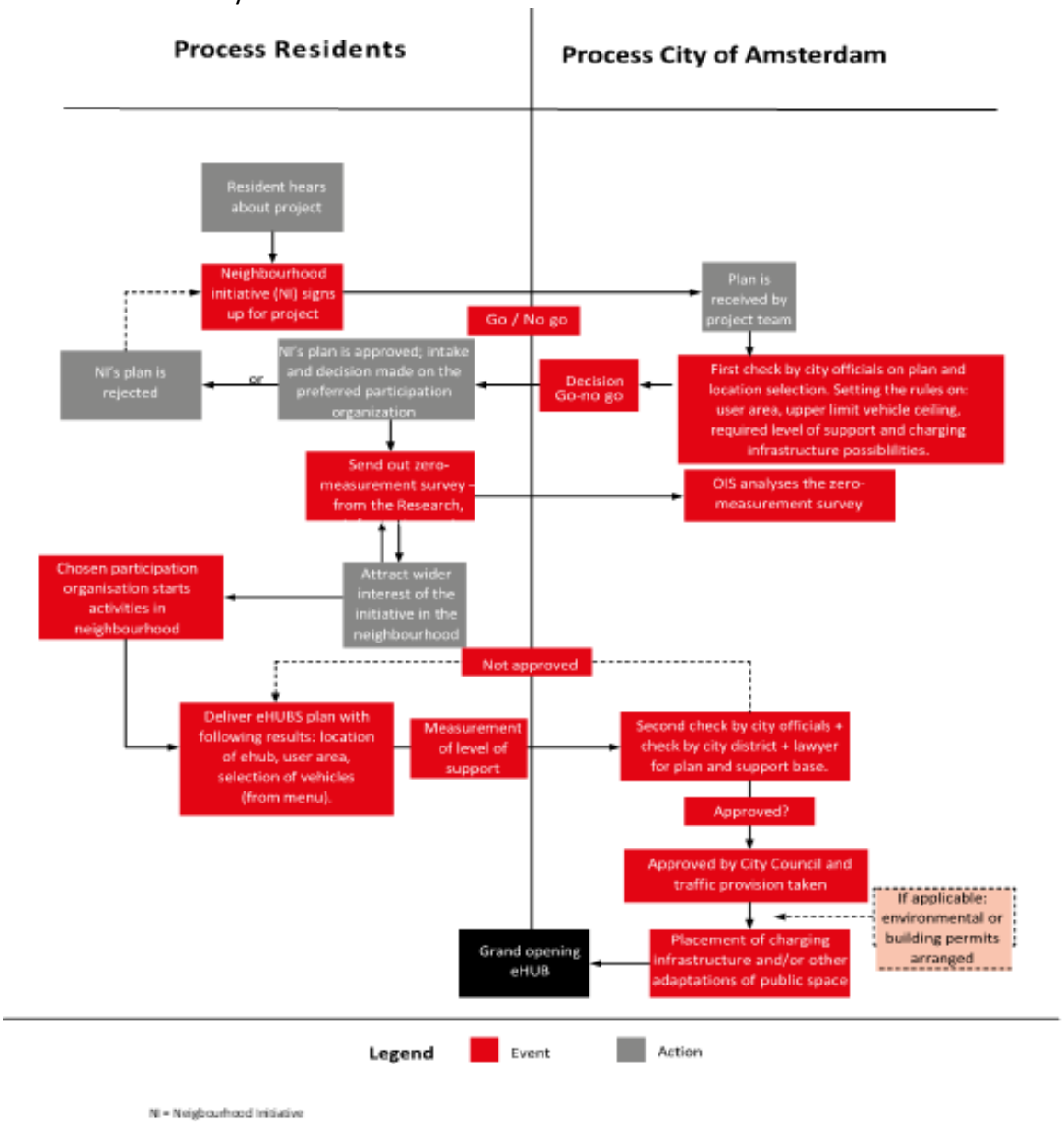
Nijmegen:
"Don't make things set in stone. Take a pragmatic and flexible approach. People in the community often know a lot about their environment, and their input can help in choosing the right locations and the right set up. "

17. **Keep the process simple, flexible, and user-friendly for the bottom-up approach.**

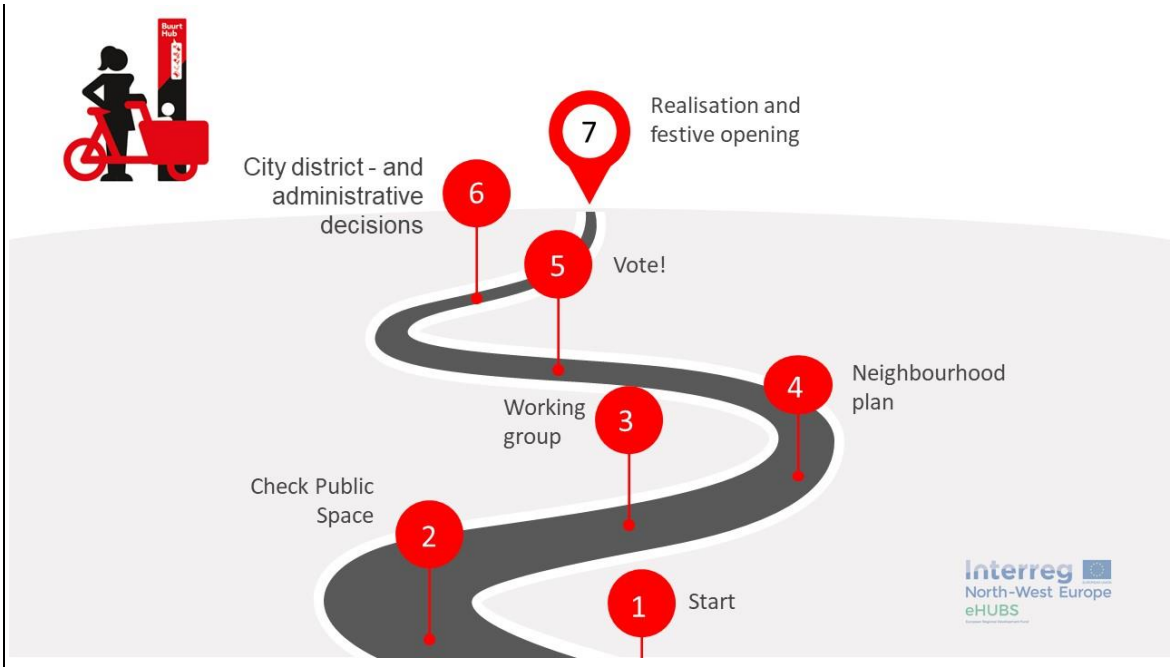
It does work to work out a general process that then serves as a basis for refining the process tailored to the neighborhood. Limit this process to what is relevant to citizens, with the minimum number of checks and balances.

Amsterdam:
The diagram below shows the process in a broad city context, with an eye also for coordination

within the various city services.



As far as the bottom-up process, in coordination with the citizens, is concerned, the following diagram can be inspiring.



1. Start: neighbourhood request or request from city district to start a BuurtHub initiative
2. Check public space: check whether parking pressure allows us to claim public space for BuurtHub
3. We form a working group with colleagues from city district to attain direct links with executive parties (Stadswerken)
4. We write a tailored neighbourhood plan (with or without citizens) in which we also determine our communication strategy
5. Vote: we distribute flyers and use other communication lines to address the neighbourhood about our plans and ask them to vote for their preferred modes of transportation and suppliers
6. City district – and administrative decisions: last formal checks before we start the implementation fase
7. Realisation and festive opening

18. Differentiate within the bottom-up approach in order to match the motivation and engagement of citizens as closely as possible.

Amsterdam:

"Throughout the bottom-up co-creation of eHUBS we've seen different flavors of this bottom-up process. The official milestones (selection of vehicles, approval by the city council) remained the same. We distinguished three types of bottom-up approaches:

- Light eHUB: the efforts of the neighborhood in the co-creation part remained at a minimum level and comprised of attending neighborhood evenings, but not taking part in taking the lead into widening the interest of creating the eHUB in the neighborhood. In the light version the neighborhood did take part in selecting the vehicles (from the menu) by taking a vote. The project team took the largest part in communicating and organizing the hub.

- Normal eHUB: the co-creation of the eHUB followed the bottom-up creation of eHUBS as was originally intended. Here, the neighborhood initiative is in the lead to design, plan and organize the hub themselves, and is helped by the project team to do so.

- The cooperative eHUB: not only does the neighborhood initiative design, plan and organize the hub itself (with help of the project team), it wants to organize mobility itself as well (by owning/leasing the vehicles in the eHUB)."

19. Consider the advantages and disadvantages of each of the sub-approaches.

Sub-approach	**+**	**-**	**Conditions**
Top-down	Fast	No guarantee in usage	
	Guarantees coverage/network		
Bottom-up Light (= hybrid)	Low cost for city	eHUB is not optimally fit to needs of people	To define well what still can be expected from citizens (and what is already decided)
	Low efforts from neighbourhood		
	Process is lean		
	Intention for better uptake of the eHUBS		
bottom-up normal and cooperative	Promotes cooperation between city services	Time consuming	Need for a strong neighbourhood initiative with leaders
	"Ownership" by citizens enables uptake	Difficult to streamline with project deadlines	Clear conditions or rules of game are necessary
		Need for patience and mediation	

1.4. Number, type and size of eHUBS

20. Organize the planning process in 2 steps: (1) city-wide and (2) per specific sub municipality and neighborhood.

At a higher level, the methodology of heat maps, in which variables such as population density, presence of public transport, road density, POI, etc. are considered, can help to determine interesting locations. Once you have a longlist ready of eHUBS, have a close look at the budget to make a shortlist of eHUBS to be deployed on the shorter term. Involve mobility providers already at this stage since they have data that can help determine interesting locations for eHUBS.

Dreux: "The expected number of eHUBS was forecast according to the size of the City of Dreux and its territorial configuration. Budget criteria were also part of the planning. The heatmaps realized by the University of Delft helped a lot in identifying the relevant locations of the eHUBS and their number. The process went smoothly thanks to the mobility providers' feedback which had the experience of shared mobility in other similar cities."

Kempten and Nijmegen*:* "In the end, the money did have a big role in deciding how many hubs we can build and how many vehicles we can put on the street. Another point was the novelty of shared mobility in our city and we don´t know if the public will use the offered service."

Manchester*:* "We decided on a plan for the number of eHUBs by creating a list of principles that we wanted to adhere to when locating them. These principles were developed in conjunction with the mobility providers and the local authorities. This plan then helped us dictate the number of expected eHUBs."

Cargoroo: "Some cities decided to select the locations solely based on internal policy objectives / an internal methodology. Others asked for input from the mobility providers. In cities where this was the case, we feel like we could contribute well to this request as we already had an extensive location selection methodology in place."

URBEE: "This was a challenging process. Overall, we feel we underestimated the importance of the choice of location, size and available options on the locations e.g. power, installation of hub solutions, etc."

21. Organize an open survey if you are prepared to give citizens a say in the eHUBS

If the proposed location corresponds to a strategically determined eHUB location, then the other criteria will determine the size of the eHUB. If the location does not match, then it might be a small eHUB.

Amsterdam:

“We decided to only focus on neighborhood eHUBS. We are focused on participation. The idea originally was that with the participation around the eHUBS neighborhoods directly could see the impact of sharing mobility by creating more public space and greenery closer to home because of a decrease in car ownership because of the eHUBS. We planned the number of eHUBS based on the amount of city districts we have (7) in order to create a city-wide network. Since every city district has its own inhabitants, its own culture, its own organization structure and its own rules. Also, we wanted to avoid a clustering of eHUBS in just a few of the 7 city districts but have them evenly dispensed across Amsterdam.

Decide what you want to give people in return. People want to know why they are putting in participation efforts to decrease car ownership (and usage) and reap the fruits of their labor. It can be a big incentive for people to start thinking and doing differently if they can expect change in their direct surrounding. People expect something in return when they cooperate to organize their mobility differently and just other people are going to park in front of their doors you are going to lose interest quickly.

We choose our locations via a challenge where citizens could apply for. What was interesting to see is that most of these locations overlapped with the heatmap the TU-Delft made for us. Insinuating that the places where people want eHUBS are also most likely to succeed.

When it comes to bottom-up approach of location selection it is very important to communicate about the level of bottom-up influence citizens have in selecting the location. As can be understood, the bottom-up selection of location demands the availability of people that are willing to help organise the eHUB in a location of their choosing. A city can develop a framework to see if they are open to this approach or set certain criteria for the eHUBS locations in their city and discuss whether or not this still allows for a bottom-up approach.”

“At the start of the project we invited citizens to register for an eHUB in their neighborhood. A few hub locations were selected through our colleagues working for the different city districts. This eventually led to 10-15 locations distributed mainly in the city center, where there is already a large supply of shared mobility. This led us to change our strategy and to aim for locations outside of the city center, such as the north and west of Amsterdam (Elzenhagen en Osdorpplein), with the goal to offer this service in locations where there is little supply of shared mobility.

We have selected our locations bottom-up meaning that citizens could apply for an eHUB in their neighbourhood. Interesting about this approach is that you only get eHUBs in neighbourhoods that want one. Another interesting part is that they are the same locations as the analysis of TU delft showed as highly to succeed. On the other hand we lacked locations in parts of the cities that are less well-off and only catered to a certain type of citizens.

Moreover we realized that certain locations were not very interesting for the mobility providers due to the low demand of shared mobility, especially the locations in the outskirts of Amsterdam such as the north and new-west. Very often, these locations are already very car focused, thus important target locations for hubs. This calls for more government regulation instead of letting the markets decide.”

22. Start with the small neighborhood eHUBS to get the residents acquainted with the concept.

These smaller hubs are cheaper and have a lower impact on the environment in terms of infrastructure.

Dreux:
"It was clear from the beginning that the eHUBS were going to be local stations, as Dreux is quite a small city and doesn't own neither interregional nor regional facilities."

Kempten:
"Because of our lack of experience and that this sort of service is new to the citizens in Kempten we decided to start with small local hubs."

Manchester:
"The majority of the hubs are local/neighborhood hubs, with a few considered regional due to their proximity to other varied transport modes. We wanted there was a mixture of different hubs to gain insight on what works best, hence a mixture of types being selected."

Nijmegen:
"Our approach has mainly been in line with our broader mobility goals, which means mainly targeting the neighborhood level."

Leuven:
"We have planned and deployed a mix of regional, local and neighborhood eHUBS in a relatively short time period so that we can test more. As a lesson learned, we recommend a more organic approach. We think it is a good idea to start with a limited number of hubs, of different types, in order to gain experience of the different types and sizes of the eHUBS. During the participation moments within the framework of the bottom-up eHUBS, we did not have operational eHUBS ready yet and this made it somewhat difficult to enter into a concrete dialogue with the citizens. It seems wise to us to start fairly quickly with a few points and take the time to monitor and adjust them, and then to scale up at a reasonable pace."

23. Location and Services determination can be supported by demographic research

Amsterdam:
"Besides a check on the public space regarding planned maintenance work etc. it is useful to check the location on demographic characteristics. For example, younger citizens are more inclined to use shared mobility. It is also interesting to look at new locations that are being developed where new residents come to reside and thus have little expectations regarding private parking facilities. This creates new mobility needs and makes the transition towards shared mobility perhaps more logical and easier.
The majority of the hubs are local/neighborhood hubs, with a few considered regional due to their proximity to other varied transport modes. We wanted there was a mixture of different hubs to gain insight on what works best, hence a mixture of types being selected."

1.4.1. Location determination

24. Be aware that the size, location and services of an eHUB are inseparable.

The needs of the location are related to the determination of what you want to offer there. Determine these services first before you can determine the exact location. This applies to strategic as well as neighbourhood eHUBS.

Leuven:
"For some eHUBS we did not succeed in spatially clustering the different functions, mainly due to lack of space. We find that users are less inclined to experience the advantages of eHUBS if the services (bicycles, cars, ...) are scattered, even if we try to give good directions. It becomes too confusing for the user."

Kempten:
"We had problems to find space, where the bikes can safely handled when put out of and into the charging stations. As stated before we also had problems to get the electricity.
It depends how much experience the city has with shared mobility. For new comers I would recommend to not build them to solid, therefore they can be changed to other locations or to other services if the chosen ones don't work out."

25. Look beyond the public domain for the locations of the eHUBS.

Define which other stakeholders might have an interest in it and enter into a dialogue with them to plan eHUBS on their property.

Kempten:
"Involve housing developers and companies where you can potentially use their property to place the hub."

Leuven:
"We are in conversation with NMBS (Belgian Railways), the university, the university hospital, the research park in order to align our plans with their expectations and to achieve synergies."

Manchester:
"Listen to the mobility providers and their experience of where their scheme works well in other cities – use their insight to shape decisions!"

26. Decide in advance what criteria your eHUB must meet regarding the specific location determination.

Scan the surroundings of the selected location according to these questions: Is it accessible for less mobile people? Enough social control? Visible in the neighbourhood? Nearby (existing) public transport or other functions? Possible to extend the eHUB? Is electricity necessary and available?
Site visits are necessary. If necessary, some structural interventions in the public domain may be required.

Amsterdam:
"The neighborhoods needed to go through a number of official's checks to make sure that the area and neighborhood was suited for implanting an eHUB. This made it difficult to install an eHUB in the city center district as parking pressure was one of these official checks. Through these various

official's checks and conversations with the neighborhood initiatives eHUB locations were choices to take further into the process. What worked is that neighborhood initiatives proved enthusiastic to co-create an eHUB remained in the process. What did not work was that some neighborhoods fell out of the process because the effort that they needed to put into organization was deemed too high for them."

Dreux:
"The determination of eHUBS location was oriented by studying the most densely-populated areas, also comparing with the proximity of public or private equipment. Technical criteria and visibility of the HUBS were also key to determine the exact locations."
"We are quite satisfied with the 3 location chosen : reports show a good balance between them. Our top-down approach with guidance from university partners gave good results in terms of use. Density and strategic equipment proximity seems to be the two main factors to ensure the uptake of the services. For us : train station, main square of Dreux in the City Centre. The implementation of 2 e-cars on the less busy entrance of the train station was clearly irrelevant, as they are suffering a lack of visibility.
We realized that the eHUBS situated right next to a high school is more exposed to degradations than the other, probably because of the students waiting at the entrance. Then we would not recommend to implement an eHUBS too close from the entrance of a school.
A replication city must pay attention to the visibility of the eUBHS, as it is one of the main criteria to decide on a location."

Kempten and Nijmegen:
"We used the strategic approach. It was difficult to get down to the exact location, because of the different criteria like for example the space needed to set the hubs up and the need for electricity."

Manchester:
"The approach taken was mainly a top -down approach. Where using information from the University of Delft and guidance from Manchester and Bury council and the mobility providers, potential locations were shortlisted. Following this, a consultation process took place with local councillors, ward members and members of the public who had nearby properties to the eHUB to get their feedback. The approach taken is detailed below:

- Identification of areas which were likely to have the highest demand for electric vehicle-based Mobility Hubs. The work was conducted by the University of Delft. The output of this process was that Chorlton, Whalley Range and Levenshulme were identified as good locations to trial the ehubs.

- Strategic Development undertook site visits to identify suitable locations to place the e-cargobikes. These locations were sent to MCC Officers for review.

- MCC Officers conducted site visits and suggested additional sites.

- All sites were visited with a cargobike to understand if the location selected was suitable to accommodate a cargobike.

- Approval from the MCC Portfolio Lead was sought to consult on the locations – Levenshulme was discounted at this stage on recommendation from MCC due to the political nature of the area at the time of consideration.

- Ancoats was introduced on recommendation of MCC. Cargoroo and TfGM were happy with this recommendation as Ancoats represents a more city central location. It is hypothesized that Ancoats will produce different use cases compared to the more residential locations of Chorlton and Whalley Range.

- Further to approval being granted, the following have been consulted: local Councillors, Neighbourhood teams and owners/occupiers of properties which have a frontage onto an e-cargobike locations.

Rely on a data-led approach to initial short-list of areas has the potential for uptake of the vehicles. Engage with citizens once you have a shortlist of potential locations, that have been agreed by the local authorities and mobility providers."

"I think a combination of both approaches work well, however from a TfGM perspective a top down approach was important to get initial sign off of a shortlist of locations. These were then consulted on with ward members and members of the public.
Close to other transport networks, more residential, natural surveillance, quiet stretch of road for people to get familiar."

Urbee:
"We still believe the best locations are the ones with commuters and businesses."

Leuven:
"Some of our eHUB locations have been determined on the basis of central location for the neighbourhood rather than visibility. Initial experience shows that visibility is a more important criterion in encouraging people to use them."

27. Be aware that comparison and conclusions about the use of eHubs for different locations takes time or is not always possible.

Nijmegen:
"Based on currently existing data, it is not yet really possible to compare the different locations. We will have to see how the usage of the eHUBS evolves throughout the coming spring before we can really draw conclusions."

Kempten:
"I cannot give any advise at this stage. As stated before we only have the 2 cars in operation, which are located in the inner city. This works well, but we do not have a comparison."

28. If using a flexible approach, ensure sufficient experimental space and be pragmatic.

Nijmegen:
"If using a flexible approach to the eHUBS, it seems a good idea to be pragmatic. Try some locations where eHUBS can be easily implemented, and see what results this brings. If a location doesn't work or if there are other problems, it can always be relocated at a later stage.

Be pragmatic! First focus on getting eHUBS on the streets. Based on further experiences you can try and improve on the existing hubs, expand into other locations and try and create a more complete network. However, it is a tall task to immediately start with a network that covers the entire city."

Amsterdam:
"We have faced some delay in our original due to several factors. Firstly, Covid unfortunately delayed the project as a whole for obvious reasons such as the change in travel behavior. Secondly, it took a lot of time to realize the necessary policy adjustments and therefore a go to experiment. Lastly, our bottom up approach needs a lot of attention and time."

Kempten:
"Originally, we thought about having less stations with more services provided at the stations. This changed during the realization process. We deviated because during our meetings it made more sense to try out more locations to have a better chance to have some that are successful. We also did not get as much money as preliminary thought due to the pandemic.
We did not use a lot of infrastructure, as we keep the construction low key at the moment, in case the locations prove to be unsuccessful. It was however a challenge to get electricity to some of the stations without too much digging up. We therefore try to get funding for solar boxes, which can be used to charge the bikes.
We did not consider battery swapping as this would require more staff.
For the cars, we used existing car parks and there was enough space and electric lines for installing the charging infrastructure."

1.4.2. Services determination

29. Estimate in advance the needs for shared mobility for a given location, and take into account the knowledge people have about shared mobility.

Think about which transport modes, how many of each. Take into account possible expansion.

Kempten:
"We chose cargo bikes because here most people have a bike and a lot even have e-bikes. Cargo bikes are not very common here and because of that and due to the fact, that one can transport things and children in them we chose to concentrate on them for citizens. We also plan to use bikes for tourists to use for city and area tours. The decision on exactly how many was based on the money we had."

Manchester:
"The appropriate mobility services were determined by aligning with the aims and objectives of the project. Due to this we wanted to encourage active travel (hence the e-cargo bikes) as well as encouraging people out of their private cars through establishing the EV car club."
"In GM e-scooters, for eHUBs both the e-cargo bikes and EVs are equally popular, we are investigating parcel lockers. We believe they may encourage other types of users to the eHUBs. We consider other forms of mobility already in GM i.e. e-scooters."

"Amsterdam:

Since we organize our hubs via a bottom-up approach its quite interesting to see how peoples knowledge about shared mobility also changes their behavior. People initially *think* they need shared cars. When explaining and talking to them they are more inclined to use bikes and cargo-bikes. On the other hand this question differs a lot per neighborhood and if people are thinking of using the eHUB as alternative to their private car or as addition to their private car."

30. **Determine together with the provider what criteria are necessary for the deployment of their shared mobility service on the public domain before deciding on the exact location of the eHUB.**

    This way you avoid major (unnecessary) interventions afterwards. Also determine in advance which party is responsible for what in every decision that is made (e.g. fixed electricity infrastructure or battery swap).

Amsterdam:
"It starts with identifying the amount of space that is available for the eHUB. The participation organisation, together with the neighborhood initiative (and supported by the Amsterdam project team) will plan interviews or a survey to further take on the conversation of how to design the hub. This is partly based on current travel behaviour but also focused on the behaviour as can be best expected when shared vehicles are available. Once the eHUBS are in place and in case a difference in modes is required it is possible to make those alterations to make sure that supply and demand in the eHUB are in balance.
The City of Amsterdam does not permit placing LEV charging infrastructure in the city, an eHUB is not an exception. As for EV charging, depending on the number of cars and the already available EV charging infrastructure additional EV charging infrastructure will be placed. As for bike parking facilities, depending on the parking places look and feel, the eHUB will require bike parking facilities, or even a platform with these facilities to become an official eHUB."

Dreux:
"A cross-cutting work has been held with the technical services of the municipality, with other technical partners and with mobility operators to identify potential options. The infrastructure requirements were designed with the providers and asked in the design brief. Many technical issues were met along the process. It is important to gather solid skills in planning, operating, grid plugs and other skills relevant in that process.
The main bottlenecks encountered within the charging infrastructure were on electrical connection. The grid connection was costly and complicated to operate and generate a lot of network failures when operating."
"E-Bike is the most requested option in comparison to e-cars and e-cargo bikes.
We are thinking of adjusting the number of e-cars because of the very low use rate, this may be due to a lack of visibility. We don't offer other services on our eHubs neither consider any additional services at this moment.
Main tips: First. Implementation on public domain. Second. Be careful with the need of grid connection and mobile network for real time control of the HUBS.
The installation of the charging infrastructure was depending on the closest electric box to be plugged to. This narrowed the range of the precise location. We had to find a middle ground between technical constraints, visible area and city domain.
Same problems as for charging infrastructures for the e-bikes. We installed classic charging infrastructure (Total Energies terminal, 22 Kva with 2 outflows). We are facing parking violations, other e-cars are plugging to the charging terminal even if it is forbidden (proper road marking and

traffic signs). Mobile panels have been installed by the e-car mobility provider to prevent these violations, and municipal police services have been briefed and will regularly patrol on these areas."

Manchester:
"Close collaboration with the mobility providers to understand their requirements. Site selection constraints for the e-cargo bikes included the following:

- Cargobikes should be placed 300m – 400m apart.

- Cargobikes should be placed within the community in areas of high density and young families.

- Footway width should not be reduced below 1.4m.

- All e-cargo bike locations are away from high speed/" busy" A and B roads to provide a clear stretch of 'quieter' road for people to familiarise themselves with the bike

- For the EVs:
    - Ideally close to other forms of PT
    - Where other car clubs are operated but have ICE vehicles in operation
    - EVCI ensure sufficient footwidth is provided. The EVCI took much longer to install then initially envisaged. This was due to shortages of equipment and delays in the installs due to COVID. The lack of EVCI made it much quicker and easier to get the infrastructure in place. However, we did have to arrange an operator/ maintainer to do the battery swaps which took some time to establish between cargoroo and the operator. So far we believe this method has worked extremely well."

Nijmegen:
"There has been some back and forth with the provider about who is responsible for which facility."

"The cooperation with the MSP's in providing the correct infrastructure especially with relation to charging has proven difficult. Part of this has to do with a lack of leverage, and therefore a reliance on a certain mutual benefit. This could be avoided by actual contracts specifying responsibility, but this is not very suitable in a pilot phase.

The battery swap system allows for a more flexible placing of the eHUBS. However, in general it seems to be more prone to vandalism and theft than a robust docking system with charging facilities.

Getting charging infrastructure in place has proven costly and difficult. We are still in the process of finalizing the correct infrastructure needed for the placement of the Deelfiets Nederland shared e-bikes.

A bottleneck has been that charging stations for shared cars provide less certainty to charging providers as to the uptake of electricity. Therefore, placing charging infrastructure for the sake of shared mobility has proven more costly and laborious than is the case for charging infrastructure for privately owned cars."

Leuven:
"Think carefully before you place infrastructure. How long will this provider stay? Do the works outweigh what they offer? Are lighter and more flexible systems an alternative? Is it necessary to

provide fixed power supply everywhere (with all the necessary infrastructural consequences) or can an alternative be provided at certain locations?
Ideally, the different functions should be as close together as possible."

Cargoroo:
"We work with battery swapping only. A major advantage is the smaller area of public space required to deploy shared bikes and hence the increased possibilities of deploying them in smaller streets as well. In addition, battery swapping doesn't require adjustments to the local electricity net and thus saves a lot of costs and doesn't require large adjustments in the public space. A disadvantage is the possibility that a user encounters a bike where the battery level is insufficient for the trip they wish to make."

URBEE:
"Overall, we feel we underestimated the importance of the timing, screening and choice of location, size and available options on the locations e.g. power, installation of eHUB solutions, screens, information panels, etcetera. As we would prefer to run a back to many sharing network the density of locations should be relatively high to compete with free floating networks".

31. Offering different services creates added value to hubs. Consider well all preconditions if you want to add extra functions to your eHUBs in the long run, possibly.

Leuven:
"If you decide to install parcel lockers in order to bundle transport movements, preconditions could be residential density, market, certain focus groups, certain neighbourhoods, geographical distribution."

Amsterdam:
We want to offer additional services on our hubs. We believe that the added value of hubs really also comes by offering different services. We, however, were not able to arrange this in this experimental fase of developing mobility hubs in the city.

It could help to add value on the user uptake. On the other hand we as a city are not very keen per sé on higher user uptake. Only if the user makes a sustainable modal shift. If people are going to use cars in the eHUB as their second or third car I do not think we can claim a success.

32. Be aware that the availability of vehicles is also highly dependent on the providers

Nijmegen:
"Currently we still do not have the amount of e-bikes that we had planned or that we would like, as Urbee has withdrawn from the project and the new e-bikes from Deelfiets Nederland have not yet been placed in enough locations.

We don't consider additional services on our eHubs."

33. The use of charging infrastructure (or not) is a key issue.

Amsterdam
"Amsterdam has a concession for charging infrastructure. However, in these contracts the concession holder decides where to put down the charging infrastructure. This means that in the end of participation they can decide to put the charging infrastructure in a completely different area or not at all."

"We have very little infrastructure. With complicating factors, such as an not convincing business case for our CPO and concession holder of charging infra and existing contracts that did not enforce our request it was found difficult to arrange this easily. For example, they can deny the city's whishes where and under which conditions they place charging infrastructure. They for example did not want to place charging poles for a back to one sharing scheme which our hubs are at the moment. All because of business cases.

We did not have much choice. Amsterdams policy is to have 0 bicycle charging infrastructure in the city. The advantage is to have less need for infrstrcutural change. The disadvasntage is the extra operational costs for transport operators and the fact that many assests will not always be fully charged."

Urbee:
"In our experience the most complex element has been the provisioning of power in the public domain. This has been a challenge in every city we operated, in terms of time needed and investment.

For an operator battery swapping is rather expensive and for the user often dissatisfying because they experience an "half empty" e-bike."

1.5. Business model

34. Be realistic in the business model of shared mobility and foresee a subsidy

Especially for small and medium-sized cities, it is necessary to (largely) subsidize the supply, especially in the start-up phase.

Dreux:
"The City realized that no providers would accept to operate under the same conditions as in bigger cities because of the size of Dreux. We had to give subsidies to attract private operators willing to experiment."

"In accordance to the e-car mobility provider calculations, the service could be viable if each car reaches 600 € rent per month. For the moment, the City is subsidizing the operation up to 480 € / car / month, and the current revenues barely reaches 100 € / month. Hence the e-car service is far from being a viable business model.

The e-bike service is not meant to be a viable business, but rather a public service subsidized by the City of Dreux : it costs 60 k € per year, while rental income in 2021 barely reached 3 000 €. Even if economies of scales can be targeted by larger cities, by no means a e-bike rental service can be viable for the mobility provider."

Kempten:
"We chose a business model that includes all services. We pay for the service and will get money back if the services get used enough."

"We subsidize the bike service but not the car service. We lease the bike and pay a service charge. All earnings will go to us till they exceed the service charge, then we will split the rest."

Leuven:
"Even though transport demand in Leuven is high and diverse within the region, the city council realises that in the first few years resources need to be provided to gradually build up the offer."

"For cambio it now seems a feasible business model as long as the fleet is not more than 10% electric and the stands are located in neighbourhoods where demand is high and complementary (daytime + evening/weekend).
In order to get an accelerated electrification of the fleet of shared cars, the City of Leuven will provide a temporary financial contribution to the provider to temporarily mitigate the financial risk. This accelerated electrification is a political ambition.

For the shared e-bike it remains a bit of a guesswork as to the business model as we have not had the opportunity to test it thoroughly in Leuven yet. Based on the experiences and data we have and conversations we have had with providers, we would need to place a reasonable volume of bicycles (200-300 bicycles) in Leuven for which we as a city would have to make a significant contribution, at least in the first years, if we want to keep the price interesting for the user. Because this mode is about the importance of network locations, i.e. transport nodes, it is very important to gain more insight in how important public transport actors such as De Lijn and NMBS will deal with this. It is

likely that e-blue bikes will be offered in station areas in the near future, and later on perhaps also in the vicinity of larger bus stations.

Unfortunately, we don't yet have a meaningful data set for the shared e-cargo bike either. We do know what the desired usage rate of the providers is more or less to run autonomously. For the very interesting locations we hope to get there with a qualitative fleet and a communication campaign in the reasonably near future, but as a city we also want to include less suitable locations, from the provider's point of view. As a city, we find it useful to continue this test and to provide a subsidy related to the use of the bicycles for about three years."

Manchester:
"At this moment in time, after 6 months piloting, we feel it is too early to tell whether eHUBs offer a viable business model. This is why we are seeking a potential six month extension to further strengthen TfGMs understanding of whether it offers a viable business model."

Amsterdam:
"Due to delays in the implementation as well as set-backs due to lock-down measures it remains uncertain if the eHUBS represent a viable business model. This also depends on the different operators, some see very promising growth of the usage of the vehicles in some hubs, but other hubs remain less promising. Again, different operators claim different experiences in this case. What we as a city hear from the differert operators is that there is a clear difference between the higher density city areas, and the more remote parts of the city. The latter being less promising to run their operations."

URBEE:
"We believe that subsidizing permanently is necessary to be able to offer continuity, quality, availability and density. Especially if cities have certain requirements towards, quality, pricing, re-distribution, etc. Think of the way public transport in general is financially structured. That is the way we expect shared mobility to be a good alternative to (car) ownership in combination with the existing public transport facilities".

35. Delegate a maximum to the shared mobility operator regarding the service management, even if it looks more expensive at first sight.

Kempten:
"For us it was clear from the beginning that we cannot take care of it ourselves and have to find a provider that will do all the work."

"The digital integration is organized by the providers, so far it seems to work well."

Dreux:

"It is important to keep in mind the potential hidden costs of such services as eHUBS: customer service, maintenance, operation etc."

36. Do not consider the business model as the responsibility of the city.

The business model is the responsibility of the mobility service provider, not of the city.

Nijmegen:
"We do not consider the business model side of the project to be the responsibility of the municipality. Nonetheless, we are in contact with the MSPs to see how their business models affect the physical planning of the eHUBS."
"There is still no really viable business model for any of the shared mobility modes. However, at the moment it is not seen as a task of the municipality to subsidize the operation of MSP's."

Urbee:
"We have not changed our goals and visions only for the eHubs but for bikesharing in general. Due to theft, damage and low revenues (lower than cost level) we question the feasibility of exploiting sharable e-bikes in the public domain."

1.6. Policies and regulations

37. eHUBS call for an integrated AND flexible legal framework.

Since eHUBS touches various policy areas, it is advisable to take stock of the various existing policy frameworks from the start. It is beneficial to work towards an integrated policy, although still flexible, because the themes and domains involved, such as transport modes, data, interoperability, are very dynamic.

Amsterdam:
"When we started the project, there was little to no legal framework at all. There was a car-sharing policy, but no framework for other shared services or small eHUBS in public space. We had two options: make a shared mobility policy or redefine the way we regulate public space.

Since the field of micro shared mobility was rapidly evolving, there was momentum to co-write a new policy, making room for experiments. This policy made our project possible, but since it excluded shared cars (there was already a shared car permit to no room for changes) we ended up with scattered policies and regulations. Since making a policy is time-consuming and in a dense city like Amsterdam very political this led to a delay in our project.

Since we based our new policy on existing ones, we ended up with a variety of regulations dispersed over different policy domains: parking, charging, public space, interoperability, and shared mobility. The downside of experimental policies is, however, the variety of sharing schemes in Amsterdam. This could be confusing for the user (so make sure to communicate this), but also lets us as government learn for different schemes.

Hubs call for an integrated AND flexible legal framework. We learned that our project checked all the boxes from a bird's eye perspective, but when it came down to the actual 58m² eHUB, policies conflicted. Therefore, be flexible when you are learning about mobility hubs. Make sure there is room for change (for example, by including experimental areas in your framework or work with a flexible number of permits)."

Leuven:

"eHUBS cover different themes: use of space, parking, data, basic accessibility, inclusion, customised transport, public-private partnerships, monitoring, behavioural change, etc. We have tried to put together a working group with colleagues to cover these various themes also in terms of policy, so that we can take them into account in the development. We are using this pilot project to sharpen our policies on mobipoints, i.e. on combined and shared mobility."

Nijmegen:
"This has been an iterative process in which we have been as pragmatic as possible, just starting out where we could and solving issues that came up on the go. Some issues that have come up involve parking permits, regulation of physical space and marketing regulations around infrastructure, etc. I think it is very difficult to know upfront all the issues that may arise. Of course, you can learn from other cities, but many of this will work differently in each city."

Manchester:
“TfGM faced delays in regards to the electric vehicle charging infrastructure due to regulations about pavement foot widths. For example, there were delays with getting sign off for implementation due to concerns that the remaining pavement space did not allow sufficient space for people to pass that had wheelchairs, prams etc. Lots of time was lost getting revised designs and for build outs. It would have been beneficial to have been aware of these requirements beforehand.”

38. Make sure to keep the goal of the hub in mind when you set out policies.

Amsterdam:
“If your target group is visitors, you might want to use different vehicles then when it comes to a local residents. Make value-based policy: what is it you want to achieve? If you know what you want it is much easier to determine what kind of regulations of public-private partnership you need to achieve your goals. Areas differ in demographics and accessibility so making use of a one-size-fits-all policy will not work if you are a big city.”

39. Be sure to coordinate with the competent authority beforehand if you are not responsible for the relevant policy.

Dreux:
“This issue was quite complicated to overcome. The city of Dreux is not the competent authority to act on mobility services. We had to deal with the urban agglomeration that gather Dreux and other surrounding cities so that they let us the permission to act on such topics. States mobility services helped us a lot regarding the legal framework.”

40. Get someone who is well versed in the legal framework and policies involved as part of the core team from the start.

Manchester:
“As part of the internal TfGM team working on the project, we had a legal representee be part of our core team. This meant we had someone who understood the project on hand to assist in legal frameworks, drafting policies, contracts and MOUs.”

41. Be aware of some core policies and regulations from the get go.

Leuven:
“This seems for us a basic set of policies:

a) Mobility Plan - what are the city's ambitions with regard to

-provision of mobipoints, combined and shared mobility

-provision of parking spaces for cars

-provision of bicycle parking spaces, also for oversized bicycles

b) Regulations on applying for a parking card/residents' card in a blue zone

c) Agreements (rights and obligations) of commercial shared car providers and for private sharing

d) Coordinated police regulations regarding permit requirement to operate in public space”

Dreux:
“Be careful on legal ability of the partner for the creation of such services. The city of Dreux does not own the mobility competence required to act on that domain, and we had to ask our urban community to delegate it to us. In France, the Loi d’Orientation des Mobilités LOM (2019) regulates the legal framework for public authorities in terms of mobility competences.”

Amsterdam:
“The policies and regulations regarding shared mobility, licensing of shared mobility, regarding electrical charging, regarding communication efforts (for example the look and feel principles set by us as a city, but also the communication campaigns), terms about privacy, data sharing regulations, policies regarding procurement were found to be relevant for the project.”

42. Be aware that there might be contra-productive policies for the implementation of eHUBS.

Leuven:
“In the Belgian highway code there is no agreement yet about prohibiting parking of regular bicycles on places reserved for shared bicycles. We have had problems on eHUBS where regular bikes took the foreseen place of the shared bikes.

We would organise it in the future that there is a ban on parking bicycles, except for permit holders. We do notice that this way of working somewhat goes against the power of nudging, whereby you have to communicate invitingly to users.”

Dreux:
“Regulation on historical monuments and landscape prevented us from installing a proper panel to indicate the eHUB. The “Architecte des Bâtiments de France” protects the view of classified monuments or natural landscapes and can ask to not degrade a beautiful view with the implementation of a eHUB. This was a point of concern for our station Place Mésirard, as the Royal domain uphill is visible from the Place.”

Amsterdam:
“In 2017 the city of Amsterdam was surprised by huge numbers of commercial dockless shared bikes offered in the public domain. In just a couple of weeks huge numbers of bikes could be rented in the streets. The city of Amsterdam decided to temperately ban the shared bikes, while it is not allowed to use the public space as a place of issuance as well as the amount of scarce public space the bikes take in. Although intentions of this ban were highly understandable, it did become an obstacle in the implementation of eHUBS. The project required commercial bike providers to be able to operate in the streets, and this was not possible. The project solicited for a policy exemption, in which commercial bike suppliers were allowed to operate within the eHUB. In February 2020 this exemption was approved by the city’s Mayor and City Council. Members and the project could go ahead.”

43. Implement flanking policies that encourage the use of eHUBS.

Leuven:
We can think at least about these 2 policies that were conducive for the use of eHUBS:

- Circulation plan with car-shy and car-free zones

- A memorandum of government that clearly draws the map of mobi-points (50 by 2021) has certainly helped to speed up the installation of the mobi-points.

Amsterdam:
“Policy regarding shared mobility is currently treating each mode of transportation as a separate subject in its policy. We found out that what is currently lacking in policy is the eHUB as a whole concept, with one set of policy regulations for the complete concept. This will make it easier for the city to work towards more hub locations in the city. Our project helped show the potential of the hub as a part of the mobility system. Now with the draft of new policy regulations the hub-concept will be given a place, clearing the path for a sustainable concept.”

1.7. Design + Look and feel

44. Choose a design, ideally a modular system, that can be flexibly adapted and fitted into any environment.

Amsterdam
"We needed it to be modular and follow the Amsterdam design principles as well as possible. This city is very strict in its public space regulations."

Dreux
"Our main criterion for developing the design was, next to size, the integration with the environment."

"We had no problems related to the set-up. If we would start all over again It would look pretty much the same : large pedestrian space for e-bike stations and clear signage for e-car stations."

Kempten:
"It depends how much experience the city has with shared mobility. For new comers I would recommend to not build them to solid, therefore they can be changed to other locations or to other services if the chosen ones don't work out."

Nijmegen
"I think it's good to stay flexible, and make sure that you can develop the eHUBS based on the specific characteristics of that hub."

Leuven
"Each eHUB remains customized. one standard model that fits everywhere is not feasible. However, we think that a recognizable branding is an important key for success. We have chosen to apply the Flemish branding of HOPPIN; the purple colour and the letter(s) H(oppin) can be applied for all parts or communication media, regardless the circumstances, the material. The available budget at the time is also a determining factor. A modular system allows you to expand later when more budget becomes available."

45. Start early with some basic design guidelines so that they can be checked off with all the actors.

Don't lay everything down too tightly so that there is room for adjustments along the way.

Kempten
"Don't decide to early on the layout as it could change due to the changes of the overall setup along the way. It's also important not to wait too long, as the decision process on political level can take a while and will involve several departments."

Nijmegen
"The design of the eHUBS was a combination between the requirements from the MSP's, the space available from the municipality and the work done by the marketing and communication bureau. Most of this was done based on an overall vision of the eHUBS brand, but with adaptation on the go depending on the specific circumstances for each eHUB. We have also tried out new measures as part of our behavioral change campaign."

Manchester:
"Ideally, signage at the sites would be larger (similar to the city of Nijmegen). However local authorities were reluctant to allow the project to do this, so more discrete signage was used."

46. Choose a design that is recognizable (beyond the municipal boundaries), take into account a higher government may propose/impose an umbrella brand.

Amsterdam:

"In the first hubs, there would be no specific parking spots for the shared bikes and cargobikes, not was the hub a separate part of the public domain. Also, there was no charging infrastructure provided for the LEV's. As a result, the hub was not clearly a hub and privately owned bikes would be parked in the middle of the hub. This further degrading the visibility and usability of the hub. The hubs were changed, by placing a platform that indicated that it was a separate 'hub-zone'. The hub-platform had yellow lineation indicating a separate part of public space, it provided parking facilities for the e-bikes and logo's indicating the different mobility modes and where they needed to be parked. This helped tremendously. Resulting in a more visible hub.

"It could be good to have a rough idea and maybe also look into existing designs, so that potential customers can recognize the services."

In Amsterdam the regulations concerning adjustments to the public domain are very strict. As a result we could not make a lot of convincing hub elements, but kept the same look and feel as was used in the rest of Amsterdam's public domain. Without clear policy on hubs, an clear hub lay-out and look and feel will not be possible. Also current developments on national level are important for further steps in this area. At the time of writing (March 2022), a Dutch national project started to enable one hub look and feel is developed for the Netherlands. This to avoid a different hub lay-out and look and feel in every city. Amsterdam solely should await these developments before further investing in only local lay-out and look and feel improvements.

Make sure a hub lay-out and look and feel is done in jointly effort with other cities or even be done on national level. A recognizable concept across many cities or even across the whole country will improve the know-how of people of that hub. Developing hubs, that's perhaps the biggest challenge: to make sure people recognize the hub, being able to use them and find their personal benefit by using the hub."

Kempten
“It could be good to have a rough idea and maybe also look into existing designs, so that potential customers can recognize the services.”

Manchester
“We have worked closely with our internal branding and communication team to develop a branding strategy for the eHUBs. We wanted something that would stand out and also align with other aspects of TfGMs strategy i.e. Electric vehicles. For the e-cargo bikes we have designed a custom ‘cube’ which fits on the Sheffield stand, providing a QR code and information about renting the bikes. The branding is consistent across the EVs, e-cargo bikes and the website.

I would recommend a replication city to choose bold branding across the eHUBs, creating a ‘brand’ for the eHUBs to make the shared mobility stand out, and obvious to passersby. I would also recommend detailing clear principles with key stakeholders and using these to form the basis of the look and feel of the eHUBs.”

“Create a recognizable brand, provide as much info as possible with QR codes for further info, put arrows on floor signage to indicate how the bikes should be parked.”

Leuven
“We chose to go along with the branding that was determined at the Flemish level, i.e. Hoppin. This way, citizens from other cities and municipalities can also recognize eHUBS in Leuven and use it more easily because, among other things, they look the same.”

47. Choose the right design and accessibility for shared car parking facilities.

Leuven:
“Take into account that sporadic users are not always familiar with the use of the vehicles, keep this in mind when choosing and setting up the locations, for example: provide sufficient space around parking spots, cross parking is usually easier than parallel parking.”

1.8. User friendliness and digital integration

48. Set sufficient service level criteria regarding the shared mobility service.

Before a provider starts working in your municipality in case of a pilot programme or before tendering, it is advisable to set your requirements regarding user friendliness and digital integration such as standards for exchange of mobility data and MaaS integration (e.g. TOMP API), easy and accessible booking system, real time information about availability of shared transport modes.

Amsterdam

"Amsterdam tried to be fast forward in integrating all the shared mobility operators in a MaaS application to increase user-friendliness. We did not manage to do this due to a lack of technical interoperability."

Dreux

"The user friendliness of the eHUBS was taken into consideration when writing the specifications for the providers, particularly on the booking system, to make it as simple as possible for the user. A dedicated webpage allowing users to check the number of bikes or car available was considered vital. The providers offered satisfying solutions on those demands. We also integrated the booking links into the city mobile application.

"Booking and payment can be realized through a mobile app for the e-car service and a webpage for the e-bike service. Both booking pages can be reached via the City of Dreux mobile application, and on the city website.

QR codes to flash are also available on our Mobipoints to facilitate access to the platforms.

We are not considering measures to enhance user experience for now."

Kempten

"We discussed the possibility to integrate the booking system into our public transport booking system."

Nijmegen

"This was left mainly to the MSP's. We have a website that links to each MSP's user platform. It would be great if one app would be available for each vehicle type, but this is not something we see as a task for the municipality."

"Ask yourself as a municipality to what extent you want to take up digital integration yourself, or if you feel that this is something to leave to the MSPs."

Leuven

"When we write our own tender, we request a high service level regarding user friendliness. With

respect to transport for all we believe that shared mobility services shouldn't be exclusively accessible through digital modes."

Cargoroo
"We apply existing standards / standards currently in development such as TOMP API and CDS-M."

URBEE:
"We also apply existing standards / standards currently in development such as TOMP API. But at the same time we have a concern that there are not so many integrated platforms that host enough active users to generate sufficient usage of the modalities. MaaS pilots that have been launched in NL are still lacking user uptake."

"The power supply was the bottleneck in most cases and at some point also the availability of e-bikes and spare parts have been low at certain moments due to the pandemic."

49. Make a checklist regarding user friendliness and take this into account when determining the locations.

At certain locations, you can achieve quick wins in user friendliness thanks to rather small interventions.

Amsterdam
"Our basic criteria are:

- Walking distance to the Hub. Make sure to include a neighborhood hub in every neighborhood to ensure a covering network.
- Digital integration and interoperability (MaaS)
- Physical integration (cars next to e-bikes to help users in making a more sustainable choice)
- Demand based supply: make sure that the kind of services match the (latent) demand in a specific area so there will be no mismatch.
- Easy access and use (for example intuitive app design and driving lessons, simple sign-up).
- Quality and clean vehicles."

"In Amsterdam we will conduct a customer satisfaction review of the hubs, through our mobility providers. This will help to identify items of user friendliness to further improve. Items that our project team identified are the digital integration of the eHUB as a whole (instead of the sum of different vehicles), clear branding of the eHUB, and explaining how to use the hub, moreover a better feedback loop should be developed in order to give residents the possibility of asking for improvements."

Manchester
"We considered user friendliness in the following ways:

- Considering other local amenities and transport links nearby
- Considering the visibility of the eHUBs
- Not impeding the highway for other users
- Adopting areas where there are already relatively high levels of cycling – so we may be able to encourage people to try new modes and spread the word
- Locations away from busy A and B roads to give people a clear stretch of road to try the bikes
EV locations in areas with lots of residential properties, giving them the opportunity to try alternative modes than private cars. Also makes the cars visible to lots of potential users
- Close to local shops and amenities
- Areas where cycling is prevalent, so they can act as ambassadors for the scheme.
Engage with local authorities and interest groups, as they will be able to indicate the best areas to introduce the eHUBs. Learn from other cities who have mobility hubs established and understand what works well and look to introduce similar practices. Do not be afraid to take on feedback and make changes if needed. i.e. we were told some locations were not suitable and were recommended others, we took this on board to ensure the best end-user experience."

"We are looking for Cargoroo to begin to monitor the incidents where they are tagged on twitter, with customers looking for support. It is a frequent way for customers in the UK to request assistance from companies
TfGM have also recently filmed some short videos as we think proactive customer support is important, explaining how to lock the bikes etc, we have also created a FAQs page where people can access more info."

50. Keep in mind that the facility of use is key to foster the adoption from the users.

Dreux:
"We recommend making registration and booking easy."

"Digital integration is key but it is important to offer non-digital solutions to book a ride. Each of our MSPs provide a card to substitute the app to unlatch the vehicle.

Make it easy for the user to access the booking platform and offer various means to reach it : website, mobile app, QR code. And don't forget the users that are not familiar with digital devices!"

Leuven:
"Because each provider works with a different system and shared systems are still only taken up by a limited share of the population, it is very important to organise the use as simply as possible and to communicate it as clearly as possible, with sufficient repetition in time and space. So communicate a clear step-by-step plan at the eHUB itself, on the bicycle, on the webpage, in a folder, ..."

51. Be aware that digital integration enables user friendliness

Dreux:
"Booking and payment can be realized through a mobile app for the e-car service and a webpage for the e-bike service. Both booking pages can be reached via the City of Dreux mobile application, and on the city website. QR codes to flash are also available on our Mobipoints to facilitate access to the platforms. We are satisfied about the digital integration services. Online rating confirms that feeling from users."

Leuven:
“Unfortunately, at present there is only limited digital integration.

For each of the modes (cars, shared bike, e-share bike), the user needs to install a separate app and create an account, or arrange it via non-digital means (at least for the shared car and regular shared bike). Cambio and Blue-bike are already integrated within existing MaaS providers Olympus and KBC.

We assumed that the HOPPIN app would be rolled out at the level of Flanders, in line with the basic accessibility policy in Flanders, with a broad and integrated scope, i.e. with the integration of the active shared mobility providers that comply with it. However, it has recently become clear that this scope would be limited to only the fleet that is awarded by the Flemish government. For Flanders, this regional scope is interesting for the user. As a city, we are trying to influence Flemish policy in order to broaden the scope. The City of Leuven has no immediate ambitions to develop a MaaS app at city level.

It is a matter of finding the right balance between customer loyalty, trust and ease of multimodal use. Take it to a higher level than your own city; therefore a regional focus in Flanders seemed the scale we should at least aim for.”

Amsterdam:
“Right now all providers have their own booking and payment process. In some hubs only one operator exist, resulting in the booking and payment of all different type of vehicles through a single provider. However, most of the hubs have 2-5 different providers of mobility. In case a person uses different modes of transportation, it needs to sign up with all these different providers. To overcome these customer unfriendly experiences Amsterdam is working on serveral MaaS –Mobility as a Service- projects. In reality these MaaS-solutions require more time and development, both from the MaaS platform side, as the transport operators, as many more stakeholders, making it quite complex. At the time of writing (March 2022) the user friendly MaaS solution that the eHUBS are able to use does not exist yet.”

“Join and promote the efforts that are being made on digital integration level. This is not a local matter, there are national and European efforts being made.”

Manchester:
TfGM are keen to understand how MaaS and potentially the TOMP API could be utilized to integrate services provided by the eHUBs. I would recommend replication cities look at this earlier in the process, especially during the procurement stage to be a requirement of any involved mobility provider.

Urbee:
“We believe that all mobility services should be integrated in one platform.”

52. Be aware that communication enables user friendliness

Nijmegen: “In terms of user-friendliness the most important thing is communication. We put a lot of effort in communication overall, but this also included videos regarding the use of the different apps for the different providers.”

Urbee: “We learned that social media and clear signage at the eHUB work best.”

1.9. Tendering for MSPs

53. Within the bottom-up approach, it is important to leave the choice of mobility provider to the citizen.

Amsterdam:
"We designed a sort of a framework contract for all mobility providers who comply to our basic demands can apply for (more information on innovatiepartners.nl) or tendering process as part of deliverable. To get an idea of our demands as a city I cite the following

1: all shared mobility providers should be electric

2: all shared mobility providers should be allowed on the Dutch roads

3: all shared mobility providers will share data with us (through CDS-M API)

4: all shared mobility providers will implement TOMP.API

After we checked if the mobility providers comply to our set of demands to become part of the Menu Card eHUBS.

After we've receive a request for a BuurtHub in a new neighbourhood and we've checked all the formal boxes, we ask the mobility providers whether they are interested or not

The mobility providers who have shown interest become available for citizens to vote for (beside the option to vote for the transportation modes). Sometimes we also ask them to vote for their preferred location."

54. Ask yourself whether it is necessary to organize a tender for MSPs at the initial stage.

Nijmegen:
"We have not done any type of procurement for the MSP's. The eHUBS are open to each MSP that wants to participate as long as they can meet a number of minimum requirements. So far this has not really led to any problems. In our broader shared mobility policy we are, however, moving towards a permit system.

In many cases, we don't know if 'selection' of MSPs really will be the case, it is often more which parties have interest to join at all. Setting up minimum requirements of course is necessary, and if more MSPs are expected than can be facilitated, a permit system might work well, which can also help control the quality of the mobility solutions provided."

55. Sharpen the service level criteria for shared mobility services in general and then per category when tendering.

Amsterdam:
"Look at the context you are working in before deciding on a strategy. And make sure to set criteria that are important for you as a city as a basic set of rules for each provider that allows them to operate in your city. Always make sure mobility providers will share their data with you and become part of a MaaS-API or even better a MaaS-platform. In this way you'll secure the future of the eHUB and user experience will go up."

"Some remarks are to be made to the agreements we made with MSPs: Points of attention are especially articles 3 and 4. These consist of the obligations of both the city as well as the applicant of the contract. How strict do you want to set the obligations?

The eHUBs project was an experiment, so the obligations where light. However, if you want a dependable system of hubs, obligations should be more developed. In article 4.4 the data points are identified. It should be discussed whether this is possible for the transport operator, as can be understood, every transport operator registers data in their own way. If possible a data standard should be used to import data (such as the City Data Standard Mobility as developed by the eHUBs project)."

Kempten:
"We are just learning if the agreement with the MSP was sufficient or if we would do it different the next time."

Dreux:
"A replication city should pay attention during the contract negotiation with mobility provider to well define the framework: rights and obligations, framework, duration of the contract, exit option (annual renewal of the contract instead of automatic renewal)."

Leuven:
"Based on the experience with eHUBS and contacts with providers outside eHUBS, we try to set out our requirements to our future providers of shared bicycles in terms of quality, maintenance, monitoring and servicing, data and interoperability, local cooperation and innovative development, pricing to the city and to the end user."

56. Try to have a procurement officer on the core team of the eHUBS planning and roll-out.

57. Organize some market research in order to improve the tendering procedure.

Manchester:
"Issuing an 'Request for Information' was a helpful way to understand supplier appetite and it allowed us to ask pertinent questions about how they could deliver the requirements of the project. The supplier day also acted as an easy way to engage with suppliers and understand more from them and for them to have the opportunity to get further details on the eHUBs project. I would also recommend engaging early with the Local Authorities to understand the contracts and agreements that are already existing."

58. Use qualitative selection criteria an give sufficient weight to the importance of experience (good references) within the assessment criteria of the mobility providers.

Manchester:
"We have found that working with experienced companies to be extremely beneficial. For example, Manchester Bike Hire have had previous experience working with Urban arrow bikes, and maintaining them, which has proved really helpful in terms of ensuring they remain well maintained. Manchester Bike hire also make us aware of any other damage to infrastructure whilst undertaking any checks, so they can be quickly dealt with.."

Enterprise (the shared car provider) have a regular maintenance schedule built into their contract and forms part of the SLAs."

"TfGM drew up contracts and MOUs where appropriate with local authorities, stipulating agreements. In some cases the mobility provider already had an existing agreement, in this case we used this as a framework. Unfortunately we have been advised from a legal perspective that we cannot share these documents."

59. **Pay sufficient attention to the vehicle maintenance section in the agreement you draw up between the city and the provider.**

1.10. Deployment

60. Give priority to locations with higher (social) control (visibility, lightning, involved citizens, video protection, etc.) so that the eHUB infrastructure may need less interventions retrospectively.

Amsterdam:
"Be aware vandalism can happen, but do not let this guide your project too much either. Look for vandalism proof items (bike parking, eHUB sign) as much as possible."

Dreux:
"Stations can be implemented under video protection."
"The city has to offer public spaces dedicated to citizens use : accessible to all, free. They allow to move, to meet, for leisure purposes, to relax…"

Kempten:
"A station-based process can eventually minimalize vandalism. Deal with it as it occurs."

Manchester:
"Consider the possible potential of theft and vandalism to the ehubs and the mobility on offer throughout the planning stage. Engage with partners who had experience of other mobility trials and therefore understand the risks about potential vandalism.

1) We have engaged with both Greater Manchester Police (TfGM) and their dedicated anti-terrorism unit to ensure that the proposed locations pose reduced risk in terms of any anti-social behavior.
2) With work from the University of Delft and TfGM's strategic development team, locations that had a reduced level of crime and anti-social behavior was favoured to try and reduce the risk of theft and anti-social behaviour."

"Neighborhood locations appear to have less incidents of damage and ASB, as it appears people adopt them and therefore check them regularly. In addition, locations where there is natural surveillance have had fewer incidents. The police have also tweeted from their account that they are undertaking regular checks of the bikes."

Leuven:
"Location choice and community support are important. The city department that operates in the field and the police department are aware of the areas where vandalism is susceptible. Sensitive areas are discussed in advance during the working group, possible risks are taken into account. Nevertheless, some locations are chosen despite possible risks, in function of other fields (social, geography,etc.). In some cases, it is examined whether additional public lighting can be placed."

61. Provide recognizable vehicles with high qualitative and innovative anti-theft and vandalism-proof standards.

Additionally, it is recommended to provide regular checkups on the street (condition of the vehicles, social monitoring).

Nijmegen:
"Attention to vandalism and theft to the electric bicycles has been a more central issue after we have been negatively surprised. The MSPs had given us the impression that this was not a problem they experienced.
In the end, most of this is down to the MSPs. However, good docking stations and robust and recognizable vehicles seem to be a major part of the solution."

Leuven:
"Vehicles and accessories that are intended for use in the public domain must be robust and vandalism-resistant."

62. **Reflect well about the approach of prevention of theft and vandalism.**

It might be good to consider a community based or rather a control-oriented approach or both within the process of location determination.

Dreux:
"Implement the eHUBS within the range of surveillance camera. Display "you are filmed" tag to prevent the damages."
"We experienced vandalism to the charging station infrastructure. We suppose that charging cables were impossible to unplug and users tried to force the plug valves. We are also facing voluntary damages to the e-bikes, and 2 e-bike were stolen.
We published various messages to prevent damages and vandalism, but it is very difficult to completely get rid of it. It is important that mobility providers offer solid equipments and infrastructures to reduce the risk of damages. "

Amsterdam:
"Because we participate and, in some cases, build a community around the eHUB we see vandalism not happening so much in Amsterdam. On the other hand, there are quite some thefts from people not being part of the community or not living in the area. We are unsure how to prevent this damage/theft."

Manchester:
"Engage early with key stakeholders to help identify areas of reduced anti-social behaviour. Having the input of the police from early stages has also been very beneficial.

"Recruiting ambassadors to look after the mobility modes in return for free credits.
Regular meetings with mobility providers and operators to understand if there are any issues with theft and vandalism
Regular spot checks to make sure the vehicles are ok."

"Unfortunately we have, especially to the e-cargo bikes placed in the more city central location. We have had incidents where the bike was stolen and also painted black to cover the Cargoroo branded, the bike was quite badly damaged. The ASB has been higher in the city central locations compared to the neighborhood ones.
The EVs also had one incident where the car was rented using somebody else's credit card and profile, and the car was damaged and written off. Enterprise indicate this is a rare event.
On all occasions the police have been involved."

Nijmegen:
"We have had some but only little vandalism of the eHUBS infrastructure, but have experienced large problems related to theft and vandalism of the shared e-bikes."

63. Make clear agreements with the MSPs on what precautions they take and to what extent they can show a track record from other cities in limiting theft and vandalism.

Keep in mind that possible triggers for undesirable behavior cannot always be pointed out definitely.

64. Foresee human resources or maximize outsourcing of operation and maintenance with clear contracts.

Dreux:
"For small city like Dreux, it was important to maximize the outsourcing of operation and maintenance of the eHUBS. Indeed, we don't have the human resources necessary to carry on these actions. It is then important to specify in the contracts with mobility providers that its their responsibility to organize the maintenance. We had several problems linked to eHUBS fixed components, mainly degradation and logout of charging stations. It is with regular exchanges with our mobility providers that we could find out solutions.

We have only one provider for the e-car service. Regarding the e-bike service, the subcontractor responsible for the e-bike maintenance is doing a great job, we just have to be with him during his monthly visit onsite. The mobility provider takes entirely in charge the management of the local contractor."

Nijmegen:
"This is a major point of concern for us: during the eHUBS pilot project we have worked based on the idea of a mutual benefit, with little concrete contracts between parties involved. This means that when things go wrong, there is little to fall back on."

Kempten:
"Concerning the cars, we can say it works well, the car dealer organizes everything, we did not hear anything about problems. In regards to the bikes, I cannot comment on this yet, as the stations are too new and are maintained by the service provider. We do not maintain the stations ourselves. We do not deal with any subcontractors, only the service provider does that. We deal with the service providers. I cannot comment on how to deal best with them, so far we have had no problems."

65. Think about the use and conditions of use of public space, especially in the long term.

Nijmegen:
"During the eHUBS project as a pilot this role was reasonably fluid. In moving onwards, we are going to take a more directive role in how MSP's are allowed to use public space and under which conditions."

Manchester:
"Continued push for shared mobility and the development of mobility hubs, increasing work to encourage people out of private cars through nudging behaviours."

66. Close collaboration with all parties is necessary to work with the same goals in mind

Manchester: “Close collaboration, we have calls and emails with all parties involved to ensure clarity and that we are all working with the same goals in mind.”

1.11. Communication and nudging

67. General communication is important from the start on.

To get people excited about the project, explain mobilityhub, but also to frame delicate issues such as the occupation of the public domain; space is taken up at the start, but there will be more space left over because less individual space is needed in the end. General communication can be done through multiple channels, at different stages, possibly customized to target groups.

Amsterdam:
"First and foremost, the concept of a 'hub' is unknown to many people. It is often used in different contexts, for example as a co-working space or a knowledge center. To make clear and understanding what a mobility hub entails, we believe that pictures of an eHUB in combination with a clear explanation accompanied with an instruction could bring you very far. This is also confirmed by the a/b test (Marvel test). The landing page performance showed that users were engaged with the visual elements of the website, they slowed down and took time to take in the information.
Furthermore, the language should be accessible and comprehensible. It helped us a lot to have critical readers, such as our communication advisor, to read our input and adjust when deemed necessary.
The insights we gained through the a/b test can be used for targeting potential users. We are planning to run a communication campaign to increase the use of the eHUBs by implementing the insights regarding effective messages for different target groups."

Kempten:
"In Kempten we have a general communication plan in place for situations like that. There are newspapers, webpage, Facebook, Instagram, posters and flyers. The same plan will go into action when we open the cargo bike stations."
"We will start our nudging campaign soon and hope we chose the right strategy to make it work".

Manchester:
"We have worked up a communication plan as we have planned the trial. As part of the plan, we have engaged with the mobility providers to ensure that there is one common message that links the eHUBs. The branding is also consistent across both the EVs and e-cargo bikes, as well as the dedicated eHUBs page on the Electric travel website."
"Clear brand, clear message with a call to action i.e., with an offer. Relevant images to the campaign i.e. images and videos from Manchester and in areas where the eHUBs were used were prevalent in our campaigns. We also used a range of models i.e. sex, age and race to ensure that everyone felt the campaign was aimed and viable for them.
Videos worked better in our campaigns than static images, links to websites so people could get more info via FAQs, the use of offers also encouraged use. We also did campaigns which featured the different times of the year i.e. a valentines campaign to spark more interest."

Nijmegen:
"Communication has always been a major part of our efforts. For this, we procured a communication and marketing bureau to lead the eHUBS campaign. This has proven very useful throughout the entire project."

Leuven:

"Thanks to good cooperation with our colleagues in communication from new city developments, we have drawn up a communication plan. We usually conduct the communication on two levels: general and per hub. Communication is done through different channels: banner, newsletters in the neigbourhoods, flyers, press moments and releases, social media posts, articles in city magazines, webpage."

Dreux:
"Factors as a low user cost and ease of use could raise the effectiveness of the communication."

68. More targeted communication is important for bottom-up eHUBS, however this takes a lot of time and energy.

It is worthwhile to monitor the effectiveness of these communications.

Amsterdam:
"Due to the bottom-up approach, communication is a fundamental part of the planning phase. What we learned is that different target groups require different communication strategies. We learned that parking is a delicate subject, therefore you need to include a conversation about the loss of parking lots in the planning phase.

In order to reach as many citizens as possible we made communication material in different languages such as English, Dutch, Arabic and Turkish. Moreover, we really need to explain the advantages of using eHUBS as well as how to use them, to really excite people about the concept. Being part of the solution in our extensive participation process gave the Amsterdammer perspective and this was considered positive."

Leuven:
"Communication depends on the type of the hub. In case of a top-down hub, communication consists mainly of informing (general). In case of a bottom-up hub, it is about customized transport and other services. Communication starts with participation moments and explanation of the following questions (time intensive): What is a hub? Why has the city of Leuven opted for shared mobility? What are the advantages of a hub? …"

69. Try to get an overview of the project first in order to be able to use all aspects of communication.

Once you start the roll-out, the communication can be more targeted, at which point you can highlight positive effects and seek users and allies. Take in account some communication tools are limited by technical constraints, as maps on webpages. Use recognizable (local) brands and channels.

Amsterdam:
"Some advice for a good communication campaign:

- Use local branding: this helps with recognizing the HUB
- Make it real and tangible: factsheets for different target groups to tell the story
- Share share share: when doing something new and innovative make sure to tell your story and find allies and early adopters to show the effects of the Buurthub (= neighborhood eHUB)."

Dreux:

"Specific leaflets were created and delivered into city center inhabitants' mailbox to spread the knowledge on eHUBS."

Kempten:
"We started a campaign once we opened the first hub with 2 e-cars and the car sharing company is satisfied with the outcome."

Manchester:
"Communication to end-users has been limited during the planning stage. We have engaged with some end users at forums as well as placing information about eHUBs on the TfGM website, indicating that they are coming soon."

Nijmegen:
"So far we feel that our communication campaign has been very successful. The main advice would be to make sure you have the expertise within the project to provide all aspects of the communication campaign."

70. Focus on the first use and on the visibility of the eHUBS to promote the uptake of the eHUBS.

It is recommended to monitor nudging interventions to evaluate what works and what not. Anyhow, outcome on the longer term is hard to prove.

Amsterdam:
"University of Applied sciences is doing research together with Fynch. They will share the outcome."

Dreux:
"Training sessions about how to ride an e-bike were held just after the inauguration of the shared e-bikes stations, it worked quite well and enhanced the service."
"Perhaps we should offer more open trial sessions, which we did only once early 2021."

Manchester:
"The eHUBs are not yet live in Manchester. However, we plan to do organic and both paid-for social media posts. For example, we will pay to have adverts around the eHUBs pushed to particular locations and interest groups. In addition, we have worked with the mobility providers to get discount codes for new users, to help encourage uptake."

Nijmegen:
"Evaluation of what has worked and what not is difficult but hiring a bureau to think about the behavioral side of the eHUBS project has proven useful. Increasing the visibility of the eHUBS has been useful, and we do expect some positive effects from the instruction video's as well. However, we will have to see how this develops in the coming year of eHUBS deployment."

Kempten: In my opinion it is important to stress how easy the handling is and what the advantages for the individual person are.

Leuven:
“When launching new hubs, we distributed a leaflet to the surrounding neighbourhoods in which we made the concept and the offer clear. We also included an incentive, e.g. a voucher for a number of free rides. This works to encourage people to have that first experience. Because of this approach, the brochure is also read more often.”

Cargoroo:
“Nudging should not (only) be aimed at increasing the usage by segments of the population that already are familiar with the hubs/shared mobility, but especially at harder to reach groups in order to diversify the segments of the population that make use of hubs/shared mobility and hence increase the support base for these services in cities.”

71. Consult behavioural change specialists for your communication and nudging.

Nijmegen:
“It needs to be recognizable, it needs to be targeted towards specific groups, it needs to be in line with the goals of the project and it needs to convey things that can actually be achieved. To really get this done well, you need to have professionals on board that have the experience and know how to really start up an effective campaign.
Achieving behavioral change is actually quite difficult, although we have seen that the new modes of transport attract some new behavior. Trying to work with windows of opportunity helps, but also using the specific triggers for target groups. In the end, I think our most important tip here is to include specialists in behavioral change aspects.”

1.12. Data collection (R) (+ user management?)

72. Make clear agreements with the mobility service providers about which data you require, how and when they are delivered, for which purposes they can be used for and how you will store them.

Dreux:
"The reporting documents sent by the providers are satisfying and help a lot to track the use of our eHUBS. We don't have a proper written agreement on data sharing with the providers, but we wrote in the specifications that they had to deliver those data, and they are doing so so far."
"The data provided by the mobility operators is quite complete. It allowed us to have a good overview of the results of the service : rentals, users, distribution per day and per hour. That data allowed us to make assumptions on rental purpose for the users. Our hypothesis is that users of the e-bike service are renting bikes mainly for leisure activities.
However we could not get data on user profile : age, gender, address. The mobility providers started to collect these data very recently.
Important to include data collection in the requirement specification document from the beginning, in order to be able to ask for that data afterwards. Ideally, specify the type of data you want to collect (but it is sometimes difficult to ask for it before the implementation)".

Nijmegen:
"Readiness to share data was a central demand for MSP's to join the project. We have made a list of the data required from the MSP's. We want to know the following for each eHUB:

- How often is each means of transport used per day at each eHUB?
- How many new users are there at each eHUB?

We also want to know about the points below per eHUB.

- How many app installations have there been in the vicinity of each eHUB?
- How long are the means of transport used?
- What are the demographics of people who have installed the app but have not used an eHUB?
- What are the demographics of people who have installed the app and are using an eHUB?

We have learned that the eHUBS do in fact replace quite a high number of car trips and therefore that they can be viewed as a success in terms of behavioral change."
"There was no specific agreement on data sharing as such, but data sharing was a requirement for participation in the eHUBS project, with a list of the required data being shared."

Leuven:
"It is good to have a clear idea in advance of what data you want for your research and policy, also to be able to anticipate questions that might come from the politicians, citizens or third parties.
It is sometimes difficult to obtain similar detailed data from different providers. Providers do not always have the same working method, which means that data is sometimes delivered with different parameters or in a different time frame. Not all providers can provide location related data.
It is important to have clarity between parties about which data can be shared and which cannot, also taking into account GDPR. A list of the raw data to be delivered can help, but to get a clear picture of the situation it is sometimes useful to get commercial information as well. We have set up a non-disclosure agreement with Cargoroo which is available on request."

Urbee:

"Data regulations are strict. We learned that cities and stakeholders believe that data sharing is relatively easy. However, there is a lot of responsibility with the providers to protect the collected data and data sets for misuse and abuse."

Manchester:
"Data sharing agreements have been finalised within the MOUs. These are being signed at the moment and can be shared once signed."
There has been regular data sharing across the mobility providers and TfGM, which has helped us monitor performance of the eHUBs.
Regular communication with the mobility providers, encouraging collaboration and therefore openness in terms of data sharing.

73. Flyers are more effective than letters to get response on questionnaires

Amsterdam:
"In terms of communication means that are effective we experienced that sending flyers, instead of letters, resulted in more filled out questionnaires. This probably has to do with the visual elements of the flyer."

74. Think about your policy questions to use data in a targeted way and avoid data suffocation.

Amsterdam:
"Really define which policy questions you want answered. This is the backbone of your research. Then you look into what type of data you need to answer these questions. And ask that data. Many people just think: get all the data! We never know what type of questions we want to answer in the future! This for us looks like a dystopian society where governments collect all the data they can. We have a responsibility as government to always exercise data minimization in our researches."

75. Take into account that user data vary through external factors (also on the long term), and that dataset analysis remain subject to progressive insights.

Amsterdam:
"We are never finished with learning, but the data needed for most of our research questions are found. We however develop new research questions."

Nijmegen:
"Although we succeeded to get almost the necessary data for policy objectives, it's still early days to come to real conclusions. It's also clear that it's difficult to draw conclusions outside of the main season.
We would also recommend to link the data analysis to the behavioral change approach."

Kempten:
"The cars were booked more often, but that is probably due to the fact, that bikes are not used a lot during winter."

1.13. Evaluation

76. Identify, from the start, a number of suitable KPIs, preferably based on the existing relevant and SMART SDG indicators

Leuven:
"We think it is a good idea to link the evaluation with the SDGs because it provides a framework to focus impact measurement not only within the pillar of sustainable transport, but to look at it in a more integrated way."

Nijmegen:
"The evaluation is in far more detail than the broader sustainable development goals. I think it can be good to use the sdgs as a background for the broader policy of which eHUBS can be part, but whether eHUBS work is more detailed and less directly related to the sdgs."

Amsterdam:
"We found out the KPI's we used are full of assumptions; for example people using shared mobility instead of their car. Many times they do this instead of walking or public transport. In order to get this modal shift insights is very difficult, but for us the only way we can really make an educated guess on the success of the usage of the eHUBS."

"Monitoring and evaluation is very complex when you want to do it right. Always involve the right partners (knowledge institutes)."

Dreux:
"Linking the evaluation to SDGs could be a good idea because eHUBS impact not only carbon emissions but can also participate to SDGs objectives : n°3 good health and well-being, n°11 sustainable cities and communities, and of course n°13 climate action."

"It is important to be very clear on the objectives pursued by the city at the beginning of the project. Evaluation methodology will then be able to rely on examining results based on. Based on our experience in Dreux, learning by doing is the best way to figure out how to organize monitoring and evaluation."

77. Provide a flexible approach and continuous evaluation

Nijmegen:
"We have learned that a flexible approach that allows for adaptive measures during the project is warranted. Provide constant and iterative discussions with the parties involved to try and see what measures are necessary to improve the eHUBS. It's not an immediately finished product."

78. User's feedback is very helpful and incentives help to get their feedback

Manchester:
"In regards to the questionnaires, including an incentive to fill in the questionnaires has helped with Manchester getting responses, i.e., additional ride credits in return for filling in the questionnaires, discount on the car club etc. We sent them to the existing customer base as well as featuring the link to the questionnaire in a Walking and cycling newsletter."

2. Failed initiatives

2.1. Introduction

We made several attempts to contact various 'failed initiatives', but we got limited response unfortunately. A real site visit did not succeed.

We did, however, gather information from Paris addressing less good experiences with shared mobility. We reviewed an interesting article about the viability of the business case of carsharing systems and another article about moped sharing.

2.2. Paris

2.2.1. Autolib

*Source: Article from consultancy office 6t in France, 2017 - **http://6t.fr/en/autolib-not-profitable/** (link no longer works)*

Autolib' one way carsharing service has started in 2012. In 2017 it is not yet profitable.

Learnings

- More subscribers per shared car does not necessarily mean more profit: members use the service less, which meant a ceiling or structural threshold effect and hampered financial health.
  Tip is certainly not to judge success of the sharing system solely on the basis of number of subscribers.
- Analysis of annual revenue (2014 to 2016): subscription fees + journeys: revenue from rides is 23% to 27% of total revenue as far as the whole fleet is concerned. Per vehicle, the share of revenue from rides is around 25%. To be financial viable this share should be higher.
- The number of members per share car increased from 22 in 2014 to 34 in 2016, so increase of 50% in 2.5 years.
  During the same period, the frequency of use of the service per subscriber decreased by about half: from 1.4 trips/week to 0.8 trips/week.
  During the same period, first the number of trips per day stagnated and then decreased from 4.5 to 4.1 trips/day in central Paris; in less densely populated cities it is often less than one trip per car. The average duration remains at 38 minutes. The average distance is 9.3 km.
- First years of Autolib: success because good density and availability - there was a spontaneous Autolib reflex - this reflex diminished by finding no response to your transport demand several times.
  Options to make Autolib financially healthier: subsidies, advertising, price increase (cost per kilometre was relatively low, i.e. €1.13 compared to €2.40 for taxi)
- Own conclusions and tip:
  - Maybe good to look rather at a shared bike system for these short trips?
  - Or make these short rides relatively more expensive: The shorter the ride the higher the cost per unit of time?
  - Very important to follow-up reservation level together with coverage

2.2.2. Mobilib

Source: Mobilib' at Polis annual conference 2020 (presentation)

Since 2015, there was the shared vehicle service, with 200 fixed stations for three operators. That contract would run from 2015 to 2018 and then be extended to 2021. From 2019, Mobilib' emerged with 1,200 stations for 4 operators, complemented from 2020 by Mobilib' commercial with 260 fixed

stations for 1 operator, focusing on light e-delivery vehicle in order of sustainable urban logistics. In total, only 18% of the vans would be fuel-engined.

The lessons learned from this subsystem were as follows:

- EVs were not yet 100% adapted to serve as roundtrip shared cars because
    - Mileage range too low
    - Preference by users for conventional or hybrid cars
    - Shortage of charging infrastructure outside Paris
    - Less revenue due to need for time to recharge between trips (up to 8 hours)
- The cost to use a parking space was too high for the providers (between €750 and €3,000 per parking space per year)
- Duration of the agreement between the city of Paris and provider was too short: namely 3 years for conventional and hybrid vehicles and 6 years for EVs and Hybrid plug-in.
- The procedure to set up a station took a long time, sometimes more than 2 years.
- The city could not collect usage data.
- The service was not known to Parisians due to poor communication

Necessary improvements to generate a viable business model for providers

- Rental fees for parking spaces should be up to 10x less (1,500 for conventional cars, 900 for hybrid, 800 for plug-in and 300 € for EV)
- Terms of agreements would be extended from 3 to 5 years, and from 6 to 7 years
- Determination of a maximum number of shared car providers so that there is still healthy competition
- Locations of stations should be well chosen
    - High population density
    - Opportunities to switch modes
- Data collection must be possible
- Nodige verbeteringen om een leefbaar business model te genereren voor aanbieders
- Huurtarieven voor parkingplaatsen moeten tot 10x minder zijn (1.500 voor conventionele wagens, 900 voor hybride, 800 voor plug-in en 300 € voor EV)
- Termijnen van overeenkomsten zouden verlengd worden van 3 naar 5 jaar, en van 6 tot 7 jaar
- Bepaling van een maximum aantal van aanbieders van deelwagens zodat er toch gezonde concurrentie is
- De locaties van de standplaatsen moeten goed gekozen worden
    - Hoge bevolkingsdichtheid
    - Mogelijkheden om overstap naar andere modi te maken
- Data collection should be possible to recruit better insight into business and travel behaviour

Tips:

- Important to collect a representative set of usage data, because just the number of registrations does not say much; as these people often did not find an offer for their demand because the number of cars was insufficient, they gradually used the service less. Registrations decreased, and utilization also remained low while availability was now better, so revenues decreased. Bolloré then asked for support from the city of Paris, but that cost was oversized so the sharing system was discontinued in June 2018.
  The success of Autolib' in the early years (2014) was due to the high coverage of the offer; it

peaked at more than 5 trips/day/car in January 2015. Then there were an average of 24 users per car, each with a usage of 1.5x/week.
- Sharing systems are well used if they are easily available.
- Trust in a sharing system is very important - that trust is built through a performant response to demand. If there is a kink, it is difficult to fix.

Often it is car-rental companies, such as Avis, Hertz, ... that have started sharing systems because it's anybody's guess how the car-rental sector will evolve and so they have a piece of their own experience of how it evolves. It is a very capital-intensive sector, and therefore not surprising that such big companies are partly venturing into that business. Another kind of player are the car manufacturers who are throwing themselves into share systems.

2.3. Can carsharing services be profitable?

Source: Transport Policy 77 (2019) 68-78. Can Carsharing services be profitable? A c ritical review of established and developing business models. Lagadic, M; Verloes, A.; Louvet, N.

Local authorities have the challenge of building a comprehensive, efficient and sustainable mobility offer, and can play a facilitating role in this by

- Providing financial support (e.g. installation of charging stations)
- Providing incentives (e.g. fixed parking spaces for a democratic fee and good signage to prevent wrong parking) - in Copenhagen, research would have shown that only round-trip car-sharing has a positive impact on congestion and car ownership, and free-floating systems do not; round-trip providers have to pay 30€/car/year, but free-floating providers pay the rate of a private car
- Integrate car-sharing systems into spatial planning policy (e.g. deploy share cars where parking pressure is high, limit parking space for private cars in new urban developments, deploy shared cars where it is paid parking; link parking fees to car emissions, set up LEZ, enforce a good price (maximum fee) with providers for charging stations (e.g. in Amsterdam) so that e-driving becomes more profitable
- Promote car sharing and make it clearly visible (parking pass for shared cars for 300€ per year in Paris)

Business model innovation can be crucial to achieve a profitable and sustainable business model:

- Combined mobility services: e.g. one app (MaaS), one account that gives access to different services, a MOBIB card that also allows you to open a shared car (although the latter is rather looking at digital integration without the use of a card or such), ... in short, advanced integration (ticket, spatial, institutional, ...) (e.g. STIB and Cambio in Brussels)
- Hybrid sharing systems (combination of peer-to-peer and commercial sharing systems on one platform, as well as a combination of modes, or in addition to sharing also renting, leasing, ..., or round-trip together with free-floating systems, or B2B in addition to B2C (maybe letting employees also use the work fleet for private use)
- Lease-to-share: the lease cost for the owner becomes a lot lower if he commits to making the car available to third parties - thus creating an attitude among these leasers that they tend to share peer-to-peer once the lease is over)
- Variable pricing: evolve from first come first served pricing to dynamic pricing that takes into account spatial distribution of cars, demand for car, "premium" price category for higher priority to car, ... Also idea to set price/minute lower during off-peak times

- Challenge of peri-urban areas: role for local authorities, e.g. by building charging infrastructure; more use of peer-to-peer sharing systems (but still need to find a solution for short distances, and therefore need for a system to open the car remotely to relieve the burden on owners, but this is still expensive)

Transforming the chain by involving new actors

- collaboration of shared-mobility providers can lead to economies of scale, and more tailored offerings and then more revenues
- partnership with retailers - socio-economic profile of car sharers is rather decent - it has been shown that people who occasionally use a shared car to go shopping spend longer time in shops and also tend to stop at multiple shops. So strike a deal with a retailer : e.g. 10min free parking time at the shop, or 5% discount on car sharing offered by shop, ...
  Also experimented in Paris with advertising messages on shared cars, but stopped by "greens"
- project developers: offer of sharing system for residents, and as there are charges for general services so too for the shared cars (e.g. for 3h/month) - if they need more, they pay extra fee (which is competitive with other providers, and gives advantage of being allowed to park in other car parks e.g.). In the parking regulation of new housing projects, it is good to be able to replace e.g. the obligation of 3 parking spaces for private cars with 1 shared car.

Conclusions from article in transport policy

- Car sharing is not a new solution, but it has evolved positively with the development of ICT. It is a good complement to public transport, but often does not yet appear to have a sustainable business model. It leads to a rather unstable and competitive niche market with many new providers for a relatively small user group. It is still necessary to change mobility behaviour to achieve a viable business.
- 3 key questions remain: (1) how can innovations lead to a use by a wider group of people ; (2) can public funds be used for car sharing? ; (3) what should car-sharing look like with the new evolutions around autonomous shuttles, for example?

2.4. Moped sharing

Source: Lessons from discontinued moped sharing operators. 19 pioneering companies that stopped service (2020, INVERS, Enrico Howe)

The sharing of mopeds is a success today (2020) as evidenced by the growing market volume. Despite that success, many operators have already discontinued their offerings. The lessons learned from them are instructive for current and future providers, though, to help them further transform our mobility system..

Who were these operators?

15 of the 19 companies were start-ups that launched their business with a focus on moped-sharing or micromobility in general. Most of them were operating in Europe, which is consistent with the market dominance in Europe since the beginning of this industry, around 2012. Most operators had started between 2016 and 2019. They had lifetimes ranging from a few months to a few years. Their fleet was usually no larger than 250, unless a few large operators.

The table below summarizes the obstacles and recommendations.

	Moped (vehicles)	Connectivity and software	Market conditions	City conditions	Business pivot
Obstacles	Combustion	Low quality of external tech supplier	No profitability	No city support (e.g. license fee)	Few companies shifted focus from operations to tech supplier role or charging solutions
	Low quality	Bad connectivity stability	COVID-19	Too few mopeds (service density)	
		No quality third party offers	Lower demand for combustion mopeds	Too powerful competitors	
			No investors		
What's next?	Focus op e-mopeds	More proven plug-and-play solutions	Coming closer to profitability	Support from cities start to take shape (e.g. by implementing tender processes with long-term operation guarantees)	More awareness for moped sharing
	Better hardware solutions	Diverse use-cases	More investors		Better acceptance for shared mobility
		Expert connectivity solutions in place			

The entire industry has witnessed an enormous progress over the past years. The start-ups were pioneers who paved the way for today's industrial growth.

3. The eHUBS Consortium

The consortium of eHUBS consists of 15 partners with multidisciplinary and complementary competencies. This includes European cities, leading universities, networks and electric and shared mobility providers.

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https://www.linkedin.com/groups/13711468/

For further information please visit http://www.nweurope.eu/ehubs

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