

3. Bremen



3.1 Local context

3.1.1 City size and context

Bremen is a harbour city in the Northwest of Germany, the larger of two cities that together form the Free Hanseatic City of Bremen, Germany's smallest federal state. Two cities forming one state („Zwei Städte, ein Bundesland - Bremen und Bremerhaven“) make for a unique configuration in Germany's federal system.

Economic background:

Bremen has a strong maritime tradition: since 1358, the Free Hanseatic City of Bremen has been a member of the Hanseatic League. Maritime trade and logistics have remained a key industry in the city. The Norddeutscher Lloyd (NDL), founded in Bremen in 1857, became one of the world's leading shipping companies. The port facilities of Bremen and Bremerhaven, which, administratively and economically, form one unit, incorporate free-port status, whereby imported goods can be handled and stored without time limits and without customs formalities. Bremen is among the ten biggest industrial sites in Germany

KEY FIGURES

Population: 566,000 inhabitants

Area: 326.25 km²

Density: 1,622 inhabitants/km²

NUTS level: NUTS 2

TEN-T corridors: North Sea - Baltic

ULaaDS role: Lighthouse city

(with key players in aerospace, automotive, and logistics industries), and the German state with the highest industrial export rate.

Historical background:

Public transport has a long history in Bremen. The city’s horse-drawn tram company went into operation in 1876, and by the end of the century, switched to electrified lines. The first trolley bus was operated in 1910, while the first diesel bus network started in 1924. The public transport network has been expanding ever since, offering 8 tram lines since 2020 and 38 bus lines. In addition, the Bremen S-Bahn has been in operation since 2010, covering the Bremen/Oldenburger Metropolitan Region. The city also benefits from an international airport, located south from the centre.

Besides, the City of Bremen is well known for its shared mobility offer, being the first city that defined a Car-Sharing Action Plan. Car-sharing was first introduced in Bremen in 1990 and has helped reduce the number of private cars, reaching 20.000 Carsharing users by 2020⁶. The city was also an early implementer of mobility hubs (mobil.punkte & mobil.pünetchen) – multimodal points which offer users options for sustainable travel (public transport, shared bikes and cars, walking), reducing parking pressure and private car use.

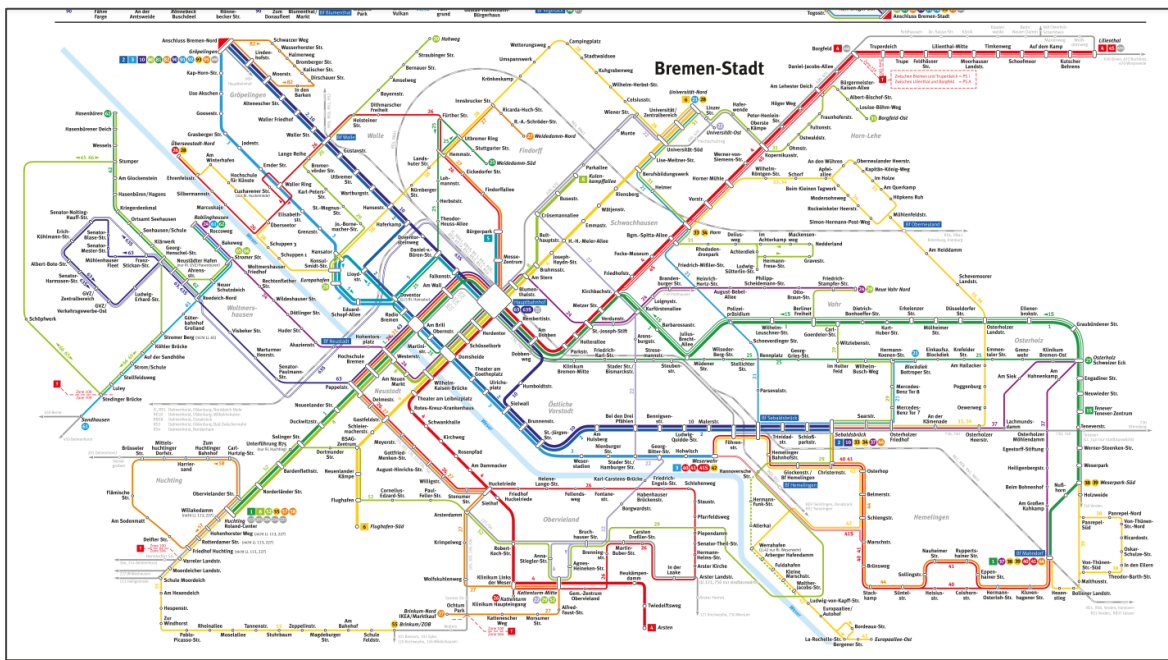


Figure 7 Bremen BSAG Public Transport System

Source: <https://www.bsag-netz.de/>

⁶ 20,000 people in Bremen are using car sharing, 2020. <https://share-north.eu/2021/05/mission-accomplished-20000-people-in-bremen-are-using-car-sharing-over-6000-cars-replaced-goals-of-the-carsharing-action-plan-achieved/>

3.1.2 Geography

Bremen is the largest city in North-western Germany and accordingly actively involved in the “Metropolregion Nordwest”. Its maritime history and proximity to the North Sea have made Bremen (and Bremerhaven) major hubs for logistics.

Bremen is connected through the North Sea – Baltic TEN-T corridor; NUT level 2, DE50.

3.1.3 Population

Around 2.7 million people live in the metropolitan region of Bremen and Oldenburg (50 km west of Bremen). With a population of 566,000, Bremen is Germany’s eleventh-largest city. The average age in 2020 was 43.6 years. At its eight universities, it counts close to 38,000 students (with more than one out of six being international students). Population density across its five boroughs (and very diverse 23 districts) averages at 1,622 inhabitants/km². With over 432,000 jobs in Bremen, the city handles around 120,000 commuters (accounting for over 20 percent of Bremen’s workforce) on their way from the surrounding state of Lower Saxony every day.

3.1.4 Area

The City of Bremen spans an area of just over 326 km². The inner city (the core of which is the old town) makes up for an area of 3.2 km².

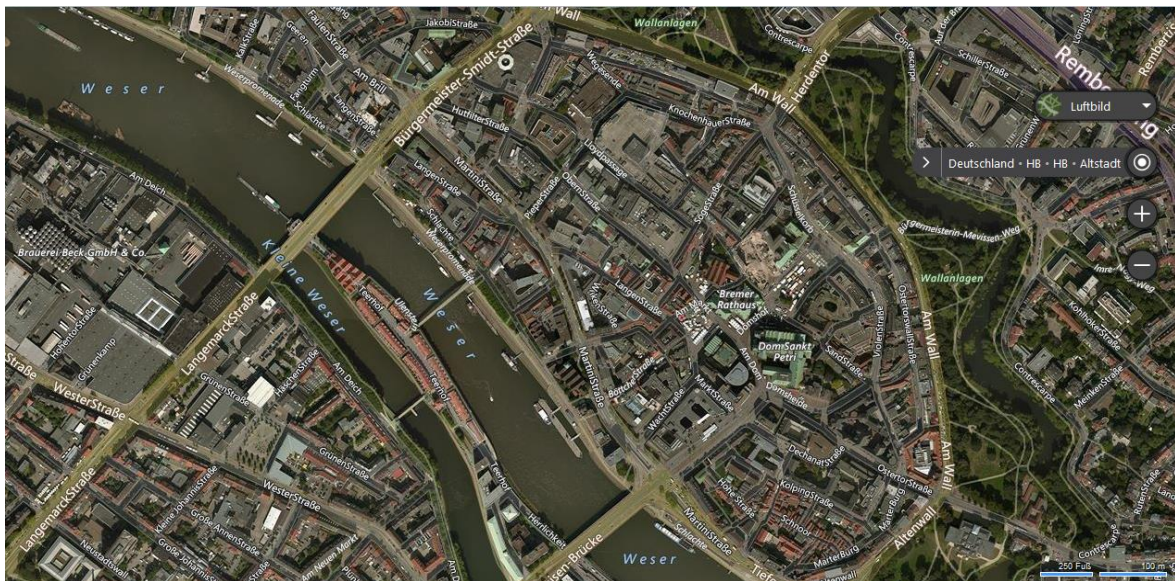
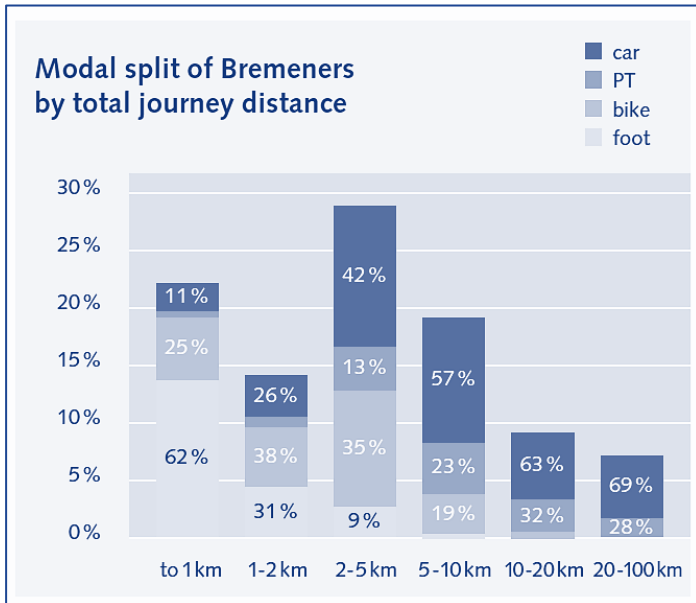


Figure 8 Bremen inner city aerial view

3.1.5 Modal split

Bremen has been a forerunner in sustainable mobility – with a share of about 64 percent of all trips done by the sustainable modes (public transport, cycling, and walking).

At 23 percent, Bremen shows the highest share of cycling of all large German cities (500,000+ inhabitants), and at the same time the lowest NO₂-level – fulfilling the European Air Quality requirements. Like many other ‘cycling cities’, Bremen shows a relatively low level of congestion (according to TomTom congestion index).



As a port city and a commercial and industrial centre, commercial traffic is of particular importance for Bremen. Its management on the road network and the accessibility of commercial centres are key factors. With 26% of traffic on the road being commercial traffic and 10% of all traffic being heavy-duty vehicles, the volume of commercial traffic in Bremen is disproportionately high⁷.

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Figure 9 Modal split of Bremeners by total journey distance

3.2 Sustainable Urban Logistics Strategies and Initiatives

3.2.1 Logistics ecosystem

Bremen has Germany’s largest and Europe’s second-largest heavy goods port. The five docks in Bremen specialise mainly in handling conventional breakbulk cargo, heavy cargo, and bulk cargo. A complementary logistics network has developed around the region’s ports that channels the flow of goods to their European destinations. A total of 1,000 logistics companies employ almost 20,000 people, making one in three local jobs dependent on the maritime or transport sector⁸. As the map below shows, Bremen is well connected to the TEN-T network, both by road and railway.

⁷ Sustainable Urban Mobility Plan Bremen 2025

⁸ Logistics hub Bremen – by land, sea and air. Jann Raveling, Bremen Invest, 2019. <https://www.wfb-bremen.de/en/page/bremen-invest/logistics-hub-bremen>

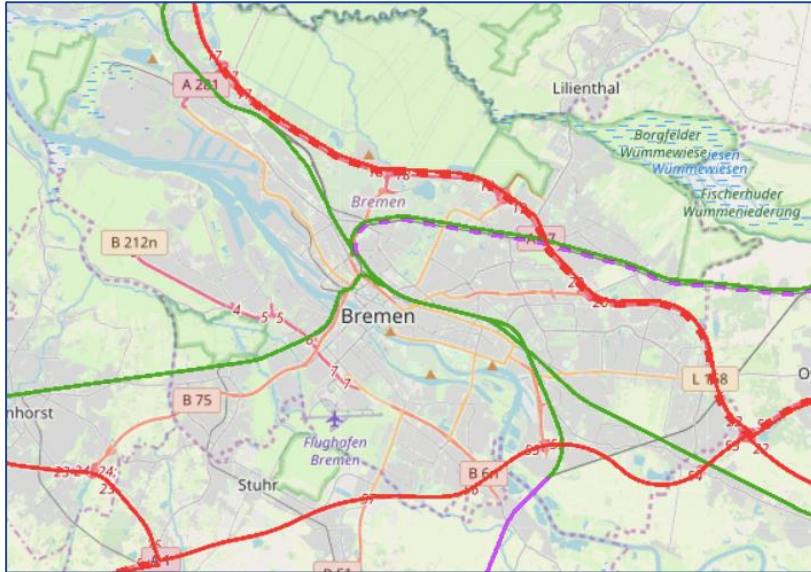


Figure 10 Road and railway TEN-T Network – Bremen

Source: <https://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html>

3.2.2 Decentralised warehouse(s) / distribution centre(s) description

Bremen has seven commercial areas relevant for its logistics, which act as decentralised distribution centres.



Figure 11 Bremen commercial areas and decentralised distribution centres

Source: “Studie zur Untersuchung und Ermittlung der Bedeutung der Logistik insgesamt, deren Wertschöpfungsketten und Zusammenhänge in Bremen und der Region”⁹

The total logistics area in Bremen covers close to three million m². A key role (also with regard to urban logistics) falls under the Cargo Distribution Centre (GVZ), Germany’s first and largest, featuring Europe’s largest high-bay warehouse. The GVZ is connected trimodally (waterborne, rail, road), and the starting point for many an urban delivery trip.



Figure 12 Cargo Distribution Centre (GVZ) in Bremen

Source: <https://www.wfb-bremen.de/>

3.2.3 Supporting policies for sustainable urban logistics

Innovative logistics projects were integrated into the city’s “Green City Masterplan” (2018). The Masterplan established 81 measures to improve the air in Bremen and, in particular, reduce nitrogen dioxide pollution. These were grouped in four categories:

- Car sharing and non-motorized transport,
- Digitalisation and connectivity in the transport system,

⁹ Study to investigate and determine the importance of logistics as a whole, value chains and connections in Bremen and the region (in German). Dr. Thomas Nobel & Susanne Knieriem, to-be-now-logistics-research-gmbh, 2020. <https://www.bremen-innovativ.de/wp-content/uploads/2020/11/Logistikstudie-Langfassung.pdf>

- Automated driving, and
- Changes caused by drives and fuels.

The Masterplan established a political base for developing ULaaDS and implementing trials.

Bremen has a low emission zone since 2019, encompassing the historic city, the Eastern suburb and some areas of Schwachhausen, as well as big parts of the new town (Neustadt).

3.2.4 SUMP and SULP at one glance

The City of Bremen developed a Sustainable Urban Mobility Plan¹⁰ (“Verkehrsentwicklungsplan 2025”) early on. It was politically adopted in 2014 and earned Bremen the EU’s SUMP award in March 2015 due to its clear orientation towards sustainable modes and its innovative participatory concepts (like online participation tools and a participatory game tool for an urban transport concept). Following the award, Bremen hosted the European SUMP conference in April 2016.

The City of Bremen is committed to sustainable mobility planning and its implementation through a number of political decisions and practical implementation. The respective ministry (since 2019, The Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development, in short “SKUMS”, based on its name in German), has been a well-known partner in European projects – as partner and coordinator. In the European CIVITAS initiative, Bremen became CIVITAS City of the Year (2005), and being awarded with the European Sustainable Energy Award 2013, The European Sustainable Mobility Plan Award (2015), German Cycle Award (2018) and others. The City of Bremen is also active member in international city networks like Covenant of Mayors, Eurocities, ICLEI, the Climate Alliance and ERRIN.

Table 4: Bremen SUMP and SULP at a glance

City	BREMEN
Type of strategy	SUMP (2014, partial update in 2019, final update spring 2021)
Goals	<ul style="list-style-type: none"> • Enable social inclusion of all people and strengthen the equality of all transport users • Increase transport safety and security • Offer and optimise alternative transport options in the entire city • Improve the connection of the systems and services for walking, cycling and public transport between Bremen and the surrounding region • Strengthen Bremen as an economic centre by optimising commercial transport • Improve the accessibility of Bremen as a regional centre • Reduce the negative effects of road transport on people, health and the environment in a lasting and perceptible way <p>2020 objectives:</p>

¹⁰ Bremen SUMP, 2014. [Link](#)

	<p>20-25 % increase in bicycle traffic</p> <p>15-20 % increase in public transport (bus and tramway)</p> <p>50 % increase in rail transport (suburban railway)</p> <p>20 000 car-sharing users</p> <p>Completion of the ring motorway A 281</p> <ul style="list-style-type: none"> • Make city centre car-free by 2030
<p>Transport measures (with potential impacts on logistics)</p>	<ul style="list-style-type: none"> • Improve walking conditions and encourage local mobility (e.g. pedestrian-friendly street design and improved quality of sojourning in public space) • Encourage cycling through infrastructure improvements and the further development of the cycling network • Improve local public transport, regional and local passenger rail (e.g. Counteract the known service deficits to create new user potential; better link services for walking, cycling and public transport; strengthen the transport connections across the river through attractive services; reduce the negative impact of noise and emissions on residents) • Design street space to improve accessibility and a balanced space allocation • Increase traffic controls to prevent illegal parking • Increase inter- and multi-modality through expansion of car sharing, bike+ride services, qualitative improvements of park+ride locations, introduction of park+bike • Use data for traffic and mobility management • Encourage electric mobility and pilot EV in local bus fleet • Reduce the number of traffic fatalities to zero • Increase knowledge about traffic regulations and improve mobility culture through focused communication and public relations
<p>Logistics measures</p>	<ul style="list-style-type: none"> • Improve motor vehicle traffic/commercial traffic: <ul style="list-style-type: none"> ○ expand the national long-distance roads (motorways and national roads) ○ optimise specific road sections ○ optimise junctions ○ improve the traffic signal timing on individual roads

Source: Bremen

3.2.5 Regional or national frameworks

Germany passed the 2030 Climate Action Programme in October 2019, aiming to reach up to 10 million EVs and 1 million charging stations by 2030. For this, the government is offering several EV incentives which are supplemented by the post-COVID-19 stimulus package of €130 billion. The package allocates significant funding into infrastructure development, tax cuts, and further subsidies to support Germany's EV market.

3.3 Relevant projects

Urban-BRE - electromobile city logistics in Bremen – aims to meet the requirements of today's urban distribution, same-day delivery tendencies, but also the increased environmental requirements. Urban-BRE focuses on the conception and implementation of a modified logistical concept for the last-mile, energy-efficient, climate-friendly and environmentally friendly supply of Bremen city centre and neighbouring districts. Inner-city deliveries of parcels and pallets (general cargo) are being optimized through the introduction of an additional distribution level: a micro hub depot.

GreenCharge (Horizon 2020) is developing a smart charging system that lets people book charging in advance, so that they can easily access the power they need. The pilot in Bremen focuses on combining the promotion of e-cars with car sharing, and the use of stationary batteries to balance peak demand from charging stations. It includes new housing projects built to avoid privately owned cars, charging facilities at intermodal hubs, and the use of second life car batteries as stationary storage.

ART-Forum (Automated Road Transport – Forum for the North Sea Region) develops the impact assessment of Automated Road Transport (ART) and has a capacity building for local and regional authorities in the North Sea Region. The City of Bremen is coordinator of the project.

3.4 Success factors and enabling conditions

- Privileged location and connection by road, railways and waterways
- Experience in implementing new mobility solutions and innovative urban logistics pilots
- Dense urban form which supports sustainable deliveries by cargo bikes
- Well-developed logistics ecosystem, with numerous decentralised hubs and diverse businesses and industries

3.5 Challenges and barriers

- Maintain the balance between accessibility and decarbonisation, while also managing the expectations of diverse stakeholders (e.g., car industries)
- Finding space to develop infrastructure such as micro-hubs in the city centre and other dense urban areas
- Developing sustainable business models

3.6 ULaaDS solutions

The schemes that will be trialled in Bremen are highlighted in bold.

Table 5: ULaaDS schemes that will be trialled in Bremen

Solution	Scheme
<p>1) Collaborative delivery models to enhance logistics efficiency and multimodal mobility in cities</p>	<ol style="list-style-type: none"> 1. Containerised urban last mile delivery 2. Logistical network integration of crowdsourced bike couriers 3. City-wide platform for integrated management of urban logistics
<p>2) Effective integration of passenger and urban freight mobility services and networks (Cargo hitching)</p>	<ol style="list-style-type: none"> 4. Location and infrastructure capacity sharing 5. Transport vehicle capacity sharing

3.6.1 BRE.01 Containerised urban last mile (micro hubs and dedicated cargo-bikes) - Solution 1, Scheme 1

Description

The first ULaaDS trial in Bremen will focus on expanding the number of micro hubs and cargo bike freight transport building on the forerunner project called Urban BRE which run from 2019 to 2021 and was funded by the Bremen Ministry SWAE. Within this forerunner project, a micro hub was set up, from which cargo bikes from the ULaaDS partner company Rytle do the last mile to the inner city. Within ULaaDS, the focus will be on general cargo instead of courier express freight itself and on expanding the number of micro hubs within the city.

Two new locations for micro hubs have been identified on top of the original pre-existing one.

The second micro hub is located in an area neighbouring the inner city, called Viertel. It started operations in July 2021 and the freight volume doubled after two months of operation.

The third micro hub is located in the northern part of the inner city of Bremen called Findorff and operations are planned to kick off in the first semester of 2022.

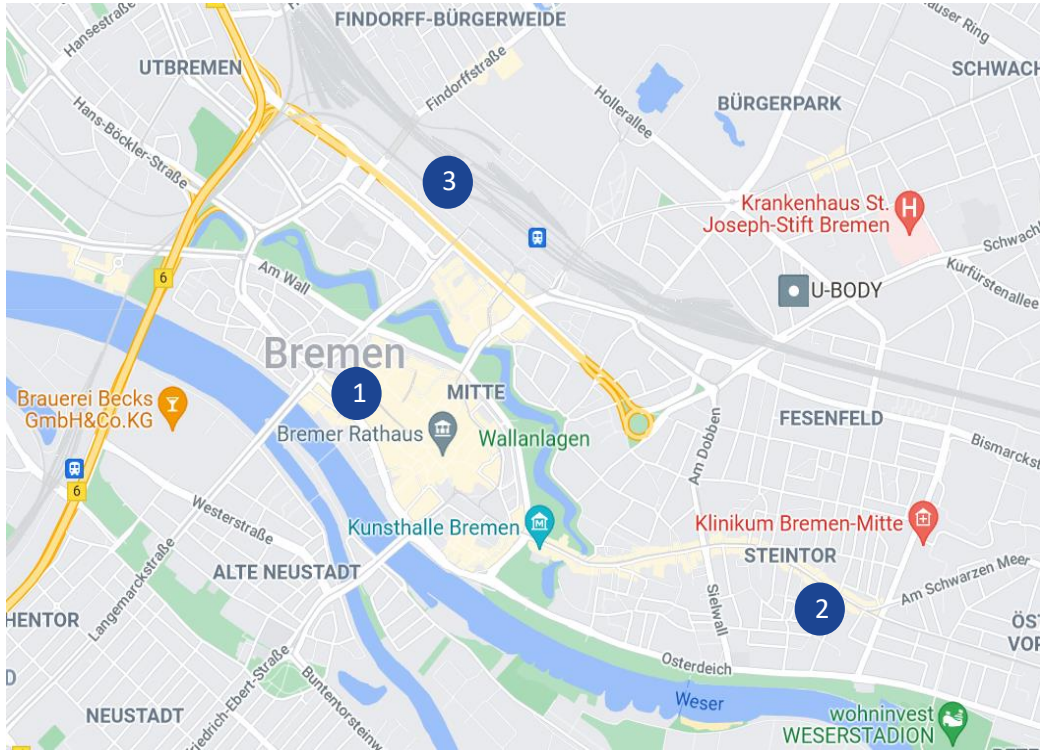


Figure 13 Micro hubs locations in Bremen

ULaaS partner Rytle, is providing the technical solution for the implementation of this trial.



Figure 14 Rytle technical solution – infographic

Bremen will test containerised urban last-mile delivery in this trial by grouping together parcels and general cargo heading towards the same city area. These will be sorted according to the delivery zone already at the warehouse. Then, containers heading to the inner city will be delivered at micro hubs and collected by cargo bikes for the final stretch.



Figure 15 Bremen micro hub and Rytle cargo bikes in action

Objectives

- reducing the number of polluting vehicles entering the city centre
- improving space management thanks to last-mile delivery by cargo-bikes
- increasing the efficiency in the interaction between long distance freight transport and urban freight transport

Timing

Micro hub 1: operational since 2019

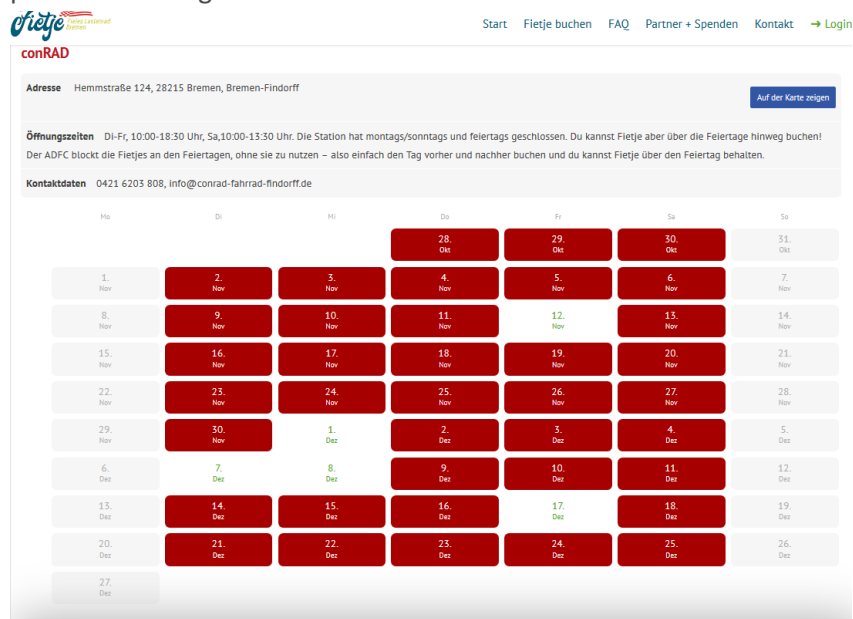
Micro hub 2: operational since July 2021

Micro hub 2: to start operation in the first semester 2022

3.6.2 BRE.02 Private micro-logistics (network of cargo-bike rental-stations) - Solution 2, Scheme 4

Description

The second trial will focus on private logistics. Within the ULaaDS project and together with ADFC, Bremen will install 24/7 cargo bike sharing options for five cargo bikes. This measure can be implemented either together with already offered services or with the city's initiative of a comprehensive city driven cargo bike sharing network that was announced during the ULaaDS project. The city-wide sharing network shall consist of cargo bikes which will be offered for little monetary compensation. Therefore, the ULaaDS solution will be a complementary measure for private micro logistics.



The screenshot displays the 'conRAD' booking interface for 'Fietje' cargo bikes. It includes the address 'Hemmnstraße 124, 28215 Bremen, Bremen-Findorff', opening hours 'Di-Fr, 10:00-18:30 Uhr, Sa, 10:00-13:30 Uhr', and contact details '0421 6203 808, info@conrad-fahrrad-findorff.de'. A calendar view shows booking slots for November and December, with most days highlighted in red, indicating availability.

In this trial, users will be able to book online their preferred slots to rent the cargo bikes, use them and return them to the rental location once done.

Figure 16 Online cargo bikes booking system – private logistics Bremen

Objectives

- Avoid car trips for private logistics, thus reducing pollution and congestion
- Offer users the possibility to familiarise with cargo bikes without having to invest in purchasing a privately owned one

Timing

The five ULaaDS cargo bikes have been acquired.

The trial is planned to kick off in the first six months of 2022.



Figure 17 ADFC cargo bikes in Bremen

3.6.3 BRE.03 Cargo-hitching (combined passenger and parcel transport) - Solution 2, Scheme 3

Description

In the third trial Bremen together with Via Van, will test cargo-hitching a scheme meant to combine passenger and freight transport. This trial aims for the reduction of freight transport traffic within the industrial test site by taking advantage of other passenger trips that take place simultaneously. In this trial shared mobility and MaaS (Mobility as a Service) functionalities offer a dynamic solution that increases the level of service provided to businesses and private recipients in the industrial test site.



The trial will build upon existing operation of the “WerkShuttle” within Daimler’s manufacturing plant in Bremen. ULaaDS partner Via Van will adapt their app for on-demand mobility to include the cargo-hitching functionalities.

Objectives

- Increasing network efficiency as a result of higher load factors
- Increasing synergies with other spatial developments
- Limiting environmental emissions
- Increase flexibility and service availability
- Keeping people transportation and freight transportation at socially acceptable levels in an economically viable way



Figure 18 Daimler “WerkShuttle” in Bremen

Timing

The trial is planned to kick off in the first six months of 2022.