

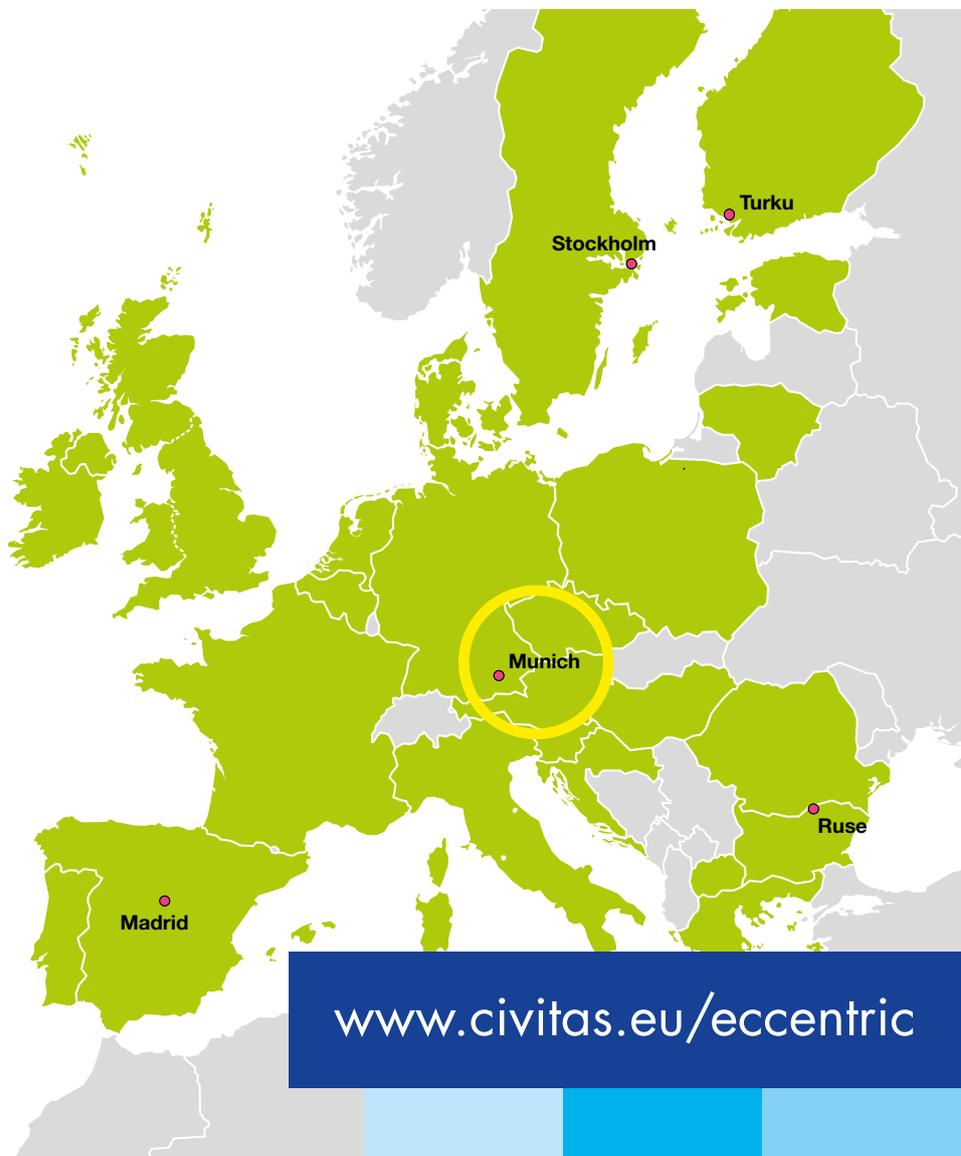


2020  
CIVITAS  
Cleaner and better transport in cities

ECCENTRIC



# Sustainable mobility solutions in Munich

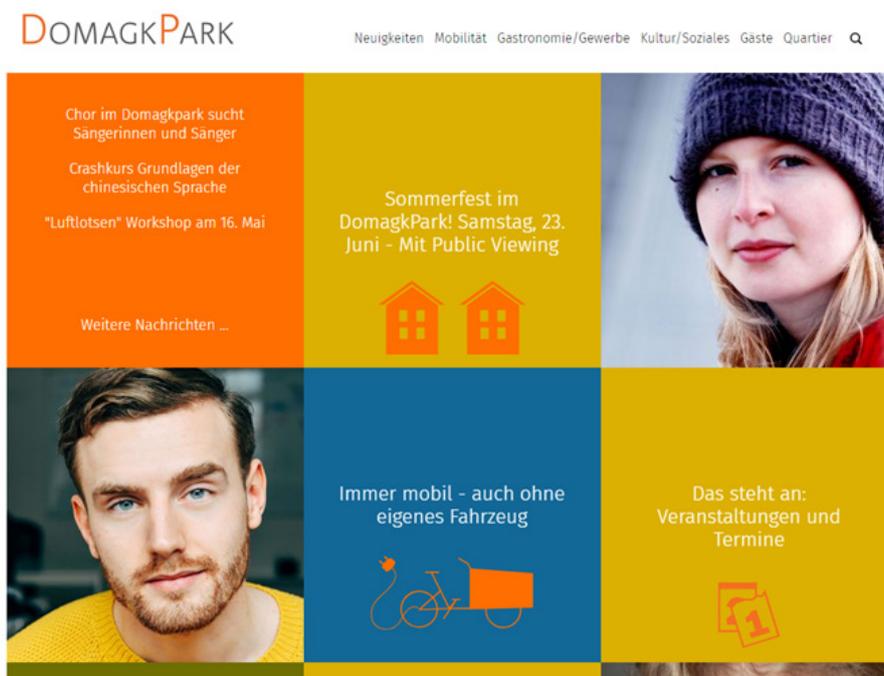


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[www.civitas.eu/eccentric](http://www.civitas.eu/eccentric)

# Community information and participation portal

Summer 2019



© Domagkpark Genossenschaft

- Community website and information portal
- Car independent lifestyles
- Demand management strategies
- Citizen participation

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** Domagkpark Genossenschaft  
<https://www.domagkpark.de/genossenschaft.html>

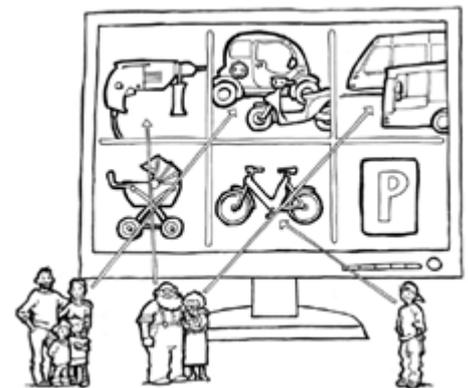
## What is the solution?

Residents of the Domagkpark district (Munich's ECCENTRIC 'living lab') in Munich have thus far lacked an online platform which bundles all information on the district's mobility offers and services, as well as related offers in the adjacent neighbourhood districts. Residents neither had the possibility to gain a comprehensive overview and up-to-date information about the mobility situation in their neighbourhood, nor a platform for discussion and exchange. The new Community Portal provides a single online hub for residents with all relevant information about the neighbourhood, mobility services and events. It aims to encourage residents to test existing and new mobility services in Domagkpark and move from 'testing new offers' to integrating these into everyday life by turning these into habitual patterns. Furthermore, the Portal promotes communication and dialogue with, for example, a feedback system, private sharing services or interactive features.

## How does it work?

The Community Portal provides a central platform for communication and participation in the residential area of Domagkpark and Parkstadt Schwabing. It combines all local mobility-related information about services and booking options, trying to be up-to-date at the best possible rate

- for mobility stations and their services,
- the concierge system and its services,
- the flexible/shared use of private parking lots,
- special offers for public transport,
- about the multimodal apps of the public transport providers as well as ridesharing opportunities,
- for opportunities of shared co-working spaces within the area, and
- information about safe ways to the local primary school.



The Portal also promotes the CIVITAS ECCENTRIC project, its measures, and the direct involvement of living lab residents are shown in the portal as well.

## Expected results

- The community portal is widely and constantly used information and exchange platform for all Domagkpark residents.
- The platform contributes to increasing awareness and acceptance of sustainable mobility offers and services in the area, thus hopefully influencing travel behaviour in the direction of more sustainable modes (walking, cycling, public transport and sharing).
- The platform helps residents to organise their mobility more efficiently, climate-friendly and with reduced emissions – not only within the laboratory area but in the entire city/region.
- The portal encourages residents from all socio-economic backgrounds and ages to adjust their mobility behaviour towards more sustainable modes, thus contributing to less motorised individual transport in the Domagkpark and surrounding area.
- Increased social equity and vehicle occupancy through easy networking.



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## Business model

The planning and final implementation of the measure was done in less than one year. The Portal requires frequent updating and maintenance. The initial funding was obtained via the CIVITAS ECCENTRIC project. Operation and maintenance of the website is financed by commercial fees. Commercial partners can use the website for posting own content and services by paying a commercial fee to the website operator.

## Contact details

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Organisation: DomagkPark Genossenschaft eG

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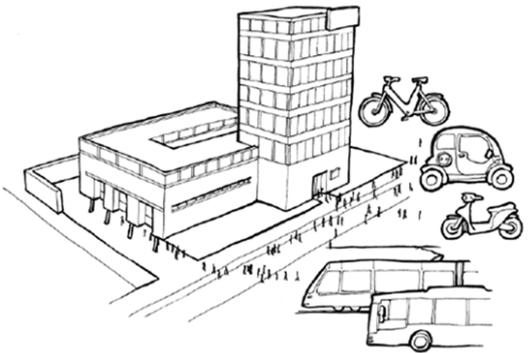
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Website: <https://www.domagkpark.de/>

Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Neighbourhood oriented marketing of sustainable multimodal mobility services

Summer 2019



© Landeshauptstadt München

- Low emission, safer neighbourhoods
- Car independent lifestyles
- Campaign tailored to achieving long-term changes in mobility behaviour

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [City of München](#)

## What is the solution?

The newly developed Domagkpark district will soon be home to more than 4,000 residents, schools, educational and other kinds of facilities. Various innovative mobility services and amenities are available in the neighbourhood already, and as part of CIVITAS ECCENTRIC, the City of Munich will implement a marketing campaign for the residents of Domagkpark. This shall include carrying out a customised marketing for sustainable mobility, mobility management for locally-based schools and childcare facilities, as well as mobility consultation for the (over 200) companies located in the adjacent business area, Parkstadt Schwabing. Both of these districts are Munich's 'living labs' (or demonstration areas) in the CIVITAS ECCENTRIC project, and together have an outreach of approximately 8,000 residents.

The marketing approaches have been chosen to help create acceptance and thereby increase the use of alternative mobility offers and services, which do not involve the use of cars. The measure shall also serve to increase the awareness of sustainable mobility in childcare facilities and schools. Furthermore, companies and their employees will be encouraged to reduce car traffic and switch to more sustainable means of transport - for example, through ride sharing.

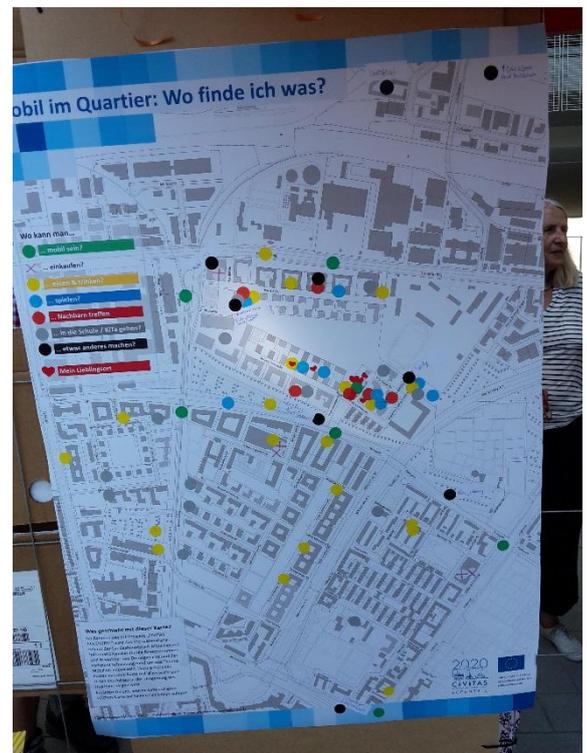
## How does it work?

There are essentially three main focuses of mobility management:

**1. Residents.** This involves direct and 'dialogue marketing' on sustainable mobility including, for instance, providing all households with encouraging, target group specific material about the mobility services on offer in the neighbourhood (public transport, walking, cycling, (e-)car sharing, (e-)bike sharing, cargo bike sharing, (e-)scooter sharing, etc.), personalised mobility advice/consultancy, and incentives to test new offers and services.

**2. Schools and childcare facilities.** Mobility marketing for residents will be accompanied by mobility management for local schools and childcare facilities. Education and training on various sustainable mobility forms will be offered to children and parents (such as, 'walking buses', bike repair training, educational offers on sustainable mobility suitable for children) in order to reduce the number of parents and teachers using their car.

**3. Companies.** This part of the measure targets the companies located in Parkstadt Schwabing, and shall include an analysis of the companies' mobility situation (commuter trips, business trips, mobility options, incentives, etc.) and customised mobility advice. This will also include promoting ECCENTRIC measures that do not only attract citizens but also businesses (e.g. mobility stations, e-mobility measures). The programme is currently being carried out with four companies. Ride-sharing was identified as a solution and has already been introduced in four companies via 'JobRide' - a web-based ride sharing solution.





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## Expected results

- Together, all three mobility management components will achieve a reduction of 5% in car use, an annual reduction in CO<sub>2</sub> emissions of 180 tonnes, and a reduction in kilometres driven by car (and commuter traffic) by at least 870,000 km per year in the living lab areas.
- 1,700 households in the living lab areas receive personalised information, guidance and motivation; at least 30% of the households contacted will make use of the offer and engage in trying out new sustainable mobility services. In the long term, these shall be integrated into everyday lives and become habitual.
- The share of children brought to school by car is 50% lower in the living lab areas than the average rate of comparable schools in Munich.
- Wide-ranging awareness of the great variety of transport and mobility offers available, particularly in the districts targeted, by providing residents with customised advice on how to organise their individual mobility more sustainably and efficiently – not only in the living lab but also in the entire city.

## Business model

The measure is funded by the EU. Most of the funding is required for the mobility management actions targeting residents, and schools/childcare facilities - the first two parts of the measure.

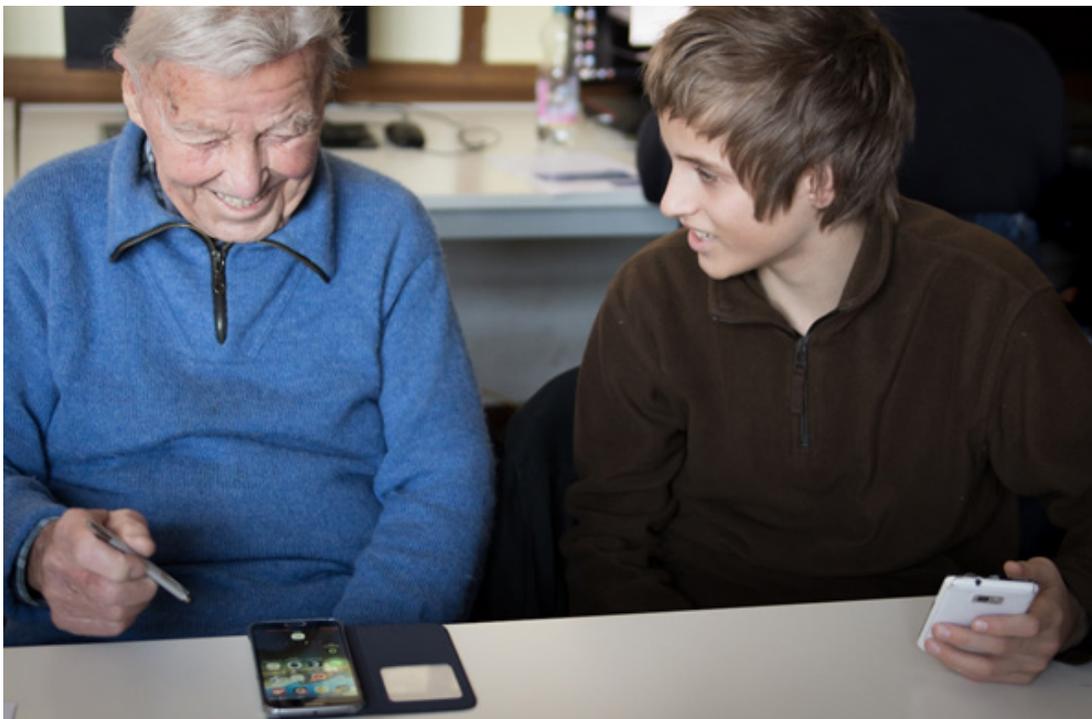
A part of the funding is required for the part targeting companies in the Parkstadt Schwabing area.

## Contact details

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# Transfer – Exchanging communication and information technology for everyday mobility between generations

Summer 2019



© Christa Schiffner/Green City e.V.

- Workshops given by young and old making sustainable mobility accessible through ICT
- Increase in sustainable transport choices
- Bridging the generational gap

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [Green City e.V.](#)

## What is the solution?

The measure **Transfer** is an environmental education project which aims to empower young and elderly citizens to make environmentally conscious decisions related to their own mobility patterns. The main objective is to enable senior citizens to organise their daily mobility with the help of modern communication devices such as computers, tablets or smartphones. This is achieved through workshops in which teenagers pass on their competencies with ICT devices to the older generation. Both groups, teenagers and seniors, will acquire knowledge of sustainable travel options and will be motivated to use environmentally friendly means of transportation. The overall goal is a reduction of traffic and CO<sub>2</sub> emissions in urban areas.

## How does it work?

This measure is implemented by Green City e.V. schoolgirls and boys aged between 13 and 17 who teach senior citizens how to use web-based applications for organising their daily mobility. These web-based applications include public transport planning tools, shared mobility services as well as walking and cycling route planning tools. To equip the teenagers with the necessary skills, an educational specialised staff of Green City e.V trains them in technologies and devices for mobility planning and their use in up to four workshops. The training covers the use of applications on smartphones and tablets, using the internet in general and mobility planning services in particular.

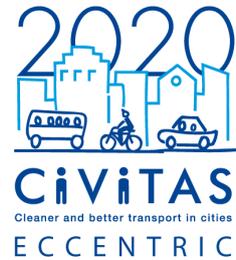
The first training session goes into detail on important skills when interacting with elderly citizens. This includes practical exercises with an old age suit that help the teenagers to put themselves into the seniors' shoes and to fully understand their limitations and needs. Following the training, the teenagers are equipped to pass on their knowledge. In a series of workshops, they assume the role of teachers and support seniors' in familiarizing themselves with modern information technology and the ways in which it can support them in planning their day to day mobility needs. In these workshops, the teenagers take on full responsibility for the seniors' learning experience. Both the teenagers and the seniors receive incentives to use alternative mobility solutions since the benefits of applications and web pages that make it easy to plan trips with public transport are highlighted.

## Expected results

Teenagers and seniors will acquire knowledge about sustainable mobility and feel empowered to change their own mobility choices and habits. They will be informed about the various options for more sustainable mobility and will be encouraged to choose sustainable options like walking, cycling, public transport and sharing solutions. Senior citizens, in particular, will be equipped to use modern technologies and devices for planning their daily trips. In addition, the measure will foster intergenerational exchanges and understanding, from which both groups will benefit.



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## Business model

The measure is run by Green City e.V. - a non-profit-organisation, which fully depends on public or private partnerships to implement the measure. The measure requires 100% funding - this can be split variably between public and private partners as long as it yields 100% together. Private funds can be sourced from companies, financial institutions, foundations, private schools and members of the public who want to support environmental education projects. Public funds are typically sourced from the City of Munich or nearby municipalities, the regional government of Bavaria, the (German) national government, the European Union or public foundations.

There is not yet an elaborated business model established, however, the main cost is staff working time. Other costs are for equipment, materials and travel.

A planned timeframe of one year is expected which includes several workshop series.

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Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Beacon-based indoor routing as a mobility service app

Summer 2019



© SWM/MVG

- Orientation-based routing and information application for groups with special needs
- Enabling car independent lifestyles
- Inclusive and barrier-free public transportation

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:**

Munich, Germany

**Organisations involved:**

[City of Munich](#)

[Stadtwerke München](#)

[Münchner](#)

[Verkehrsgesellschaft mbH](#)

## What is the solution?

In Munich, people travelling on public transport often get lost and do not find the route to their connection or to the best exit inside public transport stations. This is an even bigger challenge for the visually or hearing impaired, and as a result, these groups often avoid public means of transport. Seamless door-to-door mobility for all citizens and a truly inclusive mobility system are therefore the key goals of this measure. An indoor routing system based on 'beacons' (explained below) is thus being implemented inside a pilot public transport transit point. It will provide indoor routing information to facilitate transit between different means of transport. In the long term, the measure's objective is to develop an app that provides a routing function for the deaf and visually impaired to use when using various forms of public transport, making individual trip planning with multiple means of transport possible.

## How does it work?

For this measure, a routing application for the deaf and visually impaired will be implemented based on existing services of the local public transport corporation (MVG). This will be supported by installing beacons inside public transport stations. The beacon sends bluetooth signals to users that have installed the corresponding app on their mobile devices. The beacons can locate users as they approach, and upon receiving the bluetooth signal the app directs users with verbal instructions, such as on which side trains are located or how many steps are in a staircase, tailored to the destination they wish to travel to.

During the development phase, the beacons will be temporarily installed in a public transport station in Munich so that the application can be tested in cooperation with the local association of the deaf and visually impaired. As a result of this measure, further opportunities of using beacons for indoor routing in all public transport stations will be explored.



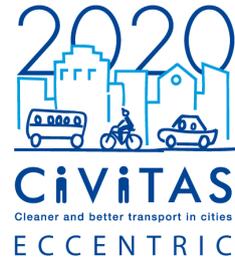
## Expected results

The implementation of the service is expected to increase the target groups' confidence and ability to make independent use of multimodal transport (services). Other impacts include:

- Accessible and safe public transport for the visually impaired or deaf through the use of indoor navigation, location-based information.
- Visually impaired and blind people increasingly use public transport because of comfortable indoor navigation and location-based information.

## Business model

A detailed business model has yet to be established. The measure is funded, up to 70%, by the CIVITAS ECCENTRIC project, and 30% from the City of Munich's Utility Company (Stadtwerke München, in German). It is part of the overall basic public services which are carried out in the system of the City of Munich and its public transport provider MVG. The planned budget to implement the solution is about 300,000 euro.



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**Partners involved:**

Public Transport Munich (MVG - Münchner Verkehrsgesellschaft).

Indoor.rs – Delivers the algorithm for the beacon technology.

Osram Licht AG – Manufacturer of the power supply connected beacon.

Technical authority for the public transport stations in Munich (Technische Aufsichtsbehörde, in German).

**Timeframe:**

Research & Development: Eight Months

Procurement & Implementation: 15 Months

Demonstration & Monitoring: 13 Months

Conclusions & Recommendations: 12 Months

**Contact details**

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Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# The App for Munich's Living Lab (Luftlotse - Der saubere Weg durch die Stadt\*)

Summer 2019



© corporate design Green City e.V./Simone Reitmeier

- An App for a quick check on air quality in your immediate surroundings
- Access real-time information on mobility options
- Showing the best route around areas of bad air quality in the city

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** Green City e.V.  
[www.greencity.de/verein](http://www.greencity.de/verein)

Netzinkubator GmbH  
[www.netzinkubator.de](http://www.netzinkubator.de)

Hawa Dawa GmbH  
[www.hawadawa.com](http://www.hawadawa.com)

## What is the solution?

Air pollution is a growing problem for public health in city centres. To allow people to get around the city in a healthy and sustainable way, this measure is about the development of an app called **Luftlotse - Der saubere Weg durch die Stadt** (the clean way through the city, in English). The **Luftlotse** app is based on the concept of a conventional mobility management tool for private users, but with an extended focus on sustainable local offers, such as the option of booking vehicles from different mobility stations, public transport, car pooling, etc. It also includes an important function related to public health. Via a grid of monitors for air quality, users can check air pollution in their immediate surroundings. This information is also integrated into the app's routing functions, so users can avoid areas with high degrees of pollution while cycling or walking.

## How does it work?

The **Luftlotse** app has two main functions:

1. It enables users to plan their own trips via different means of transport and mobility. Among these are the newly established transport/mobility options on offer in the City of Munich's 'living lab' (the Domagkpark district) like the Concierge Service (Neighbourhood Oriented Concierge Service - a service for parcel delivery and pick up) or booking shared vehicles at different mobility stations. It also offers mobility planning and routing in general throughout the whole city area of Munich. The app contains a number of interfaces to different providers, for example, for public transport, car sharing, etc.
2. A grid of air quality monitors is installed in the living lab. Measuring indicators for air quality like particulate matter (PM2.5, PM10), nitrogen dioxide, sulphur dioxide, carbon monoxide and ozone are analysed.

App users can check the quality of the air around them with a glance at the app. Furthermore, information about air quality is integrated into the routing function. This means that users are then offered alternative routes, for walking and cycling, to areas where air pollution may be higher. Tracking functions make it possible to depict personal carbon footprints. The latter presents a gamification approach to raise awareness about the link between the user's own mobility behaviour and environmental pollution.

## Expected results

The use of this app for mobility planning is expected to result in:

- Simplified access to (local) offers for sustainable mobility, and as a result, reduced environmental impact due to sustainable mobility behaviour.
- Awareness amongst users about the link between the user's own mobility behaviour and environmental pollution.
- An answer to the following question: Does knowledge about local air pollution and the own modal split/carbon footprint influence mobility behaviour?





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## Business model

There is not yet an elaborated business model established. However, there are already different interested parties from both the municipal and business side. There is an idea to expand the concept of **Luftlotse** to the whole municipal area of Munich. In this case, both software and hardware (measure grid) will need to be extended significantly, and funding through a public/private partnership would be necessary.

The grid of air quality monitors is subcontracted to a start-up company, with financial resources provided by CIVITAS ECCENTRIC.

For different providers of online maps, it could be of interest to offer an additional layer showing air quality. There are different approaches possible to implement this. The concept could simply be sold to service providers. But a service contract work, fulfilled by Green City and its subcontractors is also conceivable.

When expanding the measure grid to the whole city area, a higher six-digit price is to be expected. Appropriate adjustments in the software imply additional costs in a lower six-digit range. All in all, the expansion from the living lab to the whole of the municipal area would take at least one year.

## Contact details

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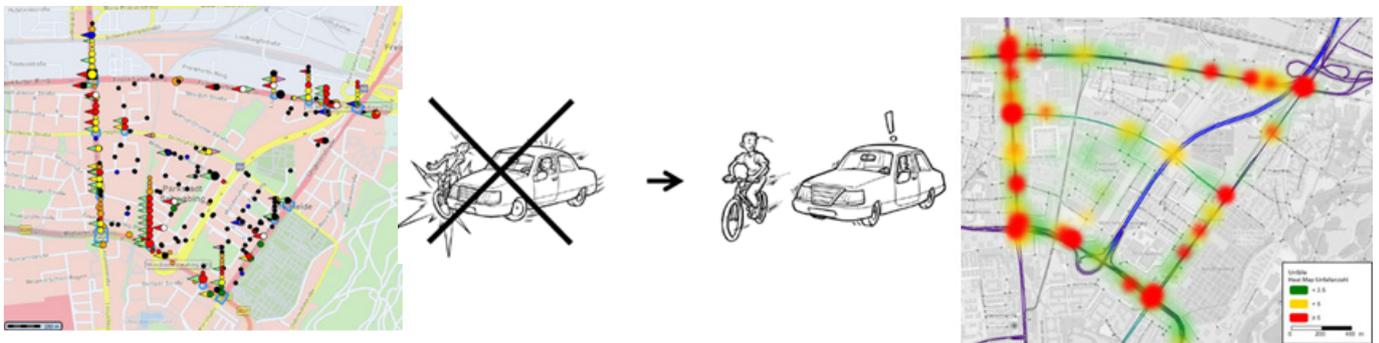
Email: [info@luftlotse.eu](mailto:info@luftlotse.eu)

Website: [www.greencity.de/projekt/civitas-eccentric](http://www.greencity.de/projekt/civitas-eccentric)

Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Software controlled safety management for the road network

Summer 2019



© LHM 2018

- Road safety software tools for preventive safety management
- Reduced number of accidents
- Improved pedestrian and cyclist environment

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [City of Munich](#)

## What is the solution?

With this measure, the city of Munich aims to develop and demonstrate the potential of a new and innovative software-controlled road safety management concept in Munich's 'living labs' - the districts of Domagkpark and Parkstadt Schwabing, north of the city centre. The concept will allow to identify risks before accidents occur and to take appropriate prevention action. This is a preventive approach to road safety management that seeks to increase the safety inherent to the road system, reduce the amount and severity of accidents, and create a safe mobility environment for all road users.

## How does it work?

The new road safety concept consists of two main aspects: a new software controlled management system that allows for preventive actions to increase road safety, and new planning elements for an innovative process in organising road safety.

In order to develop and implement the new safety concept, as a first step, it was necessary to conduct a comprehensive inventory and an in-depth analysis of the road safety situation in the area targeted. To do so, so called 'road safety hotspots' were identified in two ways:

1. A scientific analysis of the road safety in the living labs based on expert knowledge (subcontract) and existing traffic accident data;
2. An in-depth analysis of the road safety in the living labs in cooperation with local stakeholders, especially with local neighbourhood associations and local police representatives.

The results are being used to define a set of road safety objectives to be realised in the target area. Road safety is a highly political and very sensitive topic. Therefore, the safety audit is part of an intensive planning process that includes all relevant stakeholder groups.

As a second step, the objectives resulting from the safety audit are being used to develop the road safety management system. The system collects and analyses geo-referenced accident data of the past five years and links it to data of traffic models and other sources. For example, infrastructure data. Combined with a safety software tool, the findings can be used to forecast potential accident situations. The municipal urban and traffic planning authorities can then cooperate with the police in order to develop preventive measures that significantly reduce the likelihood of accidents. The management system requires high data quality. Therefore continuous monitoring and evaluation to control the development of the road safety situation in the living labs, and realisation of objectives, is foreseen.

Regarding the second aspect of the measure, the new planning elements for an innovative process in organising road safety, it is planned to make road safety management a cross-sectional task for all stakeholders involved in planning and infrastructure projects. With the help of the management system, planners will already be able to make a prognosis of their road safety impact during the planning phase of new development projects, and have the option to adapt their plans to promote better road safety.



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## Expected results

This solution will tackle the problem of increased car traffic across the city of Munich, having as focus the living lab areas. New modes of citizens participation and engagement will be developed, and better, safer environments for cyclists and pedestrians will emerge, through this comprehensive road safety concept. Reduced levels of car traffic in the Domagpark and Parkstadt Schwabing are expected. The direct, observable and measurable impacts from the measure will be:

- The measure will be widely accepted by road users.
- Road users will be satisfied with the implemented measures.
- A high number of accidents will be prevented.
- People are expected to change their travel behaviour.

## Business Model

The measure is fully financed by the CIVITAS ECCENTRIC project. A total budget of € 215,920 is allocated to realise the measure.

## Contact details

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Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Development of an integrated e-bike sharing scheme

Summer 2019



© SWM/MVG

- Public electric-trike sharing scheme supporting citizens with reduced mobility
- Sustainable mobility options for all
- Affordable and barrier-free bike sharing

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:**

Munich, Germany

**Organisations involved:**

[City of Munich](#)

[Stadtwerke München](#)

[Public Transport Munich \(MVG - Münchner Verkehrsgesellschaft\)](#)

## What is the solution?

Cities are struggling with increasing pollution due to traffic emissions. Munich, in particular, faces huge problems with air pollution. Part of a sustainable solution is the promotion and implementation of electric mobility solutions, as this can reduce local emissions. In Munich, the MVG's (Munich's public transport provider) current bike-sharing system is not well-suited for senior citizens (60+) or physically impaired people, because these groups often prefer electric bicycles or tricycles (or trikes). The current bicycles on offer also do not allow users to transport heavy loads. The chosen alternative in these cases often tends to be the private car. Within this measure, a carrier e-trike for mobility-impaired people and a concept for the integration of an e-trike in MVG Rad-bike-sharing system will be developed. This will not only diversify what is on offer in terms of public mobility services, but it will also enable access to often expensive vehicles, like electric bicycles and tricycles, such as e-bikes and e-trikes, thereby providing an affordable and sustainable alternative.

## How does it work?

A newly developed e-trike, which is easy to cycle, thanks to a low and deep-seated tricycle-frame is being integrated into the existing shared bicycle fleet of Munich's public transport provider (MVG). The e-trike is very user-friendly and offers high stability. It runs at a speed of up to 25 km/h and has enough storage space capacity for several large shopping bags. The e-trike can be located and booked by the MVG eTrike App.

The measure is being implemented in collaboration with the user groups targeted. Interviews with senior citizens provided the baseline technical requirements. The MVG was also able to build on its experience with non-electric bike-sharing schemes and applied this to the e-trike sharing scheme.

Users are given the opportunity to provide feedback on their user experience, which will allow the bike sharing provider to improve their services and further adapt it to the needs of all users. The experience with this system will be used as a basis for creating a replicable and (up)scalable concept of an e-mobility solution for all (public e-trike-sharing). It strategically strengthens the role of public transport companies, as the backbone of sustainable urban mobility, and fosters e-mobility and public multimodal transport systems.



## Expected results

By providing access to otherwise expensive e-trikes, this measure makes public mobility offers more inclusive. Therefore, the measure is expected to increase citizens' willingness to change their travel behaviour from car to bike. The measure is also expected to generally increase the knowledge of public e-bike sharing schemes and the number of users. Based on this measure, public e-trike sharing schemes will be able to be developed on a larger scale, leading to reduced emissions, improved mobility and greater health benefits for the general population, including vulnerable groups.



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## Business model

A detailed business model has yet to be established. The measure is funded, up to 70%, by the CIVITAS ECCENTRIC project, and 30% from the City of Munich's Utility Company (Stadtwerke München, in German). The e-trike will form part of the overall bike sharing system MVG Rad. The planned budget to implement the solution is about 390,000 euro.

### Partners involved:

- Public Transport Munich (MVG)
- Draisin GmbH – Trike manufacturer
- E. Ziegler Metallbearbeitung AG – Charging station manufacturer
- Pironex GmbH – Sharing technology provider
- Heinzmann GmbH & Co. KG – Engine and battery technology

### Timeframe:

- Research & Development: Eight months
- Procurement & Implementation: 12 months
- Demonstration & Monitoring: 10 months
- Conclusions & Recommendations: 18 months

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Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# E-mobility stations for the Domagkpark district and centre-periphery integration

Summer 2019



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- E-mobility stations providing various mobility services in the one spot
- Less air pollution and traffic congestion
- Improved quality of life independent without need to own a car

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [City of Munich](#)

## What is the solution?

The newly developed Domagkpark district will soon be home to approximately 8,000 residents, schools, educational and other kinds of facilities. With the steep growth in population and traffic, the objective within this district is to move away from the 'one parking spot per household regulation' to providing attractive and sustainable mobility alternatives at so-called mobility stations. Mobility stations combine and provide a number of mobility services to ensure that suitable means of transport are available for any purpose at any time. This provides real alternatives to private car ownership. Combining various services in one location, the city can tackle the challenges of limited space and different mobility needs. The goal is to ensure a better quality of life and mobility without the need for car ownership.

## How does it work?

In the new housing area of Domagkpark and Parkstadt Schwabing, several mobility stations will be established. Carsharing, e-scooters, and various types of rental bikes from Munich-based providers, like Car2go, DriveNow, Emmy, MVG Rad, OPLY and STATTAUTO, are available at these mobility stations. The services are supplemented by charging stations for electromobility. This measure combines these shared mobility services with access to public transport services, like trams and buses.



It is the first time that the City of Munich is using the new German Car Sharing Act to make public space available for car-sharing services. New road traffic signs and markings have been introduced in the district, which will apply to all mobility stations in Munich in future.

The launch of the e-mobility stations is accompanied by a marketing campaign to address all residents within the Domagkpark area (which is a purely residential area) but also companies and employees of the neighbouring residential and business area, Parkstadt Schwabing. Both these districts are Munich's 'living labs' (or demonstration areas) in the CIVITAS ECCENTRIC project, and together have an outreach of approximately 8,000 residents.

## Expected results

Mobility stations, as part of traffic and mobility planning, are a new concept. They enable cost-effective and flexible access to different modes of transport. Those who use shared mobility services save costs, gain flexibility and enjoy the advantages of individually tailored mobility. This is expected to lead to:

- An increase of car-free housing and a lower car ownership rate.
- Wider acceptance and ownership of the new mobility stations and its services.
- Increased use of e-mobility options and behavioural change to more sustainable, multimodal trips.
- The above will lead to a decrease in air pollution and emissions as well as reduced traffic congestion.



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## Business model

This measure is funded by CIVITAS ECCENTRIC and the local initiative for fostering e-mobility in Munich. All relevant shared mobility providers in Munich are integrated as operational partners. In the residential areas, the local district committee and the planning authorities are involved in the planning and implementation process.

In order to calculate the costs, the spatial and geographical location of the e-mobility station, the services envisioned and the level of civil engineering and construction works need to be taken into consideration. One station could be planned, constructed and operational in less than a year, with less than 50,000 euro. However, this estimate is subject to variability in above-mentioned factors.

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# Electric light-weight vehicles – one for all

Summer 2019



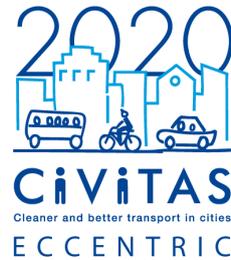
© Adaptive City Mobility

- Electric multi-purpose vehicle ideal for inner city, with battery swapping system
- Super clean, light & efficient: 70% less CO<sub>2</sub> emissions, 40% more energy efficient
- Car independent cities

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [Green City Experience GmbH](#)



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## What is the solution?

Adaptive City Mobility (ACM) is a concept with the goal of making electric mobility efficient and cost-effective, while at the same time helping reduce traffic pressure in cities. This is made possible by various innovations, such as the development of light-weight vehicles with an innovative battery exchange system, and the integration of a software-based multi-mode system, which ensures maximum utilisation of the space inside the vehicles.

This measure focuses on the implementation and demonstration of the ACM concept, which provides a new solution within the field of e-mobility and fits directly into the evolving ideas of the shared economy, urban commons, and mobility as a service. ACM is based on three innovations: an already developed new lightweight electric vehicle (maximum weight of 450 kg, L7E classification), a flexible manual battery swapping system (weighing 100 kg), and an integrated fleet management and multi-purpose sharing software enabling the maximisation of vehicle usage inside a city setting. Shared usage will reduce car ownership and long charging times will be avoided thanks to the swapping battery system.

## How does it work?

Green City Project is the organisation taking the lead on the measure. The light-weight vehicles are rented out - similar to the classic carsharing approach. In addition, the measure incorporates the multi-mode concept. That is, the use of a vehicle/fleet by different user groups (private and business car sharing). Vehicles could be used for a number of purposes, such as eco-taxis and chauffeur sectors, logistics and courier services, tradesmen, mobile nursing services, or municipal fleets. Multiple uses of the lightweight electric vehicle offers the potential for savings in densely populated urban areas. However, the intelligent networking of these groups and the multifunctional design is a crucial element of the business model.

To set the system up, the necessary infrastructure needs to be put in place, such as multiple battery swapping stations to support a test fleet of up to four vehicles. Pilot drivers will be selected from diverse business areas, including business/corporate customers (B2B) and private individuals to ensure broad coverage of different user scenarios.

A theoretical business model will be created to demonstrate the feasibility of operating such a system in a city. The technological innovations (vehicle, batteries, software) will be tested by these different user groups while gathering live feedback from the drivers for evaluation purposes.

A communication and marketing strategy will also be developed for the roll-out of this innovation, along with supporting the dissemination of new mobility concepts in general.

## Expected results

Short term objectives include creating awareness of the innovation, giving real-world electro-mobility experiences to interested pilot users, and gathering feedback about the performance and the acceptance of the new vehicles along with the mobility concept. The longer-term objective is to identify the best use cases and target groups for ACM. By finding the best combination of user groups, the multi-purpose sharing concept and business model can be adapted and optimised accordingly.



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## Business model

The business model is based on the reduction of costs through efficiency maximisation of ACM vehicles through a sharing economy and mobility as a service.

In addition to being part of CIVITAS ECCENTRIC, the project is sponsored by the German Federal Ministry of Economics and Energy (BMWi) and involves a consortium of 10 companies. The research project is also part of the technology programme 'ICT for Electromobility III: Integration of commercial electric vehicles in logistics, energy and mobility infrastructures' supported by the same Ministry. In the summer of 2015, it was chosen as one of the Lighthouse Projects of the national government.

The ACM Project officially concludes in June of 2019 with planned continued technical support until the end of the CIVITAS ECCENTRIC project in 2020. There is planned funding from CIVITAS ECCENTRIC of 443,750 euro.

## Find out more

More information about the electric lightweight vehicle (Adaptive City Mobility) available at

<http://adaptive-city-mobility.com/>

<https://www.greencity.de/experience/de/adaptive-city-mobility/>

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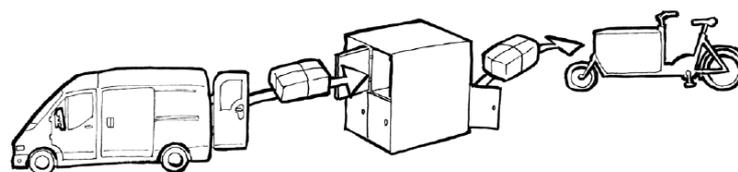
Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Sustainable city logistics by combining Electric Cargo Bike delivery services with a flexible storage system

Summer 2019



© Nicholas Duesberg, KVR



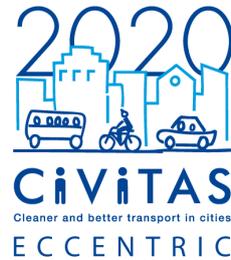
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- Cargo bikes for last mile delivery in the city centre
- Reducing traffic congestion and air pollution
- Improving public safety

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:** [City of Munich](#)



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## What is the solution?

The volume of traffic caused by delivery services has increased rapidly with the success of e-commerce. Especially in dense inner city areas, conflicts between pedestrians, cyclists, cars, other road users and delivery services are growing and even result in dangerous situations. On the other hand, the accessibility of inner city locations is becoming more and more limited for cars and trucks. As a result, goods deliveries by (cargo) bike offers great potential to keep the city accessible for freight transport and to improve road safety. Compared to ordinary bicycles, cargo bikes have a higher load capacity and enable bundling of deliveries. The overall objective of this measure is to find a feasible solution to reduce the delivery of goods by cars and trucks in the city centre, as far as economically feasible, without lowering the quality of delivery services. Therefore, it is envisioned to implement this measure in collaboration with various types of logistic service providers.

## How does it work?

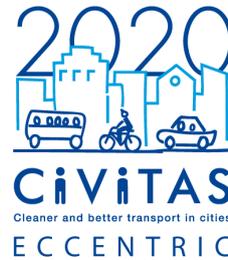
To extend the use of cargo bikes, a flexible storage system will be installed that serves as an interface where cargo can be handed over from cars to cargo bikes, and vice versa. Due to space limitations in the inner city, a system of flexible boxes will be used to help the delivery services to continuously optimise their operations.

The plan is to test out several kinds of boxes and logistic systems in cooperation with delivery companies. This includes the installation of three boxes for temporary storage of parcels. Boxes will be located at the boundaries of the city centre. Initially, the system will be tested by the local partner RAPID Kurierdienste KG, who offers delivery by car and (cargo) bicycles. Implementing this storage system close to the city centre will allow RAPID to shift from car to cargo bicycle delivery, on a step-by-step basis. The service provider will thus gain operational experience with this new logistics system.

Once the measure is up and running, additional logistic companies will be sought to use the flexible storage boxes and obtain a shift to cargo bike delivery within Munich's city centre. Furthermore, installation of a denser network of boxes is planned to extend the capacity of the system and to reduce travel times and distances.

## Expected results

Deliveries combining the use of cars and cargo bikes will improve the cost-effectiveness for all actors in the logistic chain. Use of cargo bikes will enable the bundling of deliveries and thereby make full use of their capacity for larger loads. Car deliveries will save time because flexible cargo bikes will take care of deliveries for the 'last mile'. The measure will also reduce emissions and save fuel as cars/trucks will be able to avoid congested areas. Car and truck deliveries are expected to decrease by up to 5% in the city centre, thereby reducing CO<sub>2</sub>, NO<sub>x</sub> and PM emissions also.



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## Business model

This measure is funded through CIVITAS ECCENTRIC. The planned budget to implement the measure is approximately 266,000 euro, and it is expected to be carried out during a period of 36 months.

### Partners involved:

RAPID Kurierdienste KG (local courier company) - leads the measure.

Paul Wolff GmbH and Paketin GmbH - are both responsible for technical support, such as installation and maintenance of cargo boxes.

The Chamber of Industry and Commerce for Munich and Upper Bavaria (IHK) support the measure in its planning phase.

### Approximate time frame:

Research and planning: 12 months

Procurement and implementation: 10 months

Demonstration and monitoring: 14 months

Conclusions and recommendations: Eight months

Impacts on traffic will be evaluated and technical conditions will be tested. It is envisioned to develop a charging mechanism for logistic services on public space using micro-depot logistic hubs.

## Find out more

Last mile micro-depots: <https://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Arbeit-und-Wirtschaft/News/News-ARCHIV/vier-mikrodepots-fuer-lastenraeder.html>

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CIVITAS ECCENTRIC Munich websites: [www.muenchen.de/eccentric](http://www.muenchen.de/eccentric)

Living lab area in Munich: <http://civitas.eu/eccentric/munich>

# Neighbourhood oriented concierge system

Summer 2019



© City of Munich 2018

- A central concierge service developed through partnerships with delivery service companies
- Sustainable urban and last mile logistics
- Traffic-free neighbourhoods

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.*

**Location:** Munich, Germany

**Organisations involved:**

[DomagkPark](#)  
[Genossenschaft eG](#)

## What is the solution?

The e-commerce market is growing rapidly resulting in high numbers of deliveries in residential areas. This situation can lead to conflicts with other road users, wrong parking, dangerous situations, air pollution and noise emissions. In Munich's Domagpark district (largely residential), the idea is to develop a partnership with logistic service providers and set up a Concierge Service for the area. Once the service is running, residents will be able to pick up delivered goods at the concierge, or even get their goods delivered by the local concierge with an eco-friendly electric cargo bike. The same service can be offered to post goods/parcels.



## How does it work?

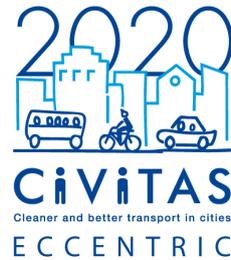
With the concierge service, goods and parcel deliveries to the district are bundled centrally, and the last mile delivery is covered in an environment and people friendly way. The concierge functions as the central point of contact for parcel deliveries to the residential district and distributes deliveries by electric cargo bike to their final destination. In addition, residents can use the service to drop off parcels which they want to send. The service provided prevents individual distribution routes and reduces emissions.

Furthermore, the concierge service provided through this measure also serves as a neighbourhood centre for residents by offering a variety of additional services interesting for residents. It supports the neighbourhoods' mobility concept providing additional services for the community (for example, bike reparation service, bike reparation courses, maintaining the neighbourhood e-mobility station, etc.). It could be extended by other services as well, such as dry cleaning, locksmiths and other craftsman services. The concierge also acts as a community centre for the district and can operate as an information/contact point and a central location for socialising. The main requirement for the concierge service is centrally located rooms large enough for handling the logistics of goods and parcels.

The concierge system requires collaboration with delivery service companies. Currently, in the Domagkpark district, three delivery companies (Hermes, GLS, UPS) have shown interest in the concierge partnership so far.

## Expected results

- Reduced neighbourhood oriented freight transport (courier services).
- Less repeated failed delivery attempts when the recipient is not at home.
- Reduced car kilometres, traffic congestion and dangerous parking, due to less delivery vehicles.
- Increased acceptance and participation in the neighbourhood oriented mobility concept for the Domagkpark district.
- Synergies with additional services provided by the concierge. For example, repairing bikes, managing co-working spaces, etc.
- Providing a good example to others cities/districts by demonstrating the opportunities and hurdles of a multilateral cooperation with logistic service providers.



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## Business model

The planning and implementation phases of the measure are funded by CIVITAS ECCENTRIC. Total costs, planned, for the measure are approximately 200,000 euro over four years. 70% of the costs are funded by CIVITAS ECCENTRIC, and the remaining amount is provided by the lead partner: Domagkpark Genossenschaft. Operation of the service is carried out by the Domagkpark Genossenschaft in cooperation with a partner for logistics.

The operational business model is based on the main service for parcel delivery, however, it needs to be extended by further secondary services in order to be economically viable. The overall planning for operational set up was done in less than one year. When implementing this measure, most time needs to be allocated for negotiations with delivery service providers.

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