

# CIVITAS INSPIRATION ON PUBLIC TRANSPORT



## Improving Smart Transfers at Local Mobility Hubs



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# INTRODUCTION

As urban areas strive to become more connected, sustainable, and efficient, the role of local mobility hubs is rapidly evolving. These hubs – strategically located centres where multiple modes of transport converge – are transforming into critical nodes within smart city ecosystems. At the heart of this evolution is the concept of **smart transfers**, which refers to the seamless, data-driven coordination of passenger movement between transport modes such as buses, trains, bikes, e-scooters, and ride-sharing services.

These seamless, coordinated transfers aim to reduce waiting times, improve user experience, and increase the overall efficiency of multimodal transport networks. By leveraging technologies like real-time data analytics, mobile apps, integrated ticketing, and IoT-enabled infrastructure, mobility hubs can ensure that connections between services are not only synchronised but also intuitive and responsive to passenger needs. This integration is especially important at the local

level, where users often face the most complexity in navigating short-distance, first- and last-mile segments of their journeys.

Offering a practical solution to this challenge, local mobility hubs play a key role in reducing car dependency, lowering emissions, promoting active modes, and making public transport more attractive and accessible to a wider population. The EU’s legislative framework, including the TEN-T Regulation, supports the strategic development of these hubs to foster seamless multimodal connectivity across urban nodes.<sup>1</sup>

As cities continue to embrace integrated urban mobility, smart local hubs stand at the forefront – driving innovation, sustainability, and inclusivity in the way we move.

<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52021PC0812>



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## WHAT ARE LOCAL MOBILITY HUBS?

Local mobility hubs are **compact, strategically located transport centres designed to connect multiple modes of travel**, making mobility easier and more sustainable – especially for short trips within neighbourhoods or smaller communities. They facilitate smooth transfers between options such as public transport (buses, trams, metro, trains), shared mobility services (bikes, e-scooters, car-sharing), ride-hailing or taxis, park-and-ride facilities, and pedestrian and cycling infrastructure.

Public transport serves as the backbone of these hubs by offering high-capacity, fixed-route travel, enabling regional and last-mile connectivity, and helping reduce congestion and emissions compared to private vehicles. Together, these elements create a cohesive network that supports accessible, efficient, and eco-friendly urban mobility.



### In Focus:

#### The Benefits of Smarter Transfers

- **Seamless Multimodal Connectivity:** Enables smooth, hassle-free transitions between modes like bus, train, bike-share, and metro.
- **Increased Efficiency and Reduced Congestion:** Smart scheduling and coordination minimise vehicle idling and overcrowding.
- **Enhanced User Experience:** Real-time updates, clear signage, and intuitive digital wayfinding simplify navigation and boost convenience.
- **Accessibility and Inclusivity:** Features such as step-free access, tactile paths, and audio-visual aids ensure equitable use for all.
- **Sustainability and Lower Emissions:** Integration with walking, cycling, e-scooters, and electric buses reduces private car dependency and supports climate goals.
- **Data-Driven Improvements:** Sensors and user data enable planners to identify patterns and continuously optimise services.
- **Safety and Security:** Improved lighting, surveillance, and crowd monitoring create safer environments, especially at night and in quieter areas.
- **Economic Development:** Mobility hubs serve as community anchors, fostering local retail, services, jobs, and overall economic growth.



# OVERCOMING OBSTACLES TO LOCAL MOBILITY HUB SUCCESS

While local mobility hubs hold great promise for improving connectivity and reducing the friction of multimodal journeys, their successful implementation faces several persistent challenges across technical, spatial, institutional, and social dimensions.

**Data integration and interoperability** remain foundational issues. Many transport systems still operate on fragmented digital infrastructures, making real-time data sharing across agencies and mobility providers difficult. The absence of common data standards and APIs prevents seamless journey planning, ticketing, and transfer coordination.

**Physical and spatial limitations** add further complexity. Most hubs must adapt to existing urban footprints, often with little room for redesign. Balancing the needs of various transport modes –

while ensuring accessibility, comfort, and intuitive navigation – can be especially difficult in dense city environments.

**Stakeholder coordination** is critical but often slow. Smart transfers require collaboration between public transport authorities, municipalities, private mobility providers, and tech vendors. However, differing priorities, fragmented governance structures, and regulatory hurdles frequently delay integration efforts.

To ensure smart transfers are widely usable and equitable, **attention must be given to user experience**, especially for:

- People with different levels of digital literacy, language proficiency, and physical ability
- Underserved and low-income populations who may face cost or service reliability barriers
- The design of user-friendly digital platforms that are intuitive across demographics

**Technology deployment** also brings its own set of constraints. While tools like Mobility-as-a-Service (MaaS), real-time tracking, and smart ticketing can enhance user experience, their implementation is often slowed by:

- Legacy infrastructure incompatible with new systems
- Cybersecurity and data privacy concerns
- Inconsistent internet and mobile connectivity, particularly in smaller or rural hubs

Finally, **funding and long-term sustainability** present ongoing concerns. Upfront capital investment is often high, while return on investment may be uncertain. Many local hubs struggle to:

- Secure diversified and reliable funding streams
- Cover operational costs over time
- Demonstrate community-wide value to attract continued public and private support



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## SUPPORTING SMART TRANSFERS AT LOCAL MOBILITY HUBS

Smarter transfers at local mobility hubs rely on a systems-thinking approach – one that combines **real-time data, collaborative governance, and user-centred infrastructure** to create seamless, reliable, and inclusive mobility experiences.

**Data is the backbone of smart transfers.** Real-time, integrated, and standardised data enables efficient trip planning, dynamic service management, and more predictable transfer coordination. Cities must promote consistent data sharing across public and private operators, using open APIs and established formats like MDS (“Mobility Data Specification”<sup>2</sup>) or GBFS (“General Bikeshare Feed Specification”<sup>3</sup>). These reduce

reporting burdens and ensure interoperability across systems. With real-time updates on arrivals, occupancy, and delays, users can make more informed transfer decisions and adapt their journeys as conditions change.

**Predictive and behavioural data add a layer of intelligence to operations.** Forecasting tools, based on historical patterns and external factors like weather or events, can anticipate demand surges and help allocate resources accordingly. Behavioural insights – from mobile apps, sensors, or heat maps – reveal how users move through hubs, allowing for continual improvements in signage, amenities, and flow management.

**Digital platforms help unify the user experience.** Mobility-as-a-Service (MaaS) platforms that integrate various transport modes – buses, trains, taxis, bikes, scooters, and car-share – into one interface create a more intuitive and connected journey. When implemented at a regional or national level, these platforms avoid fragmentation and promote wider adoption.

Moving beyond data, **strong governance is essential to tie together services, policies, and priorities across actors.** Local mobility hubs function best when supported by integrated or well-coordinated transport authorities. A dedicated intermodal task force can oversee hub development, establish service standards, and facilitate collaboration between public agencies, operators, and technology providers.

**Cross-sector partnerships strengthen delivery and promote alignment.** Cities can work with private mobility providers under shared access and equity frameworks to ensure services complement public transport rather than compete with it. Coordinated scheduling, fare structures, and service areas can improve efficiency and reduce friction at transfer points.



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<sup>2</sup> [www.openmobilityfoundation.org/about-mds](http://www.openmobilityfoundation.org/about-mds)

<sup>3</sup> <https://gbfs.org>

**Planning mobility at the network level reinforces consistency and long-term impact.** Aligning regional and local strategies ensures mobility hubs are integrated into broader transport goals, rather than functioning as isolated nodes. This kind of coordination leads to more accessible, efficient, and future-ready networks.

Alongside governance and data, **infrastructure must be designed with people, sustainability, and resilience in mind.** User-centred design ensures transfers are safe, intuitive, and efficient. Hubs should minimise walking distances between modes, support legibility through clear wayfinding, and provide barrier-free access to all users. Co-location of services – like buses, bikes, and trains – enhances multimodal connectivity and reduces overall journey times.

**Smart and sustainable physical infrastructure elevates the transfer experience.** Digital features like real-time signage, smart ticketing, and IoT sensors improve responsiveness and safety. Sustainable design elements – such as green roofs, natural ventilation, and recycled materials – help reduce environmental impacts while improving comfort.

**Charging infrastructure is critical for supporting electric and shared mobility.** Cities can integrate charging needs into zoning and planning, foster public-private partnerships, and ensure grid capacity through collaboration with

utilities. Smart charging technologies and alignment with Alternative Fuels Infrastructure Regulation (AFIR)<sup>4</sup> requirements support long-term scalability.

**Micromobility and active travel require tailored infrastructure.** This includes secure parking, weather-protected pathways, and routing integration that makes walking and cycling viable and attractive. By connecting these modes seamlessly to transit, cities expand mobility options for all.

**Climate adaptation should be embedded in hub design.** Shading structures, heat-resilient materials, permeable pavements, and flood mitigation features ensure hubs remain functional and safe in a changing climate. These additions not only protect infrastructure but also enhance user comfort and reduce heat stress.

**Finally, rethinking parking infrastructure as a mobility asset – rather than static car storage – can unlock new potential.** Designated space for shared mobility, EV charging, real-time availability data, and safer pedestrian access transform parking into a key component of multimodal mobility. Policy support, pilots, and partnerships can help cities reframe parking to support smart transfers more holistically.

<sup>4</sup> <https://eur-lex.europa.eu/eli/reg/2023/1804/oj/eng>



Source: Olraf

## MAINSTREAMING MOBILITY HUBS THROUGH LEGISLATION

The European Union's legislative framework supports the development and integration of mobility hubs through several key regulations and directives. The 2023 Revised TEN-T Regulation sets requirements for core network urban nodes to have multimodal passenger terminals with seamless transfers, sustainable infrastructure for cycling and walking, and access to Mobility-as-a-Service (MaaS) platforms by 2040. It also mandates full accessibility for people with reduced mobility and encourages the integration of digital solutions such as e-ticketing and real-time data.

Environmentally sustainable mobility hubs are promoted under AFIR, which requires EV charging infrastructure to facilitate greener multimodal

travel. The revised Intelligent Transport Systems (ITS) Directive<sup>5</sup> mandates the deployment of ITS technologies at mobility hubs to improve interoperability and user experience, supported by ITS and MaaS platforms.

Additionally, a suite of EU regulations protects the rights of persons with reduced mobility (PRM) (e.g. 1107/2006<sup>6</sup>, 1300/2014<sup>7</sup>, 181/2011<sup>8</sup>), ensuring public transport and mobility hubs are accessible to all. Beyond regulation, EU-funded research initiatives like MOVE21<sup>9</sup>, along with knowledge-sharing platforms such as the EU Urban Mobility Observatory<sup>10</sup> and CIVITAS<sup>11</sup>, play a vital role in advancing mobility hub innovation and implementation across Europe.



Dreamstime / Michael De Groot



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5 <https://eur-lex.europa.eu/eli/dir/2023/2661/oj/eng>

6 <https://eur-lex.europa.eu/eli/reg/2006/1107/oj/eng>

7 <https://eur-lex.europa.eu/eli/reg/2014/1300/oj/eng>

8 <https://eur-lex.europa.eu/eli/reg/2011/181/oj/eng>

9 <https://move21.eu>

10 [https://urban-mobility-observatory.transport.ec.europa.eu/index\\_en](https://urban-mobility-observatory.transport.ec.europa.eu/index_en)

11 <https://civitas.eu>

# INSPIRING BEST PRACTICES

The examples outlined below illustrate best practices for enabling seamless transfers between different transport modes at local mobility hubs, with a focus on improvements in **data, technology, governance, and infrastructure**. They highlight how cities can strengthen both urban and peri-urban connectivity through integrated, user-centred approaches.

## Connected Mobility Düsseldorf (CMD)

A strong example of city-led mobility innovation comes from Connected Mobility Düsseldorf (CMD) – a municipal initiative aimed at improving urban mobility through a growing network of mobility hubs.<sup>12</sup> These hubs integrate shared mobility services with public transport to enable seamless multimodal travel.

CMD has implemented over 200 mobility hubs across Düsseldorf. All include bike and e-scooter options, while larger hubs – especially near public transport stations – also feature car-sharing services. Operator data, shared via MDS feeds, informs the location and expansion of new hubs. CMD handles the physical development and financing of hubs, while private operators like Bolt, TIER-Dott, Lime, MILES, nextbike, and Voi digitally integrate them into their platforms and co-promote their use.

This is an ongoing and adaptive project, guided by transport demand and data insights. Key challenges include coordinating between multiple operators, ensuring consistent data sharing, and securing sustainable funding for expansion.



Other cities can draw from CMD’s approach by creating a dedicated development body, using shared mobility data to guide planning, and fostering strong public-private partnerships. The model offers a scalable and flexible pathway toward more integrated and efficient mobility systems.

## Jelbi

An innovative example of integrated mobility planning comes from Jelbi, a subsidiary of Berlin’s public transport operator BVG.<sup>13</sup> The initiative focuses on developing and managing mobility hubs and surrounding no-parking zones to better integrate shared mobility services with public transport and ensure a more efficient use of urban space.

Over 300 Jelbi hubs have been implemented across Berlin, and expansion plans are under way. Including district-level parking areas, nearly 350 micromobility hubs now support more sustainable and coordinated mobility in the city. The hubs vary in type and scale, ranging from smaller two-wheeler locations (Jelbi points) to larger multimodal stations (Jelbi stations) and localised groupings (Jelbi clusters). Some also include car-sharing services and EV charging infrastructure.

The planning process is data-driven and collaborative, involving site inspections and input from shared mobility providers and local authorities. Operator data informs decisions on hub size, function, and placement, ensuring each location meets actual mobility needs while supporting a clean and organised streetscape.

Key challenges include coordinating several stakeholders, aligning services spatially and operationally, and maintaining balance between public space use and access to multiple transport modes.



<sup>12</sup> [www.cmd.nrw](http://www.cmd.nrw)

<sup>13</sup> [www.jelbi.de/en/home](http://www.jelbi.de/en/home)

The Jelbi model demonstrates how data-informed planning, public-private cooperation, and flexible hub typologies can help cities improve multimodal transport access. It offers a replicable approach for cities aiming to better manage shared mobility in dense urban environments.

## ÖBB Mobility Hubs

A practical example of first- and last-mile integration comes from ÖBB, Austria's national railway company, which has developed a network of mobility hubs at train stations across the country.<sup>14</sup> These hubs aim to strengthen multimodal connectivity by linking shared mobility services, primarily e-scooters, with Austria's rail system.

To date, 18 hubs have been established across 15 Austrian cities, all located on ÖBB-owned land adjacent to train stations. While most currently offer only shared e-scooter parking, the goal is to gradually expand the range of services based on space availability and local demand. New hubs are identified in collaboration with cities and operators, though neither are required to co-finance the infrastructure. Operators can, however, opt to advertise at the sites.

Because ÖBB owns and manages the train stations, it is well positioned to coordinate hub development without needing complex public land negotiations. This centralised governance model has proven efficient in launching and scaling the initiative, even if spatial limitations at some stations restrict expansion or the addition of other modes.

The ÖBB model shows that having a single, well-positioned authority leading mobility hub development – particularly one with control over critical infrastructure – can greatly streamline planning and coordination. This approach is



<sup>14</sup> [www.oebb.at/en/reiseplanung-services/sharedmobility](http://www.oebb.at/en/reiseplanung-services/sharedmobility)

<sup>15</sup> <https://rudersdal.dk/snup-en-delecykel-eller-delebil>

<sup>16</sup> [www.geminiproject.eu](http://www.geminiproject.eu)

especially transferable in contexts where public transport operators also manage surrounding land or facilities.

## Rudersdal suburbs mobility hubs

The Rudersdal mobility hub initiative aims to improve first- and last-mile connectivity by establishing designated locations for shared bikes and cars in the suburban area of Copenhagen.<sup>15</sup> Launched in August 2024 and running through July 2025, the project is fully EU-funded under the GEMINI project, supporting both infrastructure investments and operational costs for shared mobility operators.<sup>16</sup>

Rudersdal has set up 174 mobility hubs, categorized into light, basic, and priority types. Light hubs allow users to end bike rides but do not guarantee vehicle availability, while basic hubs maintain 1–5 bikes at all times. Priority hubs offer 2–10 bikes and include shared cars. Hub locations were chosen in collaboration with existing operators to best meet local needs.

Challenges included slower-than-expected adoption of shared mobility, low parking density in some areas, and issues with untidy parking caused by insufficient capacity and poor signage. Demand spikes at transit hubs and one-way traffic flows also affected vehicle availability.

Despite these issues, the initiative has significantly improved user experience through better parking capacity, density, clear visual guidance, and more accurate GPS tracking. The hubs have gained strong local support, with workplaces and housing companies requesting additional hubs on their properties. They have also fostered tighter integration between shared bikes and public transport, with usage hotspots often found near public transport stations.

This case underscores the importance of ensuring adequate hub density, capacity, and clear visual guidance to maintain accessible and well-organized shared mobility services.



## CONCLUSION

Local mobility hubs are emerging as vital enablers of sustainable, inclusive, and efficient urban transport. By connecting diverse transport modes and supporting seamless, data-driven transfers, they respond directly to the challenges of urban congestion, accessibility, and first- and last-mile connectivity. The benefits are clear: smarter transfers reduce travel time, improve user experience, lower emissions, and promote a shift away from car dependency.

Yet, the transition to smarter mobility is not without obstacles. Infrastructure limitations, fragmented data systems, and institutional silos continue to hinder progress. Addressing these requires not only innovative technologies and user-centred design, but also strong governance, cross-sector collaboration, and long-term investment.

Legislation plays a crucial role in creating the right conditions for success. EU frameworks such as the TEN-T regulation, AFIR, and the revised ITS Directive provide essential guidance and support to cities and transport operators alike.

With coordinated planning, local mobility hubs can anchor a more connected and climate-friendly urban future – one where every transfer is smarter, faster, and more accessible for all.

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