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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
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URBEE (E-bike network Amsterdam BV)	URBEE	The Netherlands
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The Highlands and Islands Transport Partnership	HITRANS	Great Britain
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1. Introduction

Shared mobility, considered in its forms as carsharing and shared micromobility (i.e. (cargo-)bike sharing, scooter sharing and moped sharing), can contribute to the sustainable transportation system cities and regions are aiming for. More and more cities are looking for possibilities to start or open up their urban environment for shared mobility services. As this landscape is still evolving, regulatory frameworks are still being developed and adapted, so that the potential of shared mobility services is maximum utilised and problems associated with it are being reduced. Based on the experiences and findings of the eHUBS-project, this document provides several policy recommendations with regard to the introduction of eHUBS. This would support potential replication cities in implementing an eHUBS network that is accommodating a sustainable transportation shift.

It is of importance to consider measures that will on the one hand support and enable shared mobility (hubs) and on the other discourage transportation options that do not contribute to the policy goals. These so called carrot-and-sticks measures can fit into an integrated transportation planning approach, which could lead to a change in people's travel behaviour and achieve the desired modal shift.

2. Defining your policy goals

Setting up an eHUB network is a complicated task, because the network can serve different purposes and their contribution to the policy goals should be clear. The policy objectives define the kind of network that has to be implemented. This in turn determines the size and the locations of the different hubs and the services that are offered there. It is important to already consider the barriers that could arise, for example in terms of available public space, legal issues, absence of support of other departments, viability of the network for service providers, etc. Additionally, it is also relevant to consider opportunities that would support the rollout of the network in achieving certain policy goals, for example in terms of integration with public transport, supporting the development of the surroundings, partnerships with other stakeholders, etc. **If policy makers have adequately reflected on the barriers and opportunities of their planned mobility hubs network, it will be easier to take them into account during the process of adopting effective policy measures.**

The planning of an eHUBS network starts with defining the policy goals that should be achieved on the short, middle and long term. As it should not be considered as a stand-alone solution that will solve several transport-related challenges, it should be introduced into the wider-picture. Most European cities have constructed a Sustainable Urban Mobility Plan, which sets out the strategies to achieve a more sustainable and liveable transportation system. The policy objectives of the eHUBS network should be defined within the framework of the SUMP, and see where synergies with other initiatives of the SUMP are. If no concrete SUMP is established, it is recommended to identify the local/regional/national transport policy objectives on which eHUBS could have an impact and see how eHUBS could complement initiatives already taken within these frameworks. **Therefore, it is important to anticipate these different policy domains and coordinate with the other responsible authorities how policies in their respective domain could improve the effectiveness of the eHUBS network.**

eHUBS should not be looked upon within the context of a solution that only supports shared mobility. It is also of interest to consider it as a solution to reinforce public transport, support local economic development, support transition to electric mobility, create qualitative public space and amenities, increase accessibility of certain areas, reduce transport poverty, etc. Therefore, the policy recommendations in this report are involving several policy domains.

'Defining your Policy Goals'	▪ Reflect on opportunities and barriers before setting the policy goals ▪ Take on a short, middle and long-term perspective ▪ Consider it in a broader perspective, connecting with SUMPs or strategic transportation plans ▪ Consider it not only as a transportation solution, but see if synergies with other policy objectives can be established

3. Setting up the infrastructure

Establishing an eHUBS network requires an integrated planning approach. It is important to involve other administrations that can support in adapting the public space and supplying the necessary services. The components that policy makers need to take into account when establishing the infrastructure are the possibility to install charging infrastructure, the availability of space, the flexibility of the infrastructure and the possible integration with existing transportation infrastructure.

First, considering the charging infrastructure, the eHUBS-project experienced that providing the required charging infrastructure and electricity supply is a big hurdle. The investments in such a charging infrastructure network are significant. However, it can offer a certain service level for end users as their electric shared vehicles will always be charged and the charging infrastructure can be used for different modes (e.g. e-scooters, e-bikes and e-cargobikes) and different purposes (shared or personal use). **If no resources are available to install charging infrastructure at that scale, we recommend to consider certain e-micromobility services that are operating a different model, using swappable batteries**. This requires increased efforts in terms of operations, but the battery swapping can be combined with maintenance and redistribution operations. For e-carsharing, charging infrastructure is still key. **With the upcoming electrification of the vehicle fleet, every public authority is working on the deployment of a public charging infrastructure network. It is important to involve eHUBS in this process and put more focus on charging infrastructure for shared electric vehicles, as personal electric vehicles still put a lot of pressure on public space.**

Second, the availability of space is an important element that, to some extent, determines the kind of network that can be set up. As public space is scarce, especially in urban environments, there will be opposition from different (transportation) users if certain areas of public space are repurposed. Therefore, it is tempting to install infrastructure where the quick wins are, namely areas where public space is still available (in most cases this means pavements, while parking places are mainly ignored). However, this can lead to suboptimal locations and a network which is not sufficient to achieve the policy goals.

Therefore, we recommend to work closely together with other departments (involving other policy levels, i.e. local, regional, national) to see if there are opportunities to integrate the eHUBS infrastructure in upcoming public works. **It is also vital to have political support so that certain choices, which could create initial resistance from citizens, are actually made.** This also involves engaging with citizens, on which we will elaborate below. Additionally, cooperation with external stakeholders can also create opportunities in this sense, but this will be discussed in the sections below.

Third, the flexibility of the infrastructure is a necessary aspect to consider. Setting up a whole infrastructural network involves a high investment. If this infrastructure is fixed and cannot be adapted to the demand for the services in the respective area, it can hinder the performance of the total network. **Therefore, we recommend to establish infrastructure that can accommodate future growth or decline, so that the current locations can be better adapted to the demand or that the infrastructure can be reallocated towards other locations, so that it can be tested if these locations are more appropriate.** However, in order to indicate towards citizens that these mobility services will be a long-term and reliable solution, it is important to invest in the infrastructure and realise an adaptation of the public space that is qualitative, showing that you have a long-term perspective for the network.

Lastly, we recommend to look for possibilities to integrate the infrastructure into existing public transport infrastructure. This can offer opportunities to readjust the existing public transport infrastructure and make it more attractive, safe and accessible. It can furthermore enable an multimodal trip. However, it should be kept in mind that certain shared mobility modes, i.e. cargo-bikes and cars, are not well-suited for integration with public transport, so that these locations are not appropriate to set up infrastructure for these shared mobility services. **It should be the responsibility of the policy makers to plan and build for an integrated network with public transport and the respective authorities, so that the transport network in general stimulates sustainable travel.**

'Setting up the infrastructure'	▪ Consider different operating models for shared services, as this impacts the investment and readaptation you have to do in physical infrastructure (e.g. charging infrastructure and electricity supply) ▪ Consider how the different operating models have an impact on the modal shift, car ownership and emission reductions, and align policies accordingly ▪ Seek for opportunities with other policy domains to repurpose public space to eHUBS ▪ Gather political support to repurpose public space to eHUBS, as users will only be attracted if it is a long-term solution ▪ Integrate flexibility in the design of your infrastructure, so that the network can be adapted to the demand and circumstances ▪ Plan a network that complements public transport so that it reinforces the utility of public transport

4. Cooperation with MSPs

Investing in the infrastructure to accommodate the shared mobility services is one aspect. Another aspect is the provision and operation of these services within the network. Therefore, cooperation with mobility service providers is essential. Well-defined service level agreements can contribute to a network that is maintained and available. However, the objectives of the local authorities can differ with the objectives of share mobility providers. This can be reflected in the locations and target groups that the local authority is aiming at, while these are possibly no appropriate locations and user groups for the shared mobility provider to establish a solid business case. **We recommend to go into dialogue with providers before committing to a network consisting of certain locations and shared mobility services.** This can help local authorities to understand which of the anticipated locations of the network can be attractive for which kind of services. The eHUBS project experienced that smaller and medium-sized cities have difficulties to find mobility service providers willing to provide services at fixed locations specified by the local authority. If a certain scale is not reached, certain shared modes cannot reach profitability. **Therefore, we suggest to take into account the model and mode of the mobility provider and based on his input decide on certain locations where public space can be repurposed. Also take into account the possible impact of the considered model and mode, so that incentives are rewarded to operators having a larger impact on certain sustainability goals.** For example, a shared cargo bike operating as a roundtrip station-based model can function as a standalone service in neighbourhoods, while a shared bike operating as a roundtrip station-based model do not serve many use cases as a standalone service. A shared bike is more suited for a back-to-many station-based model, with a dense network of bike sharing stations. **Therefore, it is not recommended to aim for a whole range of mobility services at every hub, but take into account the contextual setting of the locations and discuss with operators which mode and model can serve these locations. It is important to think about the added value of clustering the services at the hub locations, as it can offer more flexibility to define suitable locations if only one mode is considered.**

If you want people to change their current travel behaviour, you have to provide mobility services on which they can rely for a long period of time. It is difficult to convince people to dismiss their car if they suspect that the alternative will suddenly not be available anymore. **Therefore, a long-term partnership should be strived for, while defining service level requirements for the operators that increases the quality of the network.** These service levels could define requirements in terms of number of vehicles operational, the area covered, sharing of data, the allowed time vehicles are out-of-operation, the allowed time vehicles are not being used, the average use of the fleet, the equal distribution of the fleet, etc. It is important to understand how the mobility service providers can help reaching the objectives of the local authority, but also which elements are important for the mobility providers in order to operate a long-lasting service and how the local authority can support them. **It is recommended to create a shared mobility action plan, a regulatory framework that strengthens the potential of shared mobility and facilitates the integration with the hubs and the existing (public) transportation network.** In order not to lose the broader policy objectives, the framework has to be integrated with other strategic transport plans, as mentioned in section 'Defining your policy goals'.

Lastly, in order to incentivise operators to start a qualitative service, it is recommended to investigate if some of the financial risk can partly be carried by the local authority, especially in the starting phase.

Afterwards, it can be agreed upon to reduce the financial support if the business case improves. However, take into account that it will take time before people start to adapt their travel behaviour, so the service levels for the operators should not be unquestionable requirements that have to be reached at all cost. Continuing the dialogue is key, as expectations can become more realistic if the needs and hurdles of both sides are explicated.

'Cooperation with Mobility Service Providers (MSP)'	- Before committing to the locations and services you want in the network, input from MSPs should be gathered so that a solid business case (and long-term solution) is possible - Think about the added value of clustering different services at the locations, sometimes it can be more appropriate to have locations focused on one mode. - Define service level requirements so that the network has a high reliability and availability of the services - Take a proactive approach towards the MSPs and discuss with them also their needs in order to establish a long-term relationship - See if during the starting phase some financial compensation is required that can be extended if the operators are reaching the requirements. - Provide targets for the operators and attach certain benefits to it (e.g. allow them to operate a larger fleet or across an extended area) if they reach those targets

5. Engaging the potential users

For the local authority, it is certainly valuable to engage with citizens and target groups during the establishment of eHUBS. Engagement can be displayed through a focus on inclusivity, taking a citizen participatory approach and making communication efforts.

First, a focus on inclusivity is essential so that potential user groups are not excluded beforehand. Try to consult representatives of disadvantaged groups such as people with a visual impairment, disabled people, minorities, digital illiterate people or citizens encountering transport poverty. This process helps mapping their needs and generate ideas how the eHUBS and certain shared mobility services can be readapted so they can better serve these communities. Examples of interventions are requiring mobility service operators to cover underserved areas that are less attractive, adaptations to the infrastructure so that it becomes more accessible and safe, incorporating non-digital information and booking possibilities or showcase and provide training for certain mobility modes to which the communities are not accustomed. **Policymakers should be able to better grasp the opportunities that eHUBS and shared mobility can offer to communities that are usually not considered**, next to the implementation of an efficient transportation network.

Second, the citizen participatory approach can be useful to genuinely engage with the target groups. They can be involved during different stages, from the planning to the evaluation phase. **Local authorities has to facilitate this participation process by creating and actively seeking for channels through which the input of the target groups can be gathered**. Next to this, it is important that the accommodating frameworks are created so that the input can effectively be used. This approach can offer an opportunity to better understand the needs of certain areas and neighbourhoods and adapt the services accordingly. Furthermore, it can reduce initial negative reactions of citizens since they are actively involved during the decision process. Another alternative to engage citizens is to facilitate the sharing of peer-to-peer vehicles. It can provide an alternative to the regular sharing schemes of commercial companies in neighbourhoods where the business case is not positive, while also taking away some of the negative perception if the vehicle is owned and shared by neighbourhood residents.

Lastly, policymakers can promote the eHUBS' services to their citizens by using extensive communication campaigns. They can seek synergies with other communication initiatives and establish a recognisable joint brand under which the eHUBS' services can be gathered. **It is recommended to link its communication efforts with the communication campaigns of the service providers, while also keeping inclusivity in mind, so that they also reach minority groups. Additionally, it is valuable to inform through channels which could be regarded as more trustworthy.** Peers belonging to the target groups acting as ambassadors illustrate such a case. Furthermore, we recommend to convey a message that uses the right framing for the considered target group and showcase the use cases of the services that would contribute to the policy objectives (e.g. if the aim is to stimulate intermodal travel, public transport should be part of the communication message).

'Engaging the potential users'	▪ Take a proactive approach towards inclusivity, go into dialogue with representatives of minorities, so that the opportunities shared mobility and eHUBS can offer to them are better understood ▪ Look for possibilities to receive and use the input of citizens during different phases of the implementation (from planning to evaluation) ▪ Initiate a communication campaign that conveys messages framed differently to the different target groups. ▪ Make use of communication channels that are considered more trustworthy by the potential users

6. Support the digital integration

An essential aspects that contributes to the value of eHUBS is the digital integration with mobility- and non-mobility related services. Policy takes an important role in facilitating this integration. This contains different components, such as establishing frameworks which define requirements with regard to data sharing, MaaS integration, geofencing and integration with non-mobility related services.

First, data sharing standards should be set, so that the contribution of the services to the policy objectives can be monitored based on quantitative data that is easily accessible for the local authorities. Therefore, it should be made easy to connect with the city's transport management system. Furthermore, data sharing standards provide opportunities to facilitate a MaaS solution.

For certain eHUBS' networks, MaaS can play an important role to strengthen the proposition of the network. It can elevate the user experience of having multiple transportation alternatives available in one digital environment. However, it seems difficult to establish a MaaS solution without a facilitating policy framework. **Therefore, we recommend to discuss which role the public authority can play in this facilitating process and see if there are possibilities to set conditions for shared mobility providers with regard to the integration of their services within MaaS solutions. Additionally, policymakers should make sure that public transportation is kept at the centre of MaaS solutions, as it should not be accommodated that shared mobility trips substitute the public transit journeys.**

As eHUBS and the accompanying mobility services make use of public space, the digital integration with the current transportation and urban infrastructure is an important element to consider. Shared vehicles should not be cluttering the public space in an unstructured manner. **Therefore, next to the provision of adequate infrastructure (e.g. eHUBS) that can host the shared services, policy makers should require qualitative geofencing so that the existing infrastructure is properly used and the physical integration within the current urban environment enhances the possible benefits of shared mobility**.

Lastly, digital integration with non-mobility related services can improve the utility that eHUBS offer for certain target groups. An illustration is a joint digital ticket for entering a museum or touristic attraction and access the shared mobility service to reach it. If the locations of eHUBS can complement the locations of point-of-interests, digital integration can be advantageous for both. **Therefore, we recommend to consider if the city-owned point-of-interests (e.g. museums, historic sites) can integrate the eHUBS' mobility services and provide a joint service.**

'Support the digital integration'	▪ Set up data sharing standards and requirements with MSPs, to facilitate the digital integration ▪ See which role the authority can play in establishing a MaaS solution ▪ Make use of the digital aspects of shared mobility services to better integrate them with the current urban environment, requiring geofencing ▪ Look for possibilities to digitally integrate with other public services

7. Creating the regulatory framework

As indicated in the sections above, policy plays an important role in creating a regulatory environment that enables shared mobility and eHUBS. **It cannot only be focused towards providing favourable conditions for shared mobility services, but it should also incorporate measures that reduces the convenience of private car use and ownership.**

First, the regulatory framework directed towards shared mobility has to be constructed. This overall shared mobility framework should define the policy objectives regarding shared mobility and how they fit into the broader policy objectives of liveability and sustainability. **Furthermore, it should propose regulations that enhance the potential of shared mobility and eHUBS, while reducing the externalities that appear with these new mobility solutions.** The regulations can be related to infrastructure adaptations, data sharing, use of public space, geofencing, free parking permits, service level requirements, compensation schemes, etc.

While such shared mobility framework is directly focused on shared services, there are other regulations that can be implemented and have an indirect positive impact on shared mobility and eHUBS. **On a local level, parking regulation can be an effective domain to strengthen the use case of shared mobility services.** If parking in urban centres is still very convenient and affordable, there is no incentive for people to think about alternatives for their private car ownership and use. Additionally, local authorities can also limit the number of (free) parking permits residents can receive. On the longer term, they can think about the locations of large parking garages. It can be discussed if they are still appropriate within city centres, thereby attracting a large flow of cars into that area. However, this can offer opportunities to stimulate intermodal travel behaviour, by providing eHUBS/parking lots at the city outskirt where there can be a switch from car to shared mobility or public transport. **Still considering regulations on local level, the reallocation of public space is certainly an aspect that enhances shared mobility. This can go from repurposing parking spaces to eHUBS to implementing more and better bicycle infrastructure to creating car free or car restricted areas.**

On a national level, regulations should be discussed which require the car user to pay the true cost of using the car. This means internalising the external costs that car use causes, by implementing a kind of road pricing. Furthermore, in certain countries, the car is part of the remuneration of employees as employers can offer it as a fiscal benefit. This does not incentivise people to think about their car ownership and use, as it is paid for by the employer. In the broader perspective, these situations still account for the high car use and ownership on a national level, which leads to an unfavourable position for transportation alternatives such as shared mobility and public transport.

'Creating the regulatory framework'	▪ Consider regulations directly impacting the shared mobility services and the eHUBS, but also regulations that indirectly increases the utility of shared mobility ▪ Define an overall shared mobility framework in which regulations directly having an effect on shared mobility are set, but also contains information on how shared mobility

	can contribute to policy objectives in other domains than transportation ▪ Consider in this shared mobility framework regulations related to data sharing, use of public space, geofencing, parking permits/fees, service level requirements, compensation schemes, etc. ▪ Parking regulations have an indirect impact on the utility of shared mobility and eHUBS. Discuss the current regulations regarding residence parking permits, on- and off-street parking prices, locations of large parking lots, parking lots at the city outskirts ▪ Also consider regulations that involves the repurposing and readaptation of public space towards infrastructure that favours more sustainable travel modes (e.g. taking away on-street parking space, install qualitative cycling infrastructure, implement car free or car restricted areas) ▪ On a national level, try to question policies that favours the use and ownership of private and company cars

8. Engaging other potential stakeholders

This last section elaborates on an aspect that is sometimes overlooked, but should be considered as an essential role for the local authority, namely forming and managing the ecosystem of stakeholders who are not directly related to shared mobility service providers. **The local authority should take initiative to become a stakeholder manager in this ecosystem, which can enhance the potential of share mobility and eHUBS.**

Such ecosystem for eHUBS and shared mobility can include public transport operators, local businesses and tourist sites, business park owners, real estate developers, employers, charging infrastructure providers and car park operators. They can take away some barriers of eHUBS, such as providing available space, creating a demand for shared mobility services to have a positive business case, providing additional services at eHUBS that can make the eHUB more attractive and qualitative, creating more use cases for the shared mobility services (even in a closed system), seamless integration with complementary transportation options or providing adequate charging infrastructure.

If policy can facilitate this process and keep this ecosystem dynamically involved during the creation and operation of an extensive eHUBS network, the potential to reach more different target groups and offer them reliable transportation options is heavily increased. Therefore, we recommend to stay intensively involved in connecting the (indirect) stakeholders and keep searching for potential partners.

'Engaging other potential stakeholders'	▪ Actively search for stakeholders which do not seem evident partners for establishing an eHUB network ▪ Create an ecosystem of stakeholders, that can consist of, next to shared mobility providers, public transport authorities, local businesses and tourist sites, business park owners, real estate developers, employers, charging infrastructure providers and car park operators. ▪ Invest time in the management of this ecosystem and be a facilitator through which stakeholders can seek for synergies with the eHUB network and its services.

The eHUBS Consortium

The consortium of eHUBS consists of 20 partners with multidisciplinary and complementary competencies. This includes European cities, leading universities, networks and electric and shared mobility providers.

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