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Towards Multimodal Mobility Hubs in Austria: Typology, Standards and Cooperation

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1 ABSTRACT

In this paper, we propose a typology of Multimodal Mobility Hubs (MMH) for Austria, set equipment standards for each of the six types and check their current provision in an explorative quantitative analysis (5 examples for each type). Finally, we argue that cooperation between a big variety of actors is needed to live up to the potential of MMH.

Keywords: multimodal mobility hubs, railway stations, transport system, spatial planning, sharing

2 INTRODUCTION

Multimodal Mobility Hubs (MMH) play a pivotal role in modern mobility systems, as they integrate different modes of transport and facilitate the transition between them. With ongoing urbanization and efficient, user-friendly and environmentally sustainable transport solutions becoming ever more important, harmonized further development of MMH is crucial. In Austria, the individual federal states and regions are at different development stages. Therefore, a comprehensive approach is needed that takes into account functional standards and cooperation models between different stakeholders to avoid inefficiencies in planning and implementation.

This paper proposes a new typology for multimodal hubs, focusing on functional standards and their application to different MMH types. Additionally, it argues for deepened collaboration between key stakeholders. The proposed typology is developed through a combination of literature review and utilizing existing categorizations of space structure and public transport in Austria. By establishing a structured approach for Austria, this study aims to provide a framework that enhances the efficiency, accessibility, and integration of multimodal transport systems.

The paper is structured as follows: Section 3 provides a theoretical background on multimodal hubs. Section 4 highlights distinctive features of the Austrian mobility and spatial planning system. Section 5gives an overview of actors that need to cooperate for a functional MMH ecosystem. Section 6 introduces the new typology, explains classification criteria and offers recommendations. In Section 7, we present the results of an explorative quantitative analysis of the status quo in Austria. In Section 8, conclusions are drawn.

3 CONCEPT AND DEFINITION OF MULTIMODAL MOBILITY HUBS

An MMH is a connection point between different means and modes of transport which also offers non-transport facilities (SVI 2013).Typically, the modes encompass public transport (railway, subway, tramway, bus...), sharing services and infrastructure for walking and cycling. The British sharing support platform CoMoUK emphasizes the modularity of the concept, in which components can be combined in different variations to meet the needs of individual locations and networks (CoMoUK 2019). In addition to transport services these components can include practical facilities like lockers, toilets, eateries; and community facilities like appealing public spaces with green and blue infrastructure or a playground. Since adaption to future development plays a key role, the modules must be flexible enough to add or remove components (CoMoUK 2021).

Success factors of MMH are a wide choice of sustainable travel modes that are physically and digitally well linked; design and facilities that create a safe public space with enough practical facilities; and a visual, social and community appeal of the MMH. Also, hubs need to be part of a clearly identifiable network with services easily accessible by all (CoMoUK 2025).

They are set up in public or semi-public spaces where there is a high concentration of workplaces, shopping and recreational facilities, such as existing public transport transfer points, multi-storey car parks, ground floor zones or the forecourts of buildings. There are also types that are set up in private residential buildings (Möller et.al. 2018).

With their location at highly frequented places, MMH encourage both a multimodal and an intermodal travel behaviour. The term multimodality is more general and refers to the use of different means of transport on different routes at different times, while intermodality refers to using different means of transport for different parts of a single journey (Pfaffenbichler and Vorstandlechner 2016). The availability of integrated mobility options in close vicinity supports choosing the best mode for a journey and offers a low-threshold alternative to the private car as default choice. Alongside the quality of the offered services themselves, the quality of MMH is the decisive factor for the attractivity of multimodal and intermodal travel behaviour.

In his Node-Place model (Bertolini 1999), Bertolini stresses the importance of the non-transport facilities for MMH, arguing for an equilibrium between their function as a transfer point between transport modes and the spatial function of a place itself, where different needs (e.g. shopping, education, recreation, meeting point) can be fulfilled. Since traffic can be explained as a sign of a shortage at a certain place (Knoflacher 2009),MMH with diverse facilities can avoid traffic, as people do not need to move elsewhere to compensate for their deficiency. Subsequently, they fulfil a centre-forming function themselves and encourage compact settlement structures around them. Additionally, appealing facilities attract people to MMH who would fulfil their needs by car otherwise, which in turn invigorates the hubs' node function.

4 PUBLIC TRANSPORT AND SHARING MOBILITY IN AUSTRIA

In 2021, 51.1% of Austria´s population had access to public transport connections of at least "good" quality in the public transport quality grade system "ÖV-Güteklassen" (departures minimum every 40min) (ÖROK 2022). The country is EU leader in passenger rail performance (Gratzer 2024) and has the 11th densest railway network per capita among EU states, with further investments of 21,1 billion € to be made until 2029 (ÖBB Infrastruktur 2023). While those indicators already show a competitive public transport system, the share of passenger km in eco-mobility (public transport and active mobility) that amounted to 30% in 2021 should increase further to 47% according to the Mobility Master Plan 2030. At the same time, unnecessary traffic should be avoided to impede the trajectory of constantly rising passenger km per person (BMK 2021).

The last figure is agreed upon to be connected to the relatively weak spatial planning regime in Austria, that fosters uncontrolled splinter development and car dependency (Dumke u. a. 2024). The main responsibility for spatial planning lies with the 9 federal states, with competences for local spatial planning for municipalities and only limited competences in specific areas for the federal state (ÖROK 2024). While bigger municipalities are more likely to use their know-how and economic leverage to impose a stricter spatial planning regime on private investors, and more often follow the concept of transport-oriented development, smaller municipalities that lack those resources still tend to develop car-friendly new infrastructures (Zuckerstätter-Semela 2011).

5 COOPERATION

To facilitate the integration of services and assets that is the core idea of Multimodal Mobility Hubs, a wide range of fields and stakeholders must cooperate. Currently, the main actors driving the development in Austria are large municipalities, the national railway company ÖBB (ÖBB Personenverkehr 2025) and the public autobahn financing corporation ASFINAG with its Park&Drive concept (ASFINAG 2025). Currently, these actors do not have an integrated approach on the strategic level though.

In the public sector, policy instruments 1. for different transport modes, 2. involving infrastructure provision, management, and pricing, (3) for transport, spatial planning and land-use (4) regarding policy areas such as health and education need to be coordinated and aligned (May, Kelly, und Shepherd 2006). In the Austrian three-level-governance system, this requires horizontal cooperation between municipalities, the nine states and the federal state.

On the operative level, many roles and responsibilities come together in the design, implementation and operation of an MMH. While CoMoUk stresses the importance of involving all actors and clarifying responsibilities from the beginning of the planning process (CoMoUK 2021), this can be challenging in practice. Except for neighbourhood hubs in new development areas, most Austrian MMH are not designed from scratch but developed by adding new services and assets to existing public transport stations. However, including new responsibilities to an existing scheme like the ÖBB station and property management (ÖBB Immobilien 2025) offers the advantage of a "natural" hub manager.

Depending on size and type of the hub, responsibilities can be split between municipality, public or private providers of mobility infrastructure or services, public sector services like education or healthcare available at the hub, property developers, business/industrial parks, leisure or tourist attractions or even community groups (CoMoUK 2021).

To operate and develop not only the "node" but also the "place" function of the hub, we argue for an integrated property management that exceeds the public transport station property. Assuring spatial development with an appealing mix of functions (e.g. business, health, consumption-free space) and coordinating public and private interests around the hub could be a role similar to the one of "city-centre-coordinators" established in some Austrian municipalities (Österreichischer Städtebund 2015).

Effective cooperation between those actors should lead to a physical, digital and democratic integration of the hub. The Smarthubs integration ladder (Geurs u. a. 2024) proposes universal design standards, visibility and branding; routing, booking and payment, service offers, integration of societal goals and policies, conflict-free & place making, stakeholder engagement including (vulnerable) user groups, integration of different knowledge, societal learning as highest possible level of integration.

6 TYPES OF MULTIMODAL MOBILITY HUBS IN AUSTRIA

In the United Kingdom, Switzerland and other countries, typologies of MMH have been created to take account of the range of the concept (CoMoUK 2019; Bisang, Witter, und Scherrer 2023). A typology adjusted to the national mobility system of Austria can fulfil a variety of useful functions. It allows to plan services and facilities in reference to a target system (regarding both the transport node and the place function) ; to estimate the effects of an MMH on mobility behaviour, spatial development and ecology; to estimate investment and operating costs for individual MMH or corridors; and it offers an argumentation basis for setting framework conditions in the field of mobility and land use policy.

We propose six types of Multimodal Mobility Hubs for Austria that are defined according to two criteria: The significance of the hubs transport intersection according to the Austrian public transport quality grades "ÖV-Güteklassen" (measured by the highest-ranking transport category of the stop) (ÖROK 2022), and the urbanity of the area it is located in. The latter criteria follows the urban-rural typology of Statistics Austria that classifies all Austrian municipalities in 11 types from "major urban centres" to "peripheral rural area" according to population density, commuting relations and accessibility of centres (Statistics Austria 2024). Our typology adds to the aforementioned ones by ARE and CoMoUK by not restricting itself to hubs in (sub) urban areas, but also considering rural MMH. However, we limit the typology to publicly accessible types. A possible 7th category of private MMH (in buildings and firms) is not dealt with.

6.1 Type I – Main node in major urban centres

This type represents exclusively railway main stations of the six Austrian large urban centres that have the "ÖV-Güteklassen" category I: the regional capitals Vienna, Graz, Linz, Innsbruck, Salzburg and Klagenfurt and the city-region Bregenz-Dornbirn-Feldkirch with Feldkirch as most important public transport intersection. They already provide excellent regional and national transport connections and direct international links. Their urban integration has grown historically but does not always meet modern requirements. In future, as multimodal hubs, they should enable a seamless connection between long-distance, regional and urban transport, supplemented by sharing services such as bike, scooter and car sharing as well as taxi services. Switching from motorised private transport to public transport plays a subordinate role here. The aim is to create close links with the urban fabric so that these stations not only become mobility hubs, but also vibrant urban centres.

6.2 Type II – Secondary node in major or main node in medium-sized urban centres

Apart from long distance or regional express trains ("ÖV-Güteklassen" category I), also (inter) national bus lines can be the highest-ranking transport mode at this type of hub. Secondary hubs in large and medium-sized urban centres – railway stations or (inter) national bus terminals – play an important role in Austria's regional transport network. While they already complement the traditional public transport system with sharing services, there are deficits in terms of connections for pedestrians and cyclists as well as urban integration. In future, these stations should make it easier to switch from high-level public transport to local transport services and the 'last mile'. The switch from motorised private transport to public transport is

becoming increasingly important. Close links with the city centre and neighbouring business locations as well as the establishment of centre-forming functions should integrate the railway stations more strongly into urban life.

6.3 Type III – Node in small urban centres and regional centres

Hubs of this type include railway stations for long distance or regional express trains ("ÖV-Güteklassen" category I) in small urban and regional centres that have a wide variety of functions in Austria. In addition to everyday mobility, they play an important role in the organisation of tourist route chains. Currently, on-demand transport services supplement the development of areas, but railway stations are often characterised by a certain distance from the settlement structure – a relic of historical planning patterns. The infrastructure for cycling does not meet today's standards and local amenities are often lacking. In the future, these hubs should make it easier to switch from high-level public transport to local transport services and the 'last mile', with the switch from motorised private transport also gaining in importance. Better urban integration, centre-forming functions and improved connections to business locations should further strengthen their regional importance.

6.4 Type IV – Node in rural areas in the environs of centres

Hubs of this type are represented by suburban or regional railway or express bus stops ("ÖV-Güteklassen" category II) in rural areas around centres. They are currently strongly focused on transport, with no recognizable integration into the settlement structure or complementary functions. Large Park&Ride facilities underline the importance of motorised private transport as a feeder to public transport. In the future, rail-bound public transport and bus services on motorways could achieve almost equal importance, particularly through improved parallel routing and integration of both systems. In view of the extensive, coarse-grained settlement structure, cycle highways should ensure better connections to the nodes. In addition, subjective local safety plays a central role in the attractiveness and usability of these transport hubs.

6.5 Type V – Node in rural areas

This type represents railway stations or bus terminals in rural areas that are not in the environs of centres. In terms of public transport quality these nodes are diverse, the highest-ranking mode spans from regional express train ("ÖV-Güteklassen" category I) via regional train (category II) to bus (category IV).

Multimodal transport hubs in Austria's rural areas have a wide range of functions. While some locations already offer infrastructure such as local shops and services within walking distance, others are historically characterised by agriculture or serve as freight hubs. The example of Hermagor shows a successful interplay of different services, including shopping facilities, charging infrastructure and close integration of bus and rail transport. In the future, the switch from motorised private transport to public transport will play a central role, with on-demand services primarily supplementing tourist and everyday mobility needs. Improvements to the accessibility of these nodes must be carefully planned to avoid uncontrolled urban development.

6.6 Type VI – Local neighbourhood node

This type subsumes a diverse range of local hubs in residential areas. The highest-ranking public transport can be a suburban or regional train, underground or bus in urban centres ("ÖV-Güteklassen" categories II, III or IV) or bus in rural areas (category IV). Mostly, (sharing) services are added to well-established public transport stops. In other cases, neighbourhood mobility stations have been set up from scratch with a modern understanding of planning. Examples of the latter type implemented to date in Austria come from model communities or lighthouse projects. In the future, these stations should complement an already well-developed public transport service and facilitate mobility in the local area and the surrounding countryside – for example through sharing services for transporting goods or shorter journeys. Their integration into lively public spaces plays a central role in this, so that they are not only perceived as functional transport hubs, but as a natural part of the urban living space.

7 EXPLORATIVE QUANTATIVE ANALYSIS

After having defined standards for services and facilities for each type of MMH, an explorative quantitative analysis gives exemplary insights into the status quo. The analysis encompasses 30 hubs – five in each category – that are geographically distributed throughout Austria. In each category, we chose hubs located in

five different federal states. If not marked specifically as bus terminal (Busbahnhof), the name of the hub for types I-V refers to railway stations. For type VI, the name refers to the station of the sharing service provider.

The data collection was conducted between October 2024 and February 2025 with a mix of on-site-visits and online analysis (e.g. ÖBB website, OpenStreetMap, Google Street View...).

In our explorative analysis we did not assess the integration of assets (e.g. common branding), but their mere existence. An asset is marked as existent if it can be found within 200m from the hub (entrance), otherwise it is marked as non-existent. For each hub type, assets are defined either as required, optional or undesirable.

		ASSET																				
		PT			Transport Services					Transport Infrastructure						Facilities						
HUB		long distance	regional	local	car-sharing	bike-sharing	e-scooter sh.	on-demand	bike/car rental	bike parking	separated. infra.	e-charging	high rank. road	motorway	car park	housing	public spaces	business	offices	hotel/camp	food
Type I	Feldkirch Hbf.	●	●	●	●			●	●	●		●	●		●	●		●	●	●	●
	Graz Hbf.	●	●	●	●	●			●	●	●	●	●		●	●	●	●	●	●	●
	Innsbruck Hbf.	●	●	●	●	●	●	●		●		●			●	●		●	●	●	●
	Salzburg Hbf.	●	●	●	●			●	●	●	●	●			●	●	●	●	●	●	●
	Wien Hbf.	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●
Type II	Bludenz	●	●	●	●				●	●		●	●		●	●		●	●	●	●
	Graz Don Bosco		●	●					●	●	●		●		●	●	●	●			
	Villach	●	●	●	●	●	●	●	●	●		●	●		●	●		●	●	●	●
	Vöcklabruck	●	●	●						●					●	●					●
	Wien Floridsdorf		●	●		●	●			●		●				●	●	●	●		●
Type III	Bad Ischl	●	●	●	●			●	●	●	●	●	●		●	●	●	●	●	●	●
	Landeck-Zams		●	●						●			●		●	●		●		●	●
	Leibnitz	●	●					●		●		●	●		●	●		●	●		●
	Mattersburg		●	●						●		●	●		●	●	●	●			●
	Neunkirchen N.Ö.		●	●						●		●	●		●	●					●
Type IV	Maria Saal Bhf.		●							●			●	●	●			●			●
	Matrei am Brenner		●					●	●	●		●	●	●	●			●		●	●
	Seekirchen am Wallersee		●	●									●		●	●	●				●
	Stübing		●					●		●					●						
	Wulkaprodersdorf		●					●		●		●			●	●		●	●		
Type V	Deutschkreutz		●					●		●			●		●			●			
	Eisenerz Busbahnhof		●					●				●	●		●	●			●		●
	Hermagor		●		●			●	●	●		●	●		●			●			●
	Riezlern			●									●			●	●	●		●	●
	Voitsdorf		●										●		●		●	●			
Type VI	Hernals (S-Bahn)		●	●	●	●	●			●	●	●				●	●	●			●
	Strandbad Klagenfurt			●		●	●			●	●	●			●		●			●	●
	tim Grüne Mitte Linz			●	●	●	●			●	●	●			●	●	●	●	●		●
	tim Reining. Graz			●	●					●	●					●	●	●	●		●
	VMOBIL Göfis Gemeindeamt		●		●			●		●	●				●		●	●		●	●

● existent	required	optional	undesirable

Table 1: Public Transport: 1.Long distance, 2. Regional, 3. Local; Transport Services: 1. Car-sharing (station-based), 2. Bike-sharing (station-based), 3. E-scooter sharing, 4. On-demand transport, 5. Car or bike rental; Transport Infrastructure: 1. Bike parking, 2. Separated pedestrian and bike infrastructure, 3.E-charging station (publically accessible), 4. Higher-ranking local road, 5. Motorway, 6. Car park; Facilities: 1. Housing, 2. Green, open and public spaces 3. Industry or other business, 4. Offices, 5. Hotel/Camping, 6. Food retail and eateries.

8 CONCLUSION

Against the backdrop of the well-developed Austrian public transport system, comprehensively planned, implemented and operated MMH are the most promising infrastructural instrument to both avoid traffic and

facilitate the shift from private car dependency towards a more sustainable mobility system. This, however, requires a revisiting of Austrian spatial planning practices and the involvement of new actors in established (public) transport management processes.

The explorative analysis gives exemplary insights into multimodal mobility hubs (MMH) throughout Austria. Most of the examined hubs in small centres and rural areas (types III-V) offer a limited variety of transport services and lack separated cycling and walking infrastructure. Car- and bike sharing should be implemented here as last-mile-options to make public transport more attractive. At hubs in bigger centres (types I and II), car parks should be reduced to strengthen the role of transport services and active mobility as feeder for long-distance connections. The potential centre-building function of smaller hubs (types IV-VI) remains partly untapped and can be further utilised by aligning spatial development around the node with further improvement of transport options.

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