

*Proceedings of 7th Transport Research Arena TRA 2018, April 16-19, 2018, Vienna, Austria*

*‘Mobility as a service’ in practice and urban development  
- Jointly contributing to low-car, and low-carbon and affordable  
housing: the Bremen Hulsberg case (H2020 project SUNRISE)*

*Michael Glotz-Richter,*

*<sup>a</sup>Free Hanseatic City of Bremen, Senate Dpt for Environment, Construction and Transport, Contrescarpe 72, 28195 Bremen, Germany\**

***Introduction***

Providing innovative mobility services within urban housing developments bears the opportunity to reduce dependence on a car for the residents – and to low-carbon, low car and low-cost housing. The Bremen Hulsberg development for about 2.500 new residents represents an inner city development – going for mobility management instead of conventional provision of car-parking. Only 4 car-parking spaces are planned per 10 apartments but cycle parking and mobility management will be integrated. At the same time, the surrounding neighbourhood with its narrow streets and high parking pressure is subject of a co-creation based mobility management plan – exploiting the potential to reclaim street space for sustainable modes, social and ecological functions.

A recent survey of 13,000 users of the two Bremen car sharing systems unveiled their preference: easy procedures, reliability and nearness of stations. The Bremen strategy of a dispersed network of small car sharing stations in the inner city neighbourhoods is confirmed by a high satisfaction level. “Trendy” cars are low on the demand list of the users. The survey also shows that the Bremen car sharing users do more grocery shopping in the neighbourhood than the reference group, confirming the thesis that car sharing supports the local economy.

***Keywords:*** Mobility As a Service; Active Mobility; Cycling and Walking; urban development Carsharing; housing; Accessibility; Affordability; affordable housing; parking; cycling; walking street space;

---

\* Corresponding author. Tel.: +49 421 361 6703; fax: +49 421 496 6703.  
E-mail address: michael.glotz-richter@umwelt.bremen.de

## 1. The challenge of limited space in cities

The physical limitation of public street space is a challenge shared by cities world-wide. Increasing car ownership leads to parking problems and often to the misuse of sidewalks for parking. Congestion is another effect of having too many cars in a limited street space.

Despite the problems, there are still very few strategies to tackle ever-increasing car ownership. Car sharing (called car clubs in the UK) is one element of the sharing economy. It offers a car at your disposal without the need of ownership and has the potential to reduce the number of cars in cities without reducing individual mobility.

All cities in Europe face the problem that space is limited: on a city-wide scale. New developments require space and, in the case of sub-urban development, more traffic is generated. In inner-urban neighbourhoods we face increasing conflicts for the limited street space between the needs of pedestrians and car parking. The Bremen showcase deals with both densification and with innovative solutions on the street space level.



Fig. 1 (a) "location of Hulsberg hospital area (red) within the Borough "Östliche Vorstadt" (orange) (C) open-street maps  
(b) narrow streets in the neighbouring area: parked cars cause problems for fire fighters ; photo: Glotz-Richter

The Bremen Hulsberg district is one of the five demonstrators in the Horizon 2020 SUNRISE project (Sustainable urban neighbourhoods, Research and Implementation Support in Europe) – and can serve as a showcase for how to influence mobility patterns through urban planning and street design in combination with mobility services – also presenting the related economic benefits of integrating Mobility as a Service into urban development.

This inner city area displays a prototypical setting of a grown European city: a neighbourhood that developed over the last 150 years with narrow streets and, within that neighbourhood, a new development area made possible by the centralisation of an old hospital and the conversion of more than 10 hectares into mixed housing space. In terms of mobility, the new inner city developments create a challenge.

## 2. The new Hulsberg development: going low car, low carbon and low cost

As the hospital, which will be concentrated in a large new complex, requires good accessibility at all times, the new developments area must not generate high levels of car traffic.

The new development will provide 1000-1200 housing units for 2000-2500 residents plus some offices, a nursery school, etc. The design of the street space will be very pedestrian and cycle friendly. It is expected that cycling will show the highest modal share: the modelling shows about 40%, as compared to 25% in the city as a whole and 30% in the central area (Verkehrsentwicklungsplan Bremen). A mobility centre, cargo bikes and other

related services are planned. The area is well connected by several tram and bus lines nearby. The only on-street parking will be provided for people with disabilities and for car sharing stations. Street space will primarily be dedicated to pedestrians and cyclists.

The new development will have a ratio of 4 parking spaces for every 10 apartments but will have high quality bicycle parking (expected ownership is 1+ bicycle/resident), car sharing and services for bike sharing, freight delivery, etc. as an integral part of its mobility concept.

Underground parking is expensive. Due to the high groundwater level, construction costs are €40,000-50,000 per parking space, equivalent to 10-15% of the entire construction costs for an apartment. About 50% of the debt of private households in Germany is for the purchase of cars. The monthly costs of a compact car are about €400/month (e.g. VW Polo / ADAC, 2017). Low car developments and the provision of car sharing are part of affordable housing strategies for urban areas.

Car sharing will be the option for residents when none of the other mobility options are appropriate or available for a given journey. The foundation for providing car sharing for new developments has already been laid in Bremen. A pilot was successfully carried out in 2001 (Beginnhof project) and the legal requirements for parking in new developments (Stellplatzortsgesetz) were changed in 2013, allowing developers to offer mobility management instead of full provision of car parking. Bicycle parking has been required for new housing developments in Bremen since 1996.



Fig. 2 plan for the new Hulsberg development: no through streets, no above ground parking in the central area. In the northwest corner: the hospital ; © City of Bremen

A comprehensive participation process has already started ([www.neues-hulsberg.de](http://www.neues-hulsberg.de)) and will continue through the further planning and implementation process. The aim is sustainable mobility for the new residents and improvements for citizens already living in the borough.



Fig. 3 (a); 3 (b) integration of a Car-Sharing station in the Bëginenhof development, Bremen ; photo: Glotz-Richter

### 3. Mobility management in existing neighbourhoods

The intense use of street space for car parking in narrow streets in inner city neighbourhoods is the source of many conflicts. Many German motorists are willing to take the risk of parking illegally as the fines for illegal parking are low and regulations are rarely enforced in many cities. Not only sidewalks but also intersections are (mis-)used for car parking – causing problems for large service vehicles such as waste collectors and even firefighters (see graph 1b). As there is neither space nor financial resources for constructing underground parking garages, a more efficient and solution was implemented: promotion of car sharing with many on-street stations.

Car sharing is part of neighbourhood parking management in Bremen. Understanding that there is not enough street space to meet the demand of individual car owners, Bremen decided to promote car sharing as a smart, cost-efficient measure to re-organise parking management. A strategy has been in place since 2013 to add numerous small (1-2 car) car sharing stations in very small streets in order to relieve the parking stress there. The design includes an extended kerbstone at intersections to reduce illegal parking, easing the work of waste collectors and fire fighters, whose vehicles were often blocked by parked cars.

The largest car sharing operator in Bremen, cambio, has reached a service level such that every car sharing car equates to removing 15 private cars from the streets (2015 and 2016 customer surveys). Thus the installation of an ever-growing network of car sharing stations both helps to make car sharing more attractive and also reduces the pressure on limited parking space.

The 2017 survey covers both the question of how many private cars are replaced by car sharing as well as the preferences of users, their satisfaction level and shopping behaviour: do car sharing users / non car owners shop more in their local neighbourhoods than car owners?

The survey, carried out in summer 2017 of the then 13,000 users of the Bremen car sharing operators cambio and MoveAbout, offered valuable insights for the strategic support of car sharing by municipalities as well to the business community and housing agencies and developers [team red, 2018].

The survey results show that about 80% of Bremen car sharing users do not have a car available in their household, meaning the car sharing service fills the gap when walking, cycling and public transport do not offer an appropriate option for a given journey. The mileage travelled by car of car sharers is about 25% lower than that of car owners. A substantial portion of the mileage of previous car owners who became car sharers was shifted mainly to public transport (including rail) and cycling.

In terms of the priorities of car sharing users, the key aspects are ease of booking and access (79%), availability of a car at the desired time (68%) and proximity of the car sharing station (60%). All other aspects had much lower rates (below 46%). The link of car sharing stations with public transport – as part of intermodal chains – was one minor aspect (21%) as was the availability of “trendy and sporty” cars (2%). The Bremen strategy of creating a network of smaller on-street car sharing stations (*mobil.punktchen* or “small mobility points”) in the neighbourhoods received excellent feedback; 84% of respondents were satisfied or very satisfied with the existing situation.

Car-sharers in Bremen are intense users of bicycles and of public transport. Whereas in the reference group 56% use a car to get to work, among car sharers it is only 24%. Public transport is used by 9% in the reference group but by 21% of the car sharers. The bicycle is used for commuting to work by 19% of the reference group as compared to 42% of Bremen car sharers.

In terms of shopping, 38% of the car sharing users surveyed does their grocery shopping in their local neighbourhood whereas only 22% of the reference group does.

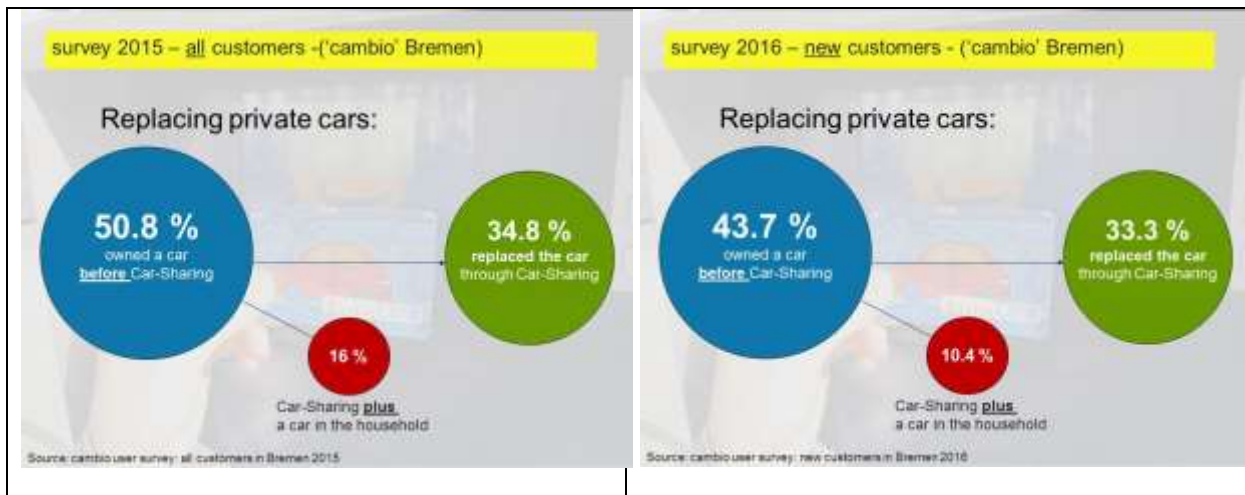


Fig. 2 (a) Results of survey among all cambio Bremen customers, source cambio (2015),  
 (b) Results of survey among new cambio Bremen customers of, source cambio (2016), graphs: Glotz-Richter

A comparison of the 2015 survey (all customers) and 2016 survey (new customers) shows the impact of an increasing number of younger users, who have never owned a car. As the share of people with a car in the household is also lower, the total results are about the same: roughly on third of all cambio customers gave up a private car.

Bremen’s car sharing is station-based and is not subsidised by the city. Bremen (population 560,000) was seen by the automotive-based companies Car2Go and DriveNow as too small for their (free-floating) car sharing.

#### **4. How the local authority in Bremen supports car sharing**

In addition to the other transport-related strategies in which car sharing is embedded, Bremen adopted the world's first car sharing action plan in 2009. This clearly defined the interest of the municipality in car sharing and set a target of at least 20,000 car sharers – equating to approximately 6,000 private cars removed from the streets – by 2020. This goal is equivalent to a four-fold increase in car sharing over 2008. As of September 2017, more than 13,000 users of car sharing have given up 4,500+ cars: a huge relief for the narrow streets of the city.

Eight concrete measures that the City of Bremen has undertaken to fully exploit the potential of car sharing are:

1. Embedding car sharing in the overall transport and urban development strategy
2. On-street car sharing stations
3. Integration into neighbourhood parking management
4. Integration in new urban developments
5. Integration with public transport
6. Using car sharing to make the city's own fleet management more efficient
7. The establishment of quality standards/certification for car sharing operators wishing to receive support from the local authority
8. Public relations and awareness raising

Car sharing is not a stand-alone measure but is embedded into overall urban development and transport strategies. In September 2014 Bremen adopted its Sustainable Urban Mobility Plan (Verkehrsentwicklungsplan 2025), which received the European Commission's 2015 European SUMP Award. As part of its strategy, Bremen continually improves its public transport network and promotes cycling and it has a strategic objective to reduce the number of cars on its streets.

The city's goals and strategies are intended to allow as many people as possible to make their daily trips by walking, cycling and public transport. Today, cycling accounts for more than 25% of all trips of Bremen citizens, and the city has a goal to further increase that share. Car sharing in Bremen is seen as a supplement to these sustainable modes; only together can they be an alternative to the private car.

Quality of life and a good environment for business go hand in hand in Bremen. The historic city centre is pedestrianised and well connected by tram. Bremen's cycling culture is supported through a growing number of cycle streets.

But even in a City like Bremen, which strongly supports car sharing, the broad public is not fully aware of car sharing and how it works, meaning awareness-raising is still an absolute "must". The City of Bremen has carried out a number of awareness raising activities. Currently, an animated cartoon character called Udo (a German man's name but also an acronym for Use it. Don't own it) serves as the hero for a car sharing advertising campaign in Bremen. Udo shows that his life is better as a car sharer than when he owned a car; he has more time, more money and more choices.

The promotion of cars sharing will play an important role for the SUNRISE co-creation process in the existing neighbourhoods around Hulsberg in order to reclaim street space. As a first measure, the project will evaluate how long cars are parked in the neighbourhood streets without being moved. In other streets in a comparable setting, about 25-35% of the cars were not moved over three consecutive workdays – meaning that these cars are likely not used for the daily trips to work but rather for occasional trips. Here, car sharing has huge potential to save money and create more flexibility for local residents.



Fig. 5 Campaign UDO (Use it – don't own it) (a) Translation: Car-wash? Change of tyres? something of the past...Udo prefers to chill, (b) Technical inspection? Checking fuel prices? something of the past...Udo prefers to chill, (C) City of Bremen

## 5. Acknowledgment

The City of Bremen is grateful for funding from the European Commission for the SUNRISE project within the Horizon 2020 programme.

Further project information and outputs can be found at: <http://www.sunrise-communities.eu/> .

## 6. References

- ADAC (German Motorist Association): ADAC Autokosten-Rechner, <https://www.adac.de/infotestrat/autodatenbank/autokosten/autokosten-rechner/default.aspx>
- Bundesverband CarSharing (German National Car Sharing Association), 'Auf dem Weg zu einer Mobilitätskultur – mehr als eine Million CarSharing Nutzer' (with English summary), bcs, Berlin, Juni 2015
- Freie Hansestadt Bremen, Deputationsbericht Umsetzung des Car-Sharing Aktionsplans 05.05.2015 (Report for the Committee for Urban Development and Transport Bremen on Car Sharing, 05 Feb 2015)
- Frost & Sullivan White Paper, car sharing in London – Vision 2020, London, 10/2014
- Glotz-Richter, Michael; Loose, Willi; Nobis, Claudia (2007). Car-Sharing als Beitrag zur Lösung von städtischen Verkehrsproblemen. *Internationales Verkehrswesen*, 59 (7,8), pages 333-337. DVV Media Group GmbH- Knie, A., Kramer, S., Scherf, C. & Wolter, F. E-Carsharing als Bestandteil multimodaler Angebote, *Internationales Verkehrswesen*, 2012
- International Transport Forum: Urban Mobility System Upgrade: How shared self-driving cars could change city traffic, ITF, Paris, April 2015

*'momorandum', project deliverable of the European momo project (more options for energy efficient mobility through car sharing), IEE project, Brussels, September 2011 – [www.momo-cs.eu](http://www.momo-cs.eu)*  
*Schlansky, Angelika; Parken im Viertel – study for the City of Bremen, Bremen 2014*  
*Team red (Berlin): Analyse der Auswirkungen des Car-Sharing in Bremen (Analysis of impacts of car sharing in Bremen), Endbericht (Entwurf), Berlin 2018 (not yet published)*  
*Verkehrsentwicklungsplan Bremen 2025, Freie Hansestadt Bremen, Der Senator für Umwelt, Bau und Verkehr, Bremen 2015 (Sustainable Urban Mobility Plan – download English version:  
[http://www.bauumwelt.bremen.de/sixcms/media.php/13/SUMP\\_Bremen2025\\_web.pdf](http://www.bauumwelt.bremen.de/sixcms/media.php/13/SUMP_Bremen2025_web.pdf))*

**Contact**

*Michael Glotz-Richter (Senior Project Manager, Sustainable Mobility)  
Free Hanseatic City of Bremen  
Senate Department for Environment, Construction and Transport  
Contrescarpe 72, 28195 Bremen, Germany  
[michael.glotz-richter@umwelt.bremen.de](mailto:michael.glotz-richter@umwelt.bremen.de)*