

Mo.Hub – Co-Developing Cooperative Mobility Hubs in Vienna

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1 ABSTRACT

Cities face the challenge that urban public spaces are often dominated by moving and parked motorised vehicles. In particular in existing neighbourhoods, the question arises as to where space for active mobility, greening and recreation can be taken from and how public space can be redesigned to meet users' needs.

The availability of diverse mobility solutions - as concentrated at mobility hubs - promotes inter-modal and multi-modal, seamless mobility and helps to reduce motorisation (Villareal 2018; Pais 2019; Claasen 2020). Thus, mobility hubs are used in some European cities, to concentrate different mobility options and functions of the public urban space spatially and digitally concentrate (Villareal 2018; Pais 2019; Claasen 2020). The implementation of such mobility hubs has often taken place in new neighbourhoods and is organised in a top-down manner by transport companies, city administrations or developers.

The research project Mo.Hub (<https://mohub.at>) aims to tackle the challenge of implementing mobility hubs in existing neighbourhoods by co-developing and implementing three mobility hubs with a cooperative and co-creative approach for a pilot phase of six months in Vienna.

The mobility hubs combine demand-oriented (shared) mobility offers in close distance to public transport and a jointly designed recreational area, in the form of a parklet. Thereby public space regained by transforming the behaviour from private car use to multi-modal mobility behaviour is made visible. A higher user acceptance is expected by involvement not only in the implementation process but also by testing new operating models that build upon active participation and self-organization.

Keywords: transformation, public space, co-creative, cooperative, mobility hub

2 INTRODUCTION: NEIGHBOURHOOD-BASED MOBILITY HUBS

2.1 Motivation and background

Currently, urban public spaces are often dominated by moving and particularly parked motorised vehicles. The availability of diverse mobility solutions promotes inter-modal and multi-modal, seamless mobility and helps to reduce motorisation (Villareal 2018; Pais 2019; Claasen 2020). For example, one shared car can replace up to 20 privately owned cars (bcs 2016) – with 12.5 m² of parking space per car (on average), this means an enormous gain in public space (Kopp 2015; Eisenmann 2018). Mobility hubs are already seen as a suitable concept in numerous European cities and regions, as they concentrate different mobility options and functions of the public urban space (such as a higher quality of stay and green space) (Villareal 2018; Pais 2019; Claasen 2020).

Up to now, the implementation of such mobility hubs has often taken place in new neighbourhoods and is organised in a top-down manner by transport companies, city administrations or developers in corporations with sharing mobility operators.

While changes in mobility behaviour and thus the acceptance of innovative mobility measures may be favoured in new-build neighbourhoods due to the change of residential location, the implementation of mobility hubs in existing neighbourhoods is more difficult.

A community-based implementation of mobility hubs with the involvement of interested neighbourhoods in a co-creative process offers the opportunity to raise awareness for sustainable mobility, to increase user sustainable mobility, user acceptance and changes toward sustainable, multi-modal mobility. In addition, the participatory approach enabling mobility hubs can also be implemented at locations where no potential is

seen top-down, but where committed residents justify the local need. This supports a faster and area-wide roll-out of mobility hubs with regard to climate protection goals.

2.2 Objectives

The research project Mo.Hub (<https://mohub.at>), funded within the research funding programme Mobility of the Future of the Austrian Research Promotion Agency (FFG), aims to enable multi-modal and seamless mobility, reduce car density and free up public spaces, that can be used in different flexible ways. Having these objectives in sight we want to increase the accessibility of residential neighbourhoods and contribute to reducing mobility poverty. Active user involvement within a cooperative and neighbourhood-based approach is expected to lead to demand-oriented mobility services, higher acceptance of the mobility services and thus to a transformed mobility behaviour.

The aim is to test different approaches to the design of the participation processes as well as different location qualities and design features of the mobility stations within three different neighbourhoods in Vienna (Neubau, Alsergrund and aspern Seestadt). This will be accompanied by impact and process evaluation to assess the acceptance of the mobility stations and learn from the processes. By implementing the hubs, the aim is to gain knowledge about cooperative neighbourhood-based approaches, and to develop a transferable overall package of Mo.Hub.

2.3 Typology of neighbourhood mobility hubs

Neighbourhood mobility hubs are important for mobility to and from the residential location as well as to and from the workplace on the one hand, and for upgrading the public space in the neighbourhood on the other. This is achieved by valorising the existing qualities of the public space and providing new opportunities to stay. (Vianen 2022; Van Gerrevink 2021)

Recommended features of neighbourhood hubs include (Vianen 2022; Van Gerrevink 2021):

- Walking: direct pedestrian connections where possible, traffic-safe location and recognition value.
- Cycling: Cycle parking facilities, cycle service station where appropriate, connection to main cycle routes, e-charging station, safe location and recognition value.
- Public transport: pedestrian connection to bus or tram stops, ideally within sight of them.
- Shared mobility: car-sharing, bike-sharing, possibly other shared vehicles such as mopeds, scooters, cargo bikes
- Private motorised vehicles: parking spaces, e-charging station,
- Open space: quality of public space, densely populated area, close to workplaces.
- Services: Information points or similar, possibly shops and restaurants, possibly parcel boxes.

3 METHODOLOGY

The research project Mo.Hubs aims to gain further knowledge on cooperative implementation processes of neighbourhood-based mobility hubs through literature and good-practice research and an experimental research design by co-developing, co-implementing and co-facilitating mobility hubs in Vienna and deriving knowledge by complementary summative and formative evaluation.

Based on the literature research good practice examples were investigated and assessed within an analysis matrix. Further, selected projects were analysed in-depth by qualitative interviews focussing on important process steps, actors, drivers and barriers.

The assessment of the needs of potential users and the involvement of relevant stakeholders and target groups have already been identified as key success factors for implementation in literature and good practice (Pais 2019; Holland et al. 2018; Dorner/Berger 2017; Dorner et al. 2020). In the collective, engagement is strengthened (Fritsche et al. 2018; Reese 2019), thus offers can be realised in locations where top-down implementation might not be feasible (Dorner/Berger 2017). Mo.Hub, therefore, implements a co-creative process to develop suitable mobility tools for shared use. As each of the pilot locations differs in terms of building and social structure, different cooperative process designs are developed within the project for each pilot location (see chapter 4.2).

An evaluation is carried out to accompany the co-creative process, gather learning experiences to improve processes (formative evaluation) and to improve the measures (summative evaluation) (cf. Chen 1996:163). Thus, the evaluation aims to capture the effects and impacts of the implemented mobility hubs on the mobility behaviour of users and the use of public space regarding user acceptance, user behaviour, characteristics of users and non-users, as well as satisfaction of different target groups (residents, traders, passers-by). Further interest lies on how co-creative processes and their relevant process steps can take place. Hereby, potential fostering and hindering aspects should be identified. A complementary combination of qualitative and quantitative methods (cf. Stifter 2005) is applied both within formative and summative evaluation (cf. Chen 1996:163).

4 REFLECTION: FIRST RESULTS OF MO.HUB IMPLEMENTATION PROCESSES

By July 2022 the first Mo.Hub is operating at full service in the 9th district, a further hub in the 7th district is partially implemented, expecting all three hubs to be operating in autumn. Following, the first results of the implementation process are outlined and discussed regarding fostering and hindering aspects.

4.1 Site definition and formal site-approval

4.1.1 Site definition

An iterative approach was developed for site selection based on quantitative and qualitative criteria and coordination with relevant public stakeholders. Further, the site definition was embedded in formal structures and procedures of the City of Vienna.

The quantitative analysis determined an initial basic selection of building blocks that are suitable in principle for a Mo.Hub location. The location criteria were developed cooperatively based on data availability, feasibility and relevance to the project goals. Building blocks with a higher density, a lower degree of motorization and existing infrastructure (especially for e-cars) were taken into consideration. Public transport connections and the availability of other mobility services were also evaluated, although there was little variation within the areas.

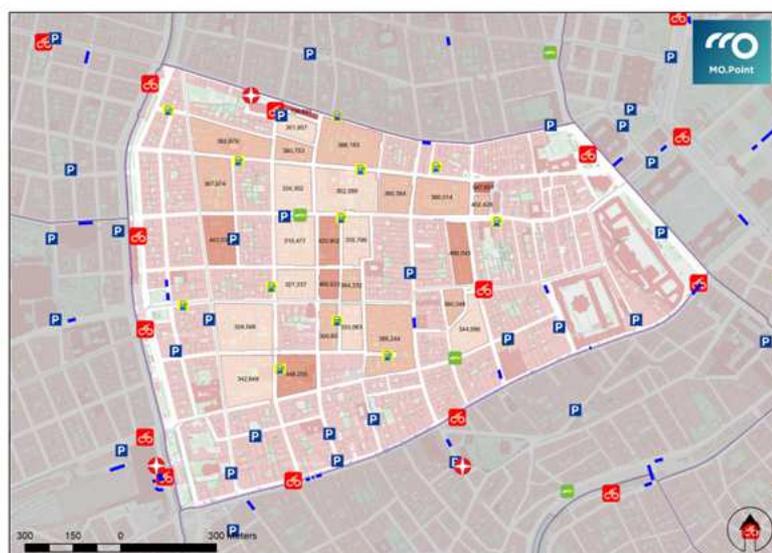


Fig. 1 Quantitative analysis result, MO.Point, 2021

The building blocks meeting the minimum requirements were subsequently explored through city tours in a qualitative process considering the quality of the public space, the availability of recreational areas and public space for car-sharing. Further, information on connecting points such as local initiatives, associations, shops and restaurants were gathered and relevant actors contacted regarding a cooperation. In addition, surveys were conducted in the respective districts to indicate the potential to build an active community for co-designing and co-facilitating the mobility hub. The identified locations were subsequently discussed with Wiener Linien and local politicians, in order not to compete with existing or planned station-based services and to consider local conditions, such as planned construction sites and short-term streetscape redesigns.

4.1.2 Formal site approval

Based on a framework agreement with the City of Vienna, Wiener Linien as the municipal transport operator is authorised to allocate car-sharing spaces on public ground via contracting to shared mobility providers. In a contract between Wiener Linien and the operators, locations and conditions for use are specified. The approved shared mobility spaces are former parking spaces which with the conversion (at least for the period of the contract) is intended only for use by the contracted operator for its offers.

In the process of approval, Wiener Linien acts as a coordinating body and contractual partner towards the third parties and forwards the application documents to the relevant municipal departments that must approve the plan (e.g. MA 28) and the representatives of the respective district. In the following, the already streamlined process of Wiener Linien for the approval of its WienMobil hubs is compared to the approval process within the project Mo.Hub. In the case of the 9th district an existing but unused shared mobility parking space could be reactivated, in the 7th district the shared mobility parking space will be newly created together with a WienMobil hub, therefore the approval process is more time consuming.

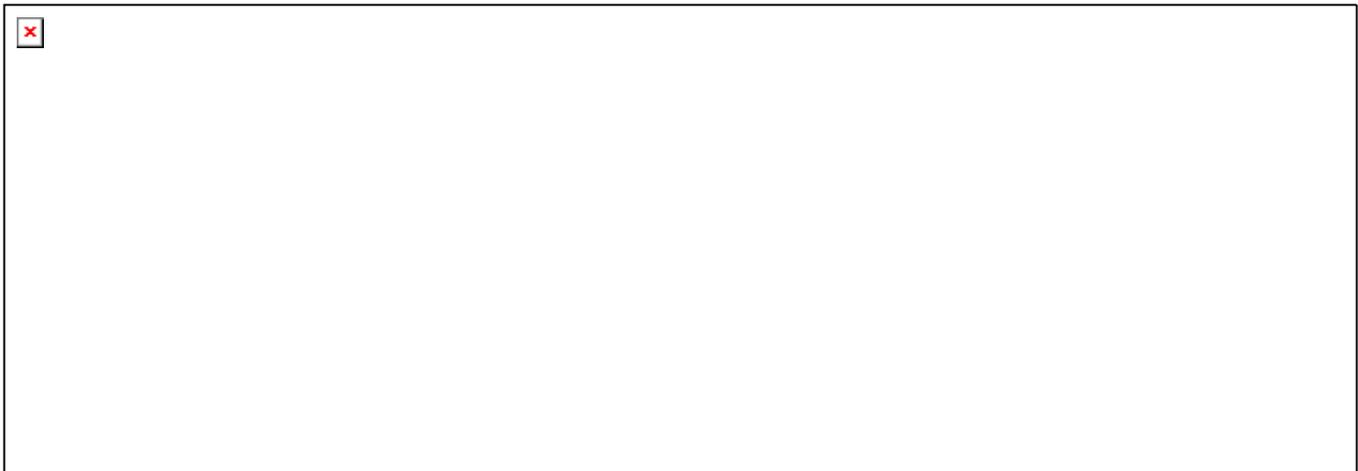


Fig. 2 Streamlined formal process for site approval for WienMobil in comparison to the approval process in Mo.Hub for the 9th district.

Wiener Linien is also obligated to go through the same approval procedure for their current expansion of the mobility hubs from 16 operating so-called WienMobil hubs to 100 by 2025. Due to the existing framework agreement with MA 28, which already defines specifications on, for example, uniform signage for carsharing parking spaces, as well as the experience of former and on-going site approval process, an efficient routine for the process could be developed.

4.2 Co-planning and participation

At each Mo.Hub a different process design for activation, participation and co-creation with local residents was developed. In general three phases of participation were applied: (1) Initial activation - recruiting interested locals for co-creating a Mo.Hub, (2) co-creation - developing and designing a Mo.Hub and (3) on-going activation - recruiting (potential) users.

Within the initial activation process, mailings were sent out including general information on the project and a short survey to indicate the potential to build an active community for co-designing and co-facilitating the mobility hub. As the response rate was low, direct interviews on site were conducted in the 7th district and the project was introduced within a local event in 9th district. Thereby contact lists were gathered of people, who wanted to be informed about upcoming events, opportunities to participate and the project's progress.

In the co-creation phase the design of the mobility hub, relevant vehicles, the operation model and the design of the open space were focused on. The corona pandemic being a main obstacle to the participation, co-creation had to be carried out hybrid or online very soon. To foster awareness and active participation informative flyer and a mobile installation in the public space were created. In the 9th district, cooperation with the local initiative Agendagruppe Lichtental - striving to improve the quality of public spaces in their neighbourhood - could be arranged. The Agendagruppe Lichtental developed and created the open space together with the Mo.Hub team. In the 7th district, active participation appeared to be more difficult, thus

variants of possible open space designs were developed by the project team and sent out via the contact list and website for voting.

The last activation phase is still ongoing, as the pilot phase just started. During this phase, people in the neighbourhood are informed via mailings about the new mobility offer. Also, the open space design is used to create attention for the shared mobility service and recruit people as sharing users, for example through local events.

4.3 Business and operating models

All existing sharing services were surveyed and analysed in the three Viennese neighbourhoods. Most of the provided sharing services in those areas are B2C, some of them also offer a B2B option. Only one service is organised in a C2C structure. The business models of many existing sharing services are quite similar and differ mostly in the structure of the tariffs and the business area, whereby most of them focus on the inner city, dense areas.

	Angebot	Betreiber	Finanzierung			Organisationsform			Betriebsform			Gebiet		
			Public	Private	Subventioniert	B2C	B2B	B2B/C	C2C	Freefloating	Stationsbasiert	7. Bezirk	9. Bezirk	Seestadt
Car Sharing	STADTAUTO by greenmove	Greenmove		X		X	X			X	X	X	X	
	ÖBB Rail and Drive	ÖBB	X		X	X	X			X	X	X	X	
	fliride CarSharing Verein	Verein für nachhaltige Mobilität und Carsharing		X				X		X	X			
	Share Now	BMW & Daimler		X		X	X		X		X	X		
	3-Loop	Caroo Mobility GmbH		X		X			X		X	X		
	Seestadtauto	Verein zur Förderung des Carsharings in der Seestadt		?		?				X			X	
	Wien Mobil Car Sharing	Wiener Linien/Greenmove	X		X	X	X			X	X	X		
Bike Sharing	City Bike	Gewista			X	X	X			X	X	X	X	
	Seestadt Flotte	Aspern Stadtteilmanagement Aspern mobil			?	?				X			X	
	Lime Bike	Neutron Holdings Inc.		X		X			X		X	X		
Kickboards	Tier	Tier Mobility GmbH		X		X			X		X	X		
	Lime	Neutron Holdings Inc.		X		X			X		X	X		
	Wheels	Wheels Ride Safe		X		X			X		X	X		
	Bird	Bird Rides, Inc.		X		X			X		X	X		
	Link	Link Your City, Inc.		X		X			X		X	X		
	KiwiRide	DW sharing GmbH (KiwiRide)		X		X			X		X	X	?	
Moped Sharing	easy way	ÖAMTC		X		X			X		X	X	X	
	goUrban	goUrban-Mobility GmbH		X					X		X	X		
	mo2drive	mo2drive GmbH		X		X			?		X	X	X	
	SCOOT	TSS GmbH		X		X			?		X	X	X	

Fig. 3 Overview of sharing services (1070, 1090, Seestadt), MO.Point, 2021

Based on the analyses and first discussions with interested people, three scenarios for operation- and cooperation models were developed whereby those differed in:

- Service- level
- Ownership structures of the vehicle
- Financial risk distribution

4.3.1 Classic station-based car sharing

The classic station-based car sharing is the most common operation model, where the operator provides a vehicle at a fixed location. After a registration process, everybody can use the offered vehicles for a fixed price, which can be defined by the operator. All revenues are returned 100% to the operator, as he also covers the economic and financial risks 100%.

4.3.2 Bottom-up sharing

The bottom-up sharing is more of a community/ cooperation model, where a group of people (main user group) acquires a vehicle together. The ongoing fixed costs of the vehicle (e.g. leasing rate/insurance, ...) are covered by the main user group. However, to keep the costs as low as possible and the utilization of the vehicle high, the vehicle is also made available to third parties (open user group). The revenue of the trips is

returned to the main user group. The economic and financial risks are taken by the main user group. The service levels can be covered by the main user group itself or by an external operator. An external operator provides the reservation and booking platform, as well as the billing platform, to ensure practical handling of the vehicle.

4.3.3 Sharing through vehicle transfer

The third operation model “sharing through vehicle transfer” can be applied when a person is willing to share his/her privately owned car with others. Therefore, a vehicle transfer agreement is necessary. Within this agreement, the vehicle owner entrusts the vehicle to an external operator for a defined period. For the vehicle to be integrated into a sharing operation, it must be equipped with appropriate hardware. To generate high usage and utilization of the vehicle, the vehicle can be used by anyone (open user group). Through an external operator, who takes over the reservation/booking/billing, users can be checked and controlled (driver's license validation for sharing operation necessary), so that traceability and security can be guaranteed. Revenues generated by the use of others are returned to the vehicle owner on a pro-rata basis. The liability risk remains with the vehicle owner, who must seek suitable insurance. A residual risk due to the loss of value of the vehicle also remains for the vehicle owner.

With the three operating models developed, an attempt was made to show a wide variety of implementation options. Despite many information and exchange events, no group could be found that was willing to actively engage with the project in the long term.

To implement a new sharing operating model, a very elaborate accompaniment and support are necessary. In the districts, where it was possible to connect to already existing initiatives, more active participation was possible, whereas, in the 7th district, where a rather young, sharing-affine audience can be found, consistent and active participation was difficult. For the development and implementation of new sharing operating models, mutual trust, long-term commitment, and the contribution of resources (both financial and timewise) are necessary, which partly contradicts the setting of a research project (temporal component vs. long-term implementation).

4.4 Learnings regarding drivers and barriers to cooperative implementation of neighbourhood-based mobility hubs

Site definition appeared to be an ongoing process, especially in the district Neubau, as there are many constructions areas due to a new metro line and coordination with all relevant stakeholders is very time-consuming. Within in the process qualitative and quantitative criteria was important, although decisions had to be derived in a practical way in coordination with the local politics and municipal transport operators. It appeared, that in case of temporary implementation process experiences and general conditions regarding contracts are not yet given.

Site definition based on the feedback of local residents through short surveys was seen as the ideal, however in reality it was very difficult to communicate with local residents on the rather abstract subject of “mobility hubs”. An unclear vision and too many options turned out to be hindering the activation and participation process. Thus, it was necessary to visualise ideas, narrow down options and prepare examples that could be discussed and further developed with residents.

Further, a participative process (for temporary implementation) contradicts current formal process structure as formal process structures require a clearly defined location and vehicle offer in order to be approved. Whereas a co-creative approach would require a defined location for easier communication with residents and co-developing the offer. In general, the complex formal process and approval structures appear to be hindering private and non-commercial actors to implement station-based mobility sharing in public space in Vienna.

Within the participative process many residents showed interested in the idea and potential results of Mo.Hub, but did not want to engage in the co-development. This corresponds with the findings of the qualitative interviews, which also stated that there was hardly any commitment to participate in the implementation. However, as soon as the services were implemented more residents engaged in facilitating and there is high demand of the services.

In the case of Mo.Hub the temporary character seemed to be a further obstacle to user commitment. Whereas, building upon existing groups of engaged residents in activation and participation and on existing infrastructure within Mo.Hub were identified as relevant driving forces for the implementation.

Interview results showed, that bottom-up initiatives for mobility sharing aim to improve accessibility, in some cases economic and ecological aspects were relevant. Regarding Mo.Hub accessibility is already on a quite high level in all districts, thus main arguments in the communication were focused on economic and ecological aspects. Within this context, interviewees emphasized the influence of a building structure that promotes social interaction.

5 CONCLUSION

Implementing mobility hubs as pilots using a co-creative and cooperative approach together with residents of existing neighbourhoods, as done in the project, has longer lead times than for standardised processes. The formal approval process for mobility hubs in Vienna is not designed for experimental processes so far. Whereas in some other cities (such as Munich), the implementation of pilot projects or temporary mobility hubs is approved more quickly in order to allow for "quick" experimentation. Another conclusion, which is also in line with experiences from comparable projects, is that residents who are participating in the process need a certain degree of knowledge of specifications and options for the design and equipment of mobility hubs to which they can orient themselves or on the basis of which offers can be further developed and shaped (e.g. indicating which vehicle types satisfy which needs or which elements a mobility hub can contain).

The requirement for participating residents to make a commitment and also to contribute financially to the future offer even before a mobility hub is implemented is difficult to achieve without a concrete implementation.

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