Shaping the Future of Urban Mobility and Logistics through the Integration of Multifunctional Hubs

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Forschungscampus Mobility 2 Grid EUREF

Motivation

Status quo in urban areas

Emissions and noise in the city

Dominance of the ICEV

Exclusive usage of charging infrastructure

Vision of the future

"Environmentally friendly mobility, reduced noise, green, compact and mixed –
this is what the city of tomorrow will look like."

Umwelt Bundesamt
= Germany's central environmental authority

Approaches

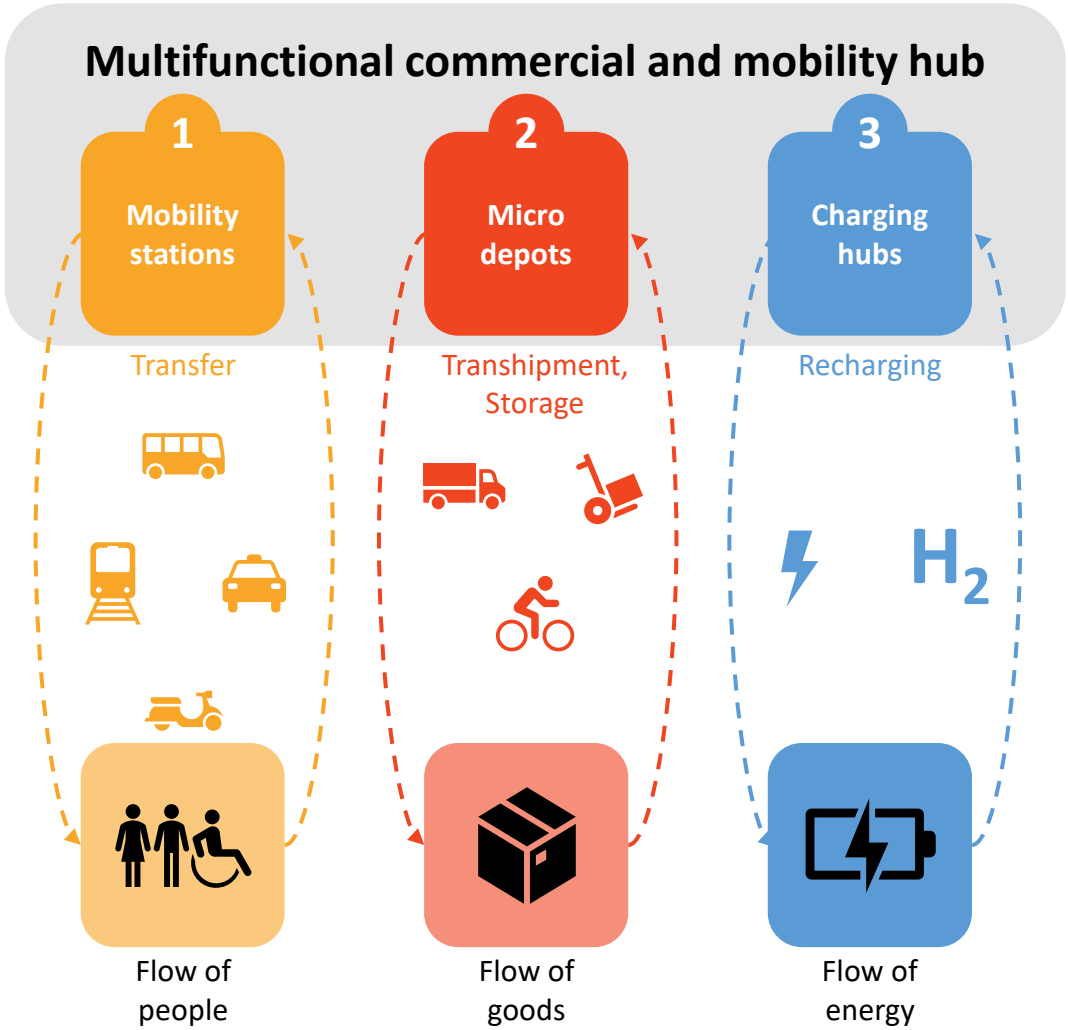
Mobility stations

Micro depots

Charging hubs

Sources: Fischer (2023); Umweltbundesamt (2022)

Multifunctional Commercial and Mobility Hubs



Definition

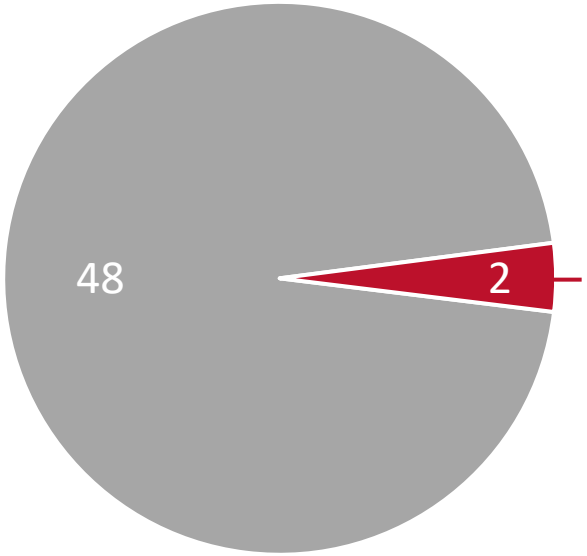
"A multifunctional commercial and mobility hub describes a **cooperatively** used location in a (sub)**urban area**. It serves as a **transfer point for people** and a **transshipment point for goods**.

The hub combines the features of a **mobility station**, a **micro depot** and a **charging hub**.

It is important that a hub meets the **logistical requirements** of the location and supplies various fleets with **(clean) energy**."

Considerung Research & Practical Implementations

50 analyzed hubs



Multifunctional commercial & mobility hub

Park Lane Mobility Hub

England

Mobility station with cab, car sharing and rental cars

Micro depot with cargo bike and small electric vehicles

Charging hub with 52 charging

Apcoa Urban Hubs

Germany

Mobility station with car sharing and micro mobility

Micro-depot with cargo bike and light commercial vehicles

Charging hub for all vehicles

➢ **Not yet implemented**

APCOA URBAN HUBS Join the ecosystem

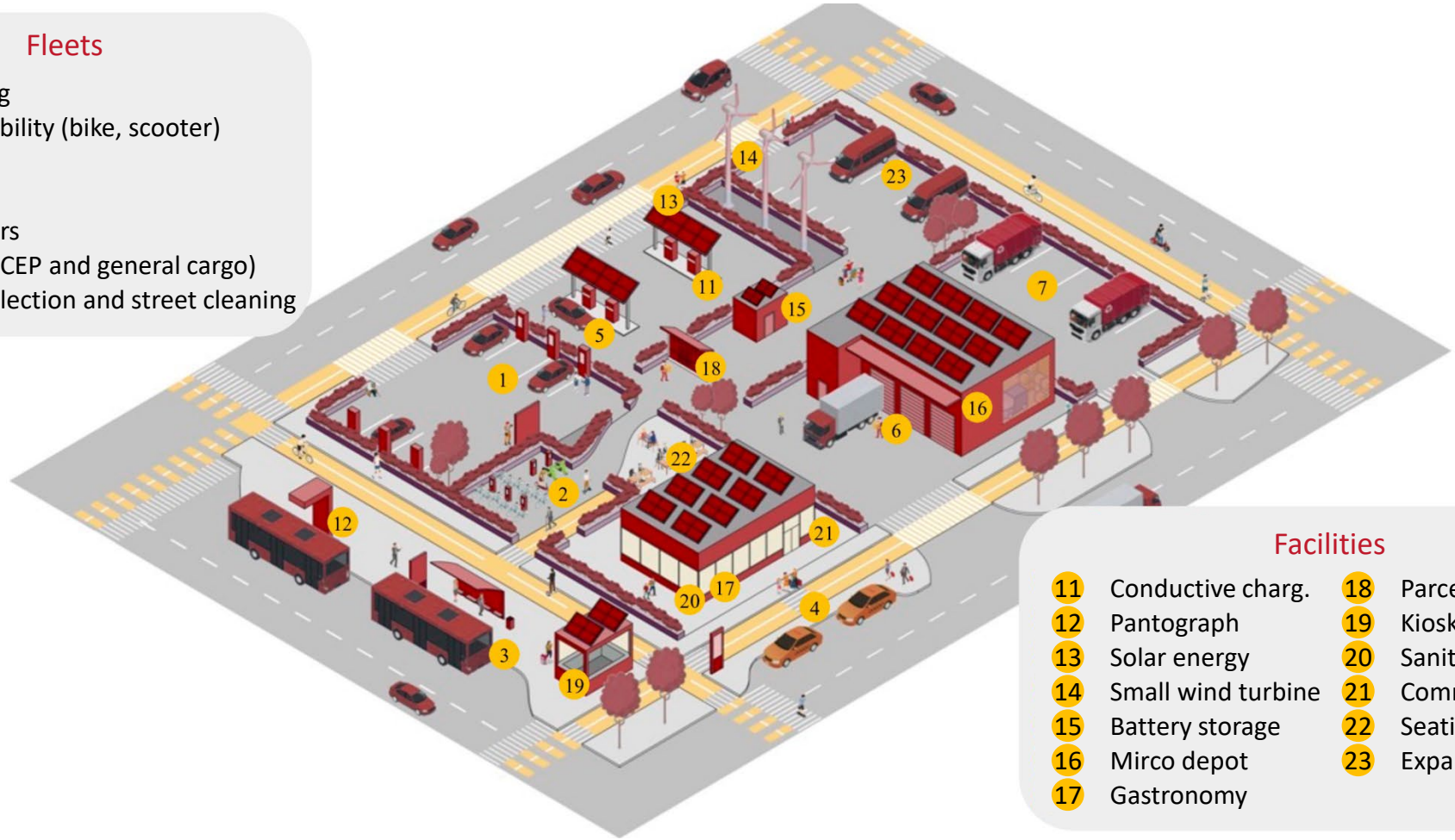
Mobility Profiles

	Car sharing	Bike sharing	Public transport	CEP	General cargo	Waste disposal	Street cleaning
Vehicle:							
Charging interface:							
Charging power:	22 – 150 kW	0,5 kW	11 – 300 kW	22 – 150 kW	22 – 150 kW	22 – 150 kW	22 – 150 kW
Classification:	Mobility stations	Mobility stations	Mobility stations	Mirco depots	Mirco depots	Charging hubs	Charging hubs

Concept - Multifunctional Commercial & Mobility Hub

Fleets

1. Carsharing
2. Mirco mobility (bike, scooter)
3. Bus
4. Cab
5. Private cars
6. Logistics (CEP and general cargo)
7. Waste collection and street cleaning



Facilities

11. Conductive charg.
12. Pantograph
13. Solar energy
14. Small wind turbine
15. Battery storage
16. Mirco depot
17. Gastronomy
18. Parcel box
19. Kiosk
20. Sanitary facilities
21. Common rooms
22. Seating
23. Expansion area

Sources: Fischer (2023)

Challenges & Potentials of Multifunctional Hubs

- Social acceptance and participation
- Stakeholder management
- Spatial planning
- Surface sealing
- Technological integration

- Traffic reduction
- Implementation best practice example
- Development of an innovation platform
- Promoting e-mobility through infrastructure
- Synergy effects between fleets
- Expansion of scope for action
- Image boost for companies

- Financing and business models
- Operator models

Future Outlook

TECHNOLOGICAL INNOVATIONS AND SOCIOECONOMIC TRENDS

Sustainable Technologies: Development and integration of electric and hydrogen infrastructure.

Autonomous Vehicles: Future potential for autonomous vehicles in multifunctional hubs.

Smart City Technologies: Connectivity through IoT, AI, and Big Data for traffic optimization.

POLITICAL AND REGULATORY DEVELOPMENTS

Legislation: Upcoming legal frameworks to promote urban multifunctional hubs and logistics solutions.

Incentive Programs: National and international incentives to support multifunctional hub infrastructure.

COLLABORATION AND POSSIBILITIES

Collaboration: Need for cooperation between public and private sectors, as well as with research institutions.

Ecological sustainability: Use of sustainable mobility options and minimization of land sealing.

Emission reduction: Contribution to the reduction of private transportation and emissions.

Thank you for your attention!

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Backup

Technology Salon